

FINANCIAL ANALYSIS AND BUSINESS VALUATION

FINAL

STUDY NOTES



The Institute of Cost Accountants of India

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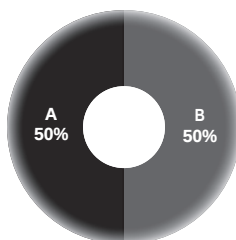
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Syllabus

Syllabus Structure

The syllabus comprises the following topics and study weightage:

A	Financial Analysis	50%
B	Business Valuation	50%



ASSESSMENT STRATEGY

There will be written examination (including case study / caselet analysis) paper of three hours

OBJECTIVES

To enable cost and management accountant professionals through analysis of financial statements to calibrate the lens to bring the business into focus. To identify the imperfections in the financial statements and frame strategic action to eradicate the dirt on the lens which may distort the financial picture. To enable business decision making through appropriate analysis of statements. To gain knowledge of the application of valuation principles and techniques in business environment.

Learning Aims

The syllabus aims to test the student's ability to:

- Understand the financial statements for analysis
- Apply appropriate measures for executing the financial analysis
- Make fundamental analysis through financial statement analysis
- Translate the understanding for business valuation
- Interpret the statements for managerial decision-making
- Evaluate the results for setting strategies
- Recommend strategic financial decisions

Skill set required

Level C: Requiring skill levels of knowledge, comprehension, application, analysis, synthesis and evaluation.

Section A: Financial Analysis	50%
1. Financial Modeling – concepts and application	
2. The Analysis of the Statement of Shareholders' Equity	
3. The Analysis of the Balance Sheet and Income Statement	
4. The Analysis of the Cash Flow Statement	
5. The Analysis of Profitability	
6. The Analysis of Growth and Sustainable Earnings	
Section B : Business Valuation	50%
7. Business Valuation Basics	
8. Valuation in Mergers and Acquisitions	
9. Fair Value in Accounting Measurement	
10. Valuation of Intangibles	

SECTION A: FINANCIAL ANALYSIS [50 MARKS]

1. Financial Modeling for Project Appraisal

- (a) Use of Functions like Net Present Value (NPV), Internal Rate of Return (IRR), etc.,
- (b) Forecasting techniques

2. The Analysis of the Statement of Shareholders' Equity

- (a) The Analyst's Checklist
- (b) Reformulating the Statement of Owners' Equity
- (c) Comprehensive Income Reporting
- (d) Financial Analysis – ratio analysis and report writing

3. The Analysis of the Balance Sheet and Income Statement

- (a) The Analyst's Checklist
- (b) Reformulation of the Balance Sheet
- (c) Reformulation of the Income Statement (Tax allocation, issues in reformulating income statements)
- (d) Comparative analysis of the Balance Sheet and Income Statement (Common size analysis; trend analysis)

4. The Analysis of the Cash Flow Statement

- (a) The Analyst's checklist
- (b) GAAP Statement of Cash Flows and Reformulated Cash Flow Statements
- (c) Analysis of cash flow statement and quality of earnings

5. The Analysis of Profitability

- (a) The Analyst's Checklist
- (b) Du Point Analysis
- (c) Cutting to the Core of Operations (the analysis of profitability)
 - (i) First level breakdown (distinguishing financing and operating activities and the effect of leverage)
 - (ii) Second level breakdown (drivers of operating profitability)
 - (iii) Third level breakdown (profit margin drivers; turnover drivers; borrowing cost drivers)

6. The Analysis of Growth and Sustainable Earnings

- (a) The Analyst's Checklist
- (b) Growth Analysis
- (c) The Analysis of Changes in Profitability and Sustainable Earnings
 - (i) Analysis of changes in operations
 - (ii) Issues in identifying sustainable earnings
 - (iii) Operating leverage
 - (iv) Analysis of changes in financing
- (d) The Analysis of Growth in Shareholders' Equity
- (e) Growth, Sustainable Earnings, Evaluation of P/B Ratios and P/E Ratios
 - (i) How price-to-book ratios and trailing P/E ratios articulate
 - (ii) Training Price-Earnings Ratios and Transitory Earnings

(iii) P/E Ratios and Analysis of Sustainable Earnings

SECTION B: BUSINESS VALUATION [50 MARKS]

7. Business Valuation Basics

- (a) Principles and techniques of valuation – DCF, Multiple methods, Accounting based valuation
- (b) Asset Valuation; Earning Valuation; Cash flow valuation; Other valuation basis

8. Valuation in Mergers and Acquisitions

- (a) Assets and Cash Flows – strengths and weaknesses of various valuation method
- (b) Recognition of interest of various stakeholders
- (c) Selection of appropriate cost of capital for valuation
- (d) Synergistic benefits
- (e) Forms of Consideration and terms of acquisitions
- (f) Post merger integration process
- (g) Implications of regulations for business combinations
- (h) Types of exit strategies and their implications
- (i) Shareholder Value Analysis
- (j) Exchange Ratio- Bases used for Computation

9. Fair Value in Accounting Measurement

- (a) Concept
- (b) Measurement techniques and standards, Challenges
- (c) Accounting treatment

10. Valuation of Intangibles

- (a) Intellectual Property
- (b) Intangibles
- (c) Brand Valuation

(Syllabus contents are subject to modification as may be required)

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Section A

Financial Analysis



Study Note - 1

FINANCIAL MODELING FOR PROJECT APPRAISAL

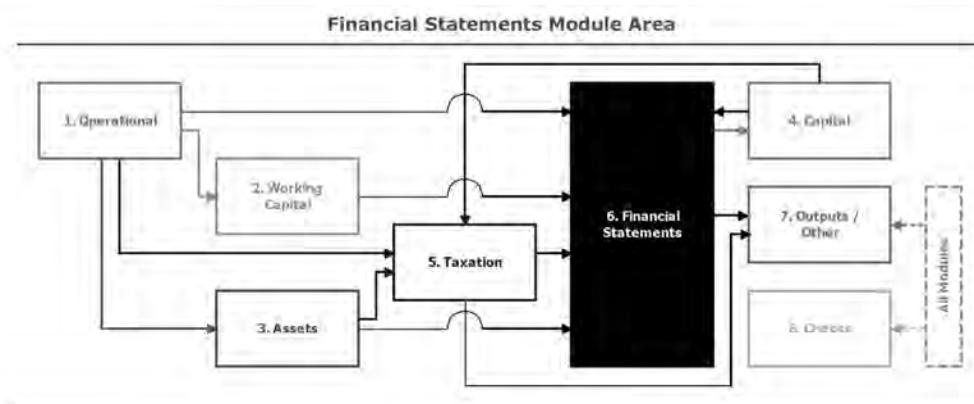


This Study Note includes

- 1.1 Financial Statement Module Area**
- 1.2 Financial Modeling – Concepts and Application**
- 1.3 Use of Functions like Net Present Value (NPV), Internal Rate of Return (IRR), etc.,**
- 1.4 Forecasting Techniques**
- 1.5 Financial Analysis**
- 1.6 Financial Statement Analysis**
- 1.7 Comparative Financial Statement**
- 1.8 Common Size Statement – Procedures — Benefits – Limitations**
- 1.9 Trend Ratio – Factors – Uses – Limitations**

1.1 FINANCIAL STATEMENTS MODULE AREA

The Financial Statements Module Area is one of eight interconnected Module Areas of a spreadsheet model as shown in the diagram below. These generic Module Areas can be used to develop a “whole-of-business financial model”.



The Financial Statements Module Area is comprised of three Module Types, representing each of the three financial statements. Each of these financial statements has the purpose of summarising a different component of an entity's financial position. The three different Module Types within the Financial Statements Module Area are:

- 1) Income Statement;
- 2) Balance Sheet; and
- 3) Cash Flow Statement.

It is important to understand the purpose of each of these three Financial Statements Module Types, and the functionalities that can be included within them to meet the requirements of model users. It is also important to understand how they can be interlinked with modules from other Module Areas, to ultimately create the required components of a spreadsheet model.

Each of the Financial Statements Module Types that may be included in a spreadsheet model is briefly explained below.

Financial Statements Modules Types

The three Financial Statements Module Types within the Financial Statements Module Area are defined as follows:

Module Type	Definition
1. Income Statement	• Provide a summary of the revenues, costs and expenses of an entity during an accounting period. • An Income Statement is generally used to calculate the Net Profit after Tax (NPAT) of an entity. • Also referred to as a 'Statement of Financial Performance' or a 'Profit & Loss Statement'.
2. Balance Sheet	• Shows the status of an entity's assets, liabilities and owner's equity at a point in time, usually the close of a month. • A Balance Sheet provides a snapshot of the entity's financial position, including the cumulative results of the Income Statement and Cash Flow Statement, at a point in time. • Also referred to as 'Statement of Financial Position'.
3. Cash Flow Statement	• Shows how changes in Income Statement and Balance Sheet accounts affect cash and cash equivalents during an accounting period. • A Cash Flow Statement breaks the analysis down according to operating, investing and financing activities. • Also referred to as a 'Statement of Cash Flows'

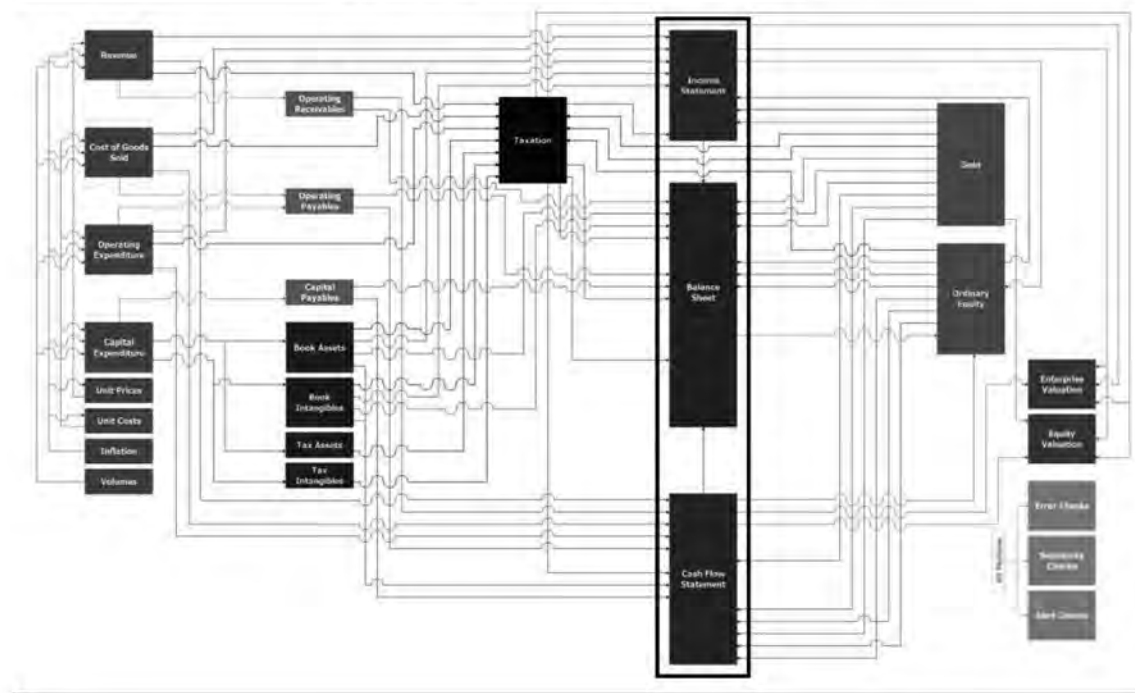
These three Financial Statement Modules can be built into a spreadsheet model independently, or linked together to establish relationships between them – e.g. Income Statement, Balance Sheet and Cash Flow Statement Modules might link in data from Operational, Working Capital and Assets Modules and then link to each other such that live, linked financial statements can be analysed.

Financial Statements Module Location

The Financial Statements Module Area is an integral area in the spreadsheet modelling process, bringing together many other Module Areas to analyse the financial position of an entity – e.g. an Income Statement Module shows the profit/loss of an entity, sourcing information from Revenue, cost of goods sold, operating expenditure, book assets, book intangibles, ordinary equity, debt and taxation modules. Additionally, information from each Financial Statement Module Type can then be used by other Modules – e.g. Net Profit After Tax (NPAT) can be used in an Ordinary Equity Module as a basis for determining dividends declared in each period.

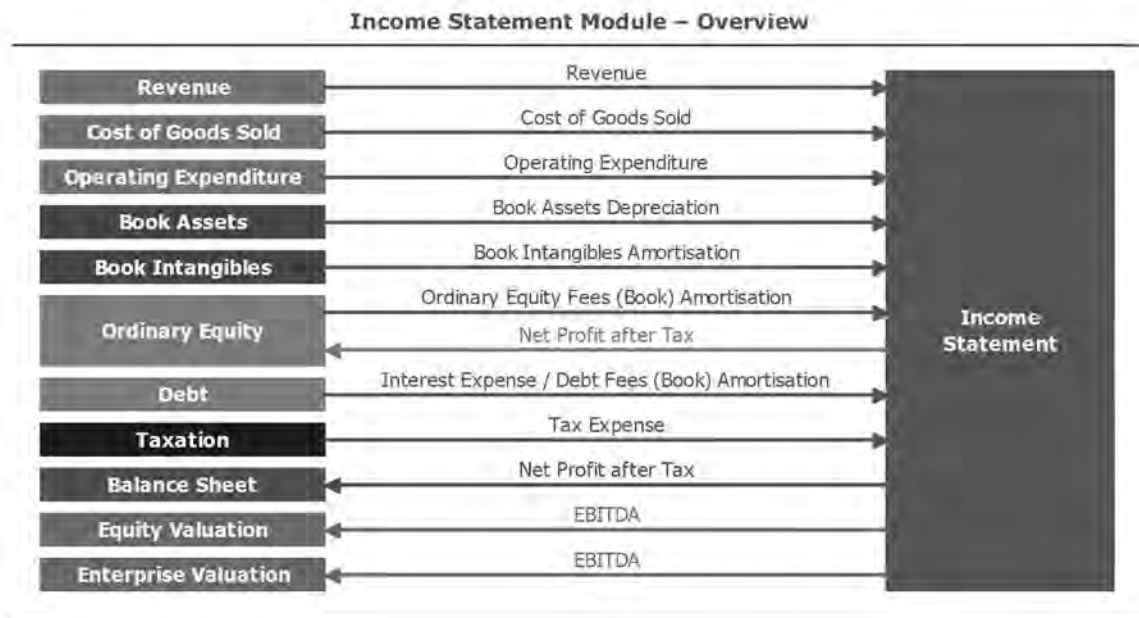
The diagram below shows each of the Module Types that can exist in a "whole of business financial model", organised into their respective Module Areas which are identifiable by colour coding. It highlights the Financial Statements Module Area and the potential links between the Financial Statements Modules and other modules from other module areas:

Financial Statements Module Location



1. Income Statement Module

The module collects revenues and expenses from Operational, Assets, Capital and Taxation Modules (if included), and links out NPAT to the Balance Sheet (if included). The module also links out Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA) to Valuation Modules (if included).



Layout

The diagram below shows an example of how an Income Statement might be laid out in order to present a summary of the revenues and expenses of an entity in order to calculate its Net Profit After Tax (NPAT). The diagram also shows where each of the Income Statement precedent modules would enter the Income Statement and the type of information that would link in from each of these precedent modules:

Income Statement Layout- example

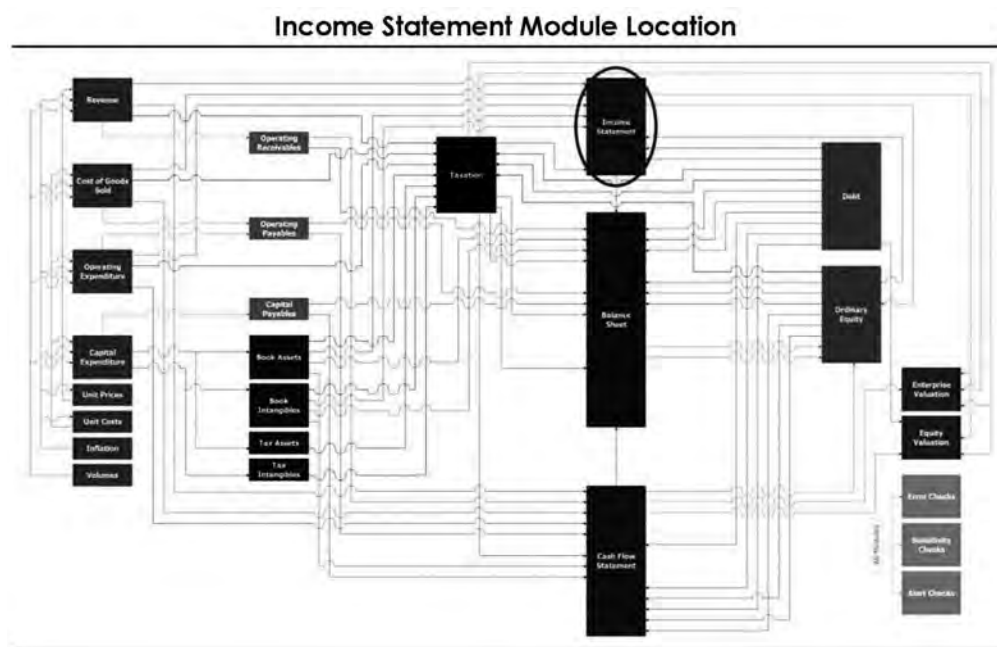
			Income Statement (₹)	
Revenue	₹1,500	— Revenue →	Revenue	1,500
Cost of goods sold	(₹200)	— Cost of goods sold →	Cost of goods sold	(200)
			Gross Margin	1,300
Operating expenditure	(₹300)	— Operating expenditure →	Operating expenditure	(300)
			EBITDA	1,000
Book assets	(₹150)	— Book assets Depreciation →	Book assets Depreciation	(150)
Book intangibles	(₹40)	— Book intangibles amortisation →	Book intangibles amortisation	(40)
Ordinary equity	(₹5)	— Ordinary equity fees (book) amortisation →	Ordinary equity fees (book) amortisation	(5)

Debt	(₹5)	— Debt fees (book) amortisation →	Debt fees (book) amortisation	(5)
			Depreciation & amortisation	(200)
			EBIT	800
Debt	(₹100)	— Interest expenses →	Interest expenses	(100)
			Net profit before tax (NPBT)	700
Taxation	(₹210)	— Tax expense →	Tax expense	(210)
Balance Sheet	₹490	← Net profit after tax (NPAT) —	Net profit after tax (NPAT)	490

The layout of an Income Statement is governed by the accounting standards and reporting requirements applicable to each entity. It is also governed by the choices the entity makes (within the boundaries of its reporting requirements) as to how it structures the presentation of its revenues and expenses on its Income Statement.

Location

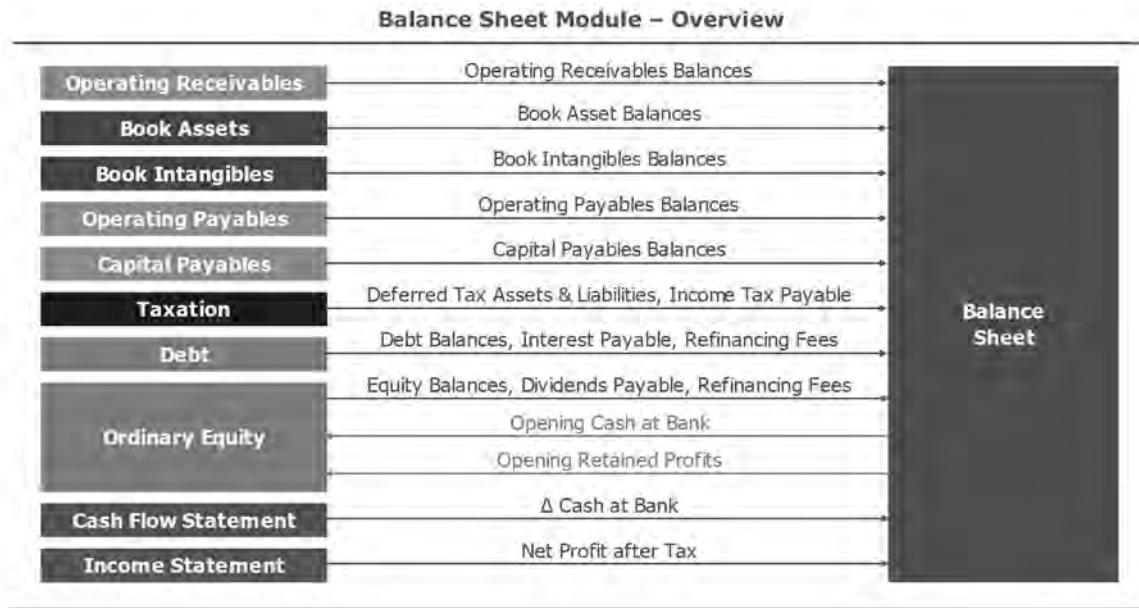
The diagram below shows the Income Statement Module contained within the Financial Statements Module Area and shows the potential links between the Income Statement Module and all other Modules:



2. Balance Sheet Module

The Balance Sheet Module provides a summary of an entity's assets, liabilities and equity at designated points in time.

The module collects asset, liability and equity balances from Working Capital, Assets, Taxation, Debt and Ordinary Equity Modules (if included), as well as the Income Statement and Cash Flow Statement Modules (if included). The module also links out Opening Cash at Bank and Opening Retained Profits to the Ordinary Equity Module (if included), which uses this information as a basis for determining dividends declared.



Layout

The diagram below shows an example of how a Balance Sheet might be laid out in order to present a summary of the assets, liabilities and equity of an entity at a point in time. The diagram also shows where each of Balance Sheet precedent modules would enter the Balance Sheet and the type of information that would link in from each of these precedent modules:

			Balance Sheet (₹)	
			Equity	
Ordinary equity	₹750	— Ordinary equity →	Ordinary equity	750
			Opening retained profits	132
Income statement	₹490	— Net profit after tax →	Net profit during period	490
Ordinary equity	(₹115)	— Ordinary equity dividends →	Ordinary equity dividends	(115)
			Retained profits	507
			Total equity	1,257
			Non-current liabilities	
Debt	₹1,500	— Debt balances →	Debt	1,500
Taxation	₹85	— Deferred tax liabilities balances →	Deferred tax liabilities	85
			Total Non-current liabilities	1,585



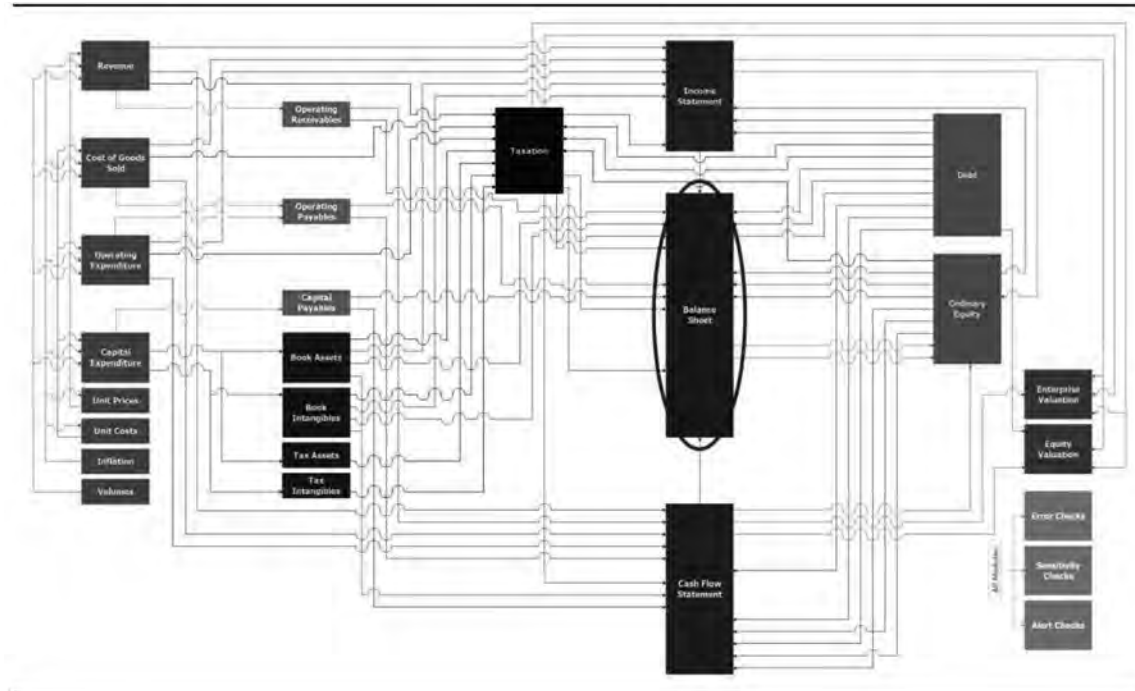
			Current liabilities	
Operating payables	₹95	— Operating payables balances →	Operating payables	95
Capital payables	₹30	— Capital payables balances →	Capital payables	30
Taxation	₹273	— Tax payables balances →	Tax payables	273
Debt	₹175	— Debt interest payables →	Debt interest payables	175
Ordinary equity	₹90	— Ordinary equity dividend payables balances →	Ordinary equity dividend payables	90
			Total current liabilities	663
			Total	3,505
			Assets	
			Non-current assets	
Book assets	₹2,250	— Book assets balances →	Book assets	2,250
Book intangibles	₹250	— Book intangibles →	Book intangibles	250
Debt	₹30	— Debt refinancing fees →	Debt refinancing fees	30
Ordinary equity	₹10	— Ordinary equity refinancing fees balance →	Ordinary equity refinancing fees	10
Taxation	₹145	— Deferred tax assets balances →	Deferred tax assets	145
			Total Non-current assets	2,685
			Current assets	
			Opening cash	400
Cash flow statement	₹295	— Change in cash held →	Change in cash held	295
			Cash	695
Operating receivables	₹125	— Operating receivables balances →	Operating receivables	125
			Total current assets	820
			Total	3,505

The layout of a Balance Sheet is governed by the accounting standards and reporting requirements applicable to each entity. It is also governed by the choices the entity makes (within the boundaries of its reporting requirements) as to how it structures the presentation of its assets, liabilities and equity accounts on its Balance Sheet.

Location

The diagram below shows the Balance Sheet Module contained within the Financial Statements Module Area and shows the potential links between the Balance Sheet Module and all other Modules:

Balance Sheet Module Location

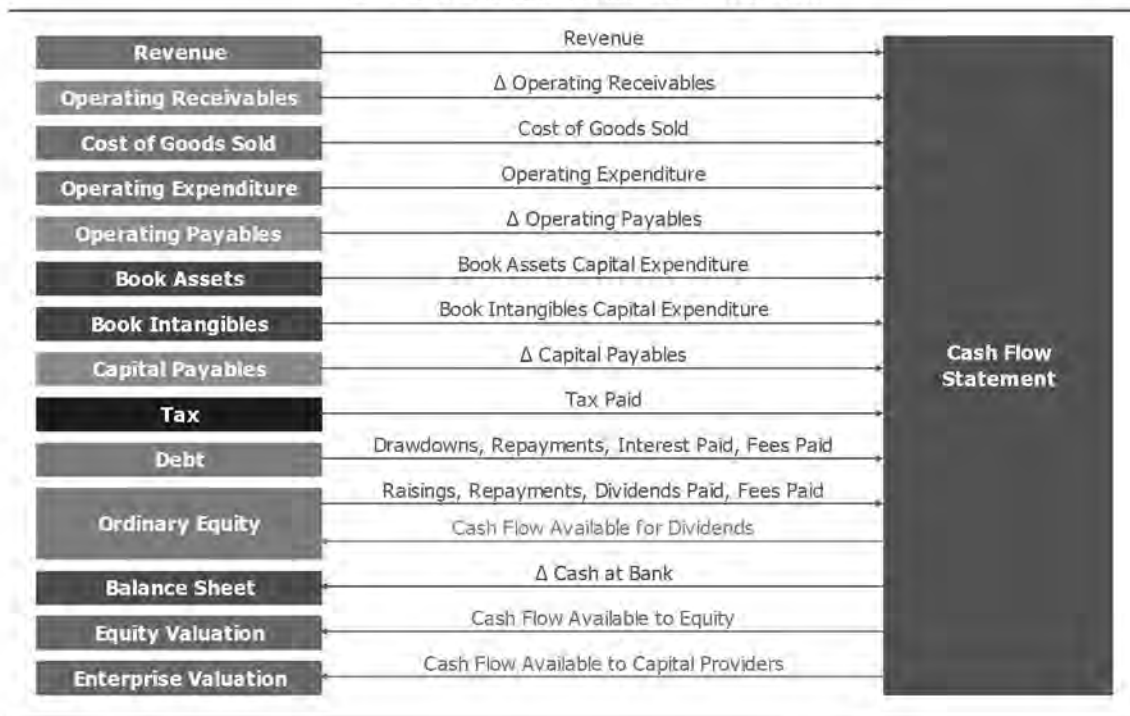


3. Cash Flow Statement Module

The Cash Flow Statement Module provides an analysis of the cash flows of an entity over a number of accounting periods, showing how changes in and Income Statement and Balance Sheet items affect cash and cash equivalents.

The module collects cash inflows and outflows Operational, Working Capital, Assets, Taxation, Debt and Ordinary Equity Modules (if included), and links out the change in cash held during each period to the Balance Sheet (if included). The module also links out cash flow available for dividends to the ordinary equity module (which is used to determine dividends declared) and cash flow available to equity and cash flow to capital providers to the Valuation Modules.

Cash Flow Statement Module – Overview



Layout

There are two common methods used to lay out a Cash Flow Statement. These two methods are summarised in the following table:

Method	Description
Direct	- The Cash Flow Statement is comprised purely of the cash inflows and outflows of an entity during the accounting period. - No reconciliation with Net Profit After Tax (NPAT) on the Income Statement is undertaken.
Indirect	- The Cash Flow Statement is built up by starting with Net Profit After Tax (NPAT) from the Income Statement. - NPAT is adjusted for differences between Income Statement revenues and expenses and actual cash inflows and outflows during the period.

Direct Cash Flow Statement Layout

The diagram below shows an example of how a Cash Flow Statement might be laid out in order to present the cash inflows and outflows of an entity during a period using the direct method. The diagram also shows where each of the Cash Flow Statement precedent modules would enter the Cash Flow Statement and the type of information that would link in from each of these precedent modules:

Cash Flow Statement Layout – Direct Method Example

	(₹)		Cash Flow Statement (Direct) (₹)	
			Cash Flow from Operating Activities	
Revenue	1,500	— Revenue →	Revenue	1,500
Operating Receivables	(200)	— Decrease in operating receivables →	Decrease in Operating Receivables	(200)
			Cash Receipts	1,300
Cost of Goods Sold	(200)	—Cost of Goods Sold→	Cost of Goods Sold	(200)
Operating Expenditure	(300)	—Operating Expenditure→	Operating Expenditure	(300)
Operating Payables	20	—Increase in Operating Payables→	Increase in Operating Payables	20
			Cash Payments	(480)
Debt	(90)	—Debt Interest Paid→	Debt Interest Paid	(90)
Taxation	(150)	—Tax Paid→	Tax Paid	(150)
			Net Cash Flow from Operating Activities	580
			Cash Flow from Investing Activities	
Book Assets	(200)	—Book Assets Capital Expenditure→	Book Assets Capital Expenditure	(200)
Book Intangibles	(50)	—Book Intangibles Capital Expenditure→	Book Intangibles Capital Expenditure	(50)
Capital Payables	20	—Increase in Capital Payables→	Increase in Capital Payables	20
			Net Cash Flow from Investing Activities	(230)
			Cash Flow from Financing Activities	
Debt	200	—Debt Drawdowns→	Debt Drawdowns	200
Debt	(100)	—Debt Repayments→	Debt Repayments	(100)
Debt	(4)	—Debt Refinancing Fees Paid→	Debt Refinancing Fees Paid	(4)
Ordinary Equity	50	—Ordinary Equity Raisings→	Ordinary Equity Raisings	50
Ordinary Equity	(100)	—Ordinary Equity Repayments→	Ordinary Equity Repayments	(100)
Ordinary Equity	(100)	—Ordinary Equity Dividends Paid→	Ordinary Equity Dividends Paid	(100)



Ordinary Equity	(1)	—Ordinary Equity Refinancing Fees Paid→	Ordinary Equity Refinancing Fees Paid	(1)
			Net Cash Flow from Financing Activities	(55)
Balance Sheet	295	←Net Increase / (Decrease) in Cash Held—	Net Increase / (Decrease) in Cash Held	295

Note that when the direct method is used to lay out a Cash Flow Statement, no reconciliation is undertaken with Net Profit After Tax (NPAT) on the Income Statement – i.e. all line items within a Direct Cash Flow Statement are actual cash inflows or outflows, not revenues or expenses.

The layout of a Cash Flow Statement is governed by the accounting standards and reporting requirements applicable to each entity. It is also governed by the choices the entity makes (within the boundaries of its reporting requirements) as to how it structures the presentation of its cash inflows and outflows on its Cash Flow Statement.

Indirect Cash Flow Statement Layout

The diagram below shows an example of how a Cash Flow Statement might be laid out in order to present the cash inflows and outflows of an entity during a period using the indirect method. The diagram also shows where each of the Cash Flow Statement precedent modules would enter the Cash Flow Statement and the type of information that would link in from each of these precedent modules:

Cash Flow Statement Layout – Indirect Method Example

	(₹)		Cash Flow Statement (Indirect) (₹)	
			Cash Flow from Operating Activities	
Income Statement	490	—Net Profit After Tax (NPAT)→	Net Profit After Tax (NPAT)	490
Income Statement	210	—Tax Expense→	(Add Back) Tax Expense	210
Income Statement	100	—Debt Interest Expense→	(Add Back) Debt Interest Expense	100
Income Statement	200	—Depreciation & Amortisation→	(Add Back) Depreciation & Amortisation	200
Operating Receivables	(200)	—Decrease in Operating Receivables→	Decrease in Operating Receivables	(200)
Operating Payables	20	—Increase in Operating Payables→	Increase in Operating Payables	20
Debt	(90)	—Debt Interest Paid→	Debt Interest Paid	(90)
Taxation	(150)	—Tax Paid→	Tax Paid	(150)
			Net Cash Flow from Operating Activities	580
			Cash Flow from Investing Activities	
Book Assets	(200)	—Book Assets Capital Expenditure→	Book Assets Capital Expenditure	(200)
Book Intangibles	(50)	—Book Intangibles Capital Expenditure→	Book Intangibles Capital Expenditure	(50)

Capital Payables	20	—Increase in Capital Payables→	Increase in Capital Payables	20
			Net Cash Flow from Investing Activities	(230)
			Cash Flow from Financing Activities	
Debt	200	—Debt Drawdowns→	Debt Drawdowns	200
Debt	(100)	—Debt Repayments→	Debt Repayments	(100)
Debt	(4)	—Debt Refinancing Fees Paid→	Debt Refinancing Fees Paid	(4)
Ordinary Equity	50	—Ordinary Equity Raisings→	Ordinary Equity Raisings	50
Ordinary Equity	(100)	—Ordinary Equity Repayments→	Ordinary Equity Repayments	(100)
Ordinary Equity	(100)	—Ordinary Equity Dividends Paid→	Ordinary Equity Dividends Paid	(100)
Ordinary Equity	(1)	—Ordinary Equity Refinancing Fees Paid→	Ordinary Equity Refinancing Fees Paid	(1)
			Net Cash Flow from Financing Activities	(55)
Balance Sheet	295	←Net Increase / (Decrease) in Cash Held—	Net Increase / (Decrease) in Cash Held	295

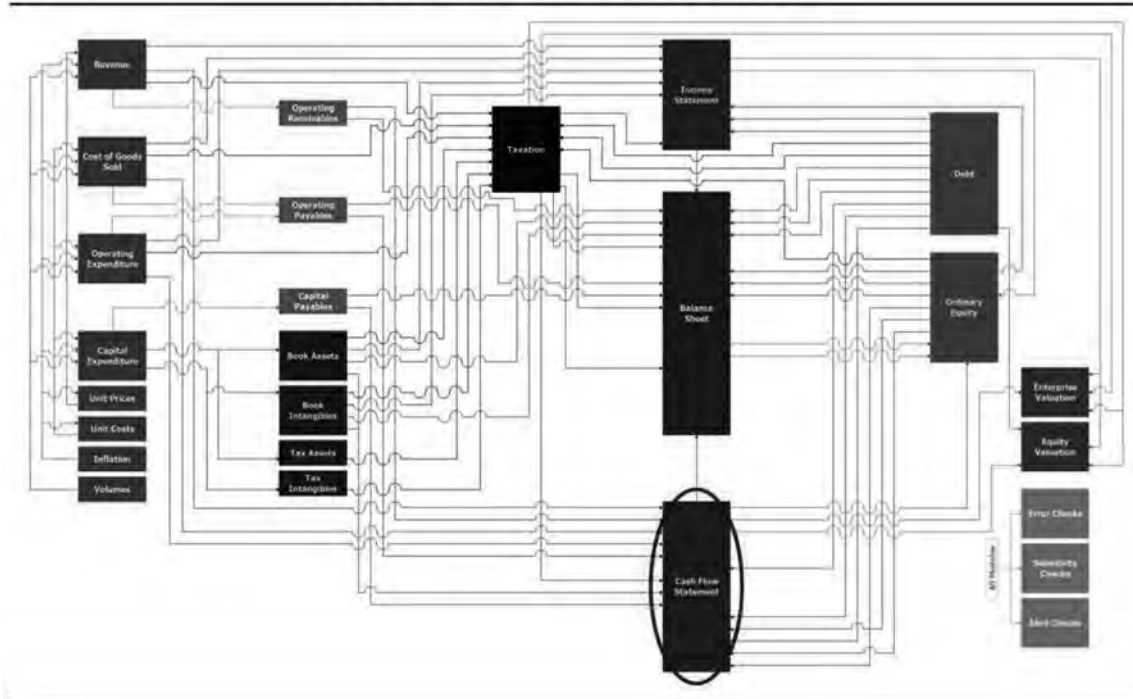
Note that when the indirect method is used to lay out a Cash Flow Statement, a reconciliation is undertaken with Net Profit After Tax (NPAT) on the Income Statement – i.e. NPAT is used as a starting point, after which adjustments are made for non-cash items in order to determine the cash inflows and outflows during the period.

The layout of a Cash Flow Statement is governed by the accounting standards and reporting requirements applicable to each entity. It is also governed by the choices the entity makes (within the boundaries of its reporting requirements) as to how it structures the presentation of its cash inflows and outflows on its Cash Flow Statement.

Location

The diagram below shows the Cash Flow Statement Module contained within the Financial Statements Module Area and shows the potential links between the Cash Flow Statement Module and all other Modules:

Cash Flow Statement Module Location



1.2 FINANCIAL MODELING - CONCEPTS AND APPLICATION

Financial modeling is the task of **building a financial model**, or the **process of using a financial model** for financial decision making and analysis. It is an abstract representation of a financial decision making situation. By abstract representation, we really mean a mathematical model, and to be practical, a computer based mathematical model. The model usually represents an ongoing business, or a project that requires investment. Financial models are not limited to profit making entities. Non-profits, governments, personal finances – all can be represented by financial models.

A financial model illustrates relationships using real (realistic) numbers so that it can answer “what if?” questions or make projections. Hence, a Model specifies the relationship between inputs and outputs.

Uses of Financial Modeling

Financial modeling is used to do historical analysis of a company’s performance, and to do projections of its financial performance into the future. Project finance is another area that lends itself to financial models. A project (such as a real estate investment or a new factory) can be analyzed using a financial model. It does not have to be complete business.

Financial Modeling is not just for the Accountant or Financial Consultant, who are called upon to develop financial projections, but also for business owners and managers. With improved user interfaces and heavy use of graphics, it is now feasible for non-technical people to use a financial model to test options and make decisions based on the projected impact on profits and cash flow.

Types of Financial Models

Financial models are often developed over the course of months and years, and many financial analysts get caught up the grind of building, auditing and maintaining existing financial models on a

daily basis, losing the big picture of understanding best practice modeling solutions used in business and economic decision analysis.

It is therefore useful for a good financial analyst to take a step back, examine the broad categories of financial models that are commonly used, and determine the optimal approach for the financial and business modeling of different scenarios and situations.

Let us first re-visit the basics, and look at how financial models can be related to its usage in modeling an economy, industry or company.

(i) Macroeconomic Financial Models

The models are usually econometric analysis based, built by government departments, universities or economic consulting firms, and used to forecast the economy of a country. Macroeconomic models are used to analyze the like effect of government policy decisions on variables such as foreign exchange rates, interest rates, disposable income and the gross national product (GNP).

(ii) Industry Financial Models

Industry models are usually econometric based models of specific industries or economic sectors. Industry models are often similar to macroeconomic models, and typically used by industry associations or industry research analysts to forecast key performance indicators within the industry in question.

(iii) Corporate Financial Models

Corporate financial models are built to model the total operations of a company, and often perceived to be critical in the strategic planning of business operations in large corporations and startup companies alike.

Almost all corporate financial models are built in Excel, although specialized financial modeling software are increasingly being used especially in large corporations to ensure standardization and accuracy of multiple financial models, or to comply with spreadsheet management requirements imposed by the Sarbanes Oxley Financial Reporting Act.

Now that we've looked at the context of financial models from an economic and financial analysis perspective, let us now examine financial models specifically from a financial modeling build perspective. Financial models can generally be classified into 3 categories:

- Deterministic Financial Models
- Simulation Based Financial Models
- Specialized Financial Models

(a) Deterministic Financial Models

In a deterministic model, a financial analyst enters a set of input data into a spreadsheet, programs the spreadsheet to perform a series of mathematical calculations, and displays an output result.

A Deterministic Model generates the same output every time you calculate.

Most deterministic financial models are built by performing an analysis on historical data to derive the relationship between key forecast variables. In a corporate context, historical accounting relationships are often used to forecast key revenue and cost variables.

Most deterministic models use one or two dimensional sensitivity analysis tables built into the model to analyze the question of risk and uncertainty in the model's output results. Each sensitivity analysis table allows a financial analyst to perform a "what if" analysis on 1 or 2 variables at a time. The advantage of sensitivity tables are its simplicity and ease of integration into existing deterministic financial models that have already been built.

Multiple sensitivity analysis tables can be combined in a scenario manager. The scenario manager is useful when there are interdependencies between the changing variables, as financial analysts can configure and change multiple variables in each scenario.



In certain scenarios, multiple regression analysis is used to determine the mathematical relationship between multiple variables in a deterministic financial model, and such analysis is termed econometric analysis.

The deterministic model is probably the most common type of financial model used in business and finance today. Most financial forecasting models used for revenue management, cost management and project financing are primarily deterministic based financial models.

(b) Simulation Based Financial Models

While a deterministic financial model is normally structured in such a way that a single point estimate is used for each input variable, simulation based financial models work by entering the likely distribution of key inputs defined by the mean, variance and type of distribution.

Simulation models use these range of inputs to recalculate the defined mathematical equation in the financial model through a few hundred iterations, normally 500 or more. The results of the analysis will produce the likely distribution of the result, therefore providing an indication of the expected range of results instead of a single point estimate.

Where risk is a dominant factor in the financial modeling scenario being analyzed, a reliable estimation of the likely range of results is often more useful than a single point estimate. Simulation based financial models therefore allows a financial analyst to model the question of risk and uncertainty using a higher level of granularity.

(c) Specialized Financial Models

Specialized financial models are narrower in scope and essentially sophisticated calculators built to address a specific business problem or financial computation. Cost management models, marginal contribution analysis models and option pricing models are examples of specialized financial models.

Attributes of a Good Model

A model is considered to be good if it has the following attributes:

- (i) Realistic - Assumptions, relationships, and inputs must be realistic so that the outputs are useable.
- (ii) Error Free - harder than it looks.
- (iii) Flexible - This is a two edged sword. Develop the model to be easy and error free, then add elements of flexibility. Experience will tell you when a model gets too complicated and should be segregated into separate models for separate purposes.
- (iv) Easy to use - Use clear labels and descriptions.
- (v) Easy to understand - A financial model is only as good as the analyst using it.

Financial Model – Structure and Importance

- A typical financial model comprises of the Income statement, Balance Sheet and Cash Flow.
- The information presented is an inter-linked version of three statements, interlinking makes it dynamic and enables the user to witness a change in each of the 3 statements by changing any of the parameters.
- Like the human body a model has parts too! Each of these parts must be in good health in order for the output to remain stable and represent facts rather than discrete numbers.

- Model parts briefly - The assumption (control sheet), debt schedule (debt sweep), depreciation schedule (Asset schedule), working capital, amortization, short term debt (revolver) and investments schedule. Each of these parts is finally integrated with the 3 statements to build a model, and that's when stress testing and error proofing techniques are applied! (Error proofing is partly done during the model building stage).
- The heart of a model is its schedules - Mainly the debt and depreciation schedules.
- Although a lot of users oversimplify the process by modeling all items as a % of sales, such models will rarely give desirable results and will fail miserably in complex real-world situations.
- Creating a good model takes far more time than perform a valuation, or merger/LBO analysis on it. The quality, user friendliness and customization of models made by some of the bulge-bracket investment banks may be the difference between them and their closest rivals.
- Remember, the quality of a model will determine the quality of analysis performed on it.

Financial Model – Need and Importance

- Financial modeling supports management in making important business decisions.
- It involves the quantification of the potential impact of decisions on the profit and loss account, balance sheet and cash flow statements.
- Through financial models, managers can determine the outcome of a proposal before even its execution and rely on a rational and comprehensive justification for their decisions.

Moreover, these models enable managers to study different options and scenarios without imposing any risk on the business. To avoid the common pitfalls related to financial modeling, designers should follow five basic principles. They should make sure that the model satisfies its objectives, maintain model flexibility, take inflation into consideration, present the model clearly and interestingly, and measure outcome.

Financial Model – Possible Applications

- Business plan performance & valuation
- Scenario planning and management decision making, (expansions & strategic planning analysis),
- Project finance
- Equity Investment
- Portfolio & Risk Management
- Credit Analysis
- Fair Valuation

These models are generally built around

- Financial statements,
- inputs (assumptions) impacting outputs
- External inputs/global variables (exchange rates, tax percentage, etc...)
- Internal inputs/company specific variables (wages, unit costs, etc)
- Mathematical relationship
- Output



Use and Users of Financial Models

(A) Top Management & Directors

- (i) Future Business plan
- (ii) Business Analysis
- (iii) Sensitivity on critical variables (Value drivers)
- (iv) Analyzing the impact of changes in industry local & international economy
- (v) Analyzing Cash flow position
 - (a) If cash surplus scenario
 - Short term Investments
 - Repayment of existing debts
 - Long term investments
 - Expansion project
 - New project
 - Acquisition & Mergers
 - (b) If cash deficit scenario
 - Short term loans
 - Long term financing
 - Restructuring of existing loans
 - Right issue
 - IPO
 - Equity Injection/investment
 - Discontinue/dispose non-profitable business segments

(B) Banks / Lenders

- (i) Analyzing Business
- (ii) Analyzing business ability to service debt
- (iii) If business is not able to service debt then restructure debt or issue new loan
- (iv) Why to finance company for projects and acquisitions

(C) Investment Managers, Fund Managers

- (i) Identifying potential investment opportunities
- (ii) Identify investments, which needs to be disposed off
- (iii) Research department issuing research reports on various sector
- (iv) Risk management department managing risk and return of the portfolio

(D) Equity Investors

- (i) Analyzing Business
- (ii) Determining the entry price on the basis of future and historical performance
- (iii) Estimating IRR on the investment by changing exit value and timings

(E) Listing, IPO, Offer for Sale, Right issues

- (i) Purpose of the activity and its impact
- (ii) Determination of offer price and its justification for:
 - Underwriters
 - Pre-IPO investors
 - Private Placements
 - IPO/right issue investors
 - SECP
 - KSE

(F) Rating Agency

- (i) Analyzing company's creditworthiness
- (i) Analyzing company's ability to pay its debt
- (iii) Issuing instrument ratings
- (iv) Issuing entity's ratings

(G) Accounting

- (i) Fair valuation of investments
- (ii) Impairment testing of investments

Financial Modeling Process

Generally following process is used for preparing Financial Model:

- (a) Gather historic financial statements and analyze it.
- (b) Compute Ratios from Historic Financial Statements to develop some of the mechanical assumptions about revenue, fixed & variable cost, working capital.
- (c) Need detailed discussions with all the departments of the organization. i.e. Productions, Sales, Commercial & Logistics, Finance.
- (d) Develop Revenue, Expense, working capital and capital expenditures by working through value drivers.
- (e) Work through the Income Statement, then the Balance Sheet, then the Cash Flow Statement and finalize Balance sheet to check, for forecast years.
- (f) Valuation, sensitivity analysis and presentation.



Modeling Issues for Profit & Loss Account and Balance Sheet Items

- (A) Profit & Loss Account items
 - (i) Revenue
 - (ii) Cost of sales
 - (iii) Administration & Selling expenses



- (iv) Financial charges (calculated in Debt Sheet)
- (v) Other income/other expenses
- (vi) Taxation

(B) Balance Sheet items

- (i) Working capital (Current assets & liabilities)
- (ii) Fixed assets
- (iii) Debt
- (iv) Cash & Bank balances (Cash flow statement)
- (v) Capital & Reserves (Statement of changes in Equity)

(C) Historical radar

(D) Output

(i) How to analyze Revenue? [Some sector specific are referred for better understanding]

(A) Analysis of Revenue of Manufacturing Companies

- (i) Begin with capacity
- (ii) Relate capacity with revenue
- (iii) New capacity driven by corporate strategy
- (iv) Drivers are Capacity, capacity utilization and price

(B) Analysis of Revenue of Telecommunication Companies

- (i) Begin with market size and market share
- (ii) $\text{Revenue} = \text{Market size} \times \text{Market share} \times \text{Price}$
- (iii) Drivers are market size, market share and price

(C) Analysis of Revenue of Banks and Investment Companies

- (i) Begin with asset and liabilities
- (ii) Use deposit growth and loan to deposit ratio
- (iii) Investments (like capital expenditures) are increases in loan

(D) Analysis of Historical Financial Statements

(E) Discussion with Sales team

(F) Creating sensitivity on Value Drivers

(ii) How to analyze Cost of Sales, Administration & Selling Expenses?

(A) Analysis of historical financial statements

(B) Identifying variable and fixed cost - variable cost to be linked to production, demand, volume drivers

(C) Fixed cost to be linked to historical financial statements - analysis of historical cost growth trends for both variable and fixed cost

(D) Impact of capacity expansion on variable and fixed cost

(E) Correlation of macro-economic variables may be useful for cost growth factors

(iii) How to analyze Other Income?

- (A) Linked with short term investments
- (B) Linked with cash surplus generated in projections
- (C) Calculate income on average deposit rates

(iv) How to analyze the impact of Taxation aspects?

- (A) Unabsorbed business losses
- (B) Unabsorbed depreciation losses
- (C) Initial depreciation on addition in property, plant and equipment
- (D) Difference between tax depreciation and accounting depreciation
- (E) Tax calculation under normal taxation
- (F) Turnover tax calculation for comparison
- (G) Timing of tax payment

(v) How to analyze the Working Capital?

- (A) Analysis of historical financial statements
- (B) Calculating historical turnover days for
 - Debtors (last year debtor $\times 365$ / revenue)
 - Stocks (last year stock $\times 365$ / cost)
 - Creditors (last year creditor $\times 365$ / cost)
- (C) Use the turnover ratios from historical financial statements for projecting current assets and liabilities
- (D) Cash flow impact –changes in working capital
- (E) Impact of change in strategy
- (F) In case of new project, need to analyze the working capital need of the project, which will be used in calculating the returns (IRR, NPV) of the project.

(vi) How to analyze Fixed Assets?

- (A) Each Class of asset should show
 - (i) Opening balance
 - (ii) Additions / deletions
 - (iii) Depreciation
 - (iv) Closing balance
- (B) Divide Additions in following
 - (i) Sustainability Capital Expenditure (CAPEX) –historical analysis
 - (ii) Capacity expansion addition / Projects / BMR(CWIP)
 - (iii) Interest capitalization of the project (CWIP)
- (C) In case of any Capacity expansion / Projects / BMR
 - (i) Identify cost of project
 - (ii) Add increase capacity because of project in production & revenue



- (iii) Sources of Finance (Debt / Equity), adding it in debt portion
- (D) Cash flow impact
- (E) Tax benefits on capital expenditure

(vii) How to analyze Existing Debt?

- (A) Identify current level of short term and long term debt
- (B) Prepare following Schedules
 - (i) Summary of loans -Balance Sheet
 - (ii) Summary of current maturity –Balance Sheet
 - (iii) Summary of short term loan -Balance Sheet
 - (iv) Summary of interest –Profit & Loss Account
- (C) Each debt should show
 - (i) Opening balance
 - (ii) Debt drawdown
 - (iii) Debt repayments
 - (iv) Closing balance
- (D) Cash flow impact
- (E) Creating option for sensitivity analysis on base rate (KIBOR)

(viii) How to analyze New Debt?

- (A) Analyze short term debt requirement with reference to working capital requirements of the company.
- (B) Possibility of long term loan requirement for expansion / project. (Separate working for new loan)
- (C) Creating option for different debt structure for the expansion / project. i.e. by changing grace period, total tenor of loan
- (D) Analyzing the impact of new loans on debt ratios, which are generally set by loan agreements

(ix) How to analyze Cash & Bank Balance (i.e. Cash Flow Statement)

- (A) Auditing / Balancing tool / Cork Screw
 - If Balance sheet is balanced after adding cash & bank balance calculated through cash flow statement then Financial Model is working.
- (B) Should be simple
- (C) Divided into
 - (i) Operating Activities
 - (ii) Investing Activities
 - (iii) Financing Activities

Specimen Cash Flow Statement for Financial Model

Cash Flow from Operating Activities	
Earnings Before Interest and Tax (EBIT)	xxx
Add: Depreciation / other non-cash items	xxx
Operating Profit before Working Capital changes	xxx
Add : Changes in Working Capital	xxx
Less: Financial charges paid	xxx
Less: Taxes paid	xxx
Cash flow from Operating Activities	xxx

Cash flow from Investing Activities	
Less: Additions in Fixed Assets/ Investments	xxx
Add: Disposal of Fixed Assets/ Investments	xxx
Cash flow from Investing Activities	xxx

Cash flow from Financing Activities	
Add: Issuance of Equity	xxx
Less : Net borrowings/Loans	xxx
Less: Dividend paid	xxx
Cash flow from Financing Activities	xxx

(x) How to analyze Capital & Reserves (Statement of changes in Equity)**(A) Share Capital**

- Opening Balance
- New shares issued
- Other adjustment
- Closing balance

(B) Accumulated Profits

- Accumulated profits brought forward
- Profit / (loss) for the period
- Transfer to other reserves
- Dividend
- Accumulated profit carried forward

How to Process Balance Sheet Items?

(A) Prepare workings for Balance Sheet items in following format except working capital:

- Opening Balance
- Additions
- Payments
- Closing Balance



- (B) Identify Balance sheet items with which Profit and Loss Account items to be linked and calculate those on same sheet e.g interest to be linked to debt
- (C) Cash flow impact–calculate cash flow impact for each Balance Sheet items
- (D) Use Balance Sheet as starting and closing point
- (E) Use Balance Sheet as Auditing tool.

How to Process Profit & Loss Account Items?

- (A) Identify value driver
- (B) Link variable items with value drivers
- (C) Link fixed items with cost growth factor
- (D) Identify Balance sheet items with which Profit loss items to be linked and calculate those on same sheet e.g Interest to be linked to Debt, Other income on short term investments.

Important Assumptions

(A) Internal Variables

- (i) Production
- (ii) Sales
- (iii) Selling Price
- (iv) Key Variable cost
- (v) Key Fixed Cost
- (vi) Sustainability Capital Expenditure
- (vii) Turnover ratios of Debtors, Creditors, Stocks

(B) External Variables

- (i) Borrowing rates, KIBOR, LIBOR
- (ii) PKR to Foreign Currency Parities

Output

(A) Executive Summary

- (i) Profit & Loss Account, Balance Sheet, Cash flow Statement
- (ii) Ratio analysis on the Projected Financial Statements
- (iii) Ratio analysis with lenders view
- (iv) Options

(B) Company Valuation

- (i) Free Cash flow to Firm (FCFF) to WACC (Enterprise Value)
- (ii) Free Cash flow to Equity (FCFE) to Equity Discount Factor (Equity Value)

(C) Project

IRR, NPV, Payback period (always use X IRR and X NPV)

(D) Equity Investors

IRR, NPV, Entry and Exit values

Ratios for Management & Lenders

(A) Key Numbers / Ratios for Management

- (i) Gross Profit
- (ii) Operating Profit
- (iii) Net Profit
- (iv) EBIT
- (v) EBITDA
- (vi) Working Capital
- (vii) CAPEX
- (viii) Debt (Current & Proposed)

(B) Key Ratios for Lenders

- (i) Debt (current & proposed)
- (ii) Current ratio
- (iii) Gearing ratio
- (iv) Debt Service Coverage ratio
- (v) Impact of new debt on coverage ratios

1.3 USE OF FUNCTIONS LIKE NET PRESENT VALUE (NPV), INTERNAL RATE OF RETURN (IRR), ETC.,

Basis	Corporate Model	Project Finance Model	LBO Model	M & A Model
Information	Historical financial statement: analysis of value drivers	Contracts and analysis of product & raw material prices and other value drivers	Historical financial statements: analysis of value drivers – transaction terms	Historical financial statements: analysis of value drivers – transaction terms
Starting Point	Historic Balance sheet	Sources (Equity/ Debt) and Uses Analysis (create Balance Sheet)	Sources and Uses and Pro-forma Balance Sheet	Sources and Uses and Pro-forma Balance Sheet
Cash Flow	Net Cash Flow for the equity holders	Cash flow that ultimately measures dividends paid to equity	Cash flow that ends in dividends paid to equity	Cash flow changes that result in surplus cash after merger



Debt Analysis	New and existing	New debt issues from transaction	New debt issues from transaction	Existing debt issues : retired debt issues; new debt issue
Model termination	Terminal period	End of project life	Transaction holding period	Profitability Analysis period
Model Output	DCF valuation, profitability projection	Equity IRR, Project IRR & NPV, Pay-back period, DSCR	Equity IRR	Project EPS and other Ratios on Stand alone vs. Combined Basis

1.4 FORECASTING TECHNIQUES

A forecast is a prediction about a condition or situation at some future time. Much of human activity is based on forecasts. When we go to a motion picture, we assume we will find the picture enjoyable — that is, we forecast an enjoyable experience. We routinely listen to weather forecasts on the radio to help us plan future activities. Forecasting is an important part of our lives.

Business decisions, and especially financially related business decisions, depend heavily on forecasts of future events. Decisions to lend money or borrow money depend on forecasts of future cash flow and future expected returns. For example, if Sandip agrees to lend Tapas some money, it is assumed that Sandip expects to be repaid.

Why Do Firms Forecast?

Most organizations with sophisticated financial management operations spend considerable time and effort in forecasting, because they need to plan for an uncertain future.

- The need to plan – Business planning is a proven way to achieve profitability and growth. Planning helps managers control the operations of their organization.
- Dealing with uncertainty – We are certain that the future is uncertain. A single financial variable can have a variety of consequences. Having good forecasting procedures generally improves the quality of predictions about financial variables.

Three Critical Questions

- Estimating accuracy of a forecast – before any forecasting process is undertaken, a business decision should be made as to how much accuracy can reasonably be expected from it. A business decision is exactly what is required in allocation expensive resources to any project.
- The cost-benefit trade-off – What is the cost-benefit trade-off involved in obtaining a more accurate forecast? It is possible to obtain more accurate forecasts of some financial variables if more effort is expended. The criterion for evaluating the cost-benefit trade-off involved in undertaking a forecast is common to any business decision: Do the benefits of the greater forecasting effort justify its extra cost? If it is likely that the benefit from the extra forecasting activity will exceed the extra cost, then the forecasting activity should be expanded.
- Meeting the criteria for timeliness – How does the forecast meet the three criteria for timeliness?
 - how timely is the forecast?
 - timeliness has to do with how far into the future the forecast should go;
 - The analyst will have to decide on the level of data detail necessary.

The Critical Role of Assumptions

Forecasting requires a willingness to make assumptions, which are the basic input in any forecast. An unwillingness to make assumptions about the future is the equivalent of an unwillingness to forecast. Any time a forecast is made, assumptions are made as well, whether or not the forecaster realizes it.

A good financial forecast should have two attributes:

- (i) It should include a list of all the relevant and significant assumptions that were used in making it. An assumption is relevant if it is likely to occur and to have a direct impact on the financial variable being forecasted. An assumption is significant if it is likely to occur and if the magnitude of its impact on the financial variable under study will be too large.

In summary, assumptions underlying a forecast should be relevant and significant, and they should be identified clearly.

It should be internally consistent – that is, it should flow directly from the assumptions made. A forecast is internally consistent when it follows in a direct, logical manner from the assumptions stated.

- (ii) Sensitivity Analysis – It is a process by which each assumption is adjusted and the impact of the adjustment on the forecast is examined.

Varying assumptions to examine what-if scenarios - Sensitivity analysis is similar to what-if analysis. Once a forecasting model has been developed and the forecasted variable estimated, the model provides a basis for considerable information about the firm. What-if analysis also is useful in reassessing assumptions over time.

Three Basic Forecasts

The three basic forecasts used by financial managers are the qualitative or judgemental forecast; the time series forecast and the casual forecast.

- (i) Judgemental forecast – where forecasts are made based on experience and judgement instead of mathematical and statistical forecasting.
- (ii) Time series forecast – this assumes that the basic forces underlying a time series (economic, political or behavioral) are stable; analyzing the pattern of a time series in the past makes it possible to create a model that will predict its future movement.
- (iii) The Casual forecast – this is used when the nature of the casual relationship is well-known, the relationship is stable over time and the casual variables are relatively easy to predict.

1.5 FINANCIAL ANALYSIS

The financial analysis of companies is usually undertaken so that investors, creditors, and other stakeholders can make decisions about those companies.

Financial analysis is the selection, evaluation and interpretation of financial data, along with other pertinent information, to assist in investment and financial decision-making. Financial analysis may be used internally to evaluate issues like employee performance, operating efficiency, credit policies and extremely to evaluate potential investments and credit-worthiness of borrowers, among other things.

The analyst draws the financial data needed in financial analysis from many sources. The primary source is the data provided by the company itself in its annual report and required disclosures. The annual report comprises of balance sheet, income statement, the statement of cash flows as well as footnotes to these statements.



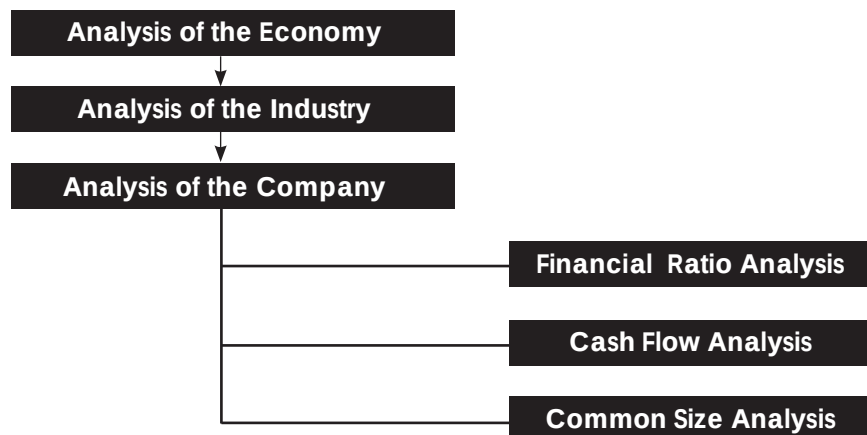
The goal of financial analysis is to assess the performance of a firm in the context of its stated goals and strategy. There are two principal tools of financial analysis: ratio analysis and cash flow analysis. Ratio analysis involves assessing how various line items in a firm's financial statements relate to one another. Cash flow analysis allows the analyst to examine the firm's liquidity, and how the firm is managing its operating, investment, and financing cash flows.

Financial analysis is used in a variety of contexts. Ratio analysis of a company's present and past performance provides the foundation for making forecasts of future performance.

Financial forecasting is useful in company valuation, credit evaluation, financial distress prediction, security analysis, mergers and acquisitions analysis, and corporate financial policy analysis.

The Tools that are Used to Analyze the Company's Financial Information Include

- (i) Financial ratio analysis ;
- (ii) Cash flow analysis; and
- (iii) Common size analysis.



Aside from the company's financial disclosures, the analyst must also perform an analysis of the economy and the industry in which the company operates.

1. Economic Analysis

With respect to information on the economy, the analyst must evaluate how the company performs in different economic environments. Armed with this information and economic forecasts, the analyst will be able to develop better forecasts of how the particular company will perform in the future.

Economic data that is needed includes:

- Production and income;
- Employment;
- Consumption;
- Investment activity;
- Interest rates;
- Stock prices; and
- Inflation.

2. Industry analysis

The analyst must also take a close look at the industry or industries in which the company operates. Aspects of the industry analysis that are important are:

- Nature of competition;
- Market share for each company in the industry;
- Labour conditions;
- Regulatory conditions;
- Price elasticity of demand and supply;
- Sensitivity of demand to economic conditions.

In the analysis of an industry and a company, it is important to understand the sources of value added. In basic economics, we have learned that a firm creates value when it has a comparative or competitive advantage. When analyzing an industry and a company, the financial analyst must identify the comparative or competitive advantage that provides economic profit and sustainable growth in the future. The economic profit (i.e. the economic value added) is the income of the company in excess of the firm's cost of capital. A company's sustainable growth is the growth rate that it can keep up without having to resort to additional financial leverage.

One way to analyze these advantages is to use the five factors that are outlined by Michael Porter:-

- (a) Threat of new entrants – the industry/company may have an advantage if there are barriers to new entrants.
- (b) Bargaining power of buyers – the stronger the bargaining power of buyers, the less advantage that a/an industry/company has.
- (c) Bargaining powers of suppliers – the greater the bargaining power of suppliers, the lower the economic profit.
- (d) Rivalry among competitors – the more competitive the industry, the lower the economic profits for any member of the industry
- (e) Threat of substitutes – the greater the ability of competitors to imitate the products or services of a company, the lower the potential economic profit. Patents, trademarks and copyrights will lower the threat of substitutes.

These are often referred to as Porter's Five Forces. As the analyst examines the industry and the company – past, present and future – these questions must be addressed:

- (i) What are the sources of the industry's and company's economic profit?
- (ii) What are the sources of the company's sustainable growth?

3. Company Analysis:

The analysis of a company requires looking closely at the company's financial history and recent events, with a goal of assembling the future prospects of the company. The types of information that an analyst must gather include:

- (a) Financial statement data and related disclosures;
- (b) Major news items in recent years;
- (c) Position and market share in the industry;
- (d) International investment;
- (e) Where the company is in its life cycle (i.e. high growth/ development, maturing, declining);



- (f) Contributions of major product, divisions or subsidiaries to the company's performance;
- (g) Research and development efforts;
- (h) Sensitivity of company to commodity prices (e.g. oil); and
- (i) Major litigation.

Necessity of Performing Financial Analysis

Projection assumptions can be supported by historical financial analysis.

Basic financial analysis tools include:

- (i) Common size financial statements
- (ii) Ratio analysis
- (iii) Trend analysis
- (iv) Industry comparatives

Financial analysis tools and techniques can:

- (i) Isolate trends (positive and negative).
- (ii) Help identify strengths and weaknesses.

Understanding Financial Statements and Annual Reports

Investors and owners have struggled with communicating and analyzing financial performance for centuries. Since the beginning of business activity – and with it, delegation of responsibility – the owner of the invested resources has sought to monitor and evaluate the stewardship of the operating manager.

Accounting is the language of business. It is the vehicle for communicating financial information about a company to many different groups of people: managers, owners, creditors, investors, customers, suppliers, government agencies, economists and others. Each of these groups may have different uses for the information. Owners are concerned that the company produce a profit and increase their wealth. Creditors want to know that the company is liquid enough to make debt payments and solvent enough to repay the loan principle if the business fails. Managers want to be compensated for their work and have confidence that their employer will provide job security. Customers and suppliers want to benefit from the ongoing business relationships. The government wants to ensure the public good, by collecting taxes and improving financial reporting. All these stakeholders can benefit and achieve their objectives if they have good accounting information.

Accounting is an ever-changing communicative system. All parties with a stake in the economic environment, upon which accounting reports, continually press for improvements in the information that accounting systems provide.

What the Financial Statements Don't Tell Us

The financial statements provide a great deal of information about a company, but there is still more that we may want to know. The financial scams in the recent past have brought more attention to what the statements don't tell us. In particular, the focus has shifted to a company's off-balance sheet liabilities. Off-balance sheet financing are methods used to finance a company without showing debt on the face of the balance sheet. Fortunately, there has been a significant in the accounting principles in the recent years that bring many of the formerly off-balance sheet liabilities at least in the notes to accounts or disclosures.

What to Watch for in a Financial Disclosure

Here are a few things to watch for in analyzing financial statements:

(a) In the financial statements, look for :

- Auditor's report: qualified? a lack of going-concern qualification is the death knell of companies
- Write-off or write-down of assets – what does this imply for future earnings?
- Write-down of inventory – if they write - it down, what does it mean about their decision to build it up? What will this do to future earnings when they sell these goods?

(b) In the footnotes, look for:

- adoption of new accounting standard before the company is required to adopt it
- related parties transactions
- shifting of receivables to or from subsidiary
- reducing in a line of credit
- change in assumptions for employee benefits (AS-15)
- change in depreciation lives or salvage values or methods of charging depreciation
- contingent liabilities and provisioning norms

(c) Comparing to year-to-year changes and overall trends, look for:

- Change in accounting method
- Substantial increase in deferred revenue
- Increase in the valuation allowance
- Cash flow from operations that is increasing or decreasing at a rate different from that of net income
- Falling reserves for bad debts and accounts receivable.

1.6 FINANCIAL STATEMENT ANALYSIS

Financial Statement

A statement is numerical report to express some facts. A financial statement is a numerical report covering financial information to express the financial results and financial condition of the concern.

According to John Myer, the term financial statement refers to the two statements, which the accountant prepares at the end of the period for a business enterprise. They are the balance sheet or statement of financial position and the income statement or profit and loss statement.

According to Kohler, financial statements are those statements, which show both the performance and the financial position. They include balance sheet, income statement, fund statement or any supporting statement or other presentation of financial data derived from accounting records.

According to J.J. Hampton, a financial statement is an organised collection of data according to logical and consistent accounting procedures. Its purpose is to convey an understanding of some financial aspects of a business firm. It may show a position at a moment of time as in the case of a



balance sheet, or may reveal a series of activities over a given period of time, as in the case of an income statement.

According to AICPA (American Institute of Certified Public Accountants), financial statements reflect a combination of recorded facts, accounting principles and personal Judgements.

According to Smith and Ashburne, the financial statement is the end product of financial accounting, prepared by the accountant of an enterprise, the result of its represents financial position, and analysis of worked has been done with earnings.

The components of financial statements are:-

- (1) Income Statement: It shows financial results of a business.
- (2) Balance Sheet: It shows financial position of a business at a particular moment of time. It represents proprietors' fund, liabilities to outsiders, investment in all assets.
- (3) Statement of Retained Earnings: It shows appropriation and distribution of earnings.
- (4) Statement of Changes in Financial Position: It shows the movement of working capital or cash or financial position for a better understanding of the affairs of the business.

Thus financial statements are prepared for presenting a periodical review or report on the progress by the management and deal with (i) the status of investments in the business and (ii) the results achieved during the period under review.

Nature of Financial Statement

Financial statement is prepared for external reporting in the form of Balance Sheet and Profit & Loss Account. These statements are contained in company's annual report, which includes chairman's speech, the director's report, the auditor's report and accounting policy changes. Number of schedules, supplementary statements, explanatory notes, footnotes etc supports these statements. According to AICPA, these statements reflect a combination of recorded facts, accounting conventions, personal judgements and the judgements & conventions applied affect them materially. According to this statement, the natures of financial statement are as follows:-

- (1) **Recorded Facts:** The events that changed the financial position are recorded in primary book, in journal proper. From these books, ledgers are prepared and there from trial balance is prepared. All the facts and figures recorded in these books and statements are called recorded facts. The financial statements are prepared from these recorded facts. Therefore, the financial statement published only recorded facts in accounting. Many important unrecorded facts are not disclosed in financial statement. For example, efficiency of labour is important matter but not shown in financial statement. However, some unrecorded facts (such as market value of investment, contingent liability) are disclosed in bracket or in footnotes to make the significant financial statement.
- (2) **Accounting Conventions:** Accounting is based on a number of conventions, which are to be taken into account in preparing financial statement. For example, there are many conventions in respect of charging some portion of a particular expense to Profit and Loss Account and rest portion of the same to capital account. Because of the above facts, financial statements have following features: - (i) data shown in financial statements are subject to the validity of the conventions used in their preparation (ii) the same pattern of conventions should be followed by the all concerns under same industry for comparison purpose.
- (3) **Generally Accepted Accounting Principles (GAAP):** Accounting is based on some accepted and running rules, assumptions, ideas known as concepts and conventions. GAAP includes these concepts, conventions, principles which are used as standard for recording the financial transactions. Consequently, the financial statements are influenced by the GAAP, e.g. closing

stock is valued at cost or market price whichever is lower followed by conservatism convention. Profit is measured by 'revenue' minus 'cost' followed by matching concept.

- (4) **Personal Judgements:** Although a number of conventions and concepts have been propounded in accountancy, their use is greatly affected by the personal judgement of the accountants. In some cases, accountants find a number of alternative solutions, e.g. there are number of methods of calculating cost of stock such as LIFO, FIFO, Simple Average, Weighted Average etc. Out of these methods, one method is selected by the accountant on the bases of his opinion and his personal judgement. So the personal judgement of the accountants may affect the amount kept for the reserve for doubtful debts, depreciation, allocation of expenses, value of stock etc.

Importance or Uses or Functions or Purposes of Financial Statement

Financial statements contain much useful and valuable information regarding the profitability, position and future prospects of the concerns, which are very helpful in analysis and interpretation of these statements. The uses and importance of financial statements have been discussed as under:-

- (1) **To the management:** For proper execution of managerial functions, management needs correct and reliable information. In the absence of such information, management can neither plan nor fulfil other functions. For efficient use of capital employed, for determination of credit standard, for improving financial position, the guidance of financial statement is necessary. Well-drawn and properly constructed financial statements have great help in policy formulation. It helps in analysis of net results of different activities and the efficiency of employees concerned with those activities.
- (2) **To the suppliers:** The supplier of trade credit always strives to attract a good number of new traders. Due to tough competition, supplier of trade credit feels that the financial position of the traders must be examined before selling him goods on credit. They should check whether the financial position of traders sound and satisfactory or traders are very lazy in making payments at the right time. The financial statement can show the exact position in these matters and can suggest about trader's ability to make the payment in future.
- (3) **To the owners:** Owners of the concern are interested to know whether the business is being carried on efficiently and the amount invested is efficiently employed from the view point of risk and return. It is obvious that owners will get this information through the financial statement.
- (4) **To the investor:** Financial statements are significant for present and prospective investor. If investor is prospective shareholder then he will be interested about adequate earning power, potentialities of growth and managerial ability, future change in capital structure, potentialities of future development. If the investor is debenture holder, he wants to know about the long-term solvency, earning capacity. Financial statement gives this information in analytical manner.
- (5) **To the banker:** Financial statements help banks in taking decisions regarding the extension of loans to their customers. Banks needs analytical information regarding customer's present financial position, liquidity position, credit standard, earning capacity, assets-distribution and future development programme. So, financial statements have great significance for the banking company.
- (6) **To the Government:** Government (Company Law Board) acquires a copy of financial statements from every company to assess whether these statements have been prepared and published according to the rules or not. Again, government has recently started active participation in economic activities. So the government is interested in position of companies, in taxable income, in net wealth, which is available in financial statements.
- (7) **To the stock exchange:** The shares of company are listed in the stock exchange. To analysis the operating performance, financial strength, stability, fix up price of share the financial statement will provide information to the share brokers.



- (8) **To the employees and trade unions:** Financial statements provide information to the employees & unions about operating performance, wages policy to make ground for claiming bonus and other profit sharing.
- (9) **To the customers:** The financial statement is useful to customers to know the cost structure, credit policy, profit margin etc.
- (10) **To the research scholar:** Various research institutions and individual researchers have deeper interests in the financial records of the concerns operating in the country.

Limitations of Financial Statement Analysis or Financial Statement

Financial statement is prepared with the object of presenting a periodical report on the progress by management and deal with the status and result of the business. But these objectives are not fulfilled due to following limitations:-

- (i) Financial statement is essentially interim report. This report is mostly dependent on estimated facts and on inaccurate information because expenses and incomes are allocated between different periods based on inappropriate base, assets are amortised over a period of estimated life. The exact position can be shown only when the business is closed down.

This problem may be solved if the time of going concern is divided in suitable accounting period according to accounting period concept and capital expenditure / income; revenue expenditure/income is identified and suitably matched. Then financial statement will disclose the real position.

- (ii) It shows many contingent assets and liabilities and fictitious assets, which have no realisable value. Beside this, the disclosed value of assets is not realisable value or replacement value. So the financial statement does not disclose the real position of the concern.

This problem may be solved if assets and liabilities are revalued from time to time, efficient valuer makes valuation, fictitious assets are written off against retained earnings, contingent items are valued from past experience.

- (iii) Balance Sheet is considered to a static document and it reflects the position of the concern at a moment of time. The real position of the concern may be changing day to day. As a result, there is possibility of window-dressing in the Balance Sheet.
- (iv) Financial statement may not be realistic and reliable because of the fact that it is based on certain concepts & conventions, which are not at all sound and realistic. For example, according to conservatism convention probable losses are ignored so it cannot disclose true position.

This problem can be overcome if all the concepts and conventions are balanced and if contradictions among them are eliminated and if emphasised is given on that convention which are suitable for the concern.

- (v) It shows the financial items that have taken place during a period at historical cost. It also includes the effect of transactions of the previous periods. Such historical statement can never be 100% helpful for future planning.

This problem can be solved by the inflation accounting, which may disclose the effect of change in price and current position.

- (vi) The analysis based on single year's statement will not be very much useful. For this purpose comparative analysis, common size analysis, trend analysis is necessary.
- (vii) If different methods of accounting are followed by different concerns under same industry, then it is difficult to compare the position.

This problem may be solved by application of uniform costing and uniform accounting system.

- (viii) It discloses only recorded monetary fact. But, non-monetary facts (such as quality of product, efficiency of labour, industrial relation etc.) which have great effect on financial position are not shown here. At present, by quality control technique, value added analysis these problems are trying to minimise).
- (ix) The financial statement is influenced by personal judgement of accounting personnel. For example, accountant selects methods of depreciation, methods of valuation of stock etc. So this statement cannot be blindly relied upon. The soundness of such judgement will depend upon accountant's or manager's competence. At present, this problem is solved by the guidelines of accounting standard, which helps, in comparative analysis.
- (x) The most important asset of the business is human resource but it is not shown in Balance Sheet. So the financial statement cannot show the real strength of the business in terms of quality and quantity of human asset. At present, this problem is minimised by human resource accounting.

Analysis and Interpretation – A Comparative Study

The significance of financial statements lies not in their preparation but in their analysis and interpretation. The analysis and interpretation of financial statement is the comprehensive and intelligent presentation of information that helps the interested parties for judgement and decision-making. Robert H. Wessal has defined analysis and interpretation of financial statement as a technique of X-Raying the financial position as well as the progress of a company.

Financial statement analysis is a study of relationship among different financial data as disclose by single statement and a study of trend of this factors as shown in series of statement, which helps in finding the strength and weakness of the concern and which supplies required data for forecasting and budgeting. Analysis means proper arrangement of the data and methodical classification of the data given in the financial statement and regrouped into their distinct and different components parts. It involves the division of facts based on some definite plans, classifying them into classes based on certain condition and presenting them in most convenient simple and understandable form.

The figures given in the financial statement will not help unless they are put in a simplified form.

Interpretation means explaining the meaning and significance of the data so simplified. It is comparison and examination of components for making conclusion about the profitability, efficiency, financial soundness of the business.

It is really an art, it involves many processes; like arrangement, analysis, establishing relations between available facts and drawing conclusion on that basis.

Interpretation and analysis are closely connected because interpretation is impossible without analysis and without interpretation analysis is useless. The data of financial statement are not uniform and homogeneous so analysis is made for reclassified, re-arranged to make relation between them. Interpretation is conclusion and representing of such arrangements to supply information to the interested parties. Analysis is always followed by interpretation and this interpretation is performed through a process called comparison. Therefore, whenever the word analysis is used it implies both analysis and interpretation.

Analysis – Types

(1) According to material use: Financial analysis is of two types – external analysis and internal analysis.

External Analysis: If analysis of financial statement is made by external persons who non related to the accounting records of the concern and have to depend on published financial statement is external analysis. Outsiders use only the figures of financial statement and other supplementary of the annual reports to get an idea and to take appropriate decision. As it is used by the external people so it is called external analysis. Generally it is made by bank, money lenders, creditors, govt. agencies, prospective investors etc.



Internal Analysis: If the analysis of financial statement is made by internal person who are related to the accounting records of the concerns from internal records and books is known as internal analysis. It is made by members of the concern such as, staff of finance and accounting department, executives etc. to help the management in assessing the profitability, solvency, liquidity etc. and to indicate the reasons of weakness of the firm. This is conducted by the people inside the firm and for the benefits of the organisation so it called internal analysis.

- (2) **According to Modus Operandi of analysis:** Financial analysis may be of two types: - Horizontal and vertical:

Horizontal Analysis: When financial statement of one year of a particular organisation are analysed and interpreted with comparing another year or years, it is called horizontal analysis.

Vertical Analysis: When financial statement of an organisation for one period is analyzed then it is called vertical analysis. This analysis is useful in inter firm comparison.

- (3) **According to objectives:** Financial statement analysis may be long term and short-term analysis.

Long Term Analysis: Long term analysis is made to study long term financial stability, solvency, and profitability of a concern. This analysis helps to know whether the firm will survive in long run and helps in long term financial planning.

Short Term Analysis: Short term analysis is made to study current financial stability, solvency, and profitability of a concern. This analysis helps to know whether the firm will have sufficient fund to meet its short term requirement that is helps in working capital analysis.

Importance and Benefits of Analysis and Interpretation

Various parties like management, shareholders, creditors, investors, and govt. are interested in financial statement analysis for the following benefits:-

- (i) **Importance to management:** According to Robert. H. Wessel through the financial statement analysis the management can measure the effectiveness of its own policies; can determine the ability of adopting new policies & procedures and can measure the result of their managerial efforts. Through this analysis, they can study the relative efficiency and weakness of different departments and can find the ways to overcome the deficiencies.
- (ii) **Importance to investors:** From this analysis, the investor can able to know the earning capacity, soundness of dividend policies, and degree of financial growth. By analysing the financial statement, the prospective investor can take investment decision.
- (iii) **Importance to creditors:** From this analysis, creditors can able to know the credit worthiness, capacity to pay the outsiders obligation and solvency of the firm.
- (iv) **Importance to financial analysts and research scholars:** According to N.K. Kulshrestha financial analysis can look through the financial policies persuade by the management and offered constructing suggestion to overcome the financial problems.
- (v) **Importance to economists:** An economist can study the extent of concentration or economic power, can analyse the financial policies, and can make an option about the pattern of investment.
- (vi) **Importance to labour union:** The labour union can understand the fairness of wages policy, degree of exploitation, goodness of work environment etc.
- (vii) **Importance to legislation:** Legislation can get the information about licensing, price fixing and other regulations.

Limitations of Analysis and Interpretation

- (i) It is difficult to decide on the proper basis of comparison.
- (ii) The comparison is difficult because of difference in situation of two companies or of one company over years.
- (iii) It is invalid if the price level changes.
- (iv) Historical financial statements are not indicator of future.

Role of Financial Statements in Exhibiting True & Fair View

Before going into the debate whether published accounts present a 'true and fair view' or not, it is necessary to know – what is true and fair view?

Section 211 of Company Act states that financial statement should give a true and fair view but the word 'true and fair view' has not been defined by the Company Act. The Council of the Institute of Chartered Accountants also has not been defined the expression. According to different judgements, true and fair view means the presentation of assets and liabilities accurately, correctly and logically in Balance Sheet and presentation of profit or loss after accurate matching of correct revenue and corrects expenses in Profit & Loss Account. Financial statements of company show a true and fair view when the following conditions are satisfied:-

- (i) All expenses and income relating to the period of account are included and all related expenses are matched against realised revenue.
- (ii) There is no secret reserve.
- (iii) There is no window-dressing, i.e. no attempt to show the position better than actual position, either by inflating the value of assets or by suppressing the liabilities.
- (iv) In presenting information generally accepted principles should be followed.
- (v) Fixed assets are valued at cost less depreciation. Current assets are valued at cost or market price whichever is lower.
- (vi) It discloses all material facts and unusual, exceptional items.

Exhibit 'true and fair view' – arguments against this statement :

- (a) It fails to reveal qualitative facts and features. Qualities like obsolesces stock, efficiency of workers, managerial ability, discipline, interrelation among worker etc. are not disclosed through accounts.
- (b) Fixed assets are recorded at historical costs, not in current market price. So assets shown in the B/S do not reflect their true values.
- (c) Assets and liabilities are shown at their acquired prices and recorded in Balance Sheet at acquisition costs. Current assets are recorded at their market value and liabilities at their committed amount. So B/S is a mixture of different prices and it does not expressed according to purchasing power of money at the date of Balance Sheet.
- (d) Fictitious assets have no utility but recorded in Balance Sheet.
- (e) Since costs are measured at historical cost and revenues are measured at current price i.e. they are measured in two different units so Profit and Loss Account does not present true and fair picture.
- (f) Many items such as valuation of stock, estimation of provision for bad debt etc. are based on estimation/ assumption/ discretion of Accountant.
- (g) It does not disclose non-monetary information.
- (h) It ignores the effect of price changes.

**Exhibit 'true and fair view' arguments in favour of this statement:-**

- (a) Balance sheet shows that at any point of time, all assets are equal to total liabilities both in side and outside.
- (b) It is difficult to express all quantitative and qualitative, monetary and non-monetary items in same units. In this respect, all items expressed in terms of money are acceptable for comparison purpose.
- (c) Published accounts are prepared in accordance with legal provisions and with generally accepted accounting principles and accounting standard.
- (d) Since a business assumes continuity so the adjustment for accrual, outstanding, advance etc. must be considered and taken into account. Published accounts are prepared with regard to these necessary adjustments.

So published accounts present true and fair picture as far as possible. Most of the criticism against true and fair are based on weak arguments. Published accounts contain all particulars required by articles and laws. It follows the cost convention, conservatism convention, consistency convention, going concern concept, realisation concept etc. So published accounts present true and fair view.

Financial Statement - Traditional Approach vs. Modern Approach

Financial Statement Analysis is a process of evaluating the relationship between component parts of financial statement to obtain a better understanding of the firm's position and performance. This analysis is made based on two approaches – Traditional approach and Modern approach.

Traditional approach:- Traditional approach refers to subject matter of financial statement analysis as a separate branch of study. It is based on basic conceptual and analytical framework. It is not applicable in internal decision making.

Modern approach:- Modern approach of financial statement analysis is broad based approach that provides a conceptual and analytical framework for financial decision making. It is an integral part of overall management.

So, there are certain differences between traditional approach and modern approach as below:-

Traditional Approach	Modern Approach
(i) In traditional approach, financial statement analysis is not an integral part of the various disciplines concerned with decision making. Economists and finance experts do not rely on the information reported in the financial statements and they ignore financial statement analysis.	(i) In modern approach, financial statement processing system as an information processing system designed to generate relevant information as input to the application of various decision making models, e.g., the portfolio selection model, bank lending decision models etc.
(ii) Here the frameworks (within which analytical methods and techniques are developed) are not defined appropriately, resulting in the lack of direction and progress.	(ii) Here tools and techniques are developed and tested within the well defined framework of decision theory.
(iii) Here financial statement analysis is completely detached from economic theories and models.	(iii) Here financial statement analysis is closely connected with economic and finance models.
(iv) Here no statistical tools or techniques are used, but simple mathematical tools like ratio, percentage, average etc. are applied.	(iv) Here various statistical tools and techniques as well as complicated mathematical models are used.
(v) Here accounting data are conventionally reported in financial statements.	(v) Here reported accounting data, unreported accounting data (such as, market value of assets) and non-accounting data (e.g., share prices) are taken into consideration.

1.7 COMPARATIVE FINANCIAL STATEMENT

If the financial statement is recasted for comparing the all elements of financial conditions from year to year in absolute term as well as in percentage then the recasted statement is called comparative financial statement. This statement is designed to provide time view of various elements of financial statement.

This statement is made by:-

- (i) Showing absolute money values of each elements of income statement and Balance Sheet of different periods.
- (ii) Showing increase / decrease in absolute money value of each elements by deducting elements of current period from past period.
- (iii) Showing increase / decreasing value in terms of percentage i.e. $\frac{\text{Increasing / decreasing amount}}{\text{amount in past period}} \times 100$
- (iv) Keeping in mind that the principles and procedures followed in the collection, and presentation of data should not materially differ over the periods.

Advantages:

- (i) Figures for two or more periods are placed side by side to facilitate inter-firm comparison and in horizontal analysis.
- (ii) It brings out more clearly the nature and trend of current changes that affect the enterprise.
- (iii) It helps in estimating weakness in the operating cycle, financial health and future position of the business.

Disadvantages:

- (i) It may be misleading, if frequent changes have been allowed in principles and procedures over the periods.
- (ii) Without the knowledge of internal analysis, it may be extremely misleading.
- (iii) It does not show the relation of any items to total assets or to total liabilities or to total net sales in a year.
- (iv) Proper comparison between two or more firms cannot be possible by this statement because there is no common base of comparison.

1.8 COMMON SIZE STATEMENT-PROCEDURES-BENEFITS-LIMITATIONS

Common size financial statement is restated financial statement showing percentage of total items with common base for comparison.

This statement is made in the following procedure:-

- (i) Assets side is classified in fixed assets, investments, current assets (CA), fictitious assets showing individually and in total. Then total assets (TA) are taken as common base 100. Then $\frac{\text{Investments}}{\text{TA}} \times 100$, $\frac{\text{CA}}{\text{TA}} \times 100$, $\frac{\text{Fictitious Assets}}{\text{TA}} \times 100$ etc. are calculated.
- (ii) Liabilities side is classified in proprietor's fund, long term loan, and current liabilities showing individually and in total. Then percentage of each liability to total liability is calculated.



- (iii) Income statement is classified in sales, cost of goods sold, operating expenses, net profit, interest, tax, EAT (earning after tax) etc. Then percentage of each element to sales is calculated.

Advantages:

- (i) It shows the changes over the years in relation to total assets, total liabilities, sales.
- (ii) It helps in inter-firm comparison with common base.
- (iii) It helps in vertical analysis of figures.
- (iv) It helps in understanding financial strategy of the firms in comparison.
- (v) It shows the relative efficiency of each cost items of two firms.

Disadvantages:

- (i) It shows the percentage of each item to the total in each period but not changes of each items from period to period.
- (ii) Its observations are not very useful because there are more definite norms for the proportion of each item to total.
- (iii) If there is no uniform costing system, no same accounting practice among the all firms of an industry, then it is meaningless for studying the comparative financial position of two firms.

1.9 TREND RATIO – FACTORS – USES – LIMITATIONS

Trend ratio is index no. of each financial item in the financial statement of different periods. The method of calculating trend percentages involves the calculation of percentage relation of necessary items with the same items of base year. i.e., trend percentages are not calculated for all items of financial statements. They are calculated only for major items since the purpose is to highlight important changes. On the other hand, any year may be taken as base year – generally the earliest year is taken as base. Any intervening year may also be taken as the base year.

Thus trend percentage or trend ratio = $\frac{\text{Value of each item in financial statement of any period}}{\text{Value of same item in financial statement of base period}} \times 100$

While calculating trend percentages care should be taken regarding the following matters :-

- (i) The uniform costing system should be followed from year to year for horizontal analysis.
- (ii) The accounting principles and practices should follow consistency convention throughout the period of analysis. Without such consistency, the comparison will be adversely affected.
- (iii) The base year should be that normal year which is monitor and representative of the items shown in the statement.
- (iv) Trend percentages should be calculated only for items having logical relationship with one another.
- (v) Trend percentages should be studied after considering the absolute figures on which they are based, otherwise, they may give misleading results. For example, one expense may increase from ₹ 100 to ₹ 200 while other expenses may increase from ₹ 10,000 to ₹ 15,000. In the first case, trend percentage will show 100% increase while in second case it will show 50% increase. This is misleading because in the first case, the change though 100% is not at all significant in real terms as compared to second case.

- (vi) The figures for the current year should also be adjusted in the light of price level changes as compared to the base year before calculating the trend percentage, otherwise comparison will be meaningless.

Uses :

- (i) It shows the trend of items with passage of time.
- (ii) It shows the nature and rate of movement of various financial factors.
- (iii) It shows horizontal and vertical analysis to reflect the behaviour of various financial items with passage of time.
- (iv) It helps in estimating the financial factor in future.

Limitations:

- (i) If there is no uniform accounting system year after year, then trend ratios give misleading result.
- (ii) It does not take into consideration the inflation accounting system. So figures of base period are incomparable with the figures of current period in case of inflation.
- (iii) Trend ratios must be always read with absolute data on which they are based, otherwise the conclusion drawn may be misleading. It may be said that a 10% change in trend ratio may represent an absolute change of ₹ 1000 only in one item, while a 10% change in another item may represent an absolute change of ₹ 10,000.

Illustration 1. Compute the trend ratios from the following data and comment.

	As on 31.03. XXXX			
	2010 (₹)	2011 (₹)	2012 (₹)	2013 (₹)
Cost of material consumed	2,00,000	2,50,000	2,00,000	1,80,000
Labour cost	1,50,000	1,50,000	2,00,000	1,25,000
Other expense	1,50,000	2,00,000	1,00,000	1,50,000
Cost of sales	5,00,000	6,00,000	5,00,000	4,55,000
Profit	3,00,000	3,00,000	2,50,000	3,45,000
Sales	8,00,000	9,00,000	7,50,000	8,00,000

Solution:**Computation of Trend Ratio (%)**

	2010	2011 $\left(\frac{2011}{2010} \times 100\right)$	2012 $\left(\frac{2012}{2010} \times 100\right)$	2013 $\left(\frac{2013}{2010} \times 100\right)$
Cost of material consumed	100	125	100	90
Labour cost	100	100	133.3	83.3
Other expense	100	133.3	66.7	100
Cost of sales	100	120	100	91
Profit	100	100	83.3	115
Sales	100	112.5	93.8	100



Comment: There is fluctuating trend in all the items disclosed in the financial statement during the period under study. So no definite conclusion can be drawn from the above analysis.

Illustration 2.

From the following information compute trend ratio and make necessary comment.

Year	Sales (₹)	Inventories (₹)	Receivables (₹)
2008	3,00,000	1,00,000	50,000
2009	3,25,000	1,50,000	75,000
2010	3,50,000	2,00,000	1,00,000
2011	3,60,000	2,50,000	1,25,000
2012	3,75,000	2,90,000	1,50,000

Solution:

Computation of Trend Ratio (%)

	2008	2009 $\left(\frac{2009}{2008} \times 100\right)$	2010 $\left(\frac{2010}{2008} \times 100\right)$	2011 $\left(\frac{2011}{2008} \times 100\right)$	2012 $\left(\frac{2012}{2008} \times 100\right)$
Sales	100	108.3	116.7	120	125
Inventories	100	150	200	250	290
Receivables	100	150	200	250	300

Comment: The computed trend percentage of sales, inventories and receivables reveals that they have increased throughout the study period. The above calculation shows that sales have increased by 25% whereas inventories and receivables have gone up by 190% and 200% respectively in the ultimate year of study period. It implies that inefficiency in both inventory management and credit management of the company during the period under study. Such liberal credit policy could help to increase the sales and to decrease the inventory level.

Illustration 3.

Calculate the trend % from the following figures of Rahul Ltd. taking 2008 as the base year and interpret

Year	Sales Revenue (₹ '000)	Inventories (₹ '000)	EBT (₹ '000)
2008	1,992	729	331
2009	2,450	801	455
2010	2,765	836	478
2011	3,131	964	548
2012	3,878	1,264	692

Solution:**Computation of Trend Ratio (%)**

	2008	2009 $\left(\frac{2009}{2008} \times 100\right)$	2010 $\left(\frac{2010}{2008} \times 100\right)$	2011 $\left(\frac{2011}{2008} \times 100\right)$	2012 $\left(\frac{2012}{2008} \times 100\right)$
Sales	100	123	138.81	157.17	194.68
Inventories	100	109.88	114.68	132.24	173.39
EBT	100	137.46	144.41	165.56	209.06

Comment: The computed percentage of sales revenue, inventories and EBT reveals that these have been increased throughout the study period. The above calculation shows that sales have increased by 94.68% and the EBT has increased by 109% in the ultimate year of the study whereas inventories have gone up by 73% in the last year of the study period. Therefore, from the above analysis we can say that though the inventory management of Rahul Ltd. was inefficient during the period under study, whereas the sales management is efficient to build up a good profitability position.

Illustration 4.

From the following income statement prepares a common size statement and also interprets the result.

Income Statement for the year ended 31st March

	2012 (₹)	2013 (₹)
Net Sales	10,50,000	13,50,000
Less :- Cost of goods sold	5,70,000	6,45,000
Gross Profit	4,80,000	7,05,000
Less :- Other operating expenses	1,50,000	2,16,000
Operating profit	3,30,000	4,89,000
Less :- Interest on long term debt	60,000	51,000
Profit before tax	2,70,000	4,38,000

Solution:**Comparative Common Size Statement for the year ended 31st March**

	2012	2013
Net Sales	100%	100%
Less: Cost of goods sold $\left(\frac{\text{Cost of good sold}}{\text{Net Sales}} \times 100\right)$	54.3%	47.8%
Gross Profit $\left(\frac{\text{Gross profit}}{\text{Net sales}} \times 100\right)$	45.7%	52.2%



Less: Other operating expenses $\left(\frac{\text{Other operating expenses}}{\text{Net sales}} \times 100 \right)$	14.3%	16%
Operating profit $\left(\frac{\text{Operating profit}}{\text{Net sales}} \times 100 \right)$	31.4%	36.2%
Less : Interest on long term debt $\left(\frac{\text{Interest}}{\text{Net sales}} \times 100 \right)$	5.7%	3.8%
Profit before tax (PBT) $\left(\frac{\text{PBT}}{\text{Net sales}} \times 100 \right)$	25.7%	32.4%

Comment: (i) The PBT to net sales has increased from 25.7% in the year 2011-12 to 32.4% in the year 2012-13. It indicates that the profit earning capacity of the company has improved during the study period. This improvement in the profitability of the company has been mainly due to significant reduction in the cost of goods sold of the company. It may occur due to fall down of input market or may occur due to improvement in the efficiency of the company. As other operating expenses has higher in 2012-13 so, it is clear that company has been operated with tight supervision, tight inventory control for reduction of COGS.

(ii) The interest on long term debt to net sales has declined from 5.7% in the 2011-12 to 3.8% in 2012-13. It implies that the financial burden of the company has reduced significantly during the study period. Higher operating profit or fund from operation has been utilised for repayment of long term debt, so that the financial risk associated with the company has declined significantly during the study period.

Illustration 5.

From the following figures prepare a common size comparative statement and comment on the result.

	2008	2009	2010	2011	2012
Particulars	₹ (in lakh)	₹ (in lakh)	₹ (in lakh)	₹ (in lakh)	₹ (in lakh)
Cost of Materials	150	220	250	200	200
Labour cost	200	140	150	150	175
Conversion cost	150	150	140	200	175
Total Manufacturing cost	500	510	540	550	550
Sales Revenue	1200	1100	1000	1000	950
Gross Profit	700	590	460	450	400
Other operating expenses	300	220	200	200	180
Operating profit	400	370	260	250	220

Solution:**Comparative Common Size Statement**

Particulars	2008	2009	2010	2011	2012
Cost of Materials $\left(\frac{\text{Cost of materials}}{\text{Sales}} \times 100 \right)$	12.5%	20%	25%	20%	21%
Labour cost $\left(\frac{\text{Labour cost}}{\text{Sales}} \times 100 \right)$	16.67%	12.73%	15%	15%	18.42%
Conversion cost $\left(\frac{\text{Conversion cost}}{\text{Sales}} \times 100 \right)$	12.50%	13.64%	14%	20%	18.42%
Total Manufacturing cost $\left(\frac{\text{Total manufacturing cost}}{\text{Sales}} \times 100 \right)$	41.67%	46.36%	54%	55%	57.89%
Sales Revenue	100%	100%	100%	100%	100%
Gross Profit $\left(\frac{\text{Gross profit}}{\text{Sales}} \times 100 \right)$	58.33%	53.64%	46%	45%	42.11%
Other operating expenses $\left(\frac{\text{Other operating expenses}}{\text{Sales}} \times 100 \right)$	25%	20%	20%	20%	18.95%
Operating profit $\left(\frac{\text{Operating profit}}{\text{Sales}} \times 100 \right)$	33.33%	33.64%	26%	25%	23.16%

Comments: From the above analysis it can be concluded that there was a clear upward rising trend in the manufacturing cost of goods sold during the study period. As a result gross profit to sales has been decreased very significantly during the same period. It was 58.3% in the year 2008 which ultimately reduced to 42.11% in the ultimate year of the study period 2012. It implies that operational efficiency of the company has been reduced very significantly during the study period.

Illustration 6.

From the following balance sheet prepare common size statement.

	Amount (₹) 31.03.2012	Amount (₹) 31.03.2013
Equity share capital (of ₹10 each)	7,20,000	7,20,000
Reserve & Surplus	2,88,000	5,46,000



Long term debt	5,46,000	5,08,000
Current Liabilities	2,40,000	1,75,500
Total	18,00,000	19,50,000
Fixed Assets	12,06,000	11,70,000
Inventory	2,52,000	3,51,000
Debtors	1,80,000	1,95,000
Bank	1,62,000	2,34,000
Total	18,00,000	19,50,000

Solution:

Common Size Balance Sheet as on 31.03.2012 & 31.03.2013

	On 31.03.2012 % of total	On 31.03.2013 % of total
Equity share capital $\left(\frac{\text{Share capital}}{\text{Total liabilities}} \times 100 \right)$	40%	36.92%
Reserve & Surplus $\left(\frac{\text{Reserve & surplus}}{\text{Total liabilities}} \times 100 \right)$	16%	28%
Long term debt $\left(\frac{\text{Long term debt}}{\text{Total liabilities}} \times 100 \right)$	30.33%	26.05%
Current Liabilities $\left(\frac{\text{Current liabilities}}{\text{Total liabilities}} \times 100 \right)$	13.33%	9%
	100%	100%
Fixed Assets $\left(\frac{\text{Fixed assets}}{\text{Total assets}} \times 100 \right)$	67%	60%
Inventory $\left(\frac{\text{Inventory}}{\text{Total assets}} \times 100 \right)$	14%	18%
Debtors $\left(\frac{\text{Debtors}}{\text{Total assets}} \times 100 \right)$	10%	10%
Bank $\left(\frac{\text{Bank}}{\text{Total assets}} \times 100 \right)$	9%	12%
	100%	100%

Comment: (i) The proportion of owner's equity to total liabilities of the company has been increased from 56% to 64.92% where as the proportion of long term debt to total liabilities has been decreased from 30.33% to 26.05% in the year 2012-13. So we can conclude that the dependency on outsiders has been decreased and degree of financial risk associated with the company has been reduced during the study period.

(ii) The percentage of current assets to total assets has been increased from 33% to 40% whereas the percentage of current liabilities to total liabilities decreased from 13.33% to 9% in the year 2012-13. Therefore it indicates that the liquidity position of the company have been significantly improved during the period understudy. But reduction of fixed assets may hamper the long term stability and operating efficiency of the company.

Illustration 7.

The following are the income statements of A Limited for the years ended 31.03.2012 and 31.03.2013.

	31.3.12 (₹)	31.3.13 (₹)
Net Sales	1,70,000	1,90,400
Less :- Cost of goods sold	1,05,000	1,20,000
Gross Profit (P)	65,000	70,400
Administrative expenses (A)	13,200	14,960
Selling expenses :		
Advertisement expenses	3,000	4,000
Other selling expenses	40,800	41,800
Total selling expenses (B)	43,800	45,800
Operating expenses (A + B)	57,000	60,760
Operating Profit (D) [D = P – (A + B)]	8,000	9,640
Other Incomes (E)	6,400	9,200
Other expenses (F)	6,800	4,800
Profit before tax (PBT) [PBT = D + E – F]	7,600	14,040
Income tax (T)	3,800	6,200
Profit after tax (PAT) [PAT = PBT – T]	3,800	7,840

Prepare a comparative income statement and comment on the performance of the company.

Solution:

Comparative Income Statement of A Ltd. for the years ended 31st March, 2012 and 2013

Particulars	31.3.12 (₹)	31.3.13 (₹)	Amount of increase (+) or decrease (-) (₹)	Percentage increase (+) or decrease (-)
Net Sales	1,70,000	1,90,400	(+) 20,400	(+) 12.0
Less :- Cost of goods sold	1,05,000	1,20,000	(+) 15,000	(+) 14.3
Gross Profit (P)	65,000	70,400	(+) 5,400	(+) 8.3
Administrative expenses (A)	13,200	14,960	(+) 1,760	(+) 13.3
Selling expenses :				
Advertisement expenses	3,000	4,000	(+) 1,000	(+) 33.3
Other selling expenses	40,800	41,800	(+) 1,000	(+) 2.5
Total selling expenses (B)	43,800	45,800	(+) 2,000	(+) 4.6
Operating expenses (A + B)	57,000	60,760	(+) 3,760	(+) 6.6



Operating Profit (D) [D = P –(A + B)]	8,000	9,640	(+) 1,640	(+) 20.5
Other Incomes (E)	6,400	9,200	(+) 2,800	(+) 43.8
Other expenses (F)	6,800	4,800	(–) 2,000	(–) 29.4
Profit before tax (PBT) [PBT = D + E – F]	7,600	14,040	(+) 6,440	84.7
Income tax (T)	3,800	6,200	(+) 2,400	(+) 63.2
Profit after tax (PAT) [PAT = PBT – T]	3,800	7,840	(+) 4,040	(+) 106.3

Notes : Calculation for percentage increase (+) or decrease (–) :

(i) $\frac{₹ 20,400}{₹ 1,70,000} \times 100 = 12\%$, (ii) $\frac{₹ 15,000}{₹ 1,05,000} = 14.3\%$ and so on

Comparative income statement shows the income and expenses of two periods of same company, absolute changes of each items for the year ended 31.3.2013 over 31.3.2012 and also shows percentage change. The following comments can be made on the performance of A Ltd.:-

(i) Sales of A Ltd. has been increased by ₹20,400 during the year 2012-13 over 2011-12. But, the cost of goods sold has also increased by ₹15,000 in the same period. i.e., sales has improved by 12% and cost of goods sold has increased by 14.3%. So, GP has not improved markedly. Cost of goods sold may increase due to higher quantity of sales or due to higher input cost. As sale value has increased so it is clear cost of good sold has increased due to higher quantity of sales. If such quantity has been sold at previous price then sales value has been increased with higher amount. But here sale value has not increased significantly. It indicates that the addition in sales has been due to lowering of sale price. It is also clear from advertisement expenses. The increase in advertisement expenses (33.3%) has been much higher than the percentage increase in net sales (12%). It indicates there was tough selling market where mass advertisement was necessary and reduction of sale price was necessary in order to higher quantity of sales. Such situation may also arise due to new product launching where huge advertisement is necessary and reduction of sale price is necessary.

(ii) There has been a substantial improvement in other incomes, both in relative term (43.8%) and in absolute term (₹2800). Similarly, there has been a considerable reduction in other expenses in relative term (29.4%) as well as in absolute term (₹2000). These items have been responsible for the increase in profit before tax (PAT) for the period under study by 84.7%. It implies that more emphasis has been given by the management of the company on earning non-operating profits as compared to the operating profits.

Illustration 8.

The following are the Balance Sheet of Maharaj Ltd. as on 31.03.12 and 31.03.13:-

	31.03.12 (₹)	31.03.13 (₹)
Current Assets :		
Cash and Bank Balance	23,600	2,000
Debtors	41,800	38,000
Inventory	32,000	26,000
Other Current Assets	6,400	2,600
(A)	1,03,800	68,600
Fixed Assets :		
Land and Building	54,000	34,000

Plant and Machinery		62,000	1,57,200
Furniture		5,800	9,600
(B)		1,21,800	2,00,800
Long term investment (C)		9,200	11,800
Total assets (A + B + C)		2,34,800	2,81,200
Current Liabilities (D)		52,400	25,400
Long-term debt (E)		40,000	65,000
Owners' Equity :			
Equity share capital		80,000	1,20,000
Reserve and surplus		62,400	70,800
(F)		1,42,400	1,90,800
Total liabilities and capital (D+E+ F)		2,34,800	2,81,200

Prepare Comparative Balance Sheet and study its financial position.

Solution:

Comparative Balance Sheet of Maharaj Ltd. as on 31.03.2012 and 31.03.2013

	31.03.12 (₹)	31.03.13 (₹)	Amount of increase (+) or decrease (-) (₹)	Percentage increase (+) or decrease (-)
Current Assets :				
Cash and Bank Balance	23,600	2,000	(-) 21,600	(-) 91.5
Debtors	41,800	38,000	(-) 3,800	(-) 9.1
Inventory	32,000	26,000	(-) 6,000	(-) 18.8
Other Current Assets	6,400	2,600	(-) 3,800	(-) 59.4
(A)	1,03,800	68,600	(-) 35,200	(-) 33.9
Fixed Assets :				
Land and Building	54,000	34,000	(-) 20,000	(-) 37
Plant and Machinery	62,000	1,57,200	(+) 95,200	(+) 153.5
Furniture	5,800	9,600	(+) 3,800	(+) 65.5
(B)	1,21,800	2,00,800	(+) 79,000	64.9
Long term investment (C)	9,200	11,800	(+) 2,600	(+) 28.3
Total assets (A + B + C)	2,34,800	2,81,200	(+) 46,400	(+) 19.8
Current Liabilities (D)	52,400	25,400	(-) 27,000	(-) 51.5
Long-term debt (E)	40,000	65,000	(+) 25,000	(+) 62.5
Owners' Equity :				
Equity share capital	80,000	1,20,000	(+) 40,000	(+) 50.0
Reserve and surplus	62,400	70,800	(+) 8,400	(+) 13.5
(F)	1,42,400	1,90,800	(+) 48,400	(+) 34
Total liabilities and capital (D + E + F)	2,34,800	2,81,200	(+) 46,400	(+) 19.8



Comparative balance sheet shows the balance of different assets and liabilities of two different periods of same company and shows absolute increase / decrease of each items in 31.3.2005 over 31.3.2012 and also shows the percentage change. Interpretation of these changes are as follows:-

- (i) The current assets of Maharaj Ltd. have decreased by ₹35,200 in the year 2012-13 over 2011-12, whereas current liabilities have decrease by ₹27,000 only. But it has no adverse effect on short term liquidity or on current ratio because current assets have decreased by 33.9% and current liabilities have decreased by 51.5%.
- (ii) Cash at Bank have decreased by 91.5%. It implies an adverse cash position of the company. The company may face problem in meeting its short-term obligations.
- (iii) The long-term debt of the company has increased by 62.5%, whereas its owners' equity has improved by 34% only. It implies that the financial risk (in terms of dependency on outsiders and in terms of contractual obligation) associated with the company has increased significantly during the period under study.
- (iv) There has been a substantial increase in the fixed assets by the company. The fixed assets have increased by ₹ 79,000 (64.9%). This is mainly due to significant increase in the plant and machinery of the company. The plant and machinery have increased by ₹95,200 (153.5%). It indicates a remarkable improvement in the production capacity of the company during the study period. Such cost of assets have financed by proprietors fund and long term loan raised. It indicates the long term stability of the business.

Illustration 9.

Prepare comparative & common-size income statement and Balance Sheet of A Ltd. & B Ltd. from the following:-

Income Statement for the year ended 31.03.13

	A Ltd. (₹)	B Ltd. (₹)
Net sales	25,38,000	9,70,000
Cost of goods sold	14,22,000	4,75,000
Gross Profit	11,16,000	4,95,000
Selling Expenses	7,20,000	2,72,000
Administrative Expenses	1,84,000	97,000
Total operating expenses	9,04,000	3,69,000
Operating Profit	2,12,000	1,26,000
Other Income	26,000	10,000
	2,38,000	136,000
Other Expenses	40,000	29,000
Profit Before Tax	1,98,000	1,07,000
Income Tax	68,000	28,000
Profit after tax (PAT)	1,30,000	79,000

	A Ltd. (₹)	B Ltd. (₹)
Current Assets:-		
Cash	54,000	72,000
Debtors	4,40,000	2,26,000
Trading Stock	2,00,000	1,74,000
Prepaid Expenses	22,000	21,000

Other current assets	20,000	21,000
Total Current Assets	7,36,000	5,14,000
Fixes Assets (Less) accumulated dep.	12,70,000	5,13,000
	20,06,000	10,27,000
Current Liabilities :-		
Creditors	84,000	1,34,000
Other current liability	1,56,000	62,000
Total Current Liabilities	2,40,000	1,96,000
Debentures	4,50,000	3,18,000
	6,90,000	5,14,000
Capital & Reserves	13,16,000	5,13,000
	20,06,000	10,27,000

Solution:**Comparative & Common-size Income Statement for the year ended 31.03.13**

	A Ltd.	% of net sales	B Ltd.	% of net sales
Net sales	25,38,000	100	9,70,000	100
Cost of goods sold	14,22,000	56.0	4,75,000	49.0
Gross Profit	11,16,000	44.0	4,95,000	51.0
Selling Expenses	7,20,000	28.4	2,72,000	28.0
Administrative Exp.	1,84,000	7.2	97,000	10.0
Total operating exp.	9,04,000	35.6	3,69,000	38.0
Operating Profit	2,12,000	8.4	1,26,000	13.0
Other Income	26,000	1.0	10,000	1.0
	2,38,000	9.4	136,000	14.0
Other Expenses	40,000	1.6	29,000	3.0
Profit Before Tax	1,98,000	7.8	1,07,000	11.0
Income Tax	68,000	2.7	28,000	2.9
Profit after tax (PAT)	1,30,000	5.1	79,000	8.1

Comparative Common-size Balance Sheet as on 31.3.13

	A Ltd. (₹)	% of total	B Ltd. (₹)	% of total
Current Assets:-				
Cash	54,000	2.7	72,000	7.0
Debtors	4,40,000	21.9	2,26,000	22.0
Trading Stock	2,00,000	10.0	1,74,000	17.0
Prepaid Exp.	22,000	1.1	21,000	2.0
Other current assets	20,000	1.0	21,000	2.0
Total C.A.	7,36,000	36.7	5,14,000	50.0
Fixes Assets (Less) accumulated dep.	12,70,000	63.3	5,13,000	50.0
	20,06,000	100	10,27,000	100



Current Liabilities :-				
Creditors	84,000	4.2	1,34,000	13.0
Other current liability	1,56,000	7.8	62,000	6.0
	2,40,000	12.0	1,96,000	19.0
Debentures	4,50,000	22.4	3,18,000	31.0
	6,90,000	34.4	5,14,000	50.0
Capital & Reserves	13,16,000	65.6	5,13,000	50.0
	20,06,000	100	10,27,000	100

The following conclusions can be drawn from a careful analysis of the above income statements and Balance Sheet.

- (1) A Ltd has a better and efficient credit and collection system because its debtors and trading stock amount to 31.9% of total assets as compared to 39% in case of B Ltd.
- (2) The cash position of B Ltd. (7% of total asset) compares favourably with that of A Ltd. (2.7% of total asset).
- (3) The turnover of A Ltd is larger (₹ 25,38,000) than that of B Ltd (₹ 9,70,000), but the cost of goods sold absorbs a larger i.e., 56% of net sales as compared to 49% in case of B Ltd. This reflects a better pricing mark-up by B Ltd.
- (4) The selling and administrative expenses are 35.6% of net sales in case of A Ltd while 38% in case of B Ltd. Administrative cost in B Ltd. is higher as compared to A Ltd., indicating a highly paid or overstaffed administrative function followed by B Ltd.
- (5) A Ltd. appears to be more traditionally financed with shareholders equity of 65.6% of total liabilities as against 50% in case of B Ltd. This indicates that contractual obligation of B Ltd. is higher than that of A Ltd.
- (6) The fixed assets of A Ltd. Is larger (₹ 12,70,000) than that of B Ltd. (₹ 5,13,000) but, if it is compared with turnover, we find that A Ltd. has a higher fixed assets turnover (2) than that of B Ltd. (1.89). This reflects a better asset utilisation by B Ltd.

Study Note - 2

THE ANALYSIS OF THE STATEMENT OF SHAREHOLDERS' EQUITY



This Study Note includes

- 2.1 The Analyst's Checklist**
- 2.2 Reformulating the Statement of Owners' Equity**
- 2.3 Comprehensive Income Reporting**
- 2.4 Ratio Analysis**
- 2.5 Financial Analysis — Report Writing on Ratio Analysis**
- 2.6 Miscellaneous Problems**

2.1 THE ANALYST'S CHECKLIST

The statement of shareholders' equity is usually not considered the most important part of the financial statements and is often ignored in analysis. In the United States it is not even required, although if it is not presented, a reconciliation of opening and closing balances of shareholders' equity must be displayed in footnotes. However, it is the first statement that the analyst should examine before going on to the other statements. It is a summary statement, tying together all transactions that affect shareholders' equity. By analyzing the statement, the analyst ensures that all aspects of the business that affect shareholders' equity are included in his analysis to value the equity.

When accounting income is used in valuation, it must be comprehensive income. Otherwise value is lost in the calculation. The accounting relations hold only if income is comprehensive. We will use these relations as analysis tools, but the tools will work only if income is on a comprehensive basis. Unfortunately, earnings reported in most income statements in most countries is not comprehensive, including earnings reported in statement prepared under U.S. GAAP and International Accounting Standards. The analysis of the statement of shareholders' equity makes the correction.

Value is generated for equity holders through operations, not by equity financing activities. Share issues and repurchases at market value do not create value in efficient capital markets. But share issues are sometimes made in exchange for goods and services in operations, mostly for employee compensation. Unfortunately, GAAP accounting sometimes confuses the financing and operating aspects of these transactions, that is, it confuses the moneys raised for financing with the expenses incurred in operation. The analysis of the statement of shareholders' equity sorts out this accounting.

Checklist:

- How GAAP statements of shareholders' equity are typically laid out.
- Why reformulation of the statement is necessary.
- What is reported in "other comprehensive income" and where it is reported.
- What "dirty-surplus" items appear in the statement of shareholders' equity.
- How stock options work to compensate employees.
- How stock options and other contingent equity claims result in a hidden expense.
- How management can create value for shareholders with share transactions.

2.2 REFORMULATING THE STATEMENT OF OWNERS' EQUITY

The statement of owners' equity provides the reconciliation of beginning and ending owners' equity according to the stocks and flows equation: The change in owners' equity is explained by comprehensive income for the period plus capital contribution from share issues, less dividends paid in cash and shares repurchases. The GAAP statement is often – and unnecessarily – from complicated than this, however, so part of the analysis involves simplifying it. The ideal statement for a fiscal period has the following form:

Reformulated Statement of Shareholders' Equity
Beginning book value of equity shares
+ Net effect of transactions with equity shareholders
+ Capital contributions (share issues)
- Share repurchases
- Dividends
= Net cash contribution (negative net dividends)
+ Effect of operations and nonequity financing
+ Net income (from income statement)
+ Other comprehensive income
- Preference dividends
= Comprehensive income available to equity shareholders
Closing book value of equity shares

Notice three things about this statement:

1. With a view to valuing the shareholders' equity, the reformulated statement excludes preference shares. From the equity shareholders' point of view, the preference shares is an obligation to pay other claimants before themselves, and it is reclassified as a financial obligation in a reformulated balance sheet.
2. The net addition to equity from transactions with shareholders – the negative net dividend – is separated from the addition to shareholders' equity that arises from business activities.
3. The total effect of operations and non equity financing on the equity shareholders is isolated in comprehensive income reported outside the income statement, and preference dividends. As preference shares is effectively debt from the equity shareholders' viewpoint, preference dividends are an "expense" in calculating comprehensive income, just like interest expense.

Introducing Hypee and Ricky

The analysis of financial statements in this and subsequent study notes will be demonstrated with the 2012 statements of Hypee, Inc., and Ricky International Ltd., the sport and leisure footwear companies. You will find it helpful to see a complete analysis of these firms, like carries on the Hypee analysis from 2004 through 2012. After covering the material in the book you will have a complete analysis history for Hypee for a nine-year period, 2004-2012. Take the Hypee analysis in the book as a model for the analysis of any firm, and use the roadmap to develop spreadsheets that deliver a concrete analysis and valuation product.



The first step in analysis and valuation is “knowing the business.” Hypee and Ricky are fierce competitors. However, in practice a much deeper understanding of a firm is required to carry out a capable analysis.

Knowing the Business: Hypee, Inc.

Incorporated in 1968, like Ricky, is a leading manufacturer and marketer of sport and fashion footwear. The firm is headquartered in Kolkata, India.

Strategy

Hypee aims to dominate the ₹38 billion worldwide market for athletic footwear and athletic footwear used for casual and leisure dress. It attempts to accomplish this through extensive promotion, often using high-profile sports figures and endorsements of sporting events.

Operations

Hypee’s top-selling footwear are basketball, cross-training, running, and children’s shoes, but it also sells tennis, soccer, golf, baseball, football, bicycling, and other footwear, as well as apparel, brand-name sports equipment, and accessories. It sells its products through retail outlets in India and around, the world and through independent distributors and licensees. About 47 per cent of Hypee’s sales in 2012 were in India.

The firm maintains an active research and development effort to improve its products. Most of its manufacturing facilities are outside the United States, in Asia and South America. It has approximately 24,700 employees, but much of the manufacturing is through independent contractors.

The market for footwear is highly competitive, with Ricky and Adore being major competitors. Changes in consumer preference, changes in technology, and competition are seen as the main risk factors.

Equity Financing

Two classes of equity shares have equal shares in profits, total of 263.1 million shares were outstanding at the end of fiscal 2012. Hypee has a continuing shares repurchase program, shares are held by an Asian supplier.

The company has an active stock compensation plan for employees. In fiscal 2012, options on 5,215 thousand shares were granted and options on 5,526 thousand shares were exercised at a weighted average exercise price of ₹42.67 per share.

Summary Data

	2012 (₹)	2011 (₹)	2010 (₹)
Basic earnings per share	3.59	1.79	2.48
Diluted earnings per share	3.51	1.77	2.44
Dividends per share	0.74	0.45	0.48
Book value per share	18.17	16.14	13.01
Price per share, end of year	75.00	56.00	55.00

Knowing the Business: Ricky International Ltd.

Organized in 1979 and incorporated in New Delhi, like Hypee, is a leader in the design, manufacturing, and marketing of sport and leisure footwear.

Strategy

Ricky’s strategy is very similar to Hypee. The firm was primarily focused on the fitness market until 1994, when it launched a “major strategic effort” to increase its on field presence and establish its name as a sports brand. To do this it entered into promotion arrangements with leading athletes and endorsed high-profile sporting events. In addition, Ricky expanded its business beyond footwear to sports related

products such as sports and fitness videos, equipment, and fashion clothing. Like Hypee, Ricky aims to be on the edge of footwear technology.

Operations

Ricky manufactures and markets a similar product line to Hypee through its Ricky Division. This division also markets its apparel. It engages in heavy advertising and promotion and in continuing research and development to enhance products. The Ricky Division also licenses the Ricky name for such products as athletic gloves, videos, sunglasses, sport watches, uniforms, school supplies, and infant apparel. Ricky's footwear Division manufactures the rock brand of comfort footwear. Footware also develops and markets the Lilly and Lopo brands of footwear.

Virtually all of the company's products are manufactured through independent manufacturers, almost all of which are outside India. The company had 9,100 employees at the end of 2012.

Equity Financing

Ricky had 59,208 thousand equity shares outstanding at the end of 2012. It has a stock option plan, and in 2012 options on 1,018 thousand shares were granted and options on 1,751 thousand shares were exercised at a weighted average exercise price of ₹23.46 per share.

Summary Data

	2012 (₹)	2011 (₹)	2010 (₹)
Basic earnings per share	3.26	2.65	2.12
Diluted earnings per share	3.05	2.43	1.97
Dividends per share	0.30	0.15	0.00
Book value per share	20.60	17.34	14.69
Price per share, end of year	44.00	33.00	28.00

Reformulation Procedures

Exhibits 2.1 and 2.2 present the GAAP statements of shareholders' equity for Hypee and Ricky, along with reformulated statements in the form of the template on the previous page. Ricky's GAAP statements are in thousands of rupees, to make the presentation less detailed. Flags to the right of the GAAP statements indicate which items are transactions with shareholders (T) and which are components of comprehensive income (CI).

Reformulation follows three steps:

1. Restate beginning and ending balances for the period for items that are not part of shareholders' equity:

- Preference Shares:** Preference shares is included in shareholders' equity in the GAAP statement, but it is a liability for the equity shareholders. So reduce the balances by the amount of preference shares in those balances (and ignore any preference shares transactions during the period in the reformulation). An exception is mandatory **redeemable preference shares** which, under GAAP, is not part of equity but rather is reported on the balance sheet in a "mezzanine" between liabilities and equity. Hypee's preference shares is redeemable, so no adjustment is required.
- Dividends Payable:** GAAP requires dividends payable to equity shareholders to be reported as a liability. But shareholders cannot owe dividends to themselves. And dividends payable do not provide debt financing. Equity dividends payable are part of the equity that the equity shareholders have in the firm. So instead of reporting them as liabilities, reclassify them to the balances of shareholders' equity, as explained in the notes to Hypee's reformulated statement.



(c) **Unearned Compensation (or deferred compensation):** When a firm issues shares at less than market value, current shareholders incur a loss. Firms grant shares to employees, often at 85 per cent of market value, and in doing so they transfer value from shareholders to employees as compensation. The amount of the compensation is the difference between the market value of the shares issued and the price paid by employees. Hypee issued shares worth ₹23.2 million during 2012 (listed as "issuance of shares to employees and others") but the employees paid only ₹15.7 million. The difference, ₹7.5 million, is compensation that the equity statement recognizes (appropriately) as deferred compensation. The compensation is deferred as it is deemed to apply to future periods over which the employees work, so it is amortized to the income statement over a service period; you see the ₹2.6 million for the amortization in the current period in the statement. This accounting is appropriate. However, the classification of the unearned compensation as a contra to equity is not. It is an asset, like any other deferred charge or, indeed, prepaid wages, and should be classified as such. Increase beginning and ending balances of equity by the amount of unearned compensation and ignore any transactions in the account during the period in the reformulated statement. See the notes to both Hypee's and Ricky's reformulated statements.

2. **Calculate net transactions with shareholders (the net dividend):** This calculation nets dividends and shares repurchases against cash from share issues, as in the exhibits. Dividends must be cash dividends (calculated as follows), and not dividends declared as dividends payable:

$$\text{Cash dividends} = \text{Dividends reported} + \text{Change in dividends payable}$$

For Hypee, dividends paid are ₹(194.9 + 36.9 – 52.6) = ₹179.2 million, which is the number for cash dividends in the cash flow statement. Ricky had no dividends payable.

3. **Calculate comprehensive income:** Comprehensive income combines net income and other income reported in the equity statement. Besides net income, the GAAP statement for both Hypee and Ricky reports currency translation gains and gains from the appreciation of certain derivative instruments. U.S. GAAP requires a number for comprehensive income to be reported, so you can see in the GAAP statements that a total is drawn for comprehensive income. The income reported outside net income is referred to as other comprehensive income, so comprehensive income is net income plus other comprehensive income. Note that all items in other comprehensive income are after tax. That is, they are net of any tax that they draw.

Exhibit 2.1 GAAP Statement and Reformulated Statement of Shareholders' Equity for Hypee, Inc.,

31st May, 2012

The reformulated statement separates transactions with shareholders from comprehensive income (₹ in millions). The flags on the right of the GAAP statement indicate transactions with shareholders (T) and comprehensive income (CI).

Hypee, INC. GAAP Statement of Shareholders' Equity (₹ in millions, except per share data)									
	Equity Shares				Capital in Excess of Stated Value (₹)	Unearned Stock Compensation (₹)	Accumulated other comprehensive loss (₹)	Retained Earnings (₹)	Total (₹)
	Class A		Class B						
	Shares	Amount (₹)	Shares	Amount (₹)					
Balance at 31st May, 2011	97.8	0.2	165.8	2.6	589.0	(0.6)	(239.7)	3,639.2	3,990.7
Stock options exercised			5.5		284.9				284.90(T)
Conversion to Class B equity shares	(20.1)	(0.1)	20.2	0.1					
Repurchase of Class B equity shares			(6.4)		(7.6)			(406.7)	(414.3)(T)
Dividends on equity shares (₹0.74)								(194.9)	(194.9)(T)
Issuance of shares to employees and others			0.4		23.2	(7.5)			15.7(T)
Amortization of unearned compensation						2.6			2.6
Forfeiture of shares from employees					(1.7)			(0.3)	(2.0)(T)
Comprehensive income:									
Net income									
Other comprehensive income									
(net of tax benefit of ₹69.0):								945.6	945.6(CI)
Foreign currency translation							27.5		27.5(CI)
Adjustment for fair value of hedge derivatives							125.9		125.9(CI)
Comprehensive income							153.4	945.6	1,099.0(CI)
Balance at 31st May, 2012	77.7	0.1	185.5	2.7	887.8	(5.5)	(86.3)	3,982.9	4,781.7

Note: Footnotes indicate Hypee had ₹52.6million in dividends payable at the end of 2012 and ₹36.9 million at the end of 2011.



Reformulated Statement of Equity

		(₹)
Balance May 31, 2011		4,028.2
Transactions with shareholders		
Shares issues	308.1	
Shares repurchases	(416.3)	
Equity dividends paid	(179.2)	(287.4)
Comprehensive income		
Net income reported	945.6	
Currency translation gain	27.5	
Gains on hedging instruments	125.9	1,099.0
Balance May 31, 2012		4,839.8

Note: The beginning balance in the reformulated statement is calculated as follows (₹ in millions):

Reported balance	3,990.7
Dividends payable	36.9
Unearned compensation balance	0.6
	<u>4,028.2</u>

The ending balance is calculated as follows:

Reported balance	4,781.7
Dividends payable	52.6
Unearned compensation balance	5.5
	<u>4,839.8</u>

Exhibit 2.2 GAAP Statement and Reformulated Statement of Shareholders' Equity for Ricky International Ltd., 31st December, 2012

Ricky International Ltd. GAAP Statement of Equity (₹ amounts in thousands)								
	Equity Shares		Additional Paid-in Capital (₹)	Retained Earnings (₹)	Treasury Stock (₹)	Unearned Compensation (₹)	Accumulated Other Comprehensive Income (₹)	Total (₹)
	Shares	Par Value (₹)						
Balance 31st December, 2011	1,01,081	1,011	0	17,96,321	(7,40,189)	(1,225)	(22,208)	10,33,710
Net income				1,92,425				1,92,425(CI)
Foreign currency translation gain								
Adjustment for fair value of derivative investments								
Comprehensive income							37,691	37,691(CI)
Issuance of shares to certain employees							4,445	4,445(CI)
Amortization of unearned compensation	149	1		6,315		(5,880)		2,34,561
Shares issued under employee stock purchase plans	110	1				1,301		436(T)
Shares issued upon exercise of stock options	1,751	18		3,351				1,301
Acquisition of treasury shares	(1,264)	(13)		41,062				3,352(T)
Income tax reductions relating to exercise to stock options				(47,788)	(40,321)			41,080(T)
Dividends				11,477				(88,122)(T)
				(17,839)				11,477(?)
								(17,839)(T)
Balance 31st December, 2012	1,01,827	1,018	0	19,85,324	(7,80,510)	(5,804)	19,928	12,19,956

The flags to the right of the GAAP statement indicate transactions with shareholders (T) and comprehensive income (CI).



Reformulated Statement of Equity (₹ in millions)

Balance 31st December, 2011		1,034.9
Transactions with shareholders		
Shares issues	62.3	
Shares repurchases	(88.1)	
Equity dividends paid	(17.8)	(43.6)
Comprehensive income		
Net income reported	192.4	
Currency translation gain	37.7	
Gains on hedging instruments	4.4	234.5
Balance 31st May, 2012		1,225.8

Note: 1. The beginning balance in the reformulated statement is calculated as follows (₹ in millions):

Reported balance	1,033.7
Unearned compensation balance	1.2
	<u>1,034.9</u>

The ending balance is calculated as follows:

Reported balance	1,220.0
Unearned compensation balance	5.8
	<u>1,225.8</u>

2. Income tax reductions from the exercise of stock options of ₹11.5 million have been treated as proceeds from share issues in the reformulated statement.

In reformulating Ricky's statement, we have added the tax reductions from the exercise of employee stock options to cash from share issues. Firms often treat the tax deduction they get when options are exercised as proceeds from share issues and report share issues net of the tax benefit. Indeed, the ₹284.9 million that Hypee reported as receipts from shares issues from the exercise of options consisted of ₹237.7 million received from employees exercising the options and ₹47.2 million for tax benefits. However, this treatment is to be questioned – as indicated by the (?) flag in Ricky's equity statement. Deeper issues lurk in the background. We defer these to the discussion of hidden dirty-surplus expenses below.

You will notice in this reformulation that we have not made any use of the distinction between stated value (or par value) of shares and additional (or excess) paid-in capital. This is of no importance for equity analysis; Retained earnings are a mixture of accumulated earnings, dividends, share repurchases, and share dividends and it does not bar on the analysis. Conversions of one class of equity to another with zero effect do not change the book value of equity (as with Hypee). Nor do share splits or share dividends change the book value of equity, splits change the number of shares but do not change a given shareholder's claim.

Dirty-Surplus Accounting

Reporting income items as part of equity rather than in an income statement that has no income other than net income from the income statement is a clean-surplus accounting statement. The terms are pejorative, and appropriately so. Under dirty-surplus accounting the income in the income statement is not "clean," it is not complete. "Net" income, as used in GAAP, is really misnomer.

Table 2.1 lists the dirty-surplus items you are likely to see in the United States. Income items are designated as part of operating income or financial income (expense) to categorize them in a reformulated income statement (later). Some of the items you will rarely see. The three most common are unrealized gains and losses on securities, foreign currency translation gains and losses, and unrealized gains and losses on certain derivatives.

1. Unrealized gains and losses on securities available for sale: FASB Statement No. 115 distinguishes three types of securities:

- Trading securities
- Securities available for sale
- Securities held to maturity

Trading securities are those held in a portfolio that is actively traded. These securities are marked to market value in the balance sheet and the unrealized gains and losses from changes in market value are reported in the income statement. Securities that are not actively traded but which might be sold before maturity are available for sale. These also are marked to "fair" market value but the unrealized gains and losses are reported as part of other comprehensive income. Securities that management intends to hold to maturity are recorded at cost on the balance sheet, so no unrealized gains and losses are reported. Realized gains and losses on all types of securities are reported in the income statement as part of net income. The rules apply to both debt securities and equity securities involving less than 20 per cent ownership interest.

2. Foreign currency translation gains and losses: The assets and liabilities of majority owned foreign subsidiaries, measured in the foreign currency, must be consolidated in the statements of an Indian parent. If the exchange rate changes over the reporting period, the value of the assets and liabilities changes in Indian Rupees. The resulting gain or loss is a translating gain or loss, to be distinguished from gains and losses on foreign currency translation gains and losses are part of other comprehensive income. Translation gains and losses can apply to both the operating and financing assets and liabilities of subsidiaries, so their income can affect operating or financing income as indicated in Table 2.1.

3. Gains and losses on derivative instruments: FASB Statement No. 133 requires most derivatives to be marked to fair value on the balance sheet, either as assets or liabilities. If the instrument hedges an existing asset or liability or a firm commitment by the company – a so-called fair value hedge – the gain or loss from marking the instrument to fair value is recorded as part of net income. (under certain conditions, the gain or loss is offset in the income statement by the gain or loss on the hedged item.) If the instrument hedges the cash flow from an anticipated further transaction – a so-called cash flow hedge – the gain or loss is recorded to the equity statement, and then removed from the equity statement to net income when the hedged transaction affects earnings.

Table 2.1 Dirty – Surplus Accounting: U.S. GAAP

All dirty-surplus income items are reported net of tax.

**Operating Income Items**

Some income-increasing accounting changes (APB Opinion No. 20):

Change from LIFO valuation of inventory

Change in long-term contract accounting

Change to or from full cost accounting in extractive industries

Change triggered by a red line in an accounting standard (e.g., change from cost to equity method for long-term equities)

Change made for the first time conjunction with an IPO or business combination

Changes in accounting for contingencies (FASB Statement No. 11)

Additional minimum pension liability (FASB Statement No. 87)

Tax benefits of loss carryforwards acquired (FASB Statement No. 109)

Tax benefits of dividends paid to ESOPs (FASB Statement No. 109)

Unrealized gains and losses on equity securities available for sale (FASB Statement No. 115)

Some adjustments of deferred tax valuation allowances

Financing Income (or Expense) Items

Preference dividends

Unrealized gains and losses on debt securities available for sale (FASB Statement No. 115)

Operating or Financing Income Items

Foreign currency translation gains and losses (FASB Statement No. 52)

Gains and losses on derivative instruments designated as cash-flow hedges (FASB Statement No. 133)

Balance Sheet Items to be Reclassified

Deferred compensation relating to grant of employee stock options and stock (ABP Opinion No. 25 and FASB Statement No. 123)

Dividends payable

Note: ABP is the Accounting Principles Board, the predecessor body to the Financial Accounting Standards Board (FASB)

2.3 COMPREHENSIVE INCOME REPORTING

For years after 1998, FASB Statement No. 130 requires comprehensive income to be identified in the financial statements. It distinguished net income from other comprehensive income and permits the sum of the two, comprehensive income, to be reported in one of three ways:

1. Report comprehensive income in the statement of shareholders' equity by adding net income to other comprehensive income items reported in the equity statement.
2. Add other comprehensive income to net income in the income statement and close the total comprehensive income to shareholders' equity.
3. Present a separate statement of other comprehensive income apart from the income statement and close it to equity along with net income from the income statement.

Accounting Clinic:

Accounting For Marketable Securities

The clinic covers debt securities held by firms and equity securities representing less than 20 per cent interest in other corporations.

Most firms follow the first approach. So you now observe dirty-surplus income items added together into a number called "other comprehensive income" and other comprehensive income and net income added to "total comprehensive income" – all within the equity statement. This presentation facilitates the task of identifying comprehensive income. However, it is not, in fact, comprehensive from the equity shareholders' point of view. First, it omits preference dividends, and second certain hidden items (which we will identify towards the end of this study note) are not included.

2.4 RATIO ANALYSIS

What does the reformatted statement of changes in owner's equity reveal? It gives the growth in equity over a period. And it distinguishes clearly between the growth in equity from new investment or disinvestment by the owners and additions to equity from running the business. Accordingly, the reformulated statement distinguishes the creation of value from the distribution of value. Indeed both ROE and growth in equity – the two drivers of residual earnings – can be identified in the statement. A set of ratios analyzes the statement to refine this information.

Payout and Retention Ratios

The disinvestment by shareholders is described by payout ratio and retention ratios. The standard dividend payout ratio is the proportion of income paid out in cash dividends:

$$\text{Dividend payout} = \frac{\text{Dividends}}{\text{Comprehensive income}}$$

A calculation that you commonly see compares dividends to net income rather than comprehensive income. The dividend payout ratio involves payout in the form of dividends; total **payout** is dividends plus share repurchases. Some firms pay no dividends but have regular share repurchases. The total payout ratio is

$$\text{Total payout ratio} = \frac{\text{Dividends} + \text{Share repurchases}}{\text{Comprehensive income}}$$

calculated with total rupees amounts rather than per-share amounts. The difference between this ratio and the dividend payout ratio gives the percentage of earnings paid out as shares repurchases.

Note that share dividends and share splits are not involved. These simply change the share units, with no effect on the claim of each shareholder. Some splits and share dividends involve a reclassification from retained earnings to additional paid-in capital, but again this has no effect on the value of claims.

Although the dividend payout ratio suggests that dividends are paid out of earnings, they are really paid out of book value, out of assets. So a firm can pay a dividend even if it reports a loss. Payout, as a proportion of book value, is the rate of disinvestment by shareholders:

$$\text{Dividend -to-book value} = \frac{\text{Dividends}}{\text{Book value of SE} + \text{Dividends}}$$

$$\text{Total payout - to - book value} = \frac{\text{Dividends} + \text{share repurchases}}{\text{Book value of SE} + \text{Dividends} + \text{share purchase}}$$

Usually ending book value of shareholders' equity (SE) is used in the denominator in these calculations (although, with dividends paid out other the year, average SE is also appropriate).



Retention ratios focus on earnings retained rather than earnings paid out. The standard retention ratio involves only cash dividends (but can be modified to incorporate share repurchases):

$$\text{Retention ratio} = \frac{\text{Comprehensive income} - \text{Dividends}}{\text{Comprehensive income}}$$

$$= 1 - \text{Dividend payout ratio}$$

Shareholder Profitability

The reformulated statement yields the comprehensive rate of return on equity, ROE, the profitability of the owners' investment for the period. ROE is also growth in equity from business activities. For Hypee, the 2012 ROE (using average equity for the year) is

$$\begin{aligned}\text{ROE}_t &= \frac{\text{Comprehensive earnings}}{\frac{1}{2}(\text{SE}_t + \text{SE}_{t-1})} \\ &= \frac{1,099}{\frac{1}{2}(4,028 + 4,840)} = 24.8\%\end{aligned}$$

The ROE calculated on beginning common equity is 27.3 per cent.

Note that the income statement and balance sheet are not needed to calculate ROE; rather, they provide the detail to analyze ROE.

Growth Ratios

The growth in shareholders' equity is simply the change from beginning to ending balances. Growth ratios explain this growth as a rate of growth.

The part of the growth rate resulting from transactions with shareholders is the net investment rate:

$$\text{Net investment rate} = \frac{\text{Net transactions with shareholders}}{\text{Beginning book value of SE}}$$

Hypee's net investment rate was a negative 7.1 per cent because net cash was paid out; shareholders disinvested. The part of the growth rate that comes from business activities is given by the ROE on beginning equity, 27.3 per cent for Hypee. The rate of growth of owners' equity from both sources – new shareholder financing and business activities – is the growth rate in shareholders' equity:

$$\begin{aligned}\text{Growth rate of SE} &= \frac{\text{Change in SE}}{\text{Beginning SE}} \\ &= \frac{\text{Comprehensive income} + \text{Net transactions with shareholders}}{\text{Beginning SE}}\end{aligned}$$

Hypee's 2012 growth rate was 20.1 percent

If ROE is calculated with beginning SE in the denominator, then

$$\text{Growth rate of SE} = \text{ROE} + \text{Net investment rate}$$

For Hypee, the growth rate in equity is 27.3 per cent – 7.1 per cent = 20.1 per cent (allow for rounding error).

Return on equity is the focus for the analysis of profitability. Growth in SE is the focus for the analysis of growth. Together, the two drive residual earnings and earnings growth. As a first insight, we see that the growth rate is driven by ROE and the rate of new investment.

Hidden Dirty Surplus

The distinction between comprehensive income and transactions with shareholders in the reformulated statement of owners' equity separates the creation of value from the raising of funds and the distribution of value of shareholders. The premise is that transactions with shareholders do not create value. This is so when share transactions are at market value, but when shares are issued at less than market value, shareholders lose. And the losses do not appear in GAAP financial statements.

Issue of Shares in Operations

We have seen that when firms grant shares to employees at less than market price, the difference between market price and grant price is treated as (unearned) compensation to employees and ultimately amortized as an expense to the income statement. More frequently, though, shares are not granted to employees. Rather, stock-options are granted and shares are issued later when the options are exercised.

Four events are involved in a stock option award: the grant of the option, the vesting of the option, the exercise of the option, and the lapse of the option. At the grant date employees are awarded the right to exercise at an exercise price; the vesting date is the first date at which they can exercise the option, and the exercise date is the date on which they actually exercise at the exercise price; and the lapse date is the date on which the option lapse should the employee choose not to exercise. Clearly the employee exercises if the shares "in the money" at exercise date, that is, if the market price is greater than the exercise price.

If the call option is granted in the money at grant date (with the exercise price set at less than the market price at grant date), GAAP accounting treats the difference between the market price and exercise price as compensation. Unearned compensation is recorded and then amortized to the income statement over the vesting period, as in the case of a shares grant. But most options are granted "at the money", with exercise price equal to the market price at grant date. As time elapses and the market price of the shares moves "into the money", no compensation expense is recorded. Further, when options are indeed exercised, no compensation expense is recorded. You see in Hypee's and Ricky's statements of equity that the amount received on exercise is recorded as issued shares, but, unlike the stock grants, the expense – the difference between the market price and the issue price – is not recorded.

The appropriate accounting is to record the issue of shares at market price and recognize the difference between the market price and issue price as compensation expense. In the absence of this accounting there is a **hidden dirty-surplus expense**. The expense is not merely recorded in equity rather than the income statement; it is not recorded at all. But there has been a distribution of wealth to employees and that distribution has come at the expense of the shareholders: The value of their shares must drop to reflect the **dilution** of their equity. GAAP accounting treats this transaction, which is both a financing transaction – raising cash – and an operational transaction – paying employees – as if it is just a financing transaction. This hidden dirty-surplus accounting creates a hidden expense.

Some commentators argue that, because options are granted at the money, there is no expense. Employees – and particularly management, who benefit most – say this adamantly. But there is no expense only if the options fail to move into the money. They also say that, as the exercise of options does not involve a cash payment by the firm, there is no expense. However, paying employees with stock options that are exercised substitutes for paying them with cash, and recording the expense is recording the cash-equivalent compensation. The firm is effectively issuing shares to employees at market price and giving them a cash amount equivalent to the difference between market and exercise prices to help pay for the shares. From a shareholder's point of view, it makes no difference whether employees are paid with cash or with the value of the shares that shareholders have to give up. Recognizing this expense is at the heart of accrual accounting for shareholder value, for accrual accounting looks past cash flows to value flows; it sees a transfer of valuable stock for wages as no different from cash wages. If you are hesitant in viewing stock compensation as an expense, think of



the case where a firm pays for all its operations - its materials, its advertising, its equipment – with stock options. (Indeed some sports stars have asked to be paid with stock options for promotions!) If the hidden expenses were not recognized, the income statement would have only revenues on it and no expenses. Stock options produce revenues and profits for shareholders if they present an incentive for employees and management. But GAAP accounting does not match the cost of the options against these revenues and profits. Value added must be matched with value lost.

With the large growth in stock compensation in the 1990's, the hidden expense has become quite significant, particularly in the high-tech sector. The Financial Accounting Standards Board addressed the issue, but in Statement No. 123 came to an unsatisfactory conclusion. This statement requires unearned compensation to be recognized at grant date at an amount equal to the value of the option, priced using option-pricing formulas. This unearned compensation is then amortized to the income statement over a service period, usually the vesting period. Firms were required to report the effect in footnotes, not the actual statements, but Statement 123R, issued in 2004 for effect in 2006, requires the expense to be recorded within the statements. The International Accounting Standard on the issue, IFRS 2, requires similar treatment. This treatment is called grant date accounting. But the granting of options yields an expense only in recognition of possible exercise. If the option lapses (because the stock does not go into the money), no expense is incurred. An expense is realized only if the option is exercised. The difference between the market price and exercise price at exercise date is the loss to shareholders. Recognizing this expense, is called exercise date accounting. In 2012, Ricky reported ₹9,522 thousand in after-tax stock option expense using grant date accounting. An expense of ₹20,492 thousand from the exercise of options during 2012. Go to next Accounting Clinic in the next page.

Significantly, the Internal Revenue Service recognizes that an expense is incurred when options are exercised and gives the firm a tax deduction for it (if certain conditions are met). The firm books this **tax benefit** to equity: You see the entry in Ricky's equity statement (Exhibit 2.2), where ₹11,477 thousand in tax benefits are recorded. So, the accounting recognizes the tax benefit of the expense, increasing equity, but not the associated expense.

This loss from the exercise of options results from options exercise in the current period. However, it does not capture the expected losses to shareholders from stock options in the future, and it is the expected costs of options with which we are concerned in valuation. Ricky's option footnote reported 77,05,184 options outstanding at the end of 2012 at exercise prices ranging from ₹7.38 to ₹48.37 per share. Most of these options are in the money and are likely to be exercised. In valuing a Ricky share, the investor must consider the expected loss in value when these options are exercised; if one ignores this loss, one will overvalue the firm and pay too much for a share.

We return to the question of how anticipated losses from stock options are incorporated in valuation. We will calculate the option overhand, a contingent liability to issue shares at less than market value, and our valuations will build in this contingent liability.

Firms use options and warrants for other operating expenses beside wages.

Measuring the Loss from Exercise of Stock Options

Stock option loss is the difference between the exercise price and the market price of the shares at the date of exercise. This is the amount that shareholders lose by not issuing the shares at market price. The amount can be calculated in two ways.

Method 1

If options are nonqualifying options, if firm receives a tax deduction for the difference between market price and exercise price (and the employee is taxed on that difference). As the firm reports the tax benefit from the exercise of options, (either in the equity statement, as with Ricky, or the cash flow statement, as with Hypee) the amount if the tax deduction-the stock option expense – can be imputed using the firm's tax rate, Ricky's tax rate, gleaned from the tax footnote to the financial statements, is 35.9 percent. So, from the tax benefit of ₹11,477 thousand reported in the equity statement, the

expense is ₹(11,477/0.359) thousand = ₹31,969 thousand. As the expense is a tax deduction, the after-tax option expense is calculated as follows ₹ (in thousands):

Stock option expense	₹11,477/0.359	₹31,969
Tax benefit at 35.9%		₹(11,477)
Stock option expense, after tax		₹20,492

Method 2

If there is no reported tax benefit to work from, the calculation must estimate the market price at exercise date. Ricky's average share price during 2012 was ₹38.00. With 1,751 thousand options exercised, the calculation is as follows:

	(₹)
Estimate market value of shares issued 1,751 x ₹38.00	66,538
Exercise (issue) price, from equity statement	(41,080)
Stock option expense, before tax	25,458
Tax Benefit at 35.9%	(9,139)
Stock option expense, after tax	16,319

This calculation is tentative. If employees exercised above the ₹38.00 price (which is likely), the expense would be higher. Indeed, the Method 2 number is less than the Method 1 number.

Method 2 must be used for incentive options where the firm does not receive a tax benefit (nor is the employee taxed until the shares are sold).

Accounting Clinic

Accounting for Stock Compensation

GAAP accounting for stock options in the United States employs grant-date accounting. The International Accounting Standards Board (IASB) also required grant-date accounting. This Accounting Clinic leads you through grant-date accounting.

This Accounting Clinic also lays out exercise-date accounting and takes you through the complete accounting that measures the effects of stock options on shareholders. Unearned compensation costs are recorded at grant date, and then recognized as expense in the income statement over the period when employee services are given. Accordingly, the compensation cost is matched against the revenues that the employees produce. Subsequent to grant date, further losses are recognized as options go into the money. Here are the steps to effect should accrual accounting for stock options:

1. Recognize the option value at grant date as a contingent liability, along with a deferred (unearned) compensation asset. The two items can be netted on the balance sheet. The option value at grant date is the amount recognized with grant-date accounting under FASB Statement No. 123R. The grant-date value given to employees is compensation, but it is contingent upon the options going the money, so it is a contingent liability to issue shares. The deferred compensation asset is similar to that which arises from shares issues to employees at less than market value.
2. Amortize the deferred compensation over an employee service period, usually the vesting period.
3. Mark the contingent liability to market as options go into the money to capture the value of the option overhang, and recognize a corresponding unrealized loss from stock options.
4. Extinguish the liability against the share issue (at market value) at exercise date. If options are not exercised, extinguish the liability and recognize a windfall gain from stock options.

Exercise of stock options increases shares outstanding, so comparing basic EPS (that anticipates the share issues) gives some idea of the extent of the problem. But the loss from stock options falls on the



current shareholders, not the future shareholders from the exercise of options, and diluted EPS does not make the distinction. Next Accounting Clinic outlines the calculation of diluted EPS.

Issue of Shares in Financing Activities

Hidden losses occur not only with employee stock options but with the exercise of all contingent equity claims. Call and put options on the firm's own shares, warrants, rights, convertible bonds, and convertible preference shares are all contingent equity claims that, if exercised, require the issue (or repurchase) of shares at price that is different from market value. Look at Exhibit 2.4.

Exhibit 2.5 covers the accounting for convertible bonds and convertible preference shares and shows how GAAP accounting does not recognize the full cost of financing with these instruments. GAAP accounting is not comprehensive, even though a nominal number, comprehensive income, is reported.

Share Transactions in Inefficient Markets

The maxim that share issues and repurchases at market value do not create value recognizes that in efficient stock markets, value received equals value surrendered; both sides of the transaction get what they paid for. In a share repurchase, for example, the firm gives up, and the seller receives, cash equal to the value of the shares.

Exhibit 2.3 Paying for License Rights with Stock Warrants: Ricky

In 2009, Ricky entered into a 10- years license agreement with the National Football League (NFL) giving the company exclusive rights to design, develop, and sell NFL footwear apparel, and accessories in exchange for stock warrants valued at ₹13.6 million. These warrants gave the NFL the right to purchase up to 1.6 million shares of Ricky's equity at various exercise prices, with an expiration date of 2020.

Ricky recorded an intangible asset ("licenses" below) and then amortized this asset over 10 years. So its intangible asset footnote for 2011 reported the following (₹ in thousands):

Amortizable intangible assets:	
Licenses	13,600
Other intangible assets	<u>4,492</u>
	18,092
Less: accumulated amortization	<u>3,656</u>
	14,436
Non amortizable intangible assets:	
Company trade names and trademarks	<u>27,860</u>
	42,296

You see that Ricky recognized the license asset and is amortizing the license cost along with other amortizable intangible assets. So the license expense is being matched against revenue from NFL branded products in the income statement over the term of the license. This is appropriate accounting.

However, the issue of the warrants was recorded as a share issue in the equity statement in 2009, as required by GAAP.

But the GAAP accounting is inappropriate. The issue of a warrant – like the issue of a stock option – is not an issue of equity but, rather, an obligation for the shareholders to surrender value in the future should the warrants be exercised. From the shareholders point of view a warrants is a (contingent) liability, and appropriate accounting for shareholder value requires it to be recognized as such. Further, if and when the warrants are exercised, the difference between the exercise price and the market price of the stock at the time, over and above the ₹13.6 million already recognized, is a further loss to shareholders.

The diligent equity analyst recognizes that GAAP fails to track the effects of this transaction on shareholder value. Many of the warrants have an exercise price of ₹27.06 per share. At the end of 2012, Ricky's shares traded at ₹ 44.00, so the warrants were well in the money and likely to be exercised. The analyst anticipates that there will be a loss of shareholder value when this happens and builds this into their valuation. This is the warrant overhang. For now, note that a rough calculation of the warrant overhang (at the end of 2012) is the amount of value that the shareholders would have to give up if the warrants were exercised at the end of 2012. The difference between the market price of the share and the exercise price at the end of 2012 is ₹44.00 - ₹ 27.06 = ₹16.94 per warrant. This calculation to recognize that the warrants cannot be exercised in 2012, but rather in 2020, so option value must be added to this rough calculation.

But we recognized that if stock markets are inefficient, a firm can buy back shares at less than they are worth and issue shares at more than they are worth. The other side of the transaction – the shareholder who sells the shares or the new shareholder who buys- loses value. But the existing shareholders who do not participate in the transaction gain. These gains (or losses if shareholders lose in the transaction) are not revealed in the accounts.

Even if stock markets are efficient with respect to publicly available information, a firm's management might have private information about the value of their firm's shares and issue or repurchase shares at prices that are different from those that will prevail when the information is subsequently made public. Such transactions also generate value for existing shareholders.

The active investor who conjectures that the market may be inefficient at times is wary of share transactions with firms. As with all his trading in the stock market, he tests the market price against an estimate of intrinsic value. But he is particularly careful in this case because the firm's management may have a better feel for intrinsic value than he.

The active investor who understands the intrinsic value of a shares understands when it might be overvalued or undervalued. And he understands that management might use the mispricing to advantage. The management might, for example, use overvalued shares to make acquisitions, to acquire other firms cheaply. Indeed this is a reason why an investor might buy overvalued shares: He sees that value can be generated by using the shares as currency in an acquisition. But this is a tricky business: If investors force up the prices of shares that are already overpriced, a price bubble can



result. The fundamental investor bases his actions on a good understanding of the firm's acquisition possibilities and its acquisition strategy.

As for the management, they can take advantage of share mispricing to create value for shareholders with share transactions. They can choose to finance new operations with debt rather than equity if they feel the shares price is "too low". But they also can choose to exercise their stock options when the price is high – a double whammy for shareholders. They might also have misguided ideas about share issues and repurchases.

Exhibit 2.4 Hidden Losses and the Accounting for Put Options (Diana Computer Corp.)

In Diana's statement of shareholders' equity for the fiscal year ending February 1, 2012, the following line item appeared (₹ in millions):

	Shares	Amount
Repurchase of equity shares	68	₹3,000

This line suggests a routine share repurchase. But further investigation levels otherwise. Dividing the ₹3 billion paid out by the 68 million shares purchased, the average per share purchase price is ₹44.12. But Diana's shares did not trade above ₹30 during the year, and the average price was ₹24. Footnotes reveal that Diana was forced to repurchase shares at the strike price of ₹44 on put options written to investors. In previous years, Diana had gained from these options as the share price continued to rise during the bubble. But with the share price falling (from a high of ₹60 in February 2010) as the stock market bubble burst, Diana was caught as these options went under water. Using the average price of ₹24 for 2012 as the market price when the shares were repurchased, the loss from the exercise of put options is as follows:

Market price for shares:	
Repurchased ₹24 × 68 million	₹ 1,632 million
Amount paid for shares repurchased	₹ (3,000) million
Loss on exercise of put options	₹ (1,368) million

(The loss is not tax deductible.) on the 2,670 million shares outstanding before the repurchase, the loss is ₹0.51 per share, a significant amount compared to Diana's reported EPS of ₹0.48. Diana effectively runs two types of businesses, a computer business earning ₹0.48 per share in 2012 and a business of betting on its own stock, earning a loss of ₹0.51 per share.

The omission of this loss is a concern of the investor, and the investor must be vigilant. Shareholders lose when share prices fall, of course, but when the firm has written put options, the shareholder suffers twice, the loss from the price decline is lived. In 2012, Electrolux Data Systems Corporation (EDS) announced that the firm had some accounting problems and that contract revenue would not be as previously expected. The share price dropped 70 per cent on the bad news. Later, the firm indicated that the drop in price would trigger the exercise of put options. The price dropped further.

Put options are sometimes referred to as **put warrants**. Firms make similar commitments to buy back share through forward share purchase **agreements**. They disclose the existence of put options and share purchase agreements in footnotes. In buying a share of Diana in 2012, one must be aware of the put option overhand, for it might require further repurchases that lose value for shareholders. At the end of fiscal 2012, when the shares were trading at ₹25, the options were in the money by ₹20 per share, a total of ₹1,020 billion, projecting a loss of ₹0.39 per outstanding share. Analysts were forecasting ₹0.80 EOS for fiscal 2013, but that is GAAP earnings. Expected comprehensive earnings were ₹0.39 less, or ₹0.41 per share.

FASB Statement No. 150

In 2013, the FASB issued Statement 150 to reform the accounting for these put obligations. Firms are now required to recognize a liability, measured at fair value when the contract is written. Subsequently, as the share price changes, this liability is measured at the amount of cash that would be required to settle the obligation at the reporting date. This, of course, is the difference between the exercise price and market price at reporting date. The revaluation of the liability is booked to the income statement as interest cost. So, the rule sees a put option contract (appropriately) as a borrowing: The firm borrows the amount that the contract is worth and then repays the "loan" in cash or shares. The amount lost on the contract is the interest cost on the loan. The accounting under statement 150 effectively puts the liability for the option overhand on the balance sheet and records losses, as interest, as the option moves into the money (and so the shareholders must give up more value). If the option does not go into the money, a gain is recognized.

Accordingly, Statement 150 brings the hidden expense into the income statement and also puts a hidden (off-balance-sheet) liability on the balance sheet. Note, however, that GAAP does not apply the same treatment to call options, (Call) warrants, and other convertible securities.

Accounting for Convertible Securities

Convertible securities are securities, such as bonds and preference shares, that can be converted into equity shares if conditions are met. Textbooks propose two methods to record the conversion of a convertible bond or a convertible preference shares into equity shares:

1. The book value method records the share issue at the book value of the bond or preference shares. Equity is increased and debt or preference share is reduced by the same amount, so no gain or loss is recorded.
2. The market value method records the share issue at the market value of the shares issued in the conversion. The difference between this market value and the book value of the security converted is recorded as a loss on conversion.

The book value method is almost exclusively used in practice. It involves a hidden dirty-surplus loss. The market value method reports the loss. It accords the treatment of convertible securities the same treatment as nonconvertible securities. On redemption of nonconvertible securities before maturity, a loss (or gain) is recognized. The only difference with convertible securities is that shares rather than cash are used to retire them. In both cases there is a loss to the existing shareholders.

Convertible bonds carry a lower interest rate than nonconvertible bonds because of the conversion option. GAAP accounting records only this interest expense as the financing cost, so it looks as if the financing is cheaper. But the full financing cost to shareholders includes any loss on conversion of the bonds into common shares – and this loss is not recorded.

In the 1990s, financing with convertible preference shares became common. Only the dividends on the preference shares were recorded as the financing cost, not the loss on conversion. Suppose a convertible preference shares issue had no dividend rights but, to compensate, set a favorable conversion price to the buyer of the issue. Under GAAP accounting would appear that this financing had no cost.

Reformulating the Equity Statement to Incorporate Hidden Expenses

The reformulated equity statements for Hypee and Ricky in Exhibits 2.1 and 2.2 rearrange items on the face of the GAAP statements but do not identify the hidden dirty-surplus expenses. Here we carry out the complete reformulation for Diana Computer Corporation (Diana, Inc.) whose put options were discussed in Exhibit 2.4. Exhibit 2.7 reformulates Diana's 2012 statement of shareholders' equity.

1. The "Other" column in Diana's statement is unearned compensation. As this is a deferred charge, an asset rather than equity, the opening and closing amounts have been added to the opening and closing equity:

Restated beginning equity = ₹ (5,622 + 74) = ₹ 5,696 million

Restated closing equity = ₹ (4,694 + 64) = ₹ 4,758 million

2. Comprehensive income includes the ₹1,222 million reported in the GAAP statement made up of ₹1,246 million in net income reported in the income statement and a ₹24 million loss in other comprehensive income. To this is added the loss from exercise of employee options, calculated from the tax benefit following Method 1. The tax benefit is netted into the share issue – Diana has treated the tax benefit as proceeds from share issues – so cannot be ascertained from the equity statement. However, the tax benefit of ₹487 million is reported in the cash flow statement. So, with a tax rate of 35 per cent, the Method 1 calculation runs as follows:



(₹ in million)

Loss from exercise : ₹487/0.35	₹ 1,391
Tax benefit at 35%	₹ (487)
After-tax loss	₹ 904

The ₹1,368 million loss from the exercise of put options, calculated in Exhibit 2.4 is also deducted in comprehensive income, to yield a comprehensive loss of ₹1,050 million.

Exhibit 2.6 Do Share Repurchases Prevent Dilution from Shares Issued Under Stock Option Programs?

Diana Computer (Diana, Inc.) explains its put option transactions (examined in Box 8.5) as “part of a share-repurchase program to manage the dilution resulting from shares issued under employee stock plans.” It is common for firms to explain share repurchases in this way. The exercise of stock options increases shares outstanding and, as we have seen, dilutes existing shareholders’ value. Buying back shares reduces shares outstanding. But does it reverse the dilution?

The answer is no. If shares are purchased at fair value, there is no change in the per-share value of the equity; the shareholder does not get extra value to compensate for the loss of value from stock options. Maintaining constant shares outstanding with share repurchases only gives the appearance of reversing the dilution.

During the stock market bubble, employees exercised options against the shareholders as prices soared. Firms then repurchased shares “to manage dilution.” But purchasing shares at bubble prices (above intrinsic value) destroys value for shareholders. Shareholders lost twice, once with the employee options, and again with the repurchases. As some firms borrowed to finance the share repurchases, they were left with large debts that led to significant credit problems as the bubble burst.

Exhibit 2.7 Reformulated Statement of Shareholders’ Equity for Diana Computer Corporation (Diana, Inc.) for Fiscal Year Ending February 1, 2012.

This reformulated statement includes hidden dirty-surplus expense involved in Diana’s share transactions for issuing of shares in response to employee’s exercising stock options and the repurchase of shares on exercise of put options written by the firm.

Diana Computer Corporation (Diana, Inc.) Reformulated Statement of Shareholders’ Equity (₹ in million)

	(₹)	(₹)	(₹)
Balance, 2nd February, 2011			5,696
Transactions with shareholders:			
Shares issued in stock option exercises (at market)		1,747	
Shares repurchased (at market)		(1,632)	115
Comprehensive income			
Comprehensive income reported		1,222	
Loss on exercise of employee stock options		(904)	
Tax benefit for employee stock options	(1,391)		
Loss on put options	487	(1,368)	(1,050)
Other			(3)
Balance, 1st February, 2012			4,758

3. The share issues and share repurchases are recorded at their market value, that is, the cash that would be involved if the transactions were at market value. The market value of the shares issued for stock option exercises is equal to the exercise price plus the loss from exercise which is always the difference between market price and exercise price). However, the exercise price of ₹843 million includes the tax benefit, so the ₹1,747 million number for the share issue is ₹843 million in the GAAP statement plus the after-tax loss of ₹904 million (in point 2 above). Similarly, the market price of the share repurchase is the ₹3,000 million paid for the repurchase minus the ₹1,368 million loss representing the difference between the market price and exercise price. The accounting for both share transactions says that, effectively, Diana traded shares at market value but then paid out cash or share equivalent to the counterparty, resulting in a loss of value shareholders.
4. The ₹3 million reduction in equity in the "other" line is not identified by Diana so is included on its own line here.

The comprehensive loss for 2012 in the reformulation is quite different from the reported comprehensive income. The analyst recognizes that, when wages are paid in shares (issued below market price) rather than cash, the loss to shareholders must be recorded. She also recognizes that, in 2012, Diana carried out two lines of business, one trading computers and associated products and one trading put options on its own shares. The comprehensive income to both lines of business must be accounted for. Accordingly, the accounting in the reformulated statement faithfully reports the effects of Diana's business activities on the shareholders.

The Eye of the Shareholder

We have characterized the financial statements as a lens on the business. For equity analysis, the lens must be focused to the eye of the shareholder. GAAP accounting is inadequate for equity analysis because it does not have its eye on the shareholder. It does not account faithfully for the welfare of the shareholder, and nowhere else is this more apparent than with the accounting in the statement of shareholders' equity.

GAAP fails to see a sale of shares by current shareholders at less than market value as a loss. If the shareholders were forced to do so on their own account, they surely would make a loss. When the firm forces it on them, they also make a loss. (to raise cash and to pass out unneeded cash as a matter of financing) and value added (or lost) from operations that can be embedded in a share issue. It also fails to see that transactions between claimants – convertible bondholders and equity shareholders, for example – can involve losses for the equity shareholders.

In short, GAAP accounting does not honour the property rights of the equity shareholder. This is so despite the fact that financial reports are prepared nominally for the shareholder, company directors (including the audit committee) have a fiduciary duty to the shareholders, and management and auditors formally present the financial reports to shareholders at the annual meeting. GAAP does not honour the shareholders as the owners of the firm. Consequently, the equity analyst must repair the accounting, as we have done in this study note.



2.5 FINANCIAL ANALYSIS – REPORT WRITING ON RATIO ANALYSIS

Objectives

The importance of ratio analysis lies in the fact that it presents data on a comparative basis and enables the drawing of inferences regarding the performance of the firm. Ratio analysis helps in concluding the following aspects:

Liquidity Position

Ratio analysis helps in determining the liquidity position of the firm. A firm can be said to have the ability to meet its current obligations when they become due. It is measured with the help of liquidity ratios.

Long- Term Solvency

Ratio analysis helps in assessing the long term financial viability of a firm. Long- term solvency measured by leverage/capital structure and profitability ratios.

Operating Efficiency

Ratio analysis determines the degree of efficiency of management and utilization of assets. It is measured by the activity ratios.

Over-All Profitability

The management of the firm is concerned about the overall profitability of the firm which ensures a reasonable return to its owners and optimum utilization of its assets. This is possible if an integrated view is taken and all the ratios are considered together.

Inter- firm Comparison

Ratio analysis helps in comparing the various aspects of one firm with the other.

Financial Ratios and their Interpretation

Table 2.2: Different Financial Ratios

Sl. No.	Category	Types of Ratio	Interpretation
1.	Liquidity ratios	Net Working Capital = Current assets-current liabilities	It measures the liquidity of a firm.
		Current ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$	It measures the short term liquidity of a firm. A firm with a higher ratio has better liquidity. A ratio of 2:1 is considered safe.
		Acid test or Quick ratio = $\frac{\text{Quick assets}}{\text{Current Liabilities}}$	It measures the liquidity position of a firm. A ratio of 1:1 is considered safe.

2.	Turnover ratios	Inventory Turnover ratio = $\frac{\text{Costs of good sold}}{\text{Average inventory}}$	This ratio indicates how fast inventory is sold. A firm with a higher ratio has better liquidity.
		Debtor Turnover ratio = $\frac{\text{Net credit sales}}{\text{Average debtors}}$	This ratio measures how fast debts are collected. A high ratio indicates shorter time lag between credit sales and cash collection.
		Creditor's Turnover ratio = $\frac{\text{Net credit purchases}}{\text{Average Creditors}}$	A high ratio shows that Accounts are to be settled rapidly.
3.	Capital Structure Ratios	Debt-Equity ratio = $\frac{\text{Long term debt}}{\text{Shareholder's Equity}}$	This ratio indicates the relative proportions of debt and equity in financing the assets of a firm. A ratio of 1:1 is considered safe.
		Debt to Total capital ratio = $\frac{\text{Long term debt}}{\text{Permanent Capital}}$ Or $\frac{\text{Total debt}}{\text{Permanent capital} + \text{Current liabilities}}$ Or $\frac{\text{Total Shareholders' Equity}}{\text{Total Assets}}$	It indicates what proportion of the permanent capital of a firm consists of long-term debt. A ratio 1:2 is considered safe. It measures the share of the total assets financed by outside funds. A low ratio is desirable for creditors. It shows what portion of the total assets is financed by the owners' capital. A firm should neither have a high ratio nor a low ratio.



4.	Coverage ratios	Interest Coverage = $\frac{\text{Earning before Interests and Tax}}{\text{interest}}$	A ratio used to determine how easily a company can pay on outstanding debt. A ratio of more than 1.5 is satisfactory.
		Dividend Coverage = $\frac{\text{Earning after tax}}{\text{Preference Dividend}}$	It measures the ability of firm to pay dividend on preference shares. A high ratio is better for creditors.
		Total Coverage ratio = $\frac{\text{Earning before interests and tax}}{\text{Total fixed charges}}$	It shows the overall ability of the firm to fulfill the liabilities. A high ratio indicates better ability.
5.	Profitability ratios	Gross Profit margin = $\frac{\text{Gross profit} \times 100}{\text{Sales}}$	It measures the profit in relation to sales. A firm should neither have a high ratio nor a low ratio.
		Net Profit margin = $\frac{\text{Net Profit after tax before interest}}{\text{Sales}}$ Or $\frac{\text{Net Profit after Tax and Interest}}{\text{Sales}}$	It measures the net profit of a firm with respect to sale. A firm should neither have a high ratio nor a low ratio.
6.	Expenses ratios	Operating ratio = $\frac{\text{Cost of Goods sold} + \text{other expenses}}{\text{Sales}}$	Operating ratio shows the operational efficiency of the business. Lower operating ratio shows higher operating profit and vice versa.
		Cost of Goods sold ratio = $\frac{\text{Cost of Goods sold}}{\text{Sales}}$	It measures the cost of goods sold per sale.
		Specific Expenses ratio = $\frac{\text{Specific Expenses}}{\text{Sales}}$	It measures the specific expenses per sale.

7.	Return on Investments	Return on Assets (ROA) = $\frac{\text{Net Profit after Taxes} \times 100}{\text{Total Assets}}$ Or $\frac{(\text{Net Profit after Taxes} + \text{Interest}) \times 100}{\text{Total Assets}}$ Or $\frac{(\text{Net profit after Taxes} + \text{Interest}) \times 100}{\text{Tangible Assets}}$ Or $\frac{(\text{Net Profit after Taxes} + \text{Interest}) \times 100}{\text{Fixed Assets}}$	It measures the profitability of the total funds per investment of a firm.
		Return on Capital Employed (ROCE) = $\frac{(\text{Net Profit after Taxes}) \times 100}{\text{Total capital employed}}$ Or $\frac{(\text{Net Profit after Taxes} + \text{Interest}) \times 100}{\text{Total capital employed}}$ Or $\frac{(\text{Net Profit after Taxes} + \text{Interest}) \times 100}{\text{Total Capital Employed} - \text{Intangible assets}}$	It measures profitability of the firm with respect to the total capital employed. The higher the ratio, the more efficient use of capital employed.
		Return on Total Shareholders' Equity = $\frac{\text{Net Profit after Taxes} \times 100}{\text{Total shareholders' equity}}$	It reveals how profitably the owner's fund has been utilized by the firm.
		Return on Ordinary shareholders equity = $\frac{\text{Net profit after taxes and Pref. dividend} \times 100}{\text{Ordinary Shareholder's Equity}}$	It determines whether the firm has earned satisfactory return for its equity holders or not.



8.	Shareholder's ratios	Earnings per Share (EPS) = $\frac{\text{Net Profit of Equityholders}}{\text{Number of Ordinary Shares}}$	It measures the profit available to the equity holders on a per share basis.
		Dividend per Share (DPS) = $\frac{\text{Net profits after interest and preference dividend paid to ordinary shareholders}}{\text{Number of Ordinary Shares outstanding}}$	It is the net distributed profit belonging to the shareholders divided by the number of ordinary shares.
		Dividend Payout ratio (D/P) = $\frac{\text{Total Dividend to Equityholders}}{\text{Total net profit of equityholders}}$ Or $\frac{\text{Dividend per Ordinary Share}}{\text{Earnings per Share}}$	It shows what percentage share of the net profit after taxes and preference dividend is paid to the equity holders. A high D/P ratio is preferred from investor's point of view.
		Earnings per Yield = $\frac{\text{Earnings per Share}}{\text{Market Value per Share}}$	It shows the percentage of each rupee invested in the stock that was earned by the company.
		Dividend Yield = $\frac{\text{Dividend per Share}}{\text{Market Value per Share}}$	It shows how much a company pays out in dividends each year relative to its share price.
		Price- Earnings ratio (P/E) = $\frac{\text{Market Value per Share}}{\text{Earnings per Share}}$	It reflects the price currently paid by the market for each rupee of EPS. Higher the ratio better it is for owners.
		Earning Power = $\frac{\text{Net profit after Taxes}}{\text{Total Assets}}$	It measures the overall profitability and operational efficiency of a firm.

9.	Activity Ratios	Inventory turnover = $\frac{\text{Cost of goods sold}}{\text{Average Inventory}}$	It measures how quickly inventory is sold. A firm should neither have a high ratio nor a low ratio.
		Raw Material turnover = $\frac{\text{Cost of Raw Material used}}{\text{Average Raw Material Inventory}}$	It shows the velocity at which raw material converted into goods ready for sale. If this ratio is high then the company is efficiently converting raw materials into finished goods.
		Work in Progress turnover = $\frac{\text{Cost of Goods manufactured}}{\text{Average Work in process inventory}}$	
		Debtors turnover = $\frac{\text{Net credit sales}}{\text{Average trade debtors}}$	It shows how quickly current assets i.e receivables or debtors are converted to cash.
10.	Assets Turnover Ratios	Total Assets turnover = $\frac{\text{Net sales}}{\text{Total Assets}}$	It measures the efficiency of a firm in managing and utilizing its assets.
		Fixed Assets turnover = $\frac{\text{Net sales}}{\text{Fixed Assets}}$	Higher the ratio, more efficient is the firm in utilizing its assets.
		Capital turnover = $\frac{\text{Net sales}}{\text{Capital Employed}}$	
		Current Assets turnover = $\frac{\text{Net sales}}{\text{Current Assets}}$	

The ratio analysis of five companies from 2010-12 has been carried out below.



1. A Ltd.

Table 2.3

Name of the Company: A Ltd.

Balance Sheet as at : 31.03.2012

(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital		1,880.20	1,878.80	1,879.30
	(b) Reserves and surplus-		58,282.00	47,398.50	39,647.80
	(c) Money received against share warrants				
2	Share application money pending allotment				
3	Non-current liabilities				
	(a) Long-term borrowings	(1)	5,669.20	4,820.30	3,064.10
	(b) Deferred tax liabilities (Net)				
	(c) Other Long term liabilities				
	(d) Long-term provisions				
4	Current Liabilities				
	(a) Short-term borrowings				
	(b) Trade payables				
	(c) Other current liabilities		25,587.30	22,453.90	19,912.70
	(d) Short-term provisions		10,918.80	9,639.30	6,662.70
	Total		1,02,337.50	86,190.80	71,166.60
II	ASSETS				
1	Non-current assets				
	(a) Fixed assets				
	(i) Tangible assets	(2)	41,582.90	34,697.00	33,147.20
	(ii) Intangible assets				
	(iii) Capital work-in-progress		21,562.10	16,028.60	6,491.90
	(iv) Intangible assets under development				
	(b) Non-current investments				
	(c) Deferred tax assets (Net)				
	(d) Long-term loans and advances				
	(e) Other non-current assets				
2	Current assets				
	(a) Current investments		14,756.40	6,790.80	8,448.10
	(b) Inventories		7,789.80	7,932.70	7,308.60

	(c) Trade receivables		2,037.00	3,101.70	2,892.90
	(d) Cash and cash equivalents		7,463.80	9,842.40	7,434.80
	(e) Short-term loans and advances		7,145.50	7,797.60	5,443.10
	(f) Other current assets				
	Total		1,02,337.50	86,190.80	71,166.60

Workings:

(₹ in millions)

1. Long-term Borrowings	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Secured loans	5,500.00	4,500.00	2,660.30
Unsecured loans	169.20	320.30	403.80
Total	5,669.20	4,820.30	3,064.10

2. Tangible Assets	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Gross block	68,262.70	58,356.70	54,640.70
Less: Accumulated depreciation	26,679.80	23,659.70	21,493.50
Total	41,582.90	34,697.00	33,147.20

Table 2.4**Name of the Company: A Ltd.****Profit and Loss Statement for the year ended: 31.12.2012**

(₹ in millions)

	Particulars	Note No.	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
I	REVENUE FROM OPERATION		80,215.90	72,299.70	68,947.90
II	OTHER INCOME		1,361.70	2,115.90	1,422.40
III	TOTAL REVENUE(I+II)		81,577.60	74,415.60	70,370.30
IV	EXPENSES:				
	(a) Cost of material consumed	(1)	19,862.60	22,503.60	28,070.40
	(b) Purchase of products for sale				
	(C) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(2)	843.00	399.60	738.70
	(f) Depreciation and amortization expenses	(3)	3,420.90	2,941.80	3,054.30
	(g) Product development expenses/ Engineering expenses				



	(h) Other expenses		34,722.20	31,963.30	21,463.20
	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		58,848.70	57,808.30	53,326.60
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		22,728.90	16,607.30	17,043.70
VI	EXCEPTIONAL ITEMS	(4)	(227.70)	(766.40)	(2269.50)
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		22,956.60	17,373.70	19,313.20
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)		22,956.60	17,373.70	19,313.20
X	Tax expenses:				
	(1) Current Tax		6,889.30	5,246.00	4,917.00
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		16,067.30	12,127.70	14,396.20
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)				
	Balance brought forward from previous year				
	Profit available for appropriation		16,067.30	12,127.70	14,396.20
	Appropriation:				
	Proposed dividend		4,317.60	3,753.30	3,750.20
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward		11,749.70	8,374.40	10,646.00
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:

(₹ in millions)

1. Cost of Material Consumed	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Raw material cost	12,046.80	11,801.50	18,367.20
Excise	7,815.80	10,702.10	9,703.20
Total	19,862.60	22,503.60	28,070.40

2. Finance Cost	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Interest expenses	843.00	399.60	738.70
Total	843.00	399.60	738.70

3. Depreciation and Amortization Expenses	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Depreciation	3,420.90	2,941.80	3,054.30
Total	3,420.90	2,941.80	3,054.30

4. Exceptional Items	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Other non-recurring income	(227.70)	(766.40)	(2,269.50)
Total	(227.70)	(766.40)	(2,269.50)

5. Operating profit is calculated as follows:

Revenue – raw material costs – excise – other expenses.

6. Gross profit is calculated as follows:

Operating profit – interest expenses. However it can be calculated alternatively.

7. Net profit is calculated as follows:

Gross profit + other income + other non-recurring income – depreciation – tax expenses.

8. Profit before tax is calculated as follows:

Net profit + tax expenses - other non-recurring income.

9. Fixed assets are calculated as follows:

Net tangible assets + capital work-in-progress + investments.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded while calculating net profit for the purpose of calculating the return on net worth.

12. For the purpose of calculating return on capital employed, capital employed is calculated as follows:

Total assets – current liabilities.

However it can be calculated alternatively.



1.1 Ratio analysis for 2011-12

Table 2.5: Analysis of Financial Ratios for 2011-12

(₹ in millions)

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹24,436.10 Current Liabilities = ₹36,506.10	₹(12,070)	Liquidity position is not good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹24,436.10 Current Liabilities = ₹36,506.10	0.66	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹16,646.3 Current Liabilities = ₹36,506.10	0.45	It is not good.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹5,669.2 Shareholder Equity = ₹60,162.20	0.09	It is not safe.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹25,631.10 Interest = ₹843.00	30.40	It is satisfactory.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹25,631.10 Sales = ₹80,215.90	31.9%	It is not satisfactory.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹24,788.10 Sales = ₹80,215.90	30.9 %	It is not satisfactory.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹16,067.30 Sales = ₹80,215.90	20.03%	It is not satisfactory.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹25,631.10 Average Assets = ₹94,264.15	27.19 %	It is not good.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹22,728.90 Net Worth = ₹60,162.20	37.7 %	It is not good.

11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹15,839.60 Average Net Worth = ₹54,719.75	28.94%	It is not safe.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹16,067.3 Capital Employed = ₹65,831.40	24.41%	It is not good.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹12,046.80 Sales = ₹80,215.90	0.15	It is satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹12,046.80 Other Expenses = ₹34,722.20 Sales = ₹80,215.90	0.58	It is not satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹77,901.4 Sales = ₹80,215.90	1.02	It is not safe.

1.2 Ratio analysis for 2010-11**Table 2.6: Analysis of Financial Ratios for 2010-11****(₹ in millions)**

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹28,674.40 Current Liabilities = ₹32,093.20	₹(3418.8)	Liquidity available is less.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹28,674.40 Current Liabilities = ₹32,093.20	0.89	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹20,741.70 Current Liabilities = ₹32,093.20	0.64	It is not satisfactory.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹4,820.30 Shareholder Equity = ₹49,277.30	0.10	It is not good.

Tot



5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹17,832.80 Interest = ₹399.60	44.63	It is safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹17,832.80 Sales = ₹72,299.70	24.66%	It is not safe.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹17,433.20 Sales = ₹72,299.70	24%	It is not good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹12,127.70 Sales = ₹72,299.70	16.77%	It is not good.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹17,832.80 Average Assets = ₹78,678.7	22.67%	It is not satisfactory.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹16,607.30 Net Worth = ₹49,277.30	33.70%	It is safe.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹11,361.30 Average Net Worth = ₹45,402.2	25.02%	It is not satisfactory.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹12,127.70 Capital Employed = ₹54,097.60	22.42%	It is not satisfactory.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹11,801.50 Sales = ₹72,299.70	0.16	It is satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹11,801.50 Other Expenses= ₹31,963.3 Sales = ₹72,299.70	0.60	It is not good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹57,516.4 Sales = ₹72,299.70	1.25	It is not safe.

1.3 Ratio Analysis for 2009-10**Table 2.7: Analysis of Financial Ratios for 2009-10****(₹ in millions)**

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹23,079.40 Current Liabilities = ₹26,575.40	₹(3496)	Liquidity available is less.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹23,079.40 Current Liabilities = ₹26,575.40	0.86	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹15,770.8 Current Liabilities = ₹26,575.40	0.59	It is not satisfactory.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹3,064.1 Shareholder Equity = ₹41,527.10	0.07	It is not good.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹19,414.30 Interest = ₹738.70	26.28	It is safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹19,414.30 Sales = ₹68,947.90	28%	It is not safe.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹18,675.60 Sales = ₹68,947.90	27%	It is not good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹14,396.20 Sales = ₹68,947.90	20.9%	It is not good.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹19,414.30 Average Assets = ₹65,840.65	29.48%	It is not satisfactory.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹17,043.70 Net Worth = ₹41,527.10	41.0%	It is satisfactory.



11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹12,126.70 Average Net Worth = ₹36,478.15	33.24%	It is safe.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹14,380.70 Capital Employed = ₹44,591.20	32.25%	It is good.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹18,367.20 Sales = ₹68,947.90	0.26	It is satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹18,367.20 Other Expenses = ₹21,463.20 Sales = ₹68,947.90	0.57	It is not satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹48,087.2 Sales = ₹68,947.90	1.43	It is not satisfactory.

1.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.8: Summary of Balance Sheet

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Current Assets	23,079.40	28,674.40	24,436.10	Short term liquidity has increased marginally.
Fixed Assets	3,064.1	57,516.4	77,901.4	Substantial increase in fixed assets due to increase in gross block.
Current Liabilities	26,575.40	32,093.20	36,506.10	Current liabilities have increased. NWC is affected.
Long term Liabilities	48,087.2	4,820.3	5,669.2	Debts have been paid off.

Table 2.9: Summary of Profit & Loss statement

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Sales	68,947.90	72,299.70	80,215.90	Sales position has increased.
Raw Material Cost	18,367.20	11,801.50	12,046.80	Expenses have decreased.
Operating Profit	19,414.30	17,832.80	25,631.10	Operating profit has increased.
Profit Before Tax (PBT)	17,028.20	16,607.30	22,728.90	PBT has increased.
Net profit	12,111.20	11,361.30	15,839.60	Net profit has increased by 30.7 %.

2. B Ltd.**Name of the Company: B Ltd.****Balance Sheet as at : 31.03.2012****(₹ in millions)**

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital		154.70	154.00	154.00
	(b) Reserves and surplus-		53,998.50	37,409.80	24,813.30
	(c) Money received against share warrants				
2	Share application money pending allotment				
3	Non-current liabilities				
	(a) Long-term borrowings	(1)	49,626.50	38,633.50	35,077.20
	(b) Deferred tax liabilities (Net)				
	(c) Other Long term liabilities				
	(d) Long-term provisions				
4	Current Liabilities				
	(a) Short-term borrowings				
	(b) Trade payables				
	(c) Other current liabilities		31,258.30	15,335.40	12,099.10
	(d) Short-term provisions		9,858.10	5,819.40	3,854.80
	Total		1,44,896.10	97,352.10	75,998.40
II	ASSETS				
1	Non-current assets				



	(a) Fixed assets				
	(i) Tangible assets	(2)	57,459.00	47,358.30	41,472.80
	(ii) Intangible assets				
	(iii) Capital work-in-progress		23,180.10	6,604.80	9,378.40
	(iv) Intangible assets under development				
	(b) Non-current investments				
	(c) Deferred tax assets (Net)				
	(d) Long-term loans and advances				
	(e) Other non-current assets				
2	Current assets				
	(a) Current investments		12,334.00	10,361.90	7,098.20
	(b) Inventories		12,099.60	9,805.60	6,424.40
	(c) Trade receivables		3,914.60	2,873.80	3,203.10
	(d) Cash and cash equivalents		3,089.60	5,779.10	529.70
	(e) Short-term loans and advances		32,789.00	14,537.20	7,859.40
	(f) Other current assets		30.20	31.40	32.40
	Total		1,44,896.10	97,352.10	75,998.40

Workings:

(₹ in millions)

1. Long-term Borrowings	As at 31.03.12	As at 31.03.11	As at 31.03.10
Secured loans	21,054.90	17,833.90	21,156.10
Unsecured loans	28,571.60	20,799.60	13,921.10
Total	49,626.50	38,633.50	35,077.20

2. Tangible Assets	As at 31.03.12	As at 31.03.11	As at 31.03.10
Gross block	73,629.00	59,189.40	49,290.30
Less: Accumulated depreciation	16,170.00	11,831.10	7,817.50
Total	57,459.00	47,358.30	41,472.80

Table 2.11

Name of the Company: B Ltd.

Profit and Loss Statement for the year ended: 31.03.2012

(₹ in millions)

	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	REVENUE FROM OPERATION		76,778.30	53,681.40	35,230.80
II	OTHER INCOME		1,994.60	573.10	360.80

III	TOTAL REVENUE(I+II)		78,772.90	54,254.50	35,591.60
IV	EXPENSES:				
	(a) Cost of material consumed	(1)	41,754.00	24,908.90	14,652.10
	(b) Purchase of products for sale				
	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(2)	2,678.90	2,430.20	1,731.90
	(f) Depreciation and amortization expenses	(3)	4,330.30	4,515.10	3,364.70
	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses		8,645.70	5,813.40	6,480.60
	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		57,408.90	37,667.60	26,229.30
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		21,364.00	16,586.90	9,362.30
VI	EXCEPTIONAL ITEMS	(4)	1,343.20	1,559.10	(88.80)
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		20,020.80	15,027.80	9,451.10
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)		20,020.80	15,027.80	9,451.10
X	Tax expenses:				
	(1) Current Tax		4,654.00	2,655.50	2,418.50
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		15,366.80	12,372.30	7,032.60
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		15,366.80	12,372.30	7,032.60
	Balance brought forward from previous year				
	Profit available for appropriation		15,366.80	12,372.30	7,032.60
	Appropriation:				
	Proposed dividend		853.30	620.20	554.30



	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward		14,783.5	11,752.10	6,478.30
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:**(₹ in millions)**

1. Cost of Material Consumed	As at 31.03.12	As at 31.03.11	As at 31.03.10
Raw material cost	34,194.20	17,274.00	10,685.00
Excise	7,559.80	7,634.90	3,967.10
Total	41,754.00	24,908.90	14,652.10

2. Finance Cost	As at 31.03.12	As at 31.03.11	As at 31.03.10
Interest expenses	2,678.90	2,430.20	1,731.90
Total	2,678.90	2,430.20	1,731.90

3. Depreciation and Amortization Expenses	As at 31.03.12	As at 31.03.11	As at 31.03.10
Depreciation	4,330.30	4,515.10	3,364.70
Total	4,330.30	4,515.10	3,364.70

4. Exceptional Items	As at 31.03.12	As at 31.03.11	As at 31.03.10
Other non-recurring income	1,343.20	1,559.10	(88.80)
Total	1,343.20	1,559.10	(88.80)

5. Operating profit is calculated as follows:

Revenue – raw material costs – excise – other expenses.

6. Gross profit is calculated as follows:

Operating profit – interest expenses. However it can be calculated alternatively.

7. Net profit is calculated as follows:

Gross profit + other income + other non-recurring income – depreciation – tax expenses.

8. Profit before tax is calculated as follows:

Net profit + tax expenses - other non-recurring income.

9. Fixed assets are calculated as follows:

Net tangible assets + capital work-in-progress + investments.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded while calculating net profit for the purpose of calculating the return on net worth.

12. For the purpose of calculating return on capital employed, capital employed is calculated as follows:

Total assets – current liabilities.

However it can be calculated alternatively.

13. Current assets exclude other current assets. However it can be calculated alternatively.

2.1 Ratio Analysis for 2011-12

Table 2.12: Analysis of Financial Ratios for 2011-12

(₹ in millions)

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets – Current liabilities	Current Assets = ₹51,892.80 Current Liabilities = ₹41,116.40	₹10,776.4	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹51,892.80 Current Liabilities = ₹41,116.40	1.26	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹39,793.2 Current Liabilities = ₹41,116.40	0.96	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹49,626.5 Shareholder Equity = ₹54,153.20	0.92	It is good.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹26,378.60 Interest = ₹2,678.90	9.84	It is not safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹26,378.60 Sales = ₹76,778.30	34%	It is safe.



7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹23,699.70 Sales = ₹76,778.30	30.87 %	It is good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹15,366.80 Sales = ₹76,778.30	20.01 %	It is not desirable.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹26,378.60 Average Assets = ₹1,21,124.10	21.78%	It is not satisfactory
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹21,364 Net Worth = ₹54,153.20	39.45%	It is satisfactory
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹16,710.00 Average Net Worth = ₹45,858.50	36.4%	It is satisfactory
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹15,364.80 Capital Employed = ₹1,03,779.70	14.81%	It is not good.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹34,194.20 Sales = ₹76,778.30	0.45	It is not satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹34,194.20 Other Expenses = ₹8,645.70 Sales = ₹76,778.30	0.55	It is not satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹92,973.1 Sales = ₹76,778.30	0.83	It is good.

2.2 Ratio Analysis for 2010-11**Table 2.13: Analysis of Financial Ratios for 2010-11****(₹ in millions)**

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹32,995.70 Current Liabilities = ₹21,154.80	₹11,840.9	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹32,995.70 Current Liabilities = ₹21,154.80	1.56	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹23,190.1 Current Liabilities = ₹21,154.80	1.1	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹38,633.5 Shareholder Equity = ₹37,563.80	1.03	It is good.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹22,959.10 Interest = ₹2,430.20	9.45	It is not safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹22,959.10 Sales = ₹53,681.40	42%	It is safe.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹20,528.90 Sales = ₹53,681.40	38.24%	It is good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹12,372.30 Sales = ₹53,681.40	23.04%	It is not good.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹22,959.10 Average Assets = ₹86,675.25	26.5%	It is not good.



10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹16,586.90 Net Worth = ₹37,563.80	44.15%	It is satisfactory
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹13,931.40 Average Net Worth = ₹31,265.55	44.55%	It is satisfactory
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹12,369.60 Capital Employed = ₹76,197.30	16.23%	It is not good
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹17,274.00 Sales = ₹53,681.40	0.32	It is not satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹17,274.00 Other Expenses = ₹5,813.40 Sales = ₹53,681.40	0.43	It is not satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹64,325 Sales = ₹53,681.40	0.83	It is good.

2.3 Ratio Analysis for 2010

Table 2.14: Analysis of Financial Ratios for 2010

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹18,016.60 Current Liabilities = ₹15,953.90	₹2,062.70	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹18,016.60 Current Liabilities = ₹15,953.90	1.13	It is not satisfactory.

3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹11,592.2 Current Liabilities = ₹15,953.90	0.73	It is not satisfactory.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹35,077.2 Shareholder Equity = ₹24,967.30	1.40	It is good.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹14,098.10 Interest = ₹1,731.90	8.14	It is not safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹14,098.10 Sales = ₹35,230.80	40 %	It is satisfactory.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹12,366.20 Sales = ₹35,230.80	35.1%	It is satisfactory
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹7,032.60 Sales = ₹35,230.80	19.9%	It is not satisfactory.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹14,098.10 Average Assets = ₹66,821.95	21.1%	It is not satisfactory
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹9,362.30 Net Worth = ₹24,967.30	37.49%	It is safe.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹6,943.80 Average Net Worth = ₹21,707.2	31.98%	It is good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹7,029.90 Capital Employed = ₹60,044.50	11.71%	It is not safe.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹10,685.00 Sales = ₹35,230.80	0.30	It is not satisfactory.



14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold + other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹10,685.00 Other Expenses = ₹6,480.60 Sales = ₹35,230.80	0.48	It is not satisfactory
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹57,949.4 Sales = ₹35,230.80	0.61	It is not good.

2.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.15: Summary of Balance Sheet

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Current Assets	18,016.60	32,995.7	51,892.80	Current asset position has increased. Liquidity position is very good.
Fixed Assets	57,949.4	64,325	92,973.1	Fixed Assets have increased due to increase in gross block.
Current Liabilities	3,854.80	5,819.40	9,858.10	Current Liabilities have increased marginally.
Long term Liabilities	35,077.2	38,633.5	49,626.5	Debts have increased due to more investment.

Table 2.16: Summary of Profit & Loss Statement

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Sales	35,230.80	53,681.40	76,778.30	Sales position has doubled.
Raw Material Cost	10,685.00	17,274.00	34,194.20	Purchase of raw material has increased.
Operating Profit	14,098.10	22,959.10	26,378.60	Operating profit has increased.
Profit Before Tax (PBT)	9,359.60	16,584.20	21,362.00	PBT has increased.
Net profit	6,941.10	13,928.70	16,708.00	Net profit has increased 140.7%

3. C Ltd.**Table 2.17****Name of the Company: C Ltd.****Balance Sheet as at : 31.03.2012****(₹ in millions)**

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital		62,034.50	62,033.00	7,277.30
	(b) Reserves and surplus-		2,35,011.50	2,10,974.30	1,33,684.20
	(c) Money received against share warrants				
2	Share application money pending allotment				
3	Non-current liabilities				
	(a) Long-term borrowings	(1)	2,69,461.80	1,80,216.90	96,453.30
	(b) Deferred tax liabilities (Net)				
	(c) Other Long term liabilities				
	(d) Long-term provisions				
4	Current Liabilities				
	(a) Short-term borrowings				
	(b) Trade payables				
	(c) Other current liabilities		89,657.60	68,422.60	63,492.40
	(d) Short-term provisions		29,341.90	29,135.20	19,304.60
	Total		6,85,507.30	5,50,782.00	3,20,211.80
II	ASSETS				
1	Non-current assets				
	(a) Fixed assets				
	(i) Tangible assets	(2)	1,09,945.40	82,561.10	85,431.20
	(ii) Intangible assets				
	(iii) Capital work-in-progress		34,876.80	43,674.50	24,974.40
	(iv) Intangible assets under development				
	(b) Non-current investments				
	(c) Deferred tax assets (Net)				
	(d) Long-term loans and advances				
	(e) Other non-current assets				
2	Current assets				
	(a) Current investments		4,23,717.80	41,031.90	61,061.80
	(b) Inventories		34,804.70	26,049.80	23,329.80



	(c) Trade receivables		6,359.80	5,434.80	6,316.30
	(d) Cash and cash equivalents		15,906.00	4,650.40	76,813.50
	(e) Short-term loans and advances		58,846.10	3,45,828.40	40,259.50
	(f) Other current assets		1,050.70	1,551.10	2,025.30
	Total		6,85,507.30	5,50,782.00	3,20,211.80

Workings:

(₹ in millions)

1. Long-term Borrowings	As at 31.03.12	As at 31.03.11	As at 31.03.10
Secured loans	39,130.50	35,205.80	37,589.20
Unsecured loans	2,30,331.30	1,45,011.10	58,864.10
Total	2,69,461.80	1,80,216.90	96,453.30

2. Tangible Assets	As at 31.03.12	As at 31.03.11	As at 31.03.10
Gross block	2,00,570.10	1,64,795.90	1,60,294.90
Less: Accumulated depreciation	90,624.70	82,234.80	74,863.70
Total	1,09,945.40	82,561.10	85,431.20

Table 2.18

Name of the Company: C Ltd.

Profit and Loss Statement for the year ended: 31.03.2012

(₹ in millions)

	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	REVENUE FROM OPERATION		2,43,483.20	1,96,544.10	1,74,526.60
II	OTHER INCOME		3,053.60	3,472.80	4,851.40
III	TOTAL REVENUE(I+II)		2,46,536.80	2,00,016.90	1,79,378.00
IV	EXPENSES:				
	(a) Cost of material consumed	(1)	1,07,746.50	85,618.20	79,841.30
	(b) Purchase of products for sale				
	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(2)	14,895.00	9,290.30	2,512.50
	(f) Depreciation and amortization expenses	(3)	9,734.00	8,346.10	8,192.90
	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses		43,972.30	28,480.50	25,547.80

	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		1,76,347.80	1,31,735.10	1,16,094.50
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		70,189.00	68,821.80	63,283.50
VI	EXCEPTIONAL ITEMS	(4)	2,977.10	2,391.30	(657.30)
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		67,211.90	65,890.50	63,940.80
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)		67,211.90	65,890.50	63,940.80
X	Tax expenses:				
	(1) Current Tax		21,148.70	23,802.80	20,404.70
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		46,063.20	42,087.70	43,536.10
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		46,063.20	42,087.70	43,536.10
	Balance brought forward from previous year				
	Profit available for appropriation		46,063.20	42,087.70	43,536.10
	Appropriation:				
	Proposed dividend		11,689.50	11,689.30	9,439.10
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward		34,373.70	30,398.40	34,097.00
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

**Workings:****(₹ in millions)**

1. Cost of Material Consumed	As at 31.03.12	As at 31.03.11	As at 31.03.10
Raw material cost	82,794.40	60,248.00	56,799.50
Excise	24,952.10	25,370.20	23,041.80
Total	1,07,746.50	85,618.20	79,841.30

2. Finance Cost	As at 31.03.12	As at 31.03.11	As at 31.03.10
Interest expenses	14,895.00	9,290.30	2,512.50
Total	14,895.00	9,290.30	2,512.50

3. Depreciation and Amortization Expenses	As at 31.03.12	As at 31.03.11	As at 31.03.10
Depreciation	9,734.00	8,346.10	8,192.90
Total	9,734.00	8,346.10	8,192.90

4. Exceptional Items	As at 31.03.12	As at 31.03.11	As at 31.03.10
Other non-recurring income	2,977.10	2,391.30	(657.30)
Total	2,977.10	2,391.30	(657.30)

5. Operating profit is calculated as follows:

Revenue – raw material costs – excise – other expenses.

6. Gross profit is calculated as follows:

Operating profit – interest expenses. However it can be calculated alternatively.

7. Net profit is calculated as follows:

Gross profit + other income + other non-recurring income – depreciation – tax expenses.

8. Profit before tax is calculated as follows:

Net profit + tax expenses - other non-recurring income.

9. Fixed assets are calculated as follows:

Net tangible assets + capital work-in-progress + investments.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded while calculating net profit for the purpose of calculating the return on net worth.

- 12.** For the purpose of calculating return on capital employed, capital employed is calculated as follows:

Total assets – current liabilities.

However it can be calculated alternatively.

- 13.** Current assets excludes other current assets. However it can be calculated alternatively.

3.1 Ratio Analysis for 2011-12

Table 2.19: Analysis of Financial Ratios for 2011-12

(₹ in millions)

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹1,15,916.60 Current Liabilities = ₹1,18,999.50	(₹3,082.90)	Liquidity available is less.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹1,15,916.60 Current Liabilities = ₹1,18,999.50	0.97	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹81,111.9 Current Liabilities = ₹1,18,999.50	0.68	It is not safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹2,69,461.80 Shareholder Equity = ₹2,97,046.00	0.91	It is good.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹91,764.40 Interest = ₹14,895.00	6.16	It is not safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹91,764.40 Sales = ₹2,43,483.20	37.69 %	It is good.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹76,869.40 Sales = ₹2,43,483.20	31.57 %	It is good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹52,017.40 Sales = ₹2,43,483.20	21.36%	It is not good.



9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹91,764.40 Average Assets = ₹6,18,144.65	14.85%	It is not good.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹70,189 Net Worth = ₹2,97,046	23.63%	It is not satisfactory
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹49,040.30 Average Net Worth = ₹2,85,026.65	17.21%	It is not good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹52,017.40 Capital Employed = ₹5,66,507.80	9.18%	It is not good.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹82,794.40 Sales = ₹2,43,483.20	0.34	It is not satisfactory
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹82,794.40 Other Expenses = ₹43,972.30 Sales = ₹2,43,483.20	0.52	It is not satisfactory
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹5,68,540 Sales = ₹2,43,483.20	0.43	It is satisfactory

3.2 Ratio Analysis for 2010-11**Table 2.20: Analysis of Financial Ratios for 2010-11****(₹ in millions)**

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹3,81,963.40 Current Liabilities = ₹97,557.80	₹284405.6	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹3,81,963.40 Current Liabilities = ₹97,557.80	3.92	It is safe
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹3,55,913.6 Current Liabilities = ₹97,557.80	3.64	It is satisfactory
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹1,80,216.9 Shareholder Equity = ₹2,73,007.30	0.66	It is not safe
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹82,445.40 Interest = ₹9,290.30	8.87	It is not satisfactory
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹82,445.40 Sales = ₹1,96,544.10	41.95%	It is satisfactory
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹73,155.10 Sales = ₹1,96,544.10	37.22%	It is good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹46,870.30 Sales = ₹1,96,544.10	23.8%	It is not satisfactory.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹82,445.40 Average Assets = ₹4,35,496.9	18.93 %	It is not safe.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹68,281.80 Net Worth = ₹2,73,007.30	25.01%	It is not good.



11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹44,479 Average Net Worth = ₹2,06,984.40	21.49%	It is not satisfactory
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹46,870.30 Capital Employed = ₹4,53,224.20	10.34%	It is not safe
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹60,248 Sales = ₹1,96,544.10	0.31	It is not satisfactory
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹60,248 Other Expenses = ₹28,480.50 Sales = ₹1,96,544.10	0.45	It is not satisfactory
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹1,67,267.5 Sales = ₹1,96,544.10	1.18	It is not safe

3.3 Ratio Analysis for 2009-10

Table 2.21: Analysis of Financial Ratios for 2009-10

(₹ in millions)

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹1,46,719.10 Current Liabilities = ₹82,797.00	₹63922.1	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹1,46,719.10 Current Liabilities = ₹82,797.00	1.77	It is not satisfactory.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹1,23,389.3 Current Liabilities = ₹82,797.00	1.49	It is safe.

4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹96,453.3 Shareholder Equity = ₹1,40,961.50	0.68	It is not safe.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹69,137.50 Interest = ₹2,512.50	27.52	It is not satisfactory.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹69,137.50 Sales = ₹1,74,526.60	39.6%	It is good.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹66,625.00 Sales = ₹1,74,526.60	38.17%	It is satisfactory.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹42,221.50 Sales = ₹1,74,526.60	24.19%	It is not satisfactory.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹69,137.50 Average Assets = ₹2,53,753.3	27.25%	It is not good.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹63,283.50 Net Worth = ₹1,40,961.50	44.89%	It is safe.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹42,878.80 Average Net Worth = ₹1,19,257.25	35.95%	It is good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹42,221.50 Capital Employed = ₹2,37,414.80	17.78%	It is not satisfactory.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹56,799.50 Sales = ₹1,74,526.60	0.33	It is not good.



14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹56,799.50 Other Expenses = ₹25,547.80 Sales = ₹1,74,526.60	0.47	It is not good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹1,71,467.40 Sales = ₹1,74,526.60	1.02	It is not safe.

3.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.22: Summary of Balance Sheet

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Current Assets	1,46,719.10	3,81,963.40	1,15,916.60	Short term liquidity available is very less.
Fixed Assets	1,71,467.40	1,67,267.50	5,68,540	Fixed Assets have increased due to increase in investment.
Current Liabilities	82,797	97,557.80	1,18,999.50	Substantial increase in liabilities. Liquidity position is not good.
Long term Liabilities	96,453.30	1,80,216.90	2,69,461.80	Debts have increased because of more investment.

Table 2.23: Summary of Profit & Loss Statement

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Sales	1,74,526.60	1,96,544.10	2,43,483.20	Sales have increased by 39.5%
Raw Material Cost	56,799.50	60,248.00	82,794.40	Expenses have increased.
Operating Profit	69,137.50	82,445.40	91,764.40	Operating profit has increased.
Profit Before Tax (PBT)	63,283.50	68,281.80	70,189.00	PBT has increased.
Net profit	42,878.80	44,479.00	49,040.30	Net profit has increased marginally.

4. D Ltd.**Table 2.24****Name of the Company: D Ltd.****Balance Sheet as at : 31.03.2012****(₹ in millions)**

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital		4,225.30	4,225.30	4,225.30
	(b) Reserves and surplus-		1,39,350.50	1,14,256.60	72,045.30
	(c) Money received against share warrants				
2	Share application money pending allotment				
3	Non-current liabilities				
	(a) Long-term borrowings	(1)	86.90	3.90	3.90
	(b) Deferred tax liabilities (Net)				
	(c) Other Long term liabilities				
	(d) Long-term provisions				
4	Current Liabilities				
	(a) Short-term borrowings				
	(b) Trade payables				
	(c) Other current liabilities		13,742.00	12,377.80	9,478.00
	(d) Short-term provisions		1,981.30	1,235.80	1,849.50
	Total		1,59,386.00	1,32,099.40	87,602.00
II	ASSETS				
1	Non-current assets				
	(a) Fixed assets				
	(i) Tangible assets	(2)	41,049.20	36,372.80	22,356.00
	(ii) Intangible assets				
	(iii) Capital work-in-progress		11,083.90	5,253.40	6,349.90
	(iv) Intangible assets under development				
	(b) Non-current investments				
	(c) Deferred tax assets (Net)				
	(d) Long-term loans and advances				
	(e) Other non-current assets				
2	Current assets				
	(a) Current investments		69,288.70	63,324.50	44,033.00
	(b) Inventories		5,456.60	5,181.00	4,992.80
	(c) Trade receivables		1,649.40	4,436.60	5,566.20



	(d) Cash and cash equivalents		27,191.50	13,627.80	1,197.00
	(e) Short-term loans and advances		3,666.70	3,903.30	3,107.10
	(f) Other current assets				
	Total		1,59,386.00	1,32,099.40	87,602.00

Workings:

(₹ in millions)

1. Long-term Borrowings	As at 31.03.12	As at 31.03.11	As at 31.03.10
Secured loans	83.00	0.00	0.00
Unsecured loans	3.90	3.90	3.90
Total	86.90	3.90	3.90

2. Tangible Assets	As at 31.03.12	As at 31.03.11	As at 31.03.10
Gross block	58,555.10	51,219.20	34,997.90
Less: Accumulated depreciation	17,505.90	14,846.40	12,641.90
Total	41,049.20	36,372.80	22,356.00

Table 2.25

Name of the Company: D Ltd.

Profit and Loss Statement for the year ended: 31.03.2012

(₹ in millions)

	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	REVENUE FROM OPERATION		56,885.10	78,954.70	85,474.20
II	OTHER INCOME		8,320.30	5,316.50	1,139.50
III	TOTAL REVENUE(I+II)		65,205.40	84,271.20	86,613.70
IV	EXPENSES:				
	(a) Cost of material consumed	(1)	11,055.40	13,752.60	9,448.50
	(b) Purchase of products for sale				
	(C) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(2)	218.80	230.50	284.40
	(f) Depreciation and amortization expenses	(3)	2,852.70	2,205.10	1,560.80
	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses		18,488.10	11,222.30	11,779.10

	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		32,615.00	27,410.50	23,072.80
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		32,590.40	56,860.70	63,540.90
VI	EXCEPTIONAL ITEMS	(4)	(1,316.20)	(3,804.90)	(1,247.60)
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		33,906.60	60,665.60	64,788.50
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)		33,906.60	60,665.60	64,788.50
X	Tax expenses:				
	(1) Current Tax		6,630.50	16,689.60	20,365.30
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION (IX-X)		27,276.10	43,976.00	44,423.20
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		27,276.10	43,976.00	44,423.20
	Balance brought forward from previous year				
	Profit available for appropriation		27,276.10	43,976.00	44,423.20
	Appropriation:				
	Proposed dividend		1,690.10	2,112.60	2,112.60
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward		25,610.60	41,863.40	42,310.60
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:**(₹ in millions)**

1. Cost of Material Consumed	As at 31.03.12	As at 31.03.11	As at 31.03.10
Raw material cost	6,525.80	5,338.20	2,718.20
Excise	4,529.60	8,414.40	6,730.30
Total	11,055.40	13,752.60	9,448.50



2. Finance Cost	As at 31.03.12	As at 31.03.11	As at 31.03.10
Interest expenses	218.80	230.50	284.40
Total	218.80	230.50	284.40

3. Depreciation and Amortization Expenses	As at 31.03.12	As at 31.03.11	As at 31.03.10
Depreciation	2,852.70	2,205.10	1,560.80
Total	2,852.70	2,205.10	1,560.80

4. Exceptional Items	As at 31.03.12	As at 31.03.11	As at 31.03.10
Other non-recurring income	1,316.20	3,804.90	1,247.60
Total	1,316.20	3,804.90	1,247.60

5. Operating profit is calculated as follows:

Revenue – raw material costs – excise – other expenses.

6. Gross profit is calculated as follows:

Operating profit – interest expenses. However it can be calculated alternatively.

7. Net profit is calculated as follows:

Gross profit + other income + other non-recurring income – depreciation – tax expenses.

8. Profit before tax is calculated as follows:

Net profit + tax expenses - other non-recurring income.

9. Fixed assets are calculated as follows:

Net tangible assets + capital work-in-progress + investments.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded while calculating net profit for the purpose of calculating the return on net worth.

12. For the purpose of calculating return on capital employed, capital employed is calculated as follows:

Total assets – current liabilities.

However it can be calculated alternatively.

4.1 Ratio Analysis for 2011-12**Table 2.26: Analysis of Financial Ratios for 2011-12****(₹ in millions)**

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹ 37,964.20 Current Liabilities = ₹15,723.30	₹22,240.90	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹37,964.20 Current Liabilities = ₹15,723.30	2.41	It is satisfactory
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹32,507.6 Current Liabilities = ₹15,723.30	2.07	It is satisfactory
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹86.90 Shareholder Equity = ₹1,43,575.80	0.0006	It is not good.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹27,341.60 Interest = ₹218.80	124.96	It is satisfactory
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹27,341.60 Sales = ₹56,885.10	48.06 %	It is good.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹27,122.80 Sales = ₹56,885.10	47.68%	It is satisfactory.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹27,276.10 Sales = ₹56,885.10	47.9 %	It is satisfactory.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹27,341.60 Average Assets = ₹1,45,742.7	18.76%	It is not good.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹32,590.40 Net Worth = ₹1,43,575.80	22.7 %	It is not satisfactory.



11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹25,959.90 Average Net Worth = ₹1,31,028.85	19.81%	It is not safe.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹27,276.10 Capital Employed = ₹1,43,662.70	18.99%	It is not satisfactory.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹6,525.80 Sales = ₹56,885.10	0.11	It is good.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹6,525.80 Other Expenses = ₹18,488.10 Sales = ₹56,885.10	0.44	It is not good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹1,21,421.8 Sales = ₹56,885.10	0.47	It is not safe.

4.2 Ratio Analysis for 2010-11

Table 2.27: Analysis of Financial Ratios for 2010-11

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹27,148.70 Current Liabilities = ₹13,613.60	₹13535.1	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹27,148.70 Current Liabilities = ₹13,613.60	1.99	It is satisfactory.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹21,967.7 Current Liabilities = ₹13,613.60	1.61	It is good.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹3.90 Shareholder Equity = ₹1,18,481.90	0.000033	It is not safe.

5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹53,979.80 Interest = ₹230.50	234.19	It is satisfactory.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹53,979.80 Sales = ₹78,954.70	68.37%	It is good.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹53,749.30 Sales = ₹78,954.70	68.08 %	It is satisfactory.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹43,960.70 Sales = ₹78,954.70	55.68%	It is satisfactory.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹53,979.80 Average Assets = ₹1,09,850.70	49.14 %	It is good.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹56,845.40 Net Worth = ₹1,18,481.90	47.98 %	It is good.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹40,155.80 Average Net Worth = ₹97,376.25	41.24%	It is safe.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹43,960.70 Capital Employed = ₹1,18,485.80	37.1 %	It is satisfactory.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹5,338.20 Sales = ₹78,954.70	0.068	It is not good.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹5,338.20 Other Expenses = ₹11,222.30 Sales = ₹78,954.70	0.21	It is not good.



15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹1,04,950.70 Sales = ₹78,954.70	0.75	It is not safe

4.3 Ratio Analysis for 2009-10

Table 2.28: Analysis of Financial Ratios for 2009-10

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹14,863.10 Current Liabilities = ₹11,327.50	₹3535.60	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹14,863.10 Current Liabilities = ₹11,327.50	1.31	It is not safe
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹9,870.3 Current Liabilities = ₹11,327.50	0.87	It is not satisfactory.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹3.90 Shareholder Equity = ₹76,270.60	0.00005	It is not safe
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹64,246.60 Interest = ₹284.40	225.90	It is good.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹64,246.60 Sales = ₹85,474.20	75.16%	It is good.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹63,962.20 Sales = ₹85,474.20	74.8%	It is good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹44,423.20 Sales = ₹85,474.20	51.97%	It is good.

9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹64,246.60 Average Assets = ₹67,765.50	94.81%	It is satisfactory.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹63,540.90 Net Worth = ₹76,270.60	83.30%	It is satisfactory.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹43,175.60 Average Net Worth = ₹55,284.20	78.08%	It is good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹44,418.10 Capital Employed = ₹76,274.50	58.23%	It is satisfactory
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹2,718.20 Sales = ₹85,474.20	0.03	It is safe.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹2,718.20 Other Expenses = ₹11,779.10 Sales = ₹85,474.20	0.17	It is safe.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹72,738.90 Sales = ₹85,474.20	1.17	It is not satisfactory.

4.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.29: Summary of Balance Sheet

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Current Assets	14,863.10	27,148.70	37,964.20	Current assets have increased. Liquidity available is satisfactory.



Fixed Assets	72,738.90	1,04,950.70	12,1421.80	Gross block of the company has increased.
Current Liabilities	11,327.50	13,613.60	15,723.30	Liability position has increased marginally.
Long term Liabilities	3.90	3.90	86.90	Debts have increased significantly due to more investment.

Table 2.30: Summary of Profit & Loss Statement

	2010 (₹ in millions)	2011 (₹ in millions)	2012 (₹ in millions)	Remarks
Sales	85,474.20	78,954.70	56,885.10	Sales have come down.
Raw Material Cost	2,718.20	5,338.20	6,525.80	Expenses have increased very little.
Operating Profit	64,246.60	53,979.80	27,341.60	Operating profit has decreased.
Profit Before Tax (PBT)	63,535.80	56,845.40	32,590.40	Substantial decrease in Profit Before Tax.
Net profit	43,170.50	40,155.80	43,170.50	Net profit didn't improve at all.

5. E Ltd.

Table 2.31

Name of the Company: E Ltd.

Balance Sheet as at : 31.12.2012

(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital		636.00	318.00	318.00
	(b) Reserves and surplus		11,551.06	10,298.97	8,069.33
	(c) Money received against share warrants				
2	Share application money pending allotment				
3	Non-current liabilities				

		(a) Long-term borrowings	(1)	4,785.71	6,642.86	9,598.29
		(b) Deferred tax liabilities (Net)				
		(c) Other Long term liabilities				
		(d) Long-term provisions				
	4	Current Liabilities				
		(a) Short-term borrowings				
		(b) Trade payables				
		(c) Other current liabilities		4,374.17	4,438.04	4,042.82
		(d) Short-term provisions		7,540.26	6,096.85	4,936.49
		Total		28,887.20	27,794.72	26,964.93
II		ASSETS				
	1	Non-current assets				
		(a) Fixed assets				
		(i) Tangible assets	(2)	13,082.04	13,428.31	13,713.55
		(ii) Intangible assets				
		(iii) Capital work-in-progress		19.50	134.08	329.02
		(iv) Intangible assets under development				
		(b) Non-current investments				
		(c) Deferred tax assets (Net)				
		(d) Long-term loans and advances				
		(e) Other non-current assets				
	2	Current assets				
		(a) Current investments		585.59	607.38	613.90
		(b) Inventories		591.87	482.51	293.59
		(c) Trade receivables		926.24	807.70	933.52
		(d) Cash and cash equivalents		946.26	1,280.66	745.49
		(e) Short-term loans and advances		12,625.63	11,021.89	9,980.44
		(f) Other current assets		110.08	32.21	355.41
		Total		28,887.20	27,794.72	26,964.93



Workings:

(₹ in millions)

1. Long-term Borrowings	As at 31.03.12	As at 31.03.11	As at 31.03.10
Secured loans	0.00	2,000.00	9,598.29
Unsecured loans	4,785.71	4,642.86	0.00
Total	4,785.71	6,642.86	9,598.29

2. Tangible Assets	As at 31.03.12	As at 31.03.11	As at 31.03.10
Gross block	18,864.06	18,465.34	17,917.84
Less: Accumulated depreciation	5,782.02	5,037.03	4,204.29
Total	13,082.04	13,428.31	13,713.55

Table 2.32

Name of the Company: E Ltd.

Profit and Loss Statement for the year ended: 31.03.2012

(₹ in millions)

	Particulars	Note No.	As at 31.03.12	As at 31.03.11	As at 31.03.10
I	REVENUE FROM OPERATION		9,772.79	9,801.22	5,889.49
II	OTHER INCOME		452.01	556.07	338.74
III	TOTAL REVENUE(I+II)		10,224.80	10,357.29	6,228.23
IV	EXPENSES:				
	(a) Cost of material consumed	(1)	957.10	324.92	297.70
	(b) Purchase of products for sale				
	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(2)	583.54	718.67	744.96
	(f) Depreciation and amortization expenses	(3)	777.78	955.37	1,293.20
	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses		4,107.70	3,882.86	2,622.84
	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		6,426.12	5,881.82	4,958.70
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		3,798.68	4,475.47	1,269.53
VI	EXCEPTIONAL ITEMS	(4)	125.02	68.83	(296.06)

VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		3,673.66	4,406.64	1,565.59
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)		3,673.66	4,406.64	1,565.59
X	Tax expenses:				
	(1) Current Tax		1,335.99	1,444.64	590.74
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION (IX-X)		2,337.67	2,962.00	974.85
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		2,337.67	2,962.00	974.85
	Balance brought forward from previous year				
	Profit available for appropriation		2,337.67	2,962.00	974.85
	Appropriation:				
	Proposed dividend		636.00	318.00	318.00
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward		1,701.67	2,644.00	656.85
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:**(₹ in millions)**

1. Cost of Material Consumed	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Raw material cost	917.77	315.58	296.92
Excise	39.33	9.34	0.78
Total	957.10	324.92	297.70

2. Finance Cost	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Interest expenses	583.54	718.67	744.96
Total	583.54	718.67	744.96



3. Depreciation and Amortization Expenses	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Depreciation	777.78	955.37	1293.20
Total	777.78	955.37	1293.20

4. Exceptional Items	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Other non-recurring income	125.02	68.83	(296.06)
Total	125.02	68.83	(296.06)

5. Operating profit is calculated as follows:

Revenue – raw material costs – excise – other expenses.

6. Gross profit is calculated as follows:

Operating profit – interest expenses. However it can be calculated alternatively.

7. Net profit is calculated as follows:

Gross profit + other income + other non-recurring income – depreciation – tax expenses.

8. Profit before tax is calculated as follows:

Net profit + tax expenses - other non-recurring income.

9. Fixed assets are calculated as follows:

Net tangible assets + capital work-in-progress + investments.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded while calculating net profit for the purpose of calculating the return on net worth.

12. For the purpose of calculating return on capital employed, capital employed is calculated as follows:

Total assets – current liabilities.

However it can be calculated alternatively.

13. Current Assets exclude other current assets. However it can be calculated alternatively.

5.1 Ratio Analysis for 2011-12

Table 2.33: Analysis of Financial Ratios for 2011-12

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹15,090 Current Liabilities = ₹11,914.43	₹3,175.56	Liquidity position is good.

2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹15,090 Current Liabilities = ₹11,914.43	1.27	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹14,498.13 Current Liabilities = ₹11,914.43	1.22	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹4,785.71 Shareholder Equity = ₹12,187.06 = ₹12,187.06	0.39	It is not good.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹4,707.99 Interest = ₹583.54	8.07	It is not safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹4,707.99 Sales = ₹9,772.79	48.17%	It is safe.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹4,124.45 Sales = ₹9,772.79	42.2 %	It is satisfactory
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹2,337.67 Sales = ₹9,772.79	23.7 %	It is not satisfactory.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹4,707.99 Average Assets = ₹28,340.96	16.61 %	It is not satisfactory.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹3,798.68 Net Worth = ₹12,187.06	31.17 %	It is good.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹2,462.69 Average Net Worth = ₹11,402.01	21.6 %	It is not good.



12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹2,314.18 Capital Employed = ₹16,972.77	13.63%	It is not good.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹917.77 Sales = ₹9,772.79	0.09	It is satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹917.77 Other Expenses = ₹4,107.70 Sales = ₹9,772.79	0.51	It is good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹13,687.13 Sales = ₹9,772.79	0.71	It is not good.

5.2 Ratio Analysis for 2010-11

Table 2.34: Analysis of Financial Ratios for 2010-11

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹13,592.76 Current Liabilities = ₹10,534.89	₹3,057.86	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹13,592.76 Current Liabilities = ₹10,534.89	1.29	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹13,110.25 Current Liabilities = ₹10,534.89	1.24	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹6,642.86 Shareholder Equity = ₹10,616.97	0.63	It is not good.

5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹5,593.44 Interest = ₹718.67	7.78	It is not satisfactory.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹5,593.44 Sales = ₹9801.22	57%	It is good.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹4,874.77 Sales = ₹9,801.22	49.74%	It is satisfactory.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹2,962 Sales = ₹9,801.22	30.22 %	It is not good.
9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹5593.44 Average Assets = ₹27,379.83	20.43 %	It is satisfactory.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹4,475.47 Net Worth = ₹10,616.97	42.15 %	It is satisfactory.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹3,030.83 Average Net Worth = ₹9,502.15	31.9 %	It is not good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹2,639.31 Capital Employed = ₹17,259.83	15.29%	It is not good.
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹315.58 Sales = ₹9,801.22	0.032	It is not satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹315.58 Other Expenses = ₹3,882.86 Sales = ₹9,801.22	0.43	It is not satisfactory.



15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹14,169.77 Sales = ₹9,801.22	0.69	It is not good.

5.3 Ratio Analysis for 2009-10

Table 2.35: Analysis of Financial Ratios for 2009-10

(₹ in millions)

Sl. No	Ratios	Particulars	Values	
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹11,953.04 Current Liabilities = ₹8,979.31	₹2,973.74	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹11,953.04 Current Liabilities = ₹8,979.31	1.33	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹11,659.45 Current Liabilities = ₹8,979.31	1.3	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholder's Equity}} \right)$	Total debt = ₹9,598.29 Shareholder Equity = ₹8,387.33	1.14	It is satisfaction
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹2,968.95 Interest = ₹744.96	3.98	It is not safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹2,968.95 Sales = ₹5,889.49	50.41%	It is satisfaction.
7.	Gross Profit margin = $\left(\frac{\text{Gross Profit} \times 100}{\text{Sales}} \right)$	Gross Profit = ₹2,223.99 Sales = ₹5,889.49	37.8%	It is good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹974.85 Sales = ₹5,889.49	16.55%	It is not good.

9.	Return on Assets = $\left(\frac{\text{Operating Profit}}{\text{Average Assets}} \right)$	Operating Profit = ₹2,968.95 Average Assets = ₹19,482.04	15.24 %	It is not satisfactory.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹1,269.53 Net Worth = ₹8,387.33	15.14%	It is not safe.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Average Net worth}} \right)$	Net profit = ₹678.79 Average Net Worth = ₹8,100.98	8.38%	It is not satisfactory.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹944.74 Capital Employed = ₹17,985.62	5.25%	It is not satisfactory
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹296.92 Sales = ₹5,889.49	0.05	It is good.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹296.92 Other Expenses = ₹2,622.84 Sales = ₹5,889.49	0.5	It is not good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹14,656.47 Sales = ₹5,889.49	0.41	It is not safe.

5.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.36: Summary of Balance Sheet

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Current Assets	11,953.04	13,592.76	15,089.90	Current Assets have increased.
Fixed Assets	5,147.21	5,778.49	6,387.11	Fixed Assets have increased marginally.



Current Liabilities	8,979.30	10,534.90	11,914.43	Liabilities have increased. Liquidity position not affected.
Long term Liabilities	9,598.29	6,642.86	4,785.71	Long term debts have been paid off.

Table 2.37: Summary of Profit & Loss Statement

	2009-10 (₹ in millions)	2010-11 (₹ in millions)	2011-12 (₹ in millions)	Remarks
Sales	5,889.49	9,801.22	9,772.79	Sales have increased by 65.9% in 2011-12 as compared to 2009-10.
Raw Material Cost	296.92	315.58	917.77	Expenses have increased.
Operating Profit	2,968.95	5,593.44	4,707.99	Operating profit has increased.
Profit Before Tax (PBT)	1,239.41	4,152.78	3,775.18	PBT has increased.
Net profit	648.67	2,708.14	2,439.19	Net profit has increased by 276% in 2011-12 as compared to 2009-10.

Comparison of Ratio Analysis of All Companies

Financial ratios of all the companies from 2007-12 has been compared below:

Comparison of Current ratio of Different Companies from 2007-12

Table 2.38: Comparison of Current Ratio

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
2007-08	0.81	1.34	0.71	1.17	2.48	E Ltd. has a better ratio
2008-09	0.94	1.26	0.72	1.54	1.96	E Ltd. has a better ratio
2009-10	0.86	1.13	1.77	1.31	1.33	C Ltd. has a better ratio
2010-11	0.89	1.56	3.92	1.99	1.29	C Ltd. has a better ratio
2011-12	0.66	1.26	0.97	2.41	1.27	D Ltd. has a better ratio

From the above table, it can be concluded that current ratio of A Ltd. was always less than 1 from 2007-12. Short term liquidity of B Ltd. and D Ltd. was good as current ratio was more than 1. Liquidity position of C Ltd. was not satisfactory as the ratio varied from 0.71 to 0.97 in five years. Current ratio of E Ltd. was more than 1 from 2007-12, so it was good.

C Ltd. has the highest current ratio of 3.92 in the year 2010-11, followed by others. By 2011-12, the ratio of C Ltd. dropped to 0.97, with D Ltd. has the highest ratio of 2.41 and B Ltd. & E Ltd. with 1.26. It can also be seen that, in the period of 5 years D Ltd. has improved its liquidity position compared to others,

while positions of companies like C Ltd. and E Ltd. have come down. Current ratio of C Ltd. decreased steeply from 2010-11 due to its decrease in current assets position.

Comparison of Debt – Equity ratio of different Companies from 2007-12

Table 2.39: Comparison of Debt –Equity Ratio

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
Dec , 2007-08	0.5	1.13	0.38	0.27	1.45	B Ltd. has a better ratio
Dec , 2008-09	0.24	1.48	0.25	0.16	1.38	E Ltd. has a better ratio
Dec , 2009-10	0.07	1.4	0.68	0.00005	1.14	E Ltd. has a better ratio
Dec , 2010-11	0.1	1.03	0.66	0.000033	0.63	B Ltd. has a better ratio
Dec , 2011-12	0.09	0.92	0.91	0.0006	0.39	B Ltd. & C Ltd. has a better ratio

From table 2.39 it can be seen that D-E ratio of A Ltd. decreased from 0.5 to 0.07 from 2007-10 and then increased to 0.09 in 2012. Debt position of B Ltd. was satisfactory as the ratio varied from 1.13 to 0.91 from 2007-12. Similarly debt position of E Ltd. was more than 1 from 2007-10 because of increasing investment and then came down to 0.39. However D-E ratio of C Ltd. & D Ltd. remained less than 1 from 2007-12 as their debts were paid off.

It can be concluded that BLTD. has the highest debt- equity ratio of 1.48 and 1.40 from 2008-10 compared to other companies. C Ltd. has improved its ratio from 0.38 to 0.91 in five years. Though owner's share in the company has decreased but more outsiders have started investing in the company and that has lead to desirable ratio. E LTD. has performed very badly as the ratio came down from 1.45 to 0.39. This is due to decrease in investment of creditor's. Investment in A Ltd. and D Ltd. has also come down in the five years.

Comparison of Net Profit margin of different companies from 2007-12

Table 2.40: Comparison of Net Profit Margin

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
2007-08	17.28 %	22.88%	23.97%	29.9%	28.04%	D Ltd. has a better net profit margin.
2008-09	21.4%	22.33%	23.17%	38.10%	8.1%	D Ltd. has a better net profit margin.
2009-10	20.9%	19.9%	24.19%	51.97%	16.55%	D Ltd. has a better net profit margin.
2010-11	16.77%	23.04%	23.8%	55.68%	30.22%	D Ltd. has a better net profit margin.
2011-12	20.03%	20.01%	21.36%	47.9%	23.7%	D Ltd. has a better net profit margin.

From Table 2.40 it can be seen that D Ltd. has the highest profit margin in all the five years which is because of their increase in sales. Profitability of A Ltd. varied marginally from 17% to 20%. Profit Margin of E LTD. came down from 28.04 % to 23.6% from 2007-12. Though sales of the company B LTD., C Ltd. and E LTD. increased, their profit percentage decreased from 2007-12 due to their decrease in net profit.



D LTD. remained the single most profitable firm in the five years with net profit increasing from 29% in 2007-08 to 47% in 2011-12. C Ltd. and B LTD. maintained a constant growth for the period while net profit of E LTD. after declining for the first two years increased up to 23% in the last year. Profit margin for A Ltd. fluctuated during the period from 17% to 20%.

Comparison of ROI of Different Companies from 2007-12

Table 2.41: Comparison of ROI

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
2007-08	18.16%	52.31%	74.57%	43.04%	22.41%	C Ltd. has a better ratio
2008-09	45.37%	39.64%	53.28%	63.94%	8.63%	D Ltd. has a better ratio
2009-10	41%	37.49%	44.89%	83.30%	15.14%	D Ltd. has a better ratio
2010-11	33.70%	44.15%	25.01%	7.98%	42.15%	D Ltd. has a better ratio
Dec, 2011-12	37.7%	39.45%	23.63%	22.70%	31.17%	B Ltd. has a better ratio

From the above table it can be seen that ROI of A Ltd. increased from 18.16% to 37.7% in five years due to substantial increase in its profit before tax. Similarly ROI of E LTD. increased marginally from 22.41% to 30.97 %. From 2008-12 overall profitability of D Ltd. was better than other companies, though its ROI decreased from 43.04 % to 22.69%. ROI of C Ltd. was highest in 2007-08 with 74.57% and then it declined to 23.62%. Similarly ROI of B Ltd. decreased from 52.31 % to 39.41 % due to significant increase in its expenses.

It can be concluded that, overall profitability of E Ltd. has improved in the last five years from 22.41% in 2007-08 to 30.97% in 2011-12. This is because of their improvement in profit before tax. ROI of C Ltd. declined steeply from 74.57% to 23.62% due to substantial increase in its expenses. Profitability of A Ltd. after rising steeply in the first year to 45.37 % came down to 33.70% in the next two years, and then increased marginally to 37.7% the last year. ROI of D Ltd. increased gradually from 43.04 % to 83.30 % and then decreased to 22.69% because of fall in operating profit during the period. ROI of B Ltd. decreased from 52.31 % in 2007-08 to 39.41 % 2011-12.

2.6 MISCELLANEOUS PROBLEMS

Illustration 1.

An analyst is comparing the non-current asset turnover ratios of two listed businesses engaged in similar activities. The non-current asset turnover ratio of one entity is almost 50% higher than that of the other entity, and she concludes that the entity with the higher non-current asset turnover ratio is utilising its assets far more effectively.

Identify TWO possible reasons why this conclusion might not be valid.

Solution:

1. The entity with the lower asset turnover may have a policy of revaluing its non-current assets. Where revalued amounts are higher than net book value, the non-current asset turnover ratio is, relatively, lower. Comparison of this ratio with that of an entity that values its own non-current assets on the cost model would be invalid.
2. The non-current assets of the entity with the higher non-current asset turnover ratio may be, on average, older than those of the other entity. This would result in lower net book values, and therefore the ratio would be higher.

Illustration 2.

On 1st September 2011, BLT held 60% of the ordinary share capital of its only subsidiary CMU. The consolidated equity of the group at that date was ₹576,600, of which ₹127,000 was attributable to the minority interest.

On 28th February 2012, exactly halfway through the financial year, BLT bought a further 20% of the ordinary share capital of CMU. In the year ended 31st August 2012 BLT's profits for the period were ₹98,970 and CMU's were ₹30,000. BLT paid a dividend of ₹40,000 on 1st July 2012. There were no other movements in equity. It can be assumed that profits accrue evenly throughout the year.

Prepare a consolidated statement of changes in equity for the BLT group for the year ended 31 August 2012.

Solution:

BLT Group: Statement of changes in equity for the year ended 31st August 2012

	Attributable to equity shareholders of parent (₹)	Minority Interest (₹)	Total (₹)
Brought forward	4,49,600	1,27,000	5,76,600
Profit for the period (W1)	1,19,970	9,000	1,28,970
Transfer in respect of shares purchased by BLT (W2)	66,500	(66,500)	—
Dividend	(40,000)	—	(40,000)
Carried forward	5,96,070	69,500	6,65,570

(W1) Profit shares

Minority share of profit

₹30,000 x 6/12 x 40% = ₹6,000



$$\begin{aligned}\text{₹}30,000 \times 6/12 \times 20\% &= \text{₹}3,000 \\ &\text{₹}9,000\end{aligned}$$

Group share

$$\text{₹}98,970 + (\text{₹}30,000 - \text{₹}9,000) = \text{₹}119,970$$

(W2) Transfer in respect of share purchase

$$\text{Value of minority interest at date of transfer: ₹127,000} + \text{₹6,000} = \text{₹133,000}$$

$$50\% \text{ of shareholding transferred: } \text{₹133,000}/2 = \text{₹66,500}.$$

Illustration 3.

On 1st January 2013, EFG issued 10,000 5% convertible bonds at their par value of ₹50 each. The bonds will be redeemed on 1st January 2018. Each bond is convertible at the option of the holder at any time during the five year period. Interest on the bond will be paid annually in arrears.

The prevailing market interest rate for similar debt without conversion options at the date of issue was 6%.

At what value should the equity element of the hybrid financial instrument be recognised in the financial statements of EFG at the date of issue?

Solution:

$$\text{Bond principal: } 10,000 \times \text{₹}50 = \text{₹}500,000. \text{ Annual interest payment} = \text{₹}500,000 \times 5\% = \text{₹}25,000.$$

	₹
Present value of principal: ₹500,000/(1.06) ⁵ (factor from table = 0.747)	373,500
Present value of interest: ₹25,000 x cumulative discount factor (from table = 4.212)	105,300
	478,800
Balancing figure = equity element	21,200
Principal	5,00,000

Illustration 4.

Arizona has carried on business for a number of years as a retailer of a wide variety of 'do it yourself' goods. The company operates from a number of stores across the country.

In recent years, the company has found it necessary to provide credit facilities to its customers in order to achieve growth in revenue. As a result of this decision, the liability of the entity's bankers has increased substantially.

The financial statements for the year ended 31st March 2012 have recently been published, and extracts are provided below, together with comparative figures for the previous two years.

Name of the Company: Arizona

Profit and Loss Statement for the year ended: 31.03.2012

(₹ in million)

	Particulars	Note No.	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
I	REVENUE FROM OPERATION		1,850	2,200	2,500
II	OTHER INCOME				
III	TOTAL REVENUE(I+II)		1,850	2,200	2,500
IV	EXPENSES:				
	(a) Cost of material consumed				
	(b) Purchase of products for sale				
	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(1)	(20)	0	20
	(f) Depreciation and amortization expenses				
	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses	(2)	1,800	2,140	2,450
	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		1,980	2,140	2,470
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		70	60	30
VI	EXCEPTIONAL ITEMS				
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)				
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)				
X	Tax expenses:				
	(1) Current Tax		23	20	10
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		47	40	20
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				



XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)				
	Balance brought forward from previous year				
	Profit available for appropriation				
	Appropriation:				
	Proposed dividend		30	30	20
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward		17	10	—
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:

1. Finance Costs	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Interest from credit sales	45	60	90
Interest payable	(25)	(60)	(110)
Total	20	0	(20)

2. Other Expenses	As at 31.03.2012	As at 31.03.2011	As at 31.03.2010
Cost of sales	1,250	1,500	1,750
Operating costs	550	640	700
Total	1,800	2,140	2,450

Name of the Company : Arizona

Balance Sheet as at : 31.03.2012

(₹ in million)

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.2011	As at 31.03.2010
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital		90	90	90
	(b) Reserves and surplus-		252	262	262
	(c) Money received against share warrants				

	2	Share application money pending allotment				
	3	Non-current liabilities				
		(a) Long-term borrowings				
		(b) Deferred tax liabilities (Net)				
		(c) Other Long term liabilities				
		(d) Long-term provisions				
	4	Current Liabilities				
		(a) Short-term borrowings		200	200	320
		(b) Trade payables				
		(c) Other current liabilities	(1)	640	840	928
		(d) Short-term provisions				
		Total		1,182	1,392	1,600
II		ASSETS				
	1	Non-current assets				
		(a) Fixed assets				
		(i) Tangible assets		278	290	332
		(ii) Intangible assets				
		(iii) Capital work-in-progress				
		(iv) Intangible assets under development				
		(b) Non-current investments				
		(c) Deferred tax assets (Net)				
		(d) Long-term loans and advances				
		(e) Other non-current assets				
	2	Current assets				
		(a) Current investments				
		(b) Inventories		400	540	620
		(c) Trade receivables		492	550	633
		(d) Cash and cash equivalents		12	12	15
		(e) Short-term loans and advances				
		(f) Other current assets				
		Total		1,182	1,392	1,600

**Workings:****(₹ in million)**

1. Other Current Liabilities	As at 31.03.12	As at 31.03.2011	As at 31.03.2010
Payables	300	300	310
Taxation	20	20	8
Overdraft	320	520	610
Total	640	840	928

Other information:

Depreciation charged for the three years was as follows:

2010	2011	2012
₹ million	₹ million	₹ million
55	60	70

The loans are secured by a floating charge over the assets of Arizona. They are due for repayment on 31st March 2012.

The bank overdraft is unsecured. The bank has set a limit of ₹630million on the overdraft.

Over the past three years, the level of credit sales has been:

2010	2011	2012
₹ million	₹ million	₹ million
213	263	375

Given the steady increase in the bank overdraft which has taken place in recent years, the company has recently written to its bankers to request an increase in the limit. The request was received by the bank on 15th May 2012, two weeks after the financial statements for the year ended 31st March 2012 were published.

You are an accountant employed by the bankers of Arizona. The bank is concerned at the steep escalation in the level of the company's overdraft and your regional manager has asked for a report on the financial performance of Arizona for the last three years.

Required:

Write a report to your regional manager which analyses the financial performance and position of Arizona for the period covered by the financial statements.

Your report may take any form you wish, but should specifically address the particular concern of the bank regarding the rapidly increasing overdraft. Therefore, your report should identify aspects of poor performance which could have contributed to the increase of the overdraft.

Solution:**Report**

To: Regional Manager

From: Accountant

Date: 17th May 2012

Subject: Financial performance of Arizona

Introduction

As requested, I have analysed the financial statements of Arizona for the last three years, identifying reasons for their increasing overdraft. The ratios I have calculated are in the attached appendix.

Analysis

Profitability

Since 2010 revenue has increased by 35.1% while net profit has fallen by 57.4%.

This decline is partially explained by the falling profit margins (gross profit margin from 32.4% to 30% and operating profit margin from 2.7% to 2%). The most significant impact however, appears to be the increasing interest charges which have risen by 340% over the two years. This is probably a direct result of the increasing overdraft and also an increase in the level of loans held by the entity.

Combined with a decline in efficiency (asset utilisation has fallen from 2.15 to 1.95), these factors have led to a fall in the return on capital employed from 5.8% to 3.9%.

The decline in profitability of Arizona will ultimately lead to a further deterioration of the cash position of the entity.

Capital structure

The gearing of the entity has increased from 60.3% to 72.5% over the three years as a result of the increasing loans and overdraft. The overdraft has been included within the calculation since it is clear that the entity sees it as a permanent source of finance.

This increase in gearing has contributed to a decline in the interest cover which is now at a very low 1.3.

Both of these factors indicate the financial risk that the entity is now facing.

Cash flows

The cash flow statement shows significant outflows of cash from operating activities, primarily as a result of increasing inventory and receivable balances combined with significant interest payments.

Further, the entity has invested heavily in non-current assets spending ₹184 million in the last two years. Only ₹120 million of loans have been raised and so it can be concluded that the remainder of the investment has been financed from the overdraft. This is a high risk strategy since the overdraft is technically repayable on demand and is also an expensive source of finance.

Conclusion

The entity's performance has deteriorated over the last three years despite an expansion in terms of its revenue and capital employed. This would appear due to an inappropriate strategy of financing the expansion from the overdraft rather than more suitable long-term sources of finance. Careful consideration should be given to increasing their overdraft limit.

Notes:

	2010	2011	2012
	₹ in million	₹ in million	₹ in million
Revenue	1,850	2,200	2,500
Revenue increase on 2011-12		18.9%	35.1%
Net profit	47	40	20
Net profit decrease on 2011-12		-14.9%	- 57.4%



Credit sales	213	263	375
		+23.5%	+76.1%
Interest receivable on credit sales	45	60	90
		33.3%	100%
Interest payable	25	60	110
		140%	340%
Gross profit	600	700	750
Gross margin	32.4%	31.8%	30%
Operating profit	50	60	50
Operating profit margin	2.7%	2.7%	2%
Capital employed = SC+ res + loans+ overdraft	862	1,072	1,282
ROCE = OP/CE	5.8%	5.6%	3.9%
Asset utilisation	2.15	2.05	1.95
Gearing = Loans + overdraft/CE	60.3%	67.2%	72.5%
Interest cover	3.8	2	1.3
Cash flow statement			
Profit before tax		60	30
Depreciation		60	70
Interest from credit sales		(60)	(90)
Finance cost		60	110
Increase in inventory		(140)	(80)
Increase in receivables		(58)	(83)
Increase in payables		-	10
Cash generated from operations		(78)	(33)
Interest paid		(60)	(110)
Tax paid		(20)	(22)
Net cash flow from operating activities		(158)	(165)
Investing activities			
Interest received		60	90
Capital expenditure		(72)	(112)
Financing activities			
Issue of loans			120
Dividends paid		(30)	(20)
Decrease in cash		(200)	(87)

Illustration 5.

The following are the accounts of Umar Ltd.

Statement of financial position as on 31st March, 2013

Particulars	2012-13		2011-12	
	₹'000	₹'000	₹'000	₹'000
Non-current assets				
Plant & Machinery		260		278
Current Assets				
Inventory	84		74	
Trade receivables	58		46	
Bank	6	148	50	170
Total		408		448
Capital and Reserves				
Ordinary Share Capital @ Re.1 each		70		70
8% Preference Shares		50		50
Securities Premium		34		34
Revaluation Reserve		20		--
Profit and Loss Account		62		84
		236		238
Non-current Liabilities				
5% Secured Loan Stock		80		80
Current Liabilities				
Trade Payables	72		110	
Provision for Taxation	20	92	20	130
		408		448

Summarized Income Statement for the year ended 31st March, 2013

	2012-13		2011-12	
	₹'000	₹'000	₹'000	₹'000
Sales		418		392
Opening Inventory	74		58	
Purchases	324		318	
	398		376	
Closing Inventory	(84)	(314)	(74)	(302)



Gross Profit		104		90
Interest	4		4	
Depreciation	18		18	
Sundry Expenses	28	(50)	22	(44)
Profit before Tax		54		46
Provision for Taxation		(20)		(20)
Profit after Tax		34		26
Equity Dividend	12		10	
Preference Dividend	4	(16)	4	(14)
Retained Profit		18		2

Calculate and comment on the following ratios for Umar Ltd.

- (1) ROCE
- (2) Gross profit margin
- (3) Asset turnover
- (4) Current ratio
- (5) Quick ratio
- (6) Inventory Turnover ratio
- (7) Inventory holding period
- (8) Debtors collection period
- (9) Creditors payment period
- (10) Equity Gearing
- (11) Total Gearing
- (12) Interest coverage
- (13) Dividend coverage
- (14) EPS
- (15) PE if market value of ordinary share is ₹2.40

Solution:

(1) ROCE

$$\begin{aligned} \text{PBIT/CE} &= (54+4) / (236+80) \times 100\% = 18.4\% & 2012-13 \\ & (46+4) / (238+80) \times 100\% = 15.7\% & 2011-12 \end{aligned}$$

The return on capital employed has increased over the year from 15.7% to 18.4%. The profit has increased which may have resulted in the increase.

(2) Gross profit margin

$$\begin{aligned} \text{GP / Sales} &= 104 / 418 \times 100\% = 24.9\% & 2012-13 \\ & 90 / 392 \times 100\% = 23.0\% & 2011-12 \end{aligned}$$

The gross profit margin has increased from 23.0% to 24.9%, which could mean higher selling prices or lower costs. This also explains the rise in ROCE

(3) Asset turnover

$$\begin{aligned} \text{T/o/CE} &= 418/316 = 1.32 \text{ times} & 2012-13 \\ &392/318 = 1.23 \text{ times} & 2011-12 \end{aligned}$$

The asset turnover has increased indicating that the company is using its assets more effectively.

(4) Current ratio

$$\begin{aligned} &= 148/92 = 1.61 & \text{for 2012-13} \\ &= 170/130 = 1.31 & \text{for 2011-12} \end{aligned}$$

The current ratio has increased, meaning that the organization is more liquid. This is due to the fact that inventory and trade receivables have increased (which are non productive assets), and trade payables have been reduced. Although this may be better for the current ratio, it may not necessarily mean that the company is operating more efficiently. Has it increased its inventory piles because it anticipates higher sales and doesn't want to run out? Is it offering its credit customers longer time to pay to increase sales? Why are they paying their suppliers quicker? Surely it would be better to take as long as possible?

(5) Quick ratio

$$\begin{aligned} &= (148 - 84)/92 = 0.70 & \text{for 2012-13} \\ &= (170 - 74)/130 = 0.74 & \text{for 2011-12} \end{aligned}$$

The quick ratio is slightly better in 2011-12, which proves that higher inventory levels are being maintained for 2012-13.

(6) Inventory turnover ratio

$$\begin{aligned} &= 314 / (74 + 84) \times 0.5 = 4.0 \text{ times} & \text{for 2012-13} \\ &= 302 / (58 + 74) \times 0.5 = 4.6 \text{ times} & \text{for 2011-12} \end{aligned}$$

This ratio shows how quickly the inventory is being sold. In 2011-12 it was being sold at a much higher rate than in 2012-13. Have the products changed? Has the customer base changed?

The nature of the business needs to be known to see whether these turnover times are in line with the normal industry.

(7) Inventory days

$$\begin{aligned} &= (74 + 84) \times 0.5 / 314 \times 365 \text{ days} = 92 \text{ days} & \text{for 2012-13} \\ &(58 + 74) \times 0.5 / 302 \times 365 \text{ days} = 80 \text{ days} & \text{for 2011-12} \end{aligned}$$

Alternatively this can be arrived at: 2012-13: $1/4 \times 365 = 92$ days. 2011-12: $1/4.6 \times 365 = 80$ days

This again highlights the fact that the stock is taking longer to shift into sales. It is spending more time within the warehouse.

(8) Trade receivable days

$$\begin{aligned} &= 58 / 418 \times 365 \text{ days} = 50.6 \text{ days} & \text{for 2012-13} \\ &46 / 392 \times 365 \text{ days} = 42.8 \text{ days} & \text{for 2011-12} \end{aligned}$$

There is a worsening debt collection period. Is there a delay in issuing invoices, lack of screening new customers? Are the year-end figures representative of the year? Perhaps there are seasonal fluctuations that need to be considered.

(9) Trade payable days

$$\begin{aligned} &= 72/324 \times 365 = 81.1 \text{ days} & \text{for 2012-13} \\ &110/318 \times 365 = 126.3 \text{ days} & \text{for 2011-12} \end{aligned}$$

The suppliers are being paid quicker, which is good for relationship with the suppliers, but bad for cash flow purposes. Trade credit is a free source of finance, and the company must try to maximize this.

(10) Gearing equity ratio

$$\begin{aligned} &= \text{Preference share capital} + \text{loans} / \text{OSC} + \text{reserves} \\ &50 + 80/236-50 = 69.9\% & 2012-13 \\ &50 + 80/238-50 = 69.1\% & 2011-12 \end{aligned}$$



Low geared = less than 100%, highly geared = more than 100% and neutrally geared if ratio is 100%. The gearing remains at similar levels. The company is not highly geared.

(11) Total gearing = Preference share capital + loan / total long term capital

$$130/(236 + 80) = 41.1\% \quad 2012-13$$

$$130/(238+80) = 40.9\% \quad 2011-12$$

With total gearing, higher than 50% is high gearing, lower than 50% is lower gearing and 50% is neutral.

(12) Interest cover = Profit before interest and tax / interest payable

$$54 + 4/4 = 14.5 \text{ times} \quad 2012-13$$

$$46 + 4/4 = 12.5 \text{ times} \quad 2011-12$$

As the company is low geared, the interest cover is high. This means there is less financial risk in investing this company. Company is in a strong position to pay interest.

(13) Dividend cover = Profit after tax and after preference dividend/ dividend paid

$$(34-4)/12 = 2.5 \text{ times} \quad 2012-13$$

$$(26-4)/10 = 2.2 \text{ times} \quad 2011-12$$

The dividend cover is after allowing for preference dividends. There is a reasonably comfortable cover.

(14) EPS = Profit after tax and after preference dividend / no of ordinary shares

$$(34-4)/140 = ₹ 21.4 \text{ per share} \quad 2012-13$$

$$(26 - 4) / 140 = ₹15.7 \text{ per share} \quad 2011-12$$

(15) PE ratio = Market price / EPS

$$240/21.4 = 11.21 \text{ times} \quad 2012-13$$

The PE ratio is quite high, indicating that the market has confidence in the company's future growth. However this needs to be compared with industry or similar companies.

With all the ratios it would be useful to compare against the industry averages.

Illustration 6.

You advise a private investor who holds a portfolio of investments in smaller listed companies.

Recently, she has received the annual report of the BZJ Group for the financial year ended 31st March, 2013. In accordance with her usual practice, the investor has read the chairman's statement, but has not looked in detail at the figures. Relevant extracts from the chairman's statement are as follows:

"Following the replacement of many of the directors, which took place in early June, 2012, your new board has worked to expand the group's manufacturing facilities and to replace non-current assets that have reached the end of their useful lives. A new line of storage solutions was designed during the second quarter and was put into production at the beginning of September. Sales efforts have been concentrated on increasing our market share in respect of storage products, and in leading the expansion into Middle Eastern markets. The growth in the business has been financed by a combination of loan capital and the issue of additional shares. The issue of 3,00,000 new Re.1 shares was fully taken up on 1st February 2013, reflecting, we believe, market confidence in the group's new management. Dividends have been reduced in 2012-13 in order to increase profit retention to fund the further growth planned for 2013-14. The directors believe that the implementation of their medium- to long term strategies will result in increased returns to investors within the next two to three years."

The group's principal activity is the manufacture and sale of domestic and office furniture. Approximately 40% of the product range is bought in from manufacturers in other countries.

Extracts from the annual report of the BZJ Group are as follows:

BZJ Group: Consolidated income statement for the year ended 31st March, 2013

(Amount in ₹ '000)

Particulars	2012-13	2011-12
Revenue	1,20,366	121,351
Cost of sales	1,03,024	1,02,286
Gross Profit	17,342	19,065
Operating Expenses	(11,965)	(12,448)
Profit from Operations	5,377	6,617
Interest Payable	(1,469)	(906)
Profit before tax	3,908	5,711
Income tax expense	(1,125)	(1,594)
Profit for the period	2,783	4,117
Represented by:		
Equity holders of the parent company	2,460	3,676
Non-controlling interest	323	441
	2,783	4,117

BZJ Group: Summarised consolidated statement of changes in equity for the year ended 31st March 2013 (attributable to equity holders of the parent)

	Accumulated profit	Share capital	Share premium	Revaluation reserve	Total 2012-13	Total 2011-12
	₹'000	₹'000	₹'000	₹'000	₹'000	₹'000
Opening balance	18,823	2,800	3,000		24,623	21,311
Surplus on revaluation of properties				2,000	2,000	
Profit for the period	2,460				2,460	3,676
Issue of share capital		300	1,200		1,500	-
Dividends paid 31/12	(155)				(155)	(364)
Closing balance	21,128				24,623	24,623
	21,128	3,100	4,200	2,000	30,428	24,623



BZJ Group: Consolidated statement of financial position (extract) as at 31st March 2013

	2012-13		2011-12	
	₹'000	₹'000	₹'000	₹'000
Non-current assets:				
Property, plant and equipment	40,643		21,322	
Goodwill	1,928		1,928	
Trademarks and patents	1,004	43,575	1,070	24,320
Current assets:				
Inventories	37,108		27,260	
Trade receivables	14,922		17,521	
Cash	-	52,030	170	44,951
		95,605		69,271
Equity:				
Share capital (Re1 shares)	3,100		2,800	
Share premium	4,200		3,000	
Revaluation reserve	2,000		-	
Accumulated profits	21,128	30,428	18,823	24,623
Non controlling interest		2,270		1,947
Non-current liabilities				
Interest bearing borrowings		26,700		16,700
Current liabilities:				
Trade and other payables	31,420		24,407	
Income tax	1,125		1,594	
Short-term borrowings	3,662	36,207	-	26,001
		95,605		69,271

- (a) Calculate the earnings per share figure for the BZJ Group for the years ended 31st March 2013 and 2012, assuming that there was no change in the number of ordinary shares in issue during 2012.
- (b) Produce a report for the investor that
- Analyses and interprets the financial statements of the BZJ Group, commenting upon the group's performance and position; and
 - Discusses the extent to which the chairman's comments about the potential for improved future performance are supported by the financial statement information for the year ended 31st March 2013.

Solution:

a) 31st March 2012 EPS - No change in capital structure

PAT / No of shares = ₹36,76,000 / 28,00,000 = ₹1.31 per share

31st March 2013 EPS - New issue of shares on 1st February 2013

Time apportion shares to find WANS

New shares issued = 300,000

Total shares after new issue = 3,100,000

Date	Proportion	Shares in issue	Bonus element	Weighted average
01/04 – 01/01	10/12	28,00,000	N/A	23,33,333
01/02 – 01/03	2/12	31,00,000		5,16,667
				28,50,000

(b)

Report

To: Investor

From: Financial Adviser

Date: XX/XXXX

Subject: Financial analysis of BZJ Group

Introduction

This report will analyse the financial performance and position of BZJ group. The financial statements consisting of the income statement and balance sheet for 2013 and 2012 will be used for this analysis. The accounting ratio calculations are in Appendix 1. I shall also discuss the extent to which the chairman's comments about the potential for improved future performance are supported by the financial statement information for the year ended 31st March 2013.

1.1 Analysis of the financial statements

From the income statement it can be seen that the performance of BZJ group has declined. Revenue is down by 1% from 2012. The gross profit has also declined by 9% from 2012 with profit from operations falling by 18.7%. There is an increase in finance cost of 62% and the profit for the year has reduced to ₹27,83,000 a fall of 32% from 2012-13.

BZJ group has invested in property plant and equipment which came into use only in December 2012. They have also increased their inventory levels and reduced their trade receivables. Long term borrowings have increased by ₹10million from 2011-12 and short term borrowings of ₹3.662million in 2012-13 has obviously increased the liabilities of BZJ group.

I will now review the accounting ratios calculated in the Appendix 1.

1.2 Performance

One of the most important accounting ratios - ROCE - has shown a decline of 40.5% compared with 2011-12.

The ROCE measures profitability and shows how well the business is utilising its capital to generate profits. Capital employed is debt and equity. Equity is shareholders funds (s/h funds) and debt is long-



term liabilities (LTL). One has to be careful when interpreting the ROCE because consideration needs to be given to the age of the assets, any new investments and the timing of the new investments. Accounting policies will also affect this ratio (e.g. revaluation policies).

For BZJ group the increased investment in the non current assets will reduce the ROCE initially and hopefully in the future this should increase as the revenue from the new venture of storage solutions increases.

The operating profit margin has also reduced to 4.5% in 2012-13 a fall of 18.2% from 2011-12. The increase in operating expenses may be due to the new venture which is incurring higher costs and has different profit margins to the group's core activities which is manufacture and sale of domestic and office furniture. A breakdown of these costs would be very useful for analysis purposes.

The gross profit margin is at 14.4% in 2012-13 showing a decrease of 8.3%. This suggests that BZJ is having problems controlling its costs in relation to its core activities. Perhaps the new venture is incurring large costs which bring the overall results down. Other factors to consider include inventory valuation, overhead allocation, bulk discounts and sales mix. It would be very useful to have the breakdown of BZJ group's revenue.

Although there has been a decrease in the operating expenses margin, the increase in finance costs due to higher borrowings in 20X5 has resulted in a decline of the net profit margin of 32.4% to just 2.3% in 2012-13.

The decline in profitability and the reduction of dividend payout by BZJ group will put investors off. BZJ has also increased the financial risk to its shareholders by increasing borrowings, which means more profits will be eaten up with obligatory interest payments. However it is important to bear in mind this is short term view to take as with the heavy investment and expansions into new markets, the profitability may increase significantly.

1.3 Position

BZJ has invested heavily in non current assets during 2012-13. Increase in property, plant and equipment is just over ₹19 million which is almost double the value of the non current assets of 2011-12. The impact on the ROCE and additional depreciation needs to be considered when assessing the profitability ratios.

The short term liquidity position of the group has declined in 2012-13. The current ratio is 1.44 compared to 1.73 of 2011-12. Short term borrowings of nearly \$4million puts BZJ in difficult position in relation to any further borrowings in the future. Cash flow problems may occur.

The management of working capital seems to have deteriorated suggesting BZJ is not managing its working capital effectively. Inventory levels have increased and inventory days is now averaging 132 days, which means BZJ is taking longer to sell its inventory.

Trade receivable days have reduced suggesting either less credit is being offered to customers or customers are paying up early. Perhaps a settlement discount is being offered which may explain the decline in the gross profit margin.

Credit suppliers are being paid quicker than last year with average credit period being taken of 30.5 days. BZJ could negotiate better terms with its suppliers to take advantage of this free form of credit.

Overall the working capital cycle has increased by 132% to 146.2 days. This means the average time taken from buy the goods to cash received from customers is 146 days compared to only 63 days in 2011-12. This also explains the cash flow problem of BZJ.

The gearing ratio has increased to 81.7% a rise of 30% from 2011-12. The interest cover is now 3.66 times compared to 7.30 times. This has increased the financial risk for shareholders who will not be too happy about this.

In conclusion the position of BZJ is not good with increased liquidity problems and inefficient management of working capital. The group could face real cash flow problems in the future unless it starts generating more revenues and runs more efficiently.

1.4 Chairman's comments

The Chairman states that BZJ has shown growth which is not entirely true. It can be seen from the balance sheets that BZJ has indeed increased its investment and inventories, but this has not materialised into increased revenues and profitability by the end of 2012-13.

The successful issue of shares during 2012-13 suggests that the investors are confident in the organisation and believe that good growth prospects are possible. However from the financial statements the income statements shows performance which is declining and the balance sheet shows ineffective management of working capital with high gearing levels. So the group really has to perform in 2013-14 and 2014-15 for the Chairman's comments to become true.

Conclusion

Usually investments through expansion are a sign that organisations are growing and if the expansion is managed effectively then BZJ should achieve increasing profitability in the future. However the short position needs to be addressed urgently. The working capital management and increase gearing may cause investors to go elsewhere unless profitability increases significantly.

Appendix 1 - Ratio calculations

	PERFORMANCE			
		2012-13	2011-12	% Change
ROCE PBIT/ CE x 100%	5,377 / (30,428 + 2,270 + 26,700) 6,617 / (24,623 + 1,947 + 16,700)	9.1%	15.3%	-40.5% (9.1 -15.3)/ 15.3
Operating profit margin PBIT / turnover	5,377/1,20,366 6,617/1,21,351	4.5%	5.5%	-18.2% 4.5-5.5 / 5.5
Asset turnover Turnover / CE	120,366/(30,428 + 2,270 + 26,700) 121,351 / (24,623 + 1,947 + 16,700)	2.03 times	2.80 times	-27.5% 2.03-2.80/ 2.80
Gross profit margin GP / Turnover x 100	17,342/1,20,366 19,065/1,21,351	14.4%	15.7%	-8.3% 14.4-15.7/15.7
Operating expenses (OE) margin OE / Turnover x 100	11,965/1,20,366 12,448/1,21,351	9.9%	10.3%	-3.9% (9.9-10.3)/10.3
Net profit (NP) margin NP / turnover x 100	2,783 / 1,20,366 4,117/1,21,351	2.3%	3.4%	-32.4% 2.3-3.4/3.4



POSITION				
		2012-13	2011-12	% Change
Current ratio CA/CL	52,030/36,207 44,951/26,001	1.44:1	1.73:1	-16.8%
Quick ratio (CA - inventory) / CL	(52,030-37,108)/ 36,207 (44,951-27,260)/ 26,001	0.41:1	0.68:1	-39.7%
Inventory days Inventory / COS x 365 days	37,108/103,024x365 27,260/102,286x365	131.5 days	97.3 days	+35.1%
Trade receivables (TR) days TR / sales x 365 days	14,922/120,366x365 17,521/121,351x365	45.2 days	52.7 days	-14.2%
Trade payable (TP) days TP / COS x 365 days	31,420/103,024x365 24,407/102,286x365	30.5 days	87.1 days	-65.0%
Working capital cycle Inventory days + trade receivable days - trade payable days	131.5 + 45.2-30.5 97.3 + 52.7-87.1	146.2 days	62.9 days	+132.4%
Interest cover PBIT / Interest	5,377/1,469 6,617/906	3.66 times	7.30 times	-49.9%
Gearing Debt / Equity	26,700 / (30,428 + 2,270) 16,700 / (24,623 + 1,947)	81.7%	62.9%	+29.9%

Illustration 7.

You are the accounting adviser to a committee of bank lending officers. Each loan application is subject to an initial vetting procedure, which involves the examination of the application, recent financial statements, and a set of key financial ratios.

The key ratios are as follows:

- Gearing (calculated as debt/debt + equity, where debt includes both long- and short-term borrowings);
- Current ratio;
- Quick ratio;
- Profit margin (using profit before tax).

Existing levels of gearing are especially significant to the decision, and the committee usually rejects any application from an entity with gearing of over 45%.

The committee will shortly meet to conduct the initial vetting of a commercial loan application made by TYD, an unlisted entity. As permitted by national accounting law in its country of registration, TYD does not comply in all respects with International Financial Reporting Standards. The committee has asked you to interview TYD's finance director to determine areas of non-compliance. As a result of the interview, you have identified two significant areas for examination in respect of TYD's financial statements for the year ended 31st March 2013.

- 1 Revenue for the period includes a sale of inventories at cost to HPS, a banking institution, for ₹85,000, which took place on 31st March 2013. HPS has an option under the contract of sale to require TYD to repurchase the inventories on 31st March 2015, for ₹95,000. TYD has derecognised the inventories at their cost of ₹85,000, with a charge to cost of sales of this mount. The inventories concerned in this transaction, are, however, stored on TYD's premises, and TYD bears the cost of insuring them.
- 2 TYD's inventories are sold on a sale or return basis. The entity's accounting policy in this respect is to recognise the sale at the point of dispatch of goods. The standard margin on sales of this type is 20%. During the year ended 31st March 2013, ₹100,000 (in sales value) has been dispatched in this way. The finance director estimates that approximately 60% of this value represents sales that have been accepted by customers; the remainder is potentially subject to return.

The financial statements of TYD for the year ended 31st March 2013 are as presented below. (Note: at this stage of the analysis only one year's figures are considered).

TYD: Income statement for the year ended 31st March 2013.

	₹'000
Revenue	600
Cost of sales	<u>450</u>
Gross profit	150
Expenses	63
Finance costs	17
Profit before tax	70
Income tax expense	<u>25</u>
Profit for the period	45

Solution:

Report

To: Committee of bank lending officers
 From: Accounting advisor
 Date: xx/xxxx
 Subject: TYD's financial statement analysis

This report will analyse the financial statement of TYD for year ending 31st March, 2013. The following will be dealt with:

- Discussion of the accounting treatment of the two significant areas identified
- Adjusted financial statements
- Analysis of the financial statements with key ratios



1.1 Discussion of the accounting treatment of the two significant areas identified

Transaction 1 - sale of inventory to HPS

Substance over form requires that transactions must be accounted for in accordance with their economic substance, rather than its true legal form. IAS 1 presentation of financial statements and IAS 8 accounting policies set out the general principles for substance over form. They state the financial statements must be prepared to show transactions which show economic substance and not just the legal form. This statement is also echoed in the framework.

The sale of the inventory to HPS does not represent a true sale TYD has the option of buying back the inventory. Under IAS 18 Revenue recognition, revenue should only be recognised in the financial statements when:

- Significant risks and rewards have been passed onto the buyer.
- Ownership of the goods has been passed to the buyer, meaning that the business selling the goods has no control over the goods, and therefore no influence over them.
- The revenue can be measured reliably.
- Reasonably certain that the seller will be gaining economic benefit from selling the goods.
- The selling costs can be measured reliably.

The first 2 points have not been met under IAS 18 which means that TYD cannot recognise the revenue of ₹85,000 as the risk and rewards have not passed to the buyer (TYD is required to purchase the inventory in 2 years time for ₹95,000 and is also responsible for insuring the goods as they are held at their premises).

The true substance of the transaction is in affect a loan secured on the assets (inventory). Therefore TYD must show a liability in their balance sheet to this affect. The following correcting journal entries are required.

Derecognise the sale	Dr. Sales ₹85,000 Cr. Cost of goods sold ₹85,000
Recognise the inventory back and recognise the loan	Dr. Inventory ₹85,000 Cr. Loan ₹85,000.

The additional ₹10,000 that is repayable in 2 years time (₹95,000) is effectively the interest on the loan and will be spread over the 2 years as finance costs.

Dr. Finance cost ₹5,000 Cr. Loan ₹5,000 for years 2014 and 2015

Transaction 2 - Sale on return basis

The substance of the transaction will also be applied here. The entire sale will not be recognised here. Under IAS 18 Revenue recognition the ownership of the goods must be passed to the buyer, meaning that the business selling the goods has no control over the goods, and therefore no influence over them. If there is an option for the buyer to return the goods, then this part of the criteria is not satisfied. The net sales must be recognised in this case as the past is a reliable estimate.

Out of the ₹100,000 sales 40% are accepted to be returned. Therefore this needs to be removed from the financial statements. This means ₹40,000 of the sales removed and (₹40,000 x 80%) ₹32,000 removed from the cost of sales. This means effectively ₹8,000 will be removed from the profit. The journal entries are as follows:

Derecognise the sale	Dr. Sales ₹40,000 Cr. Trade receivables ₹40,000
Adjust the cost of sales and inventory	Dr. Inventory ₹32,000 Cr. Cost of sales ₹32,000

The retained earnings in the statement of financial position will be reduced by ₹8,000.

1.2 Adjusted financial statements**Revised TYD income statement for the year ended 31st March, 2013.**

	Adjustment (₹'000)	After Adjustment (₹'000)	Before Adjustment (₹'000)
Revenue	600-85-40	475	600
Cost of sales	450-85-32	(333)	(450)
Gross profit		142	150
Expenses		(63)	(63)
Finance costs		(17)	(17)
Profit before tax		62	70
Income tax expense		(25)	(25)
Profit for the period		37	45

	After adjustments		Before adjustments	
	₹'000	₹'000	₹'000	₹'000
Assets				
Non current assets				
Property, plant and equipment				527
Current assets				
Inventories (95+32+85)	212		95	
Trade receivables (72-40)	32		72	
Cash	6	250	6	173
				700
Equity and liabilities				
Share capital		100		100
Retained earnings (245 - 8)		237		245
		337		345
Non current liabilities				
Long term borrowings (180+85)		265		180
Current liabilities				
Trade and other payables	95		95	
Bank overdraft	80	175	80	175
		777		700

1.3 Analysis of the financial statements with key ratios

Key ratios	Before adjustment	After adjustment
Gearing	43%	51%
Debt / debt and equity		
(180+ 80)/(345+ 180+ 80)		
(265 + 80) / (337 + 265 + 80)		
Current ratio	0.99 :1	1.43 :1
CA/CL		
173/175		
250/175		



Quick ratio	0.45:1	0.22:1
CA- inventory / CL		
(173-95)/175		
(250-212)/175		
Profit margin	12%	13%
PBT / revenue		
70 / 600		
62 / 475		
Other analysis		
Gross profit margin	25%	30%
GP / revenue		
150/600		
142 / 475		
Asset turnover	0.3 times	0.9 times
Revenue / Capital employed		
150/(345 + 180)		
475 / (337 + 265)		
Return on capital employed	17%	13%
PBIT / capital employed		
(150-63)/(345+ 180)		
(142-63)/(337+ 265)		
Interest cover	5.1 times	4.6 times
PBIT/interest paid (150 -63) / 17		
(142-63)/17		

After the adjustments for the 2 transactions, TYD's profit before tax is reduced by ₹8,000. In the balance sheet after the adjustments the total assets have increased by ₹77,000 which is mainly due the increases in inventory. However the equity has been reduced by ₹8,000 and long term borrowings have increased by ₹80,000.

From the key ratios the gearing ratio worsens to 51% which is above our threshold of 45%. The sale and repurchase agreement is going to last for 2 years which is going to result in higher finance costs and lower profits.

The current ratio improves after the adjustments from 0.99 to 1.43; however this is only as a result of increases in inventory due to the adjustments. The quick ratio shows this as after the adjustments the quick ratio reduces to 0.22 (0.45 before adjustment). This means the short term liquidity is very low for TYD and it may face severe cash flow problems.

The profit margin increases to 13% from 12% but going forward this is likely to reduce due to additional finance charges.

Other analysis work shows an improvement in the profit margin which is good news but a reduction in the return on capital employed. The interest cover is also reduced after the adjustments to 4.6 times (5.1 times before the adjustment). This makes lending money to TYD very risky.

With this in mind, the initial application for a loan must be rejected for TYD due to its high gearing.

Signed

Accounting advisor

Case Study No. 1 :-

Source: Vol-II No. (3) : 80-84 (2011)

Liquidity, Risk and Profitability Analysis:

A Case Study of Maruti India Ltd.

ABSTRACT:

Liquidity risk and return both are very important aspects to be considered while making any decisions regarding company's finance. It affects the liquidity and profitability in any ways. This paper attempts to study these three elements in company's existence and their relationship.

Keywords: Liquidity, risk, Profitability

Introduction:

Liquidity management has been taken as an important tool to analyze the sustainability and liquidity position of any enterprise that may also help any organization to derive maximum profits at minimum cost. A company must maintain its ability to pay off its current obligations and have a sound base of working capital to stay for a long in the competitive market. The management of working capital is an important aspect to be considered for attaining sound liquidity position.

Profitability, in this reference may be the return earned on the total assets of the company. Every firm aims to dig up maximum profits out of the invested capital pool. The success of the company usually depends on its returns earned, keeping the liquidity prospects in view. Usually, it is a difficult task to trade off between the liquidity and profitability, as the conservative policy of working capital may ensure sound liquidity but endangers the profitability. On the other hand, aggressive policy helps in making profits but the liquidity is in not promised. Before deciding on an appropriate level of working capital investment, a firm's management has to evaluate the trade off between expected profitability and the risk that it may be unable to meet its financial obligations.¹

Finance deals with creating a proper framework to maximize profits at a given level of risk. In pursuing this balance, the firm must develop controls over the flows of funds while allowing sufficient flexibility to respond to changes in the operating environment.² Thus, the firms must attain a level of adequate liquidity at a minimum risk so as to achieve maximum profitability.

Company Snapshot:

Maruti Suzuki India Limited (MSIL) is a passenger car company. The Company is engaged in the business of manufacturing, purchase and sale of motor vehicles and spare parts (automobiles). The other activities of the Company include facilitation of pre-owned car sales, fleet management and car financing. The Company is a subsidiary of Suzuki Motor Corporation, Japan. The Company has a portfolio of 13 brands and over 150 variants across India and abroad. The Company's two manufacturing facilities are located at Gurgaon and Manesar, south of New Delhi. The Company's subsidiaries include Maruti Insurance Business Agency Limited, Maruti Insurance Distribution Services Limited, Maruti Insurance Agency Solutions Limited, Maruti Insurance Agency Network Limited and Maruti Insurance Agency Services Limited. The study is being done with the following objectives:-

1. To examine the association between liquidity and risk.
2. To test the correlation between profitability and risk.

Hypothesis of the Study:

The above stated objectives are to be achieved by testing the following hypothesis:

1. There is negative association between liquidity and risk.



2. Profitability and risk of the firm are negatively correlated.

Experimental Details:

The study is concerned with the ten years data of Maruti Suzuki India Ltd. for a period of (2001 - 2010). The data is of secondary nature and is obtained from the published annual reports of Maruti Suzuki India Ltd. The collected data has been analyzed through various liquidity and profitability ratios and drawing out the risk factor. Further, t test has been applied to test the hypothesis and draw conclusions.

Results and Discussions:

Tables given forward show the liquidity and profitability position of the company along with the risk factor has been calculated to study the inter relationship.

Liquidity Position of Maruti India Ltd.

Table No.1 exhibits the three basic ratios of test of liquidity, viz. Current Ratio, Quick Ratio and Absolute Ratio. The ratios are ranked in the order of their influence on liquidity. The higher is the ratio, the greater is the liquidity. Further, ultimate rank has been calculated from the total of the ranks of ratios. Ultimate ranking has been done on the principle that the lower the aggregate of the individual ranks, the more profitable is the liquidity position and vice versa. Current ratio is a relationship between the current assets and current liabilities and thus is used as measure of general liquidity. It can be noted from Table No.1 that the current ratio in year 2001 and 2006 is the highest at 1.77 times. The rule of thumb is 2:1 but it can vary from firm to firm. The least value of the current ratio is 1.02 in year 2010. Quick ratio is an indicator of the liquidity in sense of the relationship between the quick assets and current liabilities. Again, the higher ratio is an indicator of higher liquidity.

Absolute ratio shows the relation of absolute liquid assets viz. cash in hand and at bank and market securities with current liabilities. This ratio helps in examining the absolute liquid position. The ratio at highest in year 2008 at 0.10 and thus ranked as 1 and the lowest ratio is in year 2003, 2004 & 2006. In these years the company struggled with shortfall of cash balances to meet their short term obligations. Further, the ultimate ranks denote that in year 2001 and 2005, the company was having highest liquidity and the poorest performed year in reference of liquidity was 2010.

Profitability Position of Maruti Suzuki India Ltd.

Table No 2 exhibits the profitability position of the company by using three very basic ratios of profitability. The return on assets (ROA) percentage shows how profitable a company's assets are in generating revenue. Table 2 reveals an increasing trend in spite of the first year to give a negative percentage at -7.18%. This shows that the company is managing to get good returns out of their assets pool. Return on capital employed is the indicator of the operational efficiency of the company. The resulting ratio represents the efficiency with which capital is being utilized to generate revenue. Table 2 shows that the ratio is at negative value in year 2001 at -9.88% and is showing a fluctuating trend till 2010.

Return on net worth is the relationship between the net profit and the shareholder's funds of the company. Table 2 reveals that the ratio is showing a negative percentage in year 2001 and showing an increasing trend till 2007, but is showing some fluctuations till the end of the period.

Trade off between risk and profitability:

Trade off between risk and profitability can be made by calculating the risk factor. The analysis can be done through which it can be said about the policies adopted while managing the working capital of the company. Risk factor has been calculated & shown in Table no 3. Risk factor can be calculated through the following formula:

$$R_k = \frac{(E_j + L_j) - A_j}{C_j}$$

Where, R_k = Risk factor, E_j = Equity + Retained Earnings, L_j = Long term Loans, A_j = Fixed Assets, C_j = Current Assets

The above formula helps to know about the financing of the current assets through long term funds after fixed assets are financed in full. Based on the above formula, following inferences can be drawn:

Value of R_k is zero or less would mean that the firm is using the aggressive policy and normally the profitability would be high.

Value of R_k is 1 or close to 1 would mean that the firm is using a conservative policy and the profitability would be low.

Under aggressive policy the firm opts for a lower level of working capital thereby investing in current assets at lower proportion to total assets. When a firm adopts this policy, the profitability is high but at higher risk of liquidity. In case of conservative policy, the firm adopts a conservative approach of having high proportion of working capital. The profitability is relatively low as the return on current assets is normally less. But ensuring good liquidity as the risk of meeting current obligations is reduced. Table no 3 discloses the risk factor that has been ranked and is indicating the policy adopted by the company in various periods.

The hypothesis drawn are tested by using student's 't' test for confirming the association between the risk, liquidity and profitability. Table no 4 exhibits that there is low degree of association between liquidity and risk, further, this association is tested.

The null hypothesis stated that there is negative association between liquidity and risk.

Calculated Value of 't'=1.43 and Critical value of 't'= 2.31

As the calculated value is less than the critical value, thus, the null hypothesis is accepted. Thus, it can be said that

Table-1: Liquidity Position of Maruti Suzuki India Ltd.

Year	Current Ratio		Quick Ratio		Absolute ratio			
	Ratio in times	Rank	Ratio in times	Rank	Ratio in times	Rank	Total	Ultimate Rank (R_1)
2001	1.77	1.5	1.09	6	0.07	2.5	10	1.5
2002	1.44	6	0.97	7	0.05	4	17	6
2003	1.57	4	1.32	1.5	0.02	9	14.5	5
2004	1.17	8	0.92	8	0.02	9	25	9
2005	1.68	3	1.32	1.5	0.04	5.5	10	1.5
2006	1.77	1.5	1.31	3	0.02	9	13.5	4
2007	1.40	7	1.13	5	0.04	5.5	17.5	7
2008	1.03	9	0.70	9	0.10	1	19	8
2009	1.51	5	1.26	4	0.07	2.5	11.5	3
2010	1.02	10	0.68	10	0.03	7	27	10

Source: Annual reports of Maruti Suzuki India Ltd.



Table- 2: Profitability Position of Maruti Suzuki India Ltd.

Year	Return on Assets		Return on Capital Employed		Return on Net Worth		Total	Ultimate Rank (R ₂)
	Ratio in %	Rank	Ratio in %	Rank	Ratio in %	Rank		
2001	-7.18	10	-9.88	10	-10.19	10	30	10
2002	3.10	9	4.74	9	3.86	9	27	9
2003	4.12	8	7.40	8	4.73	8	24	8
2004	13.88	6	22.78	6	15.10	6	18	6
2005	18.21	5	26.41	4	19.49	5	14	5
2006	21.52	2	31.13	1	21.81	2	5	1
2007	20.87	3	30.06	2	22.79	1	6	2
2008	18.58	4	26.24	5	20.56	4	13	4
2009	12.13	7	17.94	7	13.04	7	21	7
2010	22.00	1	27.89	3	21.10	3	7	3

Source: Annual Reports of Maruti Suzuki India Ltd.

Table-3 Risk Factor in Rank Order

Year	Equity+ Retained Earnings (1)	Long Term Loans (2)	Fixed Assets (3)	Current Assets (4)	Risk Factor = $\frac{[(1+2) - 3]}{4}$	
					Factor (R _k)	Rank (R _k)
2001	2642.50	1112.10	2247.10	1628.60	0.92	2
2002	2707.30	656.00	2430.10	1592.30	0.59	1
2003	3098.00	456.00	2255.70	1197.50	1.08	3
2004	3591.20	311.90	1830.80	1169.40	1.78	4
2005	4378.80	307.60	1873.70	1345.50	2.09	5
2006	5452.60	71.70	1695.20	1587.60	2.41	6
2007	6853.90	630.80	2659.70	1575.40	3.06	9
2008	8415.40	900.20	3296.50	2017.50	2.98	8
2009	9344.90	698.90	4070.80	2060.20	2.90	7
2010	11835.10	821.40	5024.70	2116.90	3.61	10

Source: Annual reports of Maruti Suzuki India Ltd.

Table-4 Rank Correlation Between Risk , Liquidity and Profitability

Year	R ₁	R ₂	R _k
2001	1.5	10	2
2002	6	9	1
2003	5	8	3
2004	9	6	4
2005	1.5	5	5
2006	4	1	6
2007	7	2	9
2008	8	4	8
2009	3	7	7
2010	10	3	10
r	0.45	-0.79	
t value of r	1.43	-3.63	
Note: table value of t at (n-2) degree of freedom at 0.05 level of significance is 2.31			

Source: Calculations are done using MS Office

there is no significant association between liquidity and risk of this company.

The table shows that the profitability and risk are negatively associated but again, it has to be tested using 't' test.

The null hypothesis states that profitability and risk of the firm are negatively correlated.

Calculated value of 't' = -3.63 & Table value of 't' = 2.31

As the calculated value is less than the table value, the null hypothesis is accepted. Hence, it can be said that the profitability and risk are negatively correlated.

Conclusion :

Maruti Suzuki India Ltd being an established company from past few decades is satisfactorily giving out profits and maintaining its liquidity position but at increased risk factor. The liquidity position of the company is fluctuating but is acceptable. The risk factor calculated is a needle of the working capital management and the policy adopted. The company is timely changing its policies for better results but at higher risk. The profitability is increasing at good pace showing the efficiency of the company. Thus, it can be concluded that the company is earning good profit with moderate liquidity and at higher risk.

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Case Study No. 2 :-

Ratio Analysis of Square Pharmaceuticals Ltd

Brief History

Square Pharmaceuticals Ltd. is a renowned company in Bangladesh. It is a flagship company in the pharmaceutical industry which has reached this mountain of success by fighting many potential competitors like BEXIMCO Pharma, INCEPTA, ACME, RENETA, OPSONIN, SK+F, SANOFI-AVENTIS etc. It initially started as a Partnership in 1958. It was incorporated as a Private Ltd. Company in 1964 and converted into Public Limited Company in 1991. Its initial public offering started in Dhaka and Chittagong stock exchange simultaneously in 1995. Their mission is to produce and provide quality & innovative healthcare relief for people, maintain stringently ethical standard in business operation also ensuring benefit to the shareholders, stakeholders and the society at large.

Ratio Analysis

Financial ratios are useful indicators of a firm's performance and financial situation. Financial ratios can be used to analyze trends and to compare the firm's financials to those of other firms.

Financial ratios can be classified according to the information they provide. The following types of ratios frequently are used:

1. Liquidity ratios
2. Asset management ratios
3. Debt management ratios
4. Profitability ratios
5. Market value ratios

Liquidity Ratios

Liquidity ratios are the first ones to come in the picture. These ratios actually show the relationship of a firm's cash and other current assets to its current liabilities. Two ratios are discussed under Liquidity ratios. They are:

1. Current ratio
2. Quick/ Acid Test ratio.

1. Current ratio: This ratio indicates the extent to which current liabilities are covered by those assets expected to be converted to cash in the near future. Current assets normally include cash, marketable securities, accounts receivables, and inventories. Current liabilities consist of accounts payable, short-term notes payable, current maturities of long-term debt, accrued taxes, and other accrued expenses (principally wages).

Current Ratio = Current Assets/Current Liabilities

Following table shows the Current ratios of Square Pharmaceuticals in different years:

Year	2005-06	2004-05	2003-04
Current ratio	1.78 times	1.66 times	1.62 times

Following paragraph shows the change of Current ratios over different periods:

From the analysis, we can see that in 2003-04 the current assets were 1.62 times than the current liabilities that has not fluctuated much throughout these three years. A minimal increase is seen in 2004-05 and it went up to 1.66 times which kept slightly increasing and resulted at 1.78 times in 2005-06. The reason for such stability can be there not investing remarkably on assets and not making any huge loan or financing from outside. If we take a closer look on the balance sheet, this assumption gets a more realistic touch. Year by year assets have gone slightly up and the liabilities as well, but proportionately assets were a little higher than the liabilities which actually reflected as a marginal increase in the ratio.

2. Quick/ Acid Test ratio: This ratio indicates the firm's liquidity position as well. It actually refers to the extent to which current liabilities are covered by those assets except inventories.

Quick Ratio=(Current Assets-Inventories)/Current Liabilities

Following table shows the Quick/ acid test ratios of Square Pharmaceuticals in different years:

Year	2005-06	2004-05	2003-04
Quick ratio	1.19 times	1.08 times	0.98 times

Following graph shows the change of Current ratios over different periods:

Analysis of this ratio speaks in a same language as current ratio. In 2003-04, the quick ratio was 0.98 times which increased very silently just like current ratio and resulted as 1.19 times in 2005-06. Both of these ratios portray the idea that square has so far an almost constant liquidity position which is good at some point, but at the same token it can be said that they have not been able to improve themselves. Standing at this point, we can make an assumption that may be their profit margin was not so high that they can make some investments paying off the liabilities that could result in an increase in assets and decrease in liabilities to make the liquidity position far better. This assumption can only be proved as we go on analyzing their financial statement and calculate the profitability ratios.

Study Note - 3

THE ANALYSIS OF THE BALANCE SHEET AND INCOME STATEMENT



This Study Note includes

- 3.1 The Analyst's Checklist**
- 3.2 Reformulation of the Balance Sheet**
- 3.3 Reformulation of the Income Statement**
- 3.4 Comparative Analysis of the Balance Sheet and Income Statement**
- 3.5 Analysis of Changes in Income**
- 3.6 Distress Analysis**
- 3.7 Off Balance Sheet Items**
- 3.8 Corporate Debt Instrument Analysis (Bond Analysis)**
- 3.9 Miscellaneous Problems**

3.1 THE ANALYST'S CHECKLIST

The reformulated statement of shareholders' equity of the last study note yields the overall profitability measure, the comprehensive return on shareholders' equity, which, along with growth, drives residual earnings and value. The balance sheet and income statement give the detail to discover the sources of profitability and growth. This study note takes you through the reformulation of the two statements in preparation for the analysis of profitability and growth.

Profitability that generates value comes from a firm's operations. Thus the analysis begins with a reformulation of the statements, which distinguishes operating activities from financing activities. This reformulation enforces the rule that one cannot value a firm without knowing the business, for distinguishing operating activities identifies the business the firm is in. And distinguishing operating items from financing items in financial statements requires understanding the role of each item in the business and how it contributes to the profitability of the firm. Reformulation of the financial statements – the lens on the business – brings the business activities into sharper focus. We understand the business better through the lens of reformulating financial statements. Reformulation is also a device for bringing considerably more detail into the statements, from the financial statements' footnotes and elsewhere, leading to a richer description of the firm than that presented in the published statements.

The main aim of reformulating the balance sheet and income statements, however, is to discover the drivers of ROE (return on equity) and growth in preparation for forecasting and valuation. This discovery is made through ratio analysis, combined as always with a good knowledge of the business. This study note introduces ratios calculated from these statements; these ratios become part of the comprehensive analysis of profitability and growth in study notes 5 and 6.

Checklist:

- Why the analyst reformulates income statements and balance sheets.
- How knowledge of the business is incorporated in reformulated statements.
- How operating and financing components of the two statements are identified.

- What assets and liabilities typically fall into operating and financing categories.
- Why income taxes are allocated to different parts of the income statement.
- What balance sheet and income statement ratios reveal.

3.2 REFORMULATION OF THE BALANCE SHEET

The typical balance sheet usually divides assets and liabilities into current and noncurrent (long-term) categories. For assets, this division is based on liquidity, and for liabilities, it is based on maturity, with the aim of giving an indication of the firm's ability to meet creditors' claims on cash. The analysis of credit risk will employ this division, but we override this classification with one that identifies the different sources of profitability, the operations and the financing activities. To discover a firm's ability to generate profits, we need to reformulate the balance sheet into operating and financing assets and liabilities.

Exhibit 3.1 lays out a typical balance sheet. It lists the standard line items you see in published statements. Balance sheets for specific firms do not include all these items, of course, and some items are often aggregated or grouped into "other assets" or "other liabilities" categories. In some industries you will see special line items that are not listed here.

Operating assets and liabilities are those involved in the business, in selling goods and services. Financing assets and liabilities are those that are involved in raising cash for operations and disbursing excess cash from operations. Before reformulating the statement, be sure to have an answer to the question: what business is the firm in? For it is the answer to this question that defines the operating assets and liabilities. Also keep in mind the parallel classification in the income statement: Operating assets and liabilities generate operating income and financial assets and liabilities are those that produce financial income or incur financial expenses.



Exhibit 3.1 Balance Sheet (as per revised Schedule VI)

Name of the Company :

Balance Sheet as at :

(₹ in.....)

Ref No.	Particulars	Note No.	Figures as at the end of the Current Reporting Period	Figures as at the end of the Previous Reporting Period
			(₹)	(₹)
I	EQUITY AND LIABILITIES			
1	Shareholders' fund			
	(a) Share capital			
	(b) Reserves and surplus			
	(c) Money received against share warrants			
2	Share application money pending allotment			
3	Non-current liabilities			
	(a) Long-term borrowings			
	(b) Deferred tax liabilities (Net)			
	(c) Other Long term liabilities			
	(d) Long-term provisions			
4	Current Liabilities			
	(a) Short-term borrowings			
	(b) Trade payables			
	(c) Other current liabilities			
	(d) Short-term provisions			
	Total			
II	ASSETS			
1	Non-current assets			
	(a) Fixed assets			
	(i) Tangible assets			
	(ii) Intangible assets			
	(iii) Capital work-in-progress			
	(iv) Intangible assets under development			
	(b) Non-current investments			
	(c) Deferred tax assets (Net)			
	(d) Long-term loans and advances			
	(e) Other non-current assets			
2	Current assets			
	(a) Current investments			
	(b) Inventories			
	(c) Trade receivables			
	(d) Cash and cash equivalents			
	(e) Short-term loans and advances			
	(f) Other current assets			
	Total			

Knowing the Business:

What Business is the Firm In?

Formulating balance sheets involves distinguishing assets and liabilities that are used in business operations – where the firm makes its money – from assets and liabilities that are used in financing – to raise cash for operations and temporarily store excess cash from operations. A firm “makes its money” by selling goods and services to customers, so identifying operating assets requires knowledge of goods and services the firm is delivering to customers.

Assets and liabilities with similar names on balance sheets may be financing items for one firm but operating items for another. Consider the following:

Banks

Banks hold mainly (what look like) financial assets and financial liabilities in the form of customer deposits, bonds, and loans. But they make money from the spread between the interest they pay on their financial liabilities and the interest they earn on their financial assets. These apparent financial assets and liabilities are operating assets and liabilities.

Captive Finance Subsidiaries

Automobile manufacturers like GL Motors and Fortune Asha consolidate finance subsidiaries bold (What look like) financial assets and liabilities. But they are used to support customers' purchases of automobiles, and often generous credit terms are used in promotions as effective price reductions. The finance subsidiaries are an integral part of operations and their assets and liabilities should be classified as such. The interest earned from the financing is operating income.

Retailers With Credit Facilities

Retailers make money from selling goods but often also make money from providing credit to customers. Accordingly, their interest income from credit cards they issue and other credit facilities is operating income, and the financing receivables that generate the income are operating assets.

Issues in Reformulating Balance Sheets

The GAAP balance sheet for the typical nonfinancial firm is reformulated into operating and financial items as in Exhibit 3.2. Some issues arise:

- **Cash:** Working cash, or operating cash, which is needed as a buffer to pay bills as they fall due, is an operating asset. This is non- interest bearing, in the form of cash on hand or in a checking account. Just as the firm needs to invest in plant and equipment to carry out operations, it also has to invest in working cash. However, interest-bearing cash equivalents (investments with less than three months maturity) or cash invested in short-term securities are financial assets – they are investments of excess cash over that required to meet liquidity demands. Typically firms lump cash and cash equivalents together, so identifying the working cash in difficult. If the analyst knows the type of business well, she might impute the required working cash (as a percentage of sales, say) but, as many firms have cash swept daily into interest-bearing accounts, she would be safe in classifying all cash as a financial asset.



Exhibit 3.2 The Classification of Operating and Financing Items in the Balance Sheet for Non-financial Firms

The Reformulated Balance Sheet

Liabilities and Shareholders' Equity	Assets
Financial liabilities: Short-term borrowings Current maturities of long-term debt Short-term notes payable(?) Long-term borrowing (bank loans, bonds payable, notes payable) Lease obligations Preference Shares Operating liabilities: All else Minority interest Equity Shares	Financial assets: Cash equivalents Short-term investments Short-term notes receivable (?) Long-term debt investments Operating assets: All else

Accounting Clinic

Accounting for Equity Investments and Accounting for Business Combinations

Previous Accounting Clinic which is Accounting for Marketable Securities in study note 2 covers the accounting for debt securities and equity securities that represent less than 20 per cent ownership of another corporation. This Accounting Clinic deals with equity investments of 20 per cent to 50 per cent ownership, where the equity method applies, and the case of majority control (over 50 per cent ownership), where consolidation accounting applies.

Firms acquire shares of other firms in mergers and acquisitions. This Accounting Clinic also covers the accounting for these business combinations, along with issues related to recognition, amortization, and the impairment of the goodwill acquired in business combinations.

- **Short-term notes receivable:** Notes can be written by customers for goods received in trade, with or without interest, and, with interest, by borrowers. If the notes are temporary investments, treat them as financial assets. If they are trade notes, treat them as operating assets. Trade notes can be treated as financial assets if they bear the market rate of interest: The trade receivable has been converted to a financial claim. But if the firm is using credit to attract customers, treat the notes as operating assets: The firm is effectively offering a lower interest rate instead of a lower price for goods shipped. Correspondingly, the interest income should be classified as operating income, part of the income from selling goods with favorable credit terms. Finance receivables (for financing product sales) fall in the same category.
- **Debt investments:** For nonfinancial firms investments in bonds and other interest bearing investments are financial assets. Under FASB Statement No. 115, both current and noncurrent investments are marked to market (carried at market value on the balance sheet) if they are part of a trading portfolio or are available for sale, as we saw in the last study note. They are recorded at cost if the firm intends to hold them to maturity. (The accounting for securities is covered in previous study note) The footnotes give a schedule of all securities showing their historical costs and current fair values, along with the associated unrealized gains and losses which are income or expense in comprehensive income. If bonds are part of a trading portfolio, the firm is probably in the business of making money from bond, so classify them as operating assets. Banks make money on the spread between borrowing and lending rates, so in their case, debt investments and liabilities are operating items.

- **Long-term equity investments:** Long-term equity investments (in the shares of other firms) are investments in the operations of other companies, and so they are classified as operating assets. If the holding is less than 20 per cent of the shares of the other corporation, they are recorded on the balance sheet at market value if "available for sale" or at cost if "held to maturity". If the holding is greater than 20 per cent and less than 50 per cent, they are recorded as equity investments under the equity method. The equity method carries these investments at cost plus accumulated share of income of the subsidiary, less dividends paid by the subsidiary and any write-offs of the goodwill in purchase. If the holding is greater than 50 per cent, consolidation accounting combines the financial statements of the related firms into one set of financial statements, so equity investments do not appear on the consolidated statement.

Equity investments in subsidiaries include the parent's share of net financial assets of subsidiaries. Thus they are investments in financial assets and obligations of these subsidiaries as well as their operating assets. Ideally we would like to go back into the subsidiaries' financial statements to sort out the operating and financial activities and divide the equity investments accordingly. This is often difficult to do if the subsidiary is not a public corporation, so as an expediency, treat the entire investment as an investment in an operating subsidiary.

- **Short-term equity investments:** Short-term marketable equity investments can be an exception to classifying equities as operating assets. If they are part of a trading portfolio, they are operating assets. If they are used to temporarily mop up excess cash, they are financial assets. These investments are marked to market.
- **Short-term notes payable:** Short-term notes can be written to generate cash, in which case they are financial obligations, however, notes also can be written to satisfy trade obligations, for the purchase of inventory, for example. If these are non-interest bearing or carry an interest rate less than the market rate for this type of credit, classify them as operating liabilities; if they are interest-bearing at market rates, treat them as financial liabilities. A note written to satisfy a trade obligation results from operating activities but if it is interest-bearing at market rate, the operating liability (the accounts payable) has effectively been converted into a financial liability (the note payable). In the United States, GAAP requires the effective market rate of interest to be imputed on long-term notes payable (and receivable) so those items should be classified as financial obligations.
- **Accrued expenses:** These could liabilities to pay to the whole variety of operating expenses, including rent, insurance, wages, and taxes. Treat them as operating liabilities. But interest payable on financial obligations in a financing item.
- **Deferred revenues (unearned revenues):** These include receipts from customers that are not yet recognized as revenue (because the firm has not performed on the sale) and obligations to complete performance such as warranties and guarantees. Treat them as operating liabilities.
- **Leases:** Leases that are capitalized are placed on the asset side of the balance sheet as a lease asset at the present value of the expected payouts under the lease agreement. The lease asset is an operating asset. The lease obligation is reported under liabilities and classified as a financial obligation in reformulated statements. Interest expense on the lease obligation is reported with other interest expenses in the income statement. Leases that are capitalized and placed on the balance sheet are called capital leases. Capital leases are essentially in-substance purchases granting the firm a right to use the asset for most of its useful life. Accordingly, if an asset satisfies criteria that indicate an in-substance purchase, the lease asset is treated similarly to any other property, plant, or equipment. And the obligation to service the lease is treated as if the firm had purchased the asset and borrowed to finance the purchase: The lease obligation is an effective loan to finance the purchase of the asset. Leases that are deemed not to be effective purchases are called operating leases. They do not appear on the balance sheet but the rent payments are included as rent expense in the income statement.
- **Deferred tax assets and liabilities:** Deferred taxes arise almost always from accounting differences in calculating the operating income component of taxable income and reported book income. So treat them as operating assets or liabilities.



- **Dividends payable:** These are classified as shareholders' equity, not a liability, as explained in the last study note.
- **Preference shares:** From a equity shareholders' focus, preference shares are considered financial obligations.
- **"Other" items:** Balance sheets typically have a line for "other assets" and "other liabilities". The detail can be discovered from footnotes and sometimes from the Management Discussion and Analysis (MD&A). If these sources prove fruitless, usually these items are considered operating. If any of the other liabilities are material mounts, firms are required to disclose them.
- **Minority interest:** It might be tempting to view minority interest in a consolidated subsidiary as a financial obligation from the equity shareholders' point of view, an interest that has to be satisfied. But the minority interest is not an obligation, like debt, that results of the consolidated operations. In the reformulated statements treat it as a separate line item that shares with the equity shareholders in the operating and financing assets and liabilities. The reformulated statement with minority interest has the following form: $NOA - NFO = SE + \text{Minority interest}$.

Here $NOA = \text{Net Operating Assets}$

$NFO = \text{Net Financial Obligations}$

$SE = \text{Shareholders' Equity}$

Some people have trouble thinking of operating liabilities as part of operations and not part of the financial indebtedness. Indeed, you may have seen these included in debt and debt ratios in other books. As obligations to creditors, they are debt, and if we were making calculations to evaluate credit risk – or the ability to pay off debt – we would include these in relevant ratios. However, our purpose here is to get a sense of operating profitability relative to the net assets put in place. And to the extent that a firm has operating liabilities, it reduces its net investment in operations, its net operating assets. Return on Net Operating Assets (RNOA) compares operating income to the investment in net operating assets; to the extent that a firm can induce suppliers to give credit, this reduces the investment and increases the return on net operating assets. Just as firms lever up return on equity through financial liabilities, so they lever up return on operating assets with operating liabilities. The following examples illustrate:

- (a) **Diana Inc.** is renowned in the computer business for its made-to-order system that keep its investment in inventories low. Diana's fiscal 2012 balance sheet reports ₹278 million in inventory, only 0.9 per cent of sales.

However, it also reports ₹5,075 million in accounts payable. Diana has managed to get material suppliers to give credit to "finance" the inventory (and more), so, in effect, Diana has negative investment in inventory. This generates value for shareholders as the shareholders do not need to use their funds to purchase inventories; needed, creditors has supplied funds to finance other operating assets besides inventory. And shareholders need not service interest on financing debt.

- (b) **Origon Corporation**, the large software and information management firm, lists customer advances and deferred revenue of ₹1,497 million as a liability in its 2012 balance sheet. This is cash that has been given to Origon by customers in advance of receiving services from the firm. This cash generates shareholder value because it can be used to purchase operating assets for which shareholders would otherwise have to provide funds.

- (c) **GL Motors**, the automobile manufacturer, has a program to pay health benefits to employees after they retire. An amount of ₹28.1 billion was reported as a liability on its 2012 balance sheet for obligations under this benefit plan. The plan pays benefits later rather than using cash for wages that would be higher without the health benefits. The liability, like wages payable, arises from operations. So does its 2012 pension liability of ₹9.5 billion.

(d) Marlin Corporation, the appliance manufacturer, included sales warranties of ₹80.6 million in its accrued liabilities for 2012. These obligations to service sales effectively net against receivables and cash from the sales.

Exhibit 3.3 GAAP Consolidated Balance Sheet and Reformulated Balance Sheet, for Hypee, Inc., 2010 – 2012: The reformulated balance sheets reformat the GAAP statements into net operating assets (operating assets minus operating liabilities), net financial obligations (financial obligations minus financial assets), and shareholders' equity (net operating assets minus net financial obligations). Number in parentheses to the right of the reformulated statement refers to points on the reformulation made in the text.

Name of the Company: Hypee, Inc.

Balance Sheet as at : 31.05.2012

(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.05.12	As at 31.05.11	As at 31.05.2010
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital	(1)	885.4	591.5	536.7
	(b) Reserves and surplus	(2)	3,896.6	3,399.5	3,302.6
	(c) Money received against share warrants				
2	Share application money pending allotment				
3	Non-current liabilities				
	(a) Long-term borrowings	(3)	682.4	551.6	625.9
	(b) Deferred tax liabilities (Net)	(4)	418.2	257.9	141.6
	(c) Other Long term liabilities				
	(d) Long-term provisions				
4	Current Liabilities				
	(a) Short-term borrowings				
	(b) Trade payables				
	(c) Other current liabilities	(5)	1,890.8	1,890.0	1,753.2
	(d) Short-term provisions	(6)	118.2	130.6	83.0
	Total		7,891.6	6,821.1	6,443.0
II	ASSETS				
1	Non-current assets				
	(a) Fixed assets				
	(i) Tangible assets	(7)	1,586.9	1,620.8	1,614.5
	(ii) Intangible assets	(8)	501.7	183.8	437.8
	(iii) Capital work-in-progress				
	(iv) Intangible assets under development				
	(b) Non-current investments		400.8	—	—
	(c) Deferred tax assets (Net)	(9)	165.0	221.8	140.8



		(d) Long-term loans and advances				
		(e) Other non-current assets		291.0	229.4	233.0
	2	Current assets				
		(a) Current investments				
		(b) Inventories		1,633.6	1,514.9	1,373.8
		(c) Trade receivables	(10)	2,120.2	2,083.9	1,807.1
		(d) Cash and cash equivalents		828.0	634.0	575.5
		(e) Short-term loans and advances				
		(f) Other current assets	(11)	364.4	332.5	260.5
		Total		7,891.6	6,821.1	6,443.0

Workings:

(₹ in millions)

1. Share Capital	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Shareholders' Equity:			
Equity shares at stated value:			
Class A convertible — 77.6 thousand and 97.8 thousand shares outstanding for 2012 and 2011	0.1	0.2	0.2
Class B — 185.5 thousand and 165.8 thousand shares outstanding for 2012 and 2011	2.7	2.6	2.6
Capital in excess of stated value	887.8	589.0	538.7
Unearned stock compensation	(5.5)	(0.6)	(5.1)
Redeemable Preference Shares	0.3	0.3	0.3
Total	885.4	591.5	536.7

2. Reserve & Surplus	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Retained earnings	3,982.9	3,639.2	3,495.0
Accumulated other comprehensive loss	(86.3)	(239.7)	(192.4)
Total	3,896.6	3,399.5	3,302.6

3. Long Term Borrowings	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Long-term debt	682.4	551.6	625.9
Total	682.4	551.6	625.9

4. Deferred tax liabilities (Net)	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Deferred income taxes	418.2	257.9	141.6
Total	418.2	257.9	141.6

(₹ in millions)

5. Other Current Liabilities	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Current portion of long-term debt	6.6	205.7	55.3
Notes payable	146.0	75.4	425.2
Accounts payable	763.8	572.7	504.4
Accrued liabilities	974.4	1,036.2	768.3
Total	1,890.8	1,890.0	1,753.2

6. Short-term Provisions	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Income taxes payable	118.2	130.6	83.0
Total	118.2	130.6	83.0

7. Tangible Assets	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Property, plant and equipment, net	1,586.9	1,620.8	1,614.5
Total	1,586.9	1,620.8	1,614.5

8. Intangible Assets	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Identifiable intangible assets, net	366.3	118.2	264.2
Goodwill	135.4	65.6	173.6
Total	501.7	183.8	437.8

9. Deferred Tax Assets	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Deferred income taxes	165.0	221.8	140.8
Total	165.0	221.8	140.8

10. Trade Receivables	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Accounts receivables less allowance for doubtful accounts of ₹95.3 million, ₹81.9 million and ₹77.4 million	2,120.2	2,083.9	1,807.1
Total	2,120.2	2,083.9	1,807.1

11. Other Current Assets	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Prepaid expenses and other current assets	364.4	332.5	260.5
Total	364.4	332.5	260.5



Reformulated Balance Sheets

(₹ in millions)

	As at 31.05.2012		As at 31.05.2011		As at 31.05.2010		
Net operating assets : (A-B)							
Operating assets							
Operating cash ¹		61		53		49	(4)
Accounts receivable (less doubtful accounts of ₹95 million, ₹82 million, and ₹77 million)		2,120		2,084		1,807	
Inventories		1,634		1,515		1,374	
Prepaid expenses ⁶		370		333		266	
Property, plant, and equipment (net)		1,587		1,621		1,615	
Goodwill		135		66		174	
Trademarks and other intangibles	400		140		283		(8)
Accumulated amortization	(34)	366	(22)	118	(19)	264	(8)
Deferred income taxes and other assets		456		451		374	
(A)		6,729		6,241		5,923	
Operating liabilities							
Accounts payable – non interest bearing ²	720		523		468		
Accrued liabilities ³	921		999		768		(6)
Income taxes payable	118		131		83		
Deferred income taxes and other liabilities	418		258		142		
(B)		2,177		1,911		1,461	
(A - B)		4,552		4,330		4,462	(2)
Net financial obligations							
Cash equivalents ¹	(767)		(581)		(527)		(4)
Short-term investments	(401)		-		-		
Current portion of long-term debt	7		206		55		
Notes payable ⁴	146		75		425		
Accounts payable–interest bearing ²	44		50		36		
Long-term debt	682		552		626		
Redeemable preference shares ⁵	0	(289)	0	302	0	615	(3)(5)
Shareholders' equity⁶		4,841		4,028		3,847	(1)(6)

- ¹ Cash and cash equivalent are split between operating cash and cash investments. Operating cash is estimated at ½% of sales.
- ² Interest bearing account payable are classified as financing obligation.
- ³ Accrued expenses exclude dividends payable that have been included in shareholders' equity.
- ⁴ Notes payable are interests bearing.
- ⁵ Preferred stock is less than ₹0.5 million.
- ⁶ Unearned compensation has been included in prepaid expenses.

Exhibit 3.3 reproduces the published comparative balance sheets for Hypee, Inc., for 2010-2012, along with reformulated balance sheets. Exhibit 3.4 reformulates Ricky's balance sheets. We introduced both of these firms in the later study note. Notice several things about the reformulated statements (number below correspond to the numbers flagging items in the reformulated statements):

1. The reformulation maintains the balance sheet equation: $SE = NOA - NFO$. The balances of shareholders' equity (SE) agree with those in the reformulated equity statement.
2. Net operating assets (NOA) are the difference between operating assets and operating liabilities.
3. Net financial obligations (NFO) are the difference between financial obligations and financial assets.
4. Cash and cash equivalents have been divided up between operating cash and financial assets. Operating cash has been estimated at ½ per cent of sales.
5. Redeemable preference share is a financial obligation.
6. Dividends payable, reported as an accrued liability, is included in shareholders' equity (as in the reformulated equity statement).
7. Minority interest is subsidiaries in not classified as either an operating or financing item on Ricky's balance sheet. Rather, as minorities share in both operating and financing assets and liabilities in subsidiaries, it is deducted from the net total for those activities in determining Ricky shareholders' share in the consolidated business. If the analyst has access to subsidiary financial statements, the allocation can be made or, if it is determined that the subsidiaries are likely to carry little net debt, minority interest can be classified as an operating item, thereby reducing the shareholders' claim on net operating assets.
8. More information has been brought into the statements from the footnotes.

Reformulated balance sheets draw the following picture. Equity shareholders' equity is represented as an investment in operations (net operating assets) less net debtholders' claim on those assets (net financial obligations). Net operating assets are net of the credit that suppliers and customers supply (operating liabilities), for this credit reduces the shareholders' investment in operations. Net financial obligations are net of financial assets, for financial assets are available to pay debt in satisfaction of the debtholders' claims. If these are negative, as with Hypee in 2012 and Ricky in all years, the firm has a net financial asset position. With this representation, the balance sheet is ready for an analysis of the profitability of operating and financing activities.

Arian Corporation in Exhibit 3.5 is a firm with significant amounts of financial assets in the form of cash equivalents and short-term debt assets. The 2010 shareholders' equity of ₹52.180 billion is invested in ₹11.574 billion of net operating assets and ₹40.606 billion of net financial assets. Arian has generated considerable free cash flow from operations, which it has invested in treasury bills and other interest-bearing investments. The reformulated statement separates these assets from those associated with operating activities, for they are storing cash rather than being used in operations. Equity investments are classified as operating items, and debt investments are classified as financing items, with the exception of convertible preferred debt in BT&T in connection with an (operating) investment in broadband.



What will Arian do with all these financial assets? It cannot use them to pay off debt because it has no debt. It could liquidate them and invest in operating assets should it find investment opportunities. Or it could pay dividends. Indeed in 2012, after paying no dividends since its inception, Arian, with over ₹60 billion in financial assets by then, paid a ₹34.5 billion special dividend to its shareholders out of these financial assets.

Exhibit 3.4 GAAP Balance Sheets and Reformulated Balance Sheets for Ricky International Ltd., 2010-2012. Numbers in parentheses to the right of the reformulated statement refer to points on the reformulation made in the text.

Name of the Company: Ricky International Ltd.

Balance Sheet as at : 31.12.2012

(₹ in thousands)

Ref No.	Particulars	Note No.	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
I	EQUITY AND LIABILITIES				
1	Shareholders' fund				
	(a) Share capital	(1)	1,018	1,011	992
	(b) Reserves and surplus-	(2)	12,18,938	10,32,699	8,83,578
	(c) Money received against share warrants				
2	Minority interest		8,514	11,657	6,858
3	Share application money pending allotment				
4	Non-current liabilities				
	(a) Long-term borrowings	(3)	3,60,126	3,53,225	3,53,329
	(b) Deferred tax liabilities (Net)				
	(c) Other Long term liabilities		45,718	25,162	36,095
	(d) Long-term provisions				
5	Current Liabilities				
	(a) Short-term borrowings				
	(b) Trade payables				
	(c)Other current liabilities	(4)	7,34,384	5,38,971	5,35,263
	(d) Short-term provisions	(5)	71,930	27,017	44,657
	Total		24,40,628	19,89,742	18,60,772
II	ASSETS				
1	Non-current assets				
	(a) Fixed assets				
	(i) Tangible assets	(6)	1,83,799	1,49,765	1,34,767
	(ii) Intangible assets	(7)	3,20,263	66,986	67,252
	(iii) Capital work-in-progress				

		(iv) Intangible assets under development				
		(b) Non-current investments				
		(c) Deferred tax assets (Net)	(8)	1,56,408	1,22,548	1,37,040
		(d) Long-term loans and advances				
		(e) Other non-current assets	(9)	34,161	23,663	25,795
	2	Current assets				
		(a) Current investments				
		(b) Inventories		4,58,435	3,52,692	3,99,664
		(c) Trade receivables	(10)	6,60,599	5,32,320	4,21,750
		(d) Cash and cash equivalents		5,65,233	6,93,599	6,42,367
		(e) Short-term loans and advances				
		(f) Other current assets	(11)	61,730	48,169	32,137
		Total		24,40,628	19,89,742	18,60,772

Workings:

(₹ in thousands)

1. Share Capital	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Shareholders Equity:			
Equity Shares:			
Authorised 2,50,000 shares; issued shares: 1,01,827 shares in 2012 and 1,01,081 in 2011	1,018	1,011	992
Total	1,018	1,011	992

2. Reserve & Surplus	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Retained earnings	19,85,324	17,96,321	16,02,453
Less: shares in treasury at cost: 42,619 in 2012, 41,473 in 2011	(7,80,510)	(7,40,189)	(6,60,422)
Unearned compensation	(5,804)	(1,225)	(1,730)
Accumulated other comprehensive income	19,928	(22,208)	(56,723)
Total	12,18,938	10,32,699	8,83,578

3. Long Term Borrowings	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Long-term debt, net of current portion	3,60,126	3,53,225	3,53,329
Total	3,60,126	3,53,225	3,53,329



4. Other Current Liabilities	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Current portion of long-term debt	1,00,627	163	125
Notes payable	63,179	8,055	18,971
Accounts payable	1,83,853	1,55,904	1,66,148
Accrued expenses	3,86,725	3,74,849	3,50,019
Total	7,34,384	5,38,971	5,35,263

5. Short-term Provisions	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Income taxes payable	71,930	27,017	44,657
Total	71,930	27,017	44,657

6. Tangible Assets	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Property, plant and equipment, net	1,83,799	1,49,765	1,34,767
Total	1,83,799	1,49,765	1,34,767

7. Intangible Assets	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Intangibles, net of amortisation	1,24,125	24,960	23,431
Goodwill	1,96,138	42,296	43,821
Total	3,20,263	66,986	67,252

8. Deferred Tax Assets	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Deferred income taxes	1,56,408	1,22,548	1,37,040
Total	1,56,408	1,22,548	1,37,040

9. Other Non-current Assets	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Other Assets	34,161	23,663	25,795
Total	34,161	23,663	25,795

10. Trade Receivables	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Accounts receivables less allowance for doubtful accounts of ₹81,280 thousands, ₹70,823 thousand and ₹60,960 thousands	6,60,599	5,32,320	4,21,750
Total	6,60,599	5,32,320	4,21,750

11. Other Current Assets	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Prepaid expenses and other current assets	61,730	48,169	32,137
Total	61,730	48,169	32,137

Exhibit 3.4 (concluded)**Reformulated Balance Sheets****(₹ in millions)**

	As at 31.12.2012		As at 31.12.2011		As at 31.12.2010		
Net operating assets :							
Operating assets							
Cash		19		17		16	(4)
Accounts receivable (less doubtful accounts of ₹81 million, ₹71 million, and ₹61 million)		661		532		422	
Inventories		458		353		400	
Deferred taxes		156		123		137	
Prepaid expenses and other assets		68		49		34	
Property, plant, and equipment		184		150		135	
Goodwill		124		25		23	(8)
Trademarks and other intangibles	200		46		46		(8)
Accumulated amortization	(4)	196	(4)	42	(2)	44	(8)
other assets		34		24		25	
Operating assets		1,900		1,315		1,236	
Operating liabilities							
Accounts payable	184		156		166		
Accrued expenses	387		375		350		
Income Taxes payable	72		27		45		
other liabilities	46	689	25	583	36	597	
		1,211		732		639	(2)
Net financial obligations							
Cash equivalents	(546)		(677)		(626)		(4)
Notes payable	63		8		19		
Current portion of long-term debt	101		0		0		
Long-term debt	360		353		353		
		(22)		(316)		(254)	(3)
SE and minority interest		1,233		1,048		893	(7)
Minority interest		9		12		7	
Shareholders' equity		1,224		1,036		886	(1)



3.3 REFORMULATION OF THE INCOME STATEMENT

The income statement reports the profits and losses that the net operating assets and net financial assets have produced. The presentation of the GAAP statement varies but the typical line items found in the income statement are given in Exhibit 3.6.

The reformulated statement groups these items into operating and financing categories. However, the reformulated statement is on a comprehensive basis, so it also includes dirty-surplus items reported within the equity statement. Exhibit 3.7 gives the layout. The two components identified – operating income and net financial expense – are identified, with dirty-surplus income and expense associated with each included (including hidden items discovered in the reformulation of the equity statement). Within these operating and financing components, some further distinctions are made. To understand profitability, we need to understand the profitability of trading with customers, so operating income from sales is distinguished from operating income not coming from sales. For example, equity income in subsidiaries, booked under the equity method, is a net number – sales minus operating expenses in the subsidiary – and is not generated by topline sales. Nor are merger charges or gains and losses on asset sales, for example. Finally, the reformulated statement allocated taxes so that income in each part of the statement is net of taxes in attracts.

Exhibit 3.5

Arian Corporation Reformulated Comparative Balance Sheet as at 30th June (₹ in million)

	2010		2009	
Net operating assets				
Operating assets				
Cash ¹		50		50
Accounts receivable, net		5,129		3,671
Inventories		673		83
Deferred income taxes		2,112		1,522
Property and equipment, net		2,268		2,309
Equity investments		9,151		8,780
Convertible preferred debt ²		3,036		3,925
Goodwill		1,426		1,511
Intangible assets, net		243		401
Other assets		2,952		3,372
		27,040		25,624
Operating liabilities				
Accounts payable	1,208		1,188	
Accrued Compensation	1,145		742	
Income Taxes payable	2,022		1,468	
Unearned revenue	7,743		5,614	
Preferred income taxes	398		409	
Other liabilities	2,950	15,466	2,120	11,541
		11,574		14,083
Net financial assets				
Cash equivalents	2,966		3,872	
Short-term investments	35,636		27,678	
Long-term debt investments	2,004	40,606	1,656	33,206
Shareholders' equity		52,180		47,289

¹ Cash and cash equivalents split between working cash and financial assets.

² Convertible debt in connection with investment in broadband.

Exhibit 3.6 Format of Statement of Profit and Loss as per Revised Schedule VI**Name of the Company:****Profit and Loss Statement for the year ended:**.....**(₹ in.....)**

	Particulars	Note No.	Figures for the Current Reporting Period	Figures for the Previous Reporting Period
I	REVENUE FROM OPERATION			
II	OTHER INCOME			
III	TOTAL REVENUE(I+II)			
IV	EXPENSES:			
	(a) Cost of material consumed			
	(b) Purchase of products for sale			
	(c) changes in inventories of finished goods, work-in-progress and products for sale			
	(d) Employees cost/ benefits expenses			
	(e) Finance cost			
	(f) Depreciation and amortization expenses			
	(g) Product development expenses/Engineering expenses			
	(h) Other expenses			
	(i) Expenditure transfer to capital and other account			
	TOTAL EXPENSES			
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)			
VI	EXCEPTIONAL ITEMS			
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)			
VIII	EXTRAORDINARY ITEMS			
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)			
X	Tax expenses:			
	(1) Current Tax			
	(2) deferred tax			
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)			
XII	Profit (loss) from discontinuing operations			
XIII	Tax expenses from discontinuing operations			
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)			



XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)			
	Balance brought forward from previous year			
	Profit available for appropriation			
	Appropriation:			
	Proposed dividend			
	Transfer to General Reserve			
	Distribution Tax			
	Total			
	Balance carried forward			
XVI	Earning per equity share:			
	(1) Basic			
	(2) Diluted			

Tax Allocation

Income taxes are reported in two ways under GAAP. The income tax expense reported in the income statement applies to income above it in the income statement. The firm may also pay taxes on items below the tax line, including the income reported in the equity statement. However, extraordinary items and other items below the tax line are reported net of tax, as are the dirty-surplus items. Thus no tax needs to be allocated to them. These after-tax items have been listed below the items to which the reported in income statements, so this number must be allocated to the two components to put both on an after-tax basis. Referred to as tax allocation, this is done by first calculating the tax benefit of deducting net interest expense on debt for tax purchases and allocating it to operating income. The tax benefit sometimes referred to as the tax shield from debt, is calculated as —

$$\text{Tax benefit} = \text{Net interest expense} \times \text{Tax rate}$$

and the after-tax net interest expense is

$$\text{After-tax net interest expense} = \text{Net interest expense} \times (1 - \text{Tax rate})$$

Firms are taxed on a schedule of tax rates, depending on the size of their income. The tax rate used in the calculation is the **marginal tax rate**, the highest rate at which income is taxed, for interest expense reduces taxes at this rate. This marginal rate is not to be confused with the **effective tax rate**, which is tax expense divided by income before tax in the income statement (and incorporates any tax benefits the firm generates). The effective tax rate is reported in footnotes, but it is not to be used for the tax allocation. In United States, with little graduation in tax rates, the marginal rate is usually the maximum statutory tax rate for federal and state taxes combined. These rates are usually reported in the tax footnote. Foreign statutory tax rates are used if a multinational firm issues debt in another country and receives a tax deduction for interest paid on the debt in that country.

Without the tax benefit of debt, taxes on operating income would be higher, so the amount of the benefit that reduces the net interest expense is allocated to operating income.

Thus the tax on operating income is —

$$\text{Tax on operating income} = \text{Tax expense as reported} + (\text{Net interest expense} \times \text{Tax rate})$$

If there is net interest income (more financial assets than financial obligations), then the financial activities attract tax rather than reduce it, and this tax reduces the tax on operating activities. In both cases, the idea is to calculate after-tax operating income that is insensitive to the financing activities: What would after-tax operating income that is insensitive to the financing activities? This provides a measure of the profitability from operations that takes into account the tax consequences of conducting operations.

Exhibit 3.7 The Form of the Reformulated Comprehensive Income Statement (1) Operating items are separated from financing items. (2) Operating income from sales is separated from other operating income. (3) Tax is allocated to components of the statement, with no allocation to items reported on an after tax basis

Reformulated Comprehensive Income Statement	
Net sales	
- <u>Expenses to generate sales</u>	
Operating income from sales (before tax)	
- Tax on operating income from sales	
+ Tax as reported	
+ Tax benefit from net financial expenses	
- <u>Tax allocated to other operating income</u>	
Operating income from sales (after tax)	
± Other operating income (expense) requiring tax allocation	
Restructuring charges and asset impairments	
Merger expenses	
Gains and losses on asset sales	
Gains and losses on security transactions	
- Tax on other operating income	
± After-tax operating items	
Equity share in subsidiary income	
Operating items in extraordinary income	
Dirty-surplus operating items in Table 2.1	
<u>Hidden dirty-surplus operating items</u>	
Operating income (after tax)	
- Net financial expenses after tax	
+ Interest expense	
- Interest revenue	
± Realized gains and losses on financial assets	
= <u>Net interest expense before tax</u>	
- <u>Tax benefit from net interest expenses</u>	
= Net interest expenses after tax	
± Gains and losses on debt retirement	
± Dirty- surplus financial items in table 2.1 (including preference dividends)	
± Hidden dirty – surplus financing items	
- Minority interest	
= <u>Comprehensive income to equity shareholders</u>	



Accounting Clinic

Accounting For Income Taxes

Income taxes are recorded by matching taxes with the income that draws the tax, so the analyst understands the after-tax consequences of earnings income (or losses). As the income may not be taxed (on the firm's tax return) at the same time as it is reported (in the income statement), this matching leads to deferred tax liabilities and deferred tax assets.

This Accounting Clinic takes you through the details of deferred tax accounting and covers other tax issues such as operating loss carry forwards and valuation allowances against deferred tax assets, it also shows how taxes are allocated over various components of income in reported financial statements.

The one circumstance where this tax calculation is not done is when the firm cannot get the benefit of tax deduction for interest expense because it has losses for tax purposes. In this case the marginal tax rate is zero. A net operating loss (or NOL) for tax purposes can be carried back and deducted from taxable income in the previous two years or carried forward to income for 20 future years. So a firm loses the tax benefit only if the loss cannot be absorbed into taxable income over the carry back and carry forward periods.

Preference dividends typically are not deductible in calculating taxes, so no benefit arises. An exception is preference dividends paid to an ESOP for which the tax benefit is recognized as a dirty-surplus item and brought into the income statement. In a recent innovation, firms issue preference share through a wholly owned trust from which firms borrow the proceeds of the issue. In the consolidation of the trust into the firm's accounts, the firm gets the tax benefits of interest paid to the trust and recognizes the preference dividends paid by the trust. This effectively gives the firm a tax benefit for the preference dividends paid.

Returning to Exhibit 3.7, you see that tax on financing activities has been calculated on items that attract or reduce taxes (interest), but not on items, such as preferred dividends, that do not, or on items that are reported after tax. The tax benefit from financing activities is then added to the reported tax to calculate the tax on operating income. The tax on operating income from sales is then reduced by the amount of tax that other operating income attracts. Accordingly, tax is allocated within the statement to the income it attracts, with components that reduce taxes allocated a negative tax.

Tax allocation will be demonstrated shortly with Hypee and Ricky. Exhibit 3.8 gives a simple example and also contrasts the top-down approach, outlined above, with a bottom-up approach.

The tax allocation produces a revised effective tax rate that applies to the operations:

$$\text{Effective tax rate for operations} = \frac{\text{Tax on operating income}}{\text{Operating income before tax, equity income, and extraordinary and dirty-surplus items}}$$

The benefits of tax planning (from using investment and depreciation tax allowances and tax credits and utilizing loss carry forwards, for example) arise from operations, and this measure gives a sharper measure of those benefits. As income from equity in subsidiaries, extraordinary items, and dirty-surplus items is reported after tax, the denominator excludes these income items. The above Accounting Clinic deals with the accounting for income taxes.

Exhibit 3.8 Top-Down and Bottom-Up Methods of Tax Allocation

The allocation of taxes to calculate operating income after tax is applied to the simple income statement on the left using a top down approach and a bottom-up approach. The firm has a 35% statutory tax rate.

GAAP Income Statement (₹)		Top-Down Tax Allocation (₹)		Bottom-Up Tax Allocation (₹)	
Revenue	4,000	Revenue	4,000	Net income	350
Operating expenses	(3,400)	Operating expenses	(3,400)	Interest expense	100
Interest expense	(100)	Operating income before tax	600	Tax benefit	35
Income before tax	500	Tax expense:		Operating income after tax	415
Income tax expense	(150)	Tax reported	150		
Net income	350	Tax benefit for interest	35		
		(100 x 0.35)	(185)		
		Operating income after tax	415		

The top-down approach adjusts the reported tax for that which applies to financing activities. The bottom-up approach works up from the bottom line, net income, and calculates operating income after-tax as net income adjusted for the after-tax financing component of net income.

The effective tax rate on operating income is ₹185/₹600 = 30.8%. Why is this rate less than the statutory tax rate of 35 per cent? Well, because operations generate tax benefits. So, if the firm receives research and development tax credits or credits for investment in certain industrial zones, it lowers its tax rate. These credits arise from operations, so the operations are allocated the benefit. Financing activities draw no such benefit, so are taxed at the statutory rate.

Beware of the Term “Operating Income”

The name operating income is used to mean different things in different circumstances:

1. Even though GAAP does not recognize the term, firms sometimes tag a line in their income statement as Operating income. However, the analyst must be careful. Operating income so reported often includes interest income on financial assets and excludes some expenses associated with operations.
2. Operating income is used by analysts to refer to recurring income, that is, income adjusted for one-time charges such as restructuring charges and gains from asset sales.
3. Firms sometimes refer to operating income – or pro forma income – in their press releases as different from GAAP income. Be particularly careful in this case. These proforma income numbers sometimes exclude significant expenses.
4. Operating income is also used in the way it is defined in the study note. More commonly, it goes under the name of NOPAT, net operating profit after tax. Be careful about the line to which NOPAT refers. Does it apply to all operating income or to operating income from sales? Is it comprehensive operating income?

Issues in Reformulating Income Statements

Apart from the tax allocation, reformulating the income statement, as with the balance sheet, is a mechanical reclassification exercise. But, as with the balance sheet, the analyst must know the business. Interest income is usually earned on financial assets, but interest income on a finance receivable from financing customer purchases is operating income. The following issues arise in the reformulation:

- Lack of disclosure is often a problem:

The share of income of a subsidiary may include both financing income and operating income, but the two components are often not identifiable. As the investment in the subsidiary in the balance sheet is identified as an operating item, so should this corresponding income statement item.



Dividing currency translation gains and losses into financing and operating components is often difficult.

Detailing some expenses is often frustrating. In particular, selling, administrative, and general expenses are usually a large number with little explanation provided in the footnotes.

Interest income is often lumped together with “other income” from operations. If this is the case, estimate interest income by applying an interest rate to the average balances of financial assets during the period. If financial assets are all current assets, this rate is the short-term interest rate.

- Abnormal gains and losses in extraordinary items are, along with income from discontinued operations, operating items, but gains and losses from debt retirement, also in extraordinary items, are financing items.
- Under GAAP interest that finances construction is capitalized into the cost of assets on the balance sheet. It is treated as a construction cost just like the labour and materials that go into the asset. This accounting practice confuses operating and financing activities; labour and material costs are investments in assets, and interest costs are cost of financing assets. The result may be that little interest expense appears in the income statement for debt on the balance sheet. But it is difficult to unscramble this capitalized interest: it is depreciated, along with other construction costs, through the income statement and so is hard to trace. As the depreciation expense that includes interest is an operating expense, the practice also distorts the operating profitability.
- Reformulated statements can be prepared for segments of the firm—from the detail provided in the footnotes – to reveal more of the operations.

Analysis of the equity statement is a prerequisite for the reformulation of the income statement, for that reformulation identifies dirty-surplus items – including the hidden ones – that have to be brought into the income statement. Exhibit 3.9 gives the reformulated equity statements for Hypee and Ricky for 2012, with comprehensive income – to which the reformulated income statement must total – identified. The comprehensive income includes losses from the exercise of stock option.

Exhibit 3.10 gives the GAAP comparative income statement for Hypee, Inc., for 2012, along with the reformulated statement. Exhibit 3.11 reformulates Ricky’s income statement. Note the following the reformulated statement (numbers flag items in the exhibits):

1. Dirty-surplus items have been brought into the statement so the “bottom line” for 2012 is the comprehensive income calculated in Exhibit 3.9 (and so for 2011 and 2010).
2. The reformulation distinguishes operating income that comes from sales from operating income that does not come from sales. This distinction gives a clean measure of the profit margin from sales and also a clean measure of the effective tax rate on operating income. operating income from items reported net of tax are separately identified.

Exhibit 3.9 Reformulated Statements of Shareholders' Equity for Hypee, Inc. and Ricky International, Ltd. for 2012 (₹ in millions)

These statements include losses on exercise of employee stock options in comprehensive income. The statements identify ₹1,019 million in comprehensive income for Hypee and ₹214 million for Ricky.

	Hypee			Ricky		
Balance on 31st May, 2011			4,028			1,035
Transaction with shareholders:						
Shares issued, at market	388			83		
Shares repurchased	(416)			(88)		
Equity dividends	(179)		(207)	(18)		(23)
Comprehensive income						
Net income reported		946			192	
Currency translation gain		28			38	
Gains on hedging instruments		126			4	
Loss on option exercise	127			32		
Tax benefit	(47)	(80)		(12)	(20)	
Balance on 31st May, 2012			1,020			214
			4,841			1,226

Note: If the firm adopts FASB Statement 123R or IFRS 2, the amount of the loss on exercise of stock options is reduced by the grant date expense recognised in net income, and the share issue for the options is adjusted by the same amount.

Exhibit 3.10 GAAP Consolidate Statements of Income and Reformulated Income Statements for Hypee, Inc., 2010-2012.

The reformulated statement reformats the GAAP statement into operating income (operating revenue minus operating expense) and net financial expense (financial expense minus financial income), adds dirty-surplus income items, and makes the appropriate tax allocation. Numbers to the right of the reformulated statement refer to points on the reformulation in the text.

Name of the Company: Hypee, Inc.**Profit and Loss Statement for the year ended: 31.05.2012****(₹ in millions)**

	Particulars	Note No.	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
I	REVENUE FROM OPERATION		12,253.1	10,697.0	9,893.0
II	OTHER INCOME				
III	TOTAL REVENUE(I+II)		12,253.1	10,697.0	9,893.0
IV	EXPENSES:				
	(a) Cost of material consumed				
	(b) Purchase of products for sale				



	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(1)	25.0	28.8	34.0
	(f) Depreciation and amortization expenses				
	(g) Product development expenses/Engineering expenses				
	(h) Other expenses	(2)	10,778.1	9,545.2	8,841.7
	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		10,803.1	9,574.0	8,875.7
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		1,450.0	1,123.0	1,017.3
VI	EXCEPTIONAL ITEMS	(3)	—	266.1	5.0
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		1,450.0	856.9	1,012.3
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)				
X	Tax expenses:				
	(1) Current Tax	(4)	504.4	382.9	349.0
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		945.6	474.0	663.3
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		945.6	474.0	663.3
	Balance brought forward from previous year				
	Profit available for appropriation				
	Appropriation:				
	Proposed dividend				

	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward				
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:

(₹ in millions)

1. Finance Costs	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Interest expenses, net	25.0	28.8	34.0
Total	25.0	28.8	34.0

2. Other Expenses	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Cost of sales	7,001.4	6,313.6	6,004.7
Selling and administrative expenses	3,702.0	3,154.1	2,835.8
Other related expenses, net	74.7	77.5	1.2
Total	10,778.1	9,545.2	8,841.7

3. Exceptional Items	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Cumulative effect of accounting change, net of income taxes.	—	266.1	5.0
Total	—	266.1	5.0

4. Current Tax	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Income taxes	504.4	382.9	349.0
Total	504.4	382.9	349.0


Exhibit 3.10 (concluded)
Reformulated Income Statements
(₹ in millions)

		2012		2011		2010	
Operating revenues		12,253		10,697		9,893	
Cost of sales		<u>7,001</u>		<u>6,314</u>		<u>6,005</u>	
Gross margin		5,252		4,383		3,888	
Operating expenses							
Administrative expenses	2,312		1,983		1,805		
Advertising ¹	1,378		1,167		1,028		(4)
Amortization of intangibles ¹	12		4		3		(4)
Other expenses ²	75	3,777	78	3,232	1	2,837	
Operating income from sales (before tax)		1,475		1,151		1,051	
Taxes as reported	504		383		349		
Tax on financial items ³	<u>9</u>	<u>513</u>	<u>11</u>	<u>394</u>	<u>13</u>	<u>362</u>	(3)
Operating income from sales (after tax)		962		757		689	(2)
Other operating income (net-of-tax items):							
Currency translation gains	28		127		(2)		(1)(2)
Loss on employee options	(80)		(21)		(23)		(1)(2)
Derivative gains and losses from equity statement	126		(175)		(96)		(1)(2)
Effect of accounting change (goodwill write-off) ⁴	-	74	(266)	(335)	52	69	(1)(2)
Operating income (after tax)		1,036		422		620	
Financing expense (income)							
Interest expense	40		43		48		
Interest income ⁵	<u>(15)</u>	<u>25</u>	<u>(14)</u>	<u>29</u>	<u>(14)</u>	<u>34</u>	
Tax effect ³		(9)		(11)		13	(3)
Net interest expense		16		18		21	
Preference dividends ⁶		0		0		0	(1)
		16		18		21	
Comprehensive income		1,020		404		599	(1)

¹ Broken out from selling and administrative expenses.

² Other expenses are largely foreign currency hedge losses offset by favourable effects on profits

³ Statutory tax rate was 37.1%, 37.5% and 37.2% in 2012, 2011 and 2010 respectively.

⁴ The ₹266 million charge for 2011 results from adoption of FASB Statement 142 on the impairment of goodwill. The amount for 2010 includes ₹57 million effect reported in the equity statement.

⁵ Interest income is netted against interest expense in GAAP statement.

⁶ Preference dividends are less than ₹0.5 million.

1. Taxes have been allocated using federal and state statutory rates, 35 per cent for the federal rate plus the state rate: The rates are ascertained from the tax footnote. Hypee's effective tax rate on operating income from sales for 2012 is 34.8 per cent ($513/1,474 = 34.8\%$) while Ricky's is 25.3% ($73/289=25.3\%$)
2. Detail on expenses has been discovered in the footnotes. However, more detail on the large administrative and general expenses is not available. You will often be frustrated by such a lack of disclosure.
3. Minority interest income (in Ricky's income statement) has not been divided over operating and financing income. the allocation should be made if one has access to the financial statements of the subsidiaries in which the minority has an interest, in order to determine the type of income in which the minority has interest.

The formulation of Hypee's financial statements is continued on Box 3.1.

Exhibit 3.12 presents reformulated income statements for Arian that correspond to the reformulated balance sheets in Exhibit 3.5. The GAAP income statement is given at the top of the exhibit. A line for "operating income" is identified in the GAAP statement, followed by losses on equity investments under the equity method and "investment income". Arian, as we observed in the balance sheet, holds considerable financial assets, and the interest on these assets is included in investment income. However, investment income also mixes in gains and losses on its (operating) equity investments. The reformulated statement, with the help of footnote information, shots out the income into operating and financing components; further, it distinguishes operating income that comes from sales from operating income that comes from Arian's portfolio of equity investments. The reformulated statement is, of course, on a comprehensive income basis so that both operating income and financing income in the equity statement have been brought into the reformulated income statement.

Exhibit 3.11 GAAP Statements of Income and Reformulated Income Statements for Ricky International Ltd., 2010-2012. Numbers to the right of the reformulated statement refer to points on the reformulation made in the next.

Name of the Company: Ricky International Ltd.

Profit and Loss Statement for the year ended: 31.12.2012

(₹ in thousands)

	Particulars	Note No.	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
I	REVENUE FROM OPERATION		37,85,284	34,85,316	31,27,872
II	OTHER INCOME				
III	TOTAL REVENUE (I+II)		37,85,284	34,85,316	31,27,872
IV	EXPENSES:				
	(a) Cost of material consumed				
	(b) Purchase of products for sale				
	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(1)	23,640	17,407	14,529
	(f) Depreciation and amortization expenses				



	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses	(2)	34,95,848	32,33,757	29,17,956
	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		35,19,488	32,51,164	29,32,485
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		2,65,796	2,34,152	1,95,387
VI	EXCEPTIONAL ITEMS	(3)	—	—	(5,070)
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		2,65,796	2,34,152	2,00,457
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)				
X	Tax expenses:				
	(1) Current Tax	(4)	68,491	72,119	60,570
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		1,97,305	1,62,033	1,39,887
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		1,97,305	1,62,033	1,39,887
	Balance brought forward from previous year				
	Profit available for appropriation				
	Appropriation:				
	Proposed dividend				
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward				
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:

(₹ in thousands)

1. Finance Costs	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Interest expenses	26,073	25,590	23,848
Interest income	(12,661)	(8,183)	(9,319)
Loss on early extinguishment of debt	10,228	—	—
Total	23,640	17,407	14,529

2. Other Expenses	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Cost of sales	22,87,283	21,47,111	19,30,203
Selling, general and administrative expenses	12,03,654	10,85,841	9,81,813
Other related expenses	4,911	805	5,940
Total	34,95,848	32,33,757	29,17,956

3. Exceptional Items	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Cumulative effect of accounting change, net of income taxes.	—	—	(5,070)
Total	—	—	(5,070)

4. Current Tax	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Income taxes	68,491	72,119	60,570
Total	68,491	72,119	60,570

5. Minority interests for 2012, 2011 and 2010 are ₹4,880 thousands, ₹4,779 thousands and ₹3,289 thousands respectively.

Exhibit 3.11 (concluded)**Reformulated Income Statements**

(₹ in millions)

	As at 31.12.2012	As at 31.12. 2011	As at 31.12.2010	
Operating revenues	3,785	3,485	3,128	
Cost of sales	<u>2,287</u>	<u>2,147</u>	<u>1,930</u>	
Gross margin	1,498	1,338	1,198	



Operating expenses							
Administrative expenses	1,067		936		851		
Advertising ¹	137		150		131		(4)
Other expenses	5	1,209	1	1,087	6	988	
Operating income from sales (before tax)		289		251		210	
Taxes							
Taxes as reported	68		72		61		
Tax on financial items ²	5	73	6	78	5	66	(3)
Operating income from sales (after tax)		216		173		144	(2)
Other operating income (net-of-tax items):							
Currency translation gains	38		49		37		(1)(2)
Loss on employee options	(20)		(17)		(7)		(1)(2)
Derivative gains and losses in equity statement	4		(14)		(23)		(1)(2)
Effect of accounting change	-	22	-	18	(5)	2	(1)(2)
Operating income (after tax)		238		191		146	
Financing expense (income)							
Interest expense	26		26		24		
Interest income	(13)	13	(8)	18	(9)	15	
Tax effect ²		(5)		(6)		(5)	(3)
Net interest expense after tax		8		12		10	
Loss on retirement debt		10		-		-	
		18		12		10	
Comprehensive income before minority interest		220		179		136	
Minority interest		5		5		3	(5)
Comprehensive income to Equity shareholders		215		174		133	(1)

As Arian has net financing income (rather than expense), the financing activities attract tax (rather than reduce it), so the tax allocation to operating income reduces the tax on operating income. The net investment loss draws a tax benefit, and the allocation of this benefit back to operating income from sales recognizes that taxes would have been higher but for the investment losses. (Items from the equity statement are net of tax.)

The reformulated statement in Exhibit 3.12 draws the following picture. Arian is involved in software sales, runs an equity investment portfolio (with less than 20 per cent ownership in other firms), and invests in subsidiaries with greater than 20 per cent ownership where it is deemed to have substantial influence on the operations. The after-tax income for the three operating activities is identified, and considerably more information on the performance of the investments is added. Not only are the realized gains and losses in the GAAP income statement recognized, but so are the unrealized gains and losses from the equity statement. Therefore, one can understand the overall performance of the portfolio, irrespective of whether the firm sold investments or not. (The investor is not deceived, therefore, by a firm that engages in "cherry picking" – selling off investments that have appreciated so as to increase net income, but leaving unrealized losses in the equity statement.) In addition to these operations,

Arian invests excess cash in financial assets, and the income from these assets is identified (and not commingled with the results of operations).

Box 3.1 Hypee Inc., 2004-2010

The reformulation of Hypee's 2004 financial statements in this study note continues an analysis of the firm for 2004-2011. By going to this feature, you can trace Hypee over an extended period, giving yourself more information for a valuation in 2012. Below are some summary numbers from the reformulated statements (₹ in millions).

	2010	2009	2008	2007	2006	2005	2004
Sales	9,893	9,489	8,995	8,777	9,553	9,187	6,471
Operating income (after tax)	620	577	557	449	410	797	549
Comprehensive income	599	549	537	430	384	777	535
Net operating assets	4,460	4,517	4,402	3,993	4,042	3,674	2,659
Net financial obligations	616	1,022	1,254	658	780	518	228
Shareholders' equity	3,844	3,495	3,148	3,335	3,262	3,156	2,431

Exhibit 3.12 Income Statements and Reformulated Statements for Arian Corporation, 2009- 2010.

Name of the Company: Arian Corporation

Profit and Loss Statement for the year ended: 30.06.2010

(₹ in millions)

	Particulars	Note No.	As at 30.06.2010	As at 30.06.2009
I	REVENUE FROM OPERATION		28,365	25,296
II	OTHER INCOME			
III	TOTAL REVENUE(I+II)		28,365	25,296
IV	EXPENSES:			
	(a) Cost of material consumed			
	(b) Purchase of products for sale			
	(c) changes in inventories of finished goods, work-in-progress and products for sale			
	(d) Employees cost/ benefits expenses			
	(e) Finance cost	(1)	397	195
	(f) Depreciation and amortization expenses			
	(g) Product development expenses/Engineering expenses			
	(h) Other expenses	(2)	16,455	13,576
	(i) Expenditure transfer to capital and other account			
	TOTAL EXPENSES		16,852	13,771



V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		11,513	11,525
VI	EXCEPTIONAL ITEMS	(3)	—	375
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		11,513	11,150
VIII	EXTRAORDINARY ITEMS			
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)			
X	Tax expenses:			
	(1) Current Tax	(4)	3,684	3,804
	(2) deferred tax			
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		7,829	7,346
XII	Profit (loss) from discontinuing operations			
XIII	Tax expenses from discontinuing operations			
XIV	Profit(loss) from discontinuing operations (after tax) (XII-XIII)			
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		7,829	7,346
	Balance brought forward from previous year			
	Profit available for appropriation			
	Appropriation:			
	Proposed dividend			
	Transfer to General Reserve			
	Distribution Tax			
	Total			
	Balance carried forward			
XVI	Earning per equity share:			
	(1) Basic			
	(2) Diluted			

Workings:

(₹ in millions)

1. Finance Costs	As at 30.06.2010	As at 30.06.2009
Losses on equity investments and other	92	159
Investment loss	305	36
Total	397	195

2. Other Expenses	As at 30.06.2010	As at 30.06.2009
Cost of revenue	5,191	3,455
Research and development	4,307	4,379
Sales and marketing	5,407	4,885
General and administrative	1,550	857
Total	16,455	13,576

3. Exceptional Items	As at 30.06.2010	As at 30.06.2009
Cumulative effect of accounting change, net of taxes.	—	(375)
Total	—	(375)

4. Current Tax	As at 30.06.2010	As at 30.06.2009
Provision for income taxes	3,684	3,804
Total	3,684	3,804

Exhibit 3.12 (concluded)

Reformulated Income Statements				
(₹ in millions)				
	2010		2009	
Revenues		28,365		25,296
Operating expenses:				
Cost of revenue		5,191		3,455
Research and development		4,307		4,379
Sales and marketing		5,407		4,885
General and administrative		1,550		857
Operating income from sales, before tax		16,455		13,576
Tax as reported	3,684	11,910	3,804	11,720
Tax on other operating income	872		756	
Tax on financing income	(758)	3,798	(743)	3,817



Operating income form sales (after tax)		8,112		7,903
Investment income statement: ¹				
Dividends	357		377	
Realized gains on sales of investments	2,121		3,003	
Permanent impairment of investments	(4,323)		(4,804)	
Unrealized losses on derivatives	(480)	(2,325)	(592)	(2,016)
Tax on investment income(at 37.5%) ²		872		756
		(1,453)		(1,260)
Investment income in equity statement (after tax):				
Unrealized losses on convertible debt		-		(829)
Gains(losses) on derivatives		(91)		634
Unrealized losses on equity investments		(281)		(707)
Total investment income		(1,825)		(2,162)
Losses in equity subsidiaries		(92)		(159)
Currency translation and other		82		(39)
Cumulative effect of accounting change		-		(450)
Total other income		(1,835)		(2,810)
Total operating income		6,277		5,093
Net financing income				
Interest income ³		1,762		1,808
Realized gains on short-term investments ¹		258		172
		2,020		1,980
Tax at 37.5% ⁴		758		743
		1,262		1,237
Financing income in equity statement(after tax):				
Unrealized gain on financial assets		286		76
Total financing income		1,548		1,313
Comprehensive income		7,825		6,406

¹ Included in investment income is the GAAP statement, details from footnotes.

² Losses on investments draw a tax deduction.

³ Interest income is included in investment income in the GAAP statement.

⁴ With net financing income, financing activity draw further taxes rather than a tax benefit.

3.4 COMPARATIVE ANALYSIS OF THE BALANCE SHEET AND INCOME STATEMENT

To make judgments about a firm's performance the analyst needs benchmarks. Benchmarks are established by reference to other firms (usually in the same industry) or to the same firm's past history. Comparison to other firms is called cross-sectional analysis. Comparison to a firm's own history is called time-series analysis. Financial statements are prepared for cross-sectional comparisons using the techniques of common-size analysis. The statements are compared over time using trend analysis.

Common-Size Analysis

Common-size analysis is simply a standardization for the lines to eliminate the effect of size. Line items are expressed per dollar of an attribute that reflects the scale of operations. However, if that attribute is chosen carefully, and if reformulated statements are used, the scaling will reveal pertinent features of a firm's operations. And when compared across firms, or across time, common-size statements will identify unusual features that require further investigation.

Common-Size Income Statements

Exhibit 3.13 places Hypee's reformulated 2012 income statement on a common-size basis and compares the statement to that of Ricky. Revenues and expenses, along with net comprehensive income, are expressed as a percentage of the revenue.

The comparative common-size statements reveal two things:

- How firms do business differently and the different structure of revenues and expenses that result. These two firms have similar sources of revenue and expense, as valid comparables should. Looking at operating expenses, the firms have similar cost structures, but Hypee has the lowest cost of sales per rupee of revenue (57.1 percent). Hypee also maintains the lowest administrative costs at 18.9 per cent of sales, but is has higher advertising costs (11.2 percent).

Exhibit 3.13 Comparative Common – size Income Statements for Hypee, Inc., and Ricky International Ltd. for 2012. Rupees amounts in millions. Percentages are per rupee of sales. Common size income statements reveal the profitability of sales and the effect of each expense item on the profitability of sales.

	Hypee		Ricky	
	₹	%	₹	%
Revenue	12,253	100.0	3,785	100.0
Cost of sales	7,001	57.1	2,287	60.4
Gross margin	5,252	42.9	1,498	39.6
Operating expenses				
Administrative	2,312	18.9	1,067	28.2
Advertising	1,378	11.2	137	3.6
Amortization and other	87	0.7	5	0.1
Operating income from sales (before tax)	1,475	12.0	289	7.6
Tax on operating income from sales	513	4.2	73	1.9
Other operating income from sales (after tax)	962	7.8	216	5.7
Other operating income	74	0.6	22	0.5
Operating income (after tax)	1,036	8.4	238	6.3
Net financing expense (income)	16	0.1	18	0.5
Comprehensive income to equity shareholders	1,020	8.3	220	5.8



- Operating profitability per rupee of sales. As each operating item is divided through by sales revenue, the common-size number indicates the proportion of each rupee of sales the item represents. Thus the number for an operating – expense is the percentage of sales that is absorbed by the expense, and the number for operating income is the percentage of sales that ends up in profit. The latter is particularly important:

Operating profit margin from sales = Operating income from sales (after tax)/Sales

Hypee's profit margin from sales is 7.8 percent, compared with a 5.7 percent margin for Ricky. Ratios also can be calculated for operating income before tax and for total operating income, as in the exhibit. Reviewing the expense ratios, we see that Ricky had a lower profit margin than Hypee primarily because of higher cost of sales and administrative expenses. These differences highlight features of the business that need to be investigated. They direct the analyst to find information that will explain the differences and so explain why these firms might be valued differently.

The Final comprehensive income number, expressed as a percentage of sales, is the (comprehensive) net profit margin. The comparison of this number to the operating profit margin reveals how much the firms increased or decreased their profits through financing activities. Hypee earned a net 8.3 paisa for every rupee of sales, compared to 5.7 paisa for Ricky.

Common-Size Balance Sheets

Common-size balance sheets often standardize on total assets, but a more informative approach, using reformulated statements, standardizes operating assets and liabilities on their totals. The operating section of the comparative common-size balance sheets for the two firms is shown in Exhibit 3.14. The percentages describe the relative composition of the net assets in the operating activities. You can easily spot the differences when the balance sheets are in this form; try comparing the relative amounts of investments in accounts receivable, inventory, property, plant and equipment, and so on, for the two companies.

Exhibit 3.14 Comparative Common-size Balance Sheets for Hypee, Inc., and Ricky International Ltd. for 2012. Amounts in millions. Common –size balance sheets reveal the percentage makeup of operating assets and operating liabilities.

	Hypee		Ricky	
	₹	%	₹	%
Operating assets				
Operating cash	61	0.9	19	1.0
Accounts receivable	2,120	31.5	661	34.8
Inventories	1,634	24.3	458	24.1
Prepaid expenses	370	5.5	68	3.6
Property, plant, and equipment	1,587	23.6	184	9.7
Goodwill	135	2.0	124	6.5
Trademarks and other intangibles	400	5.9	200	10.5
Accumulated amortization	(34)	(0.5)	(4)	(0.2)
Deferred taxes and other assets	456	6.8	190	10.0
	6,729	100.0	1,900	100.0
Operating liabilities				
Accounts payable	720	33.1	184	26.7
Accrued liabilities	921	42.3	387	56.2
Income taxes payable	118	5.4	72	10.4
Deferred taxes and other	418	19.2	46	6.7
	2,177	100.0	689	100.0
Net operating assets	4,552		1,211	

Trend Analysis

Exhibit 3.15 presents trends for Hypee, Inc., from 2008 to 2012. Trend analysis expresses financial statement items as an index relative to a base year. In Hypee's case, the index is 100 for the base year of 2007.

Trend analysis gives a picture of how financial statement items have changed over time. The index for net operating assets indicates whether the firm is growing investments in operations, and at what rate, or is liquidating. The index for stockholders' equity obligations tracks the net indebtedness. Similarly, the indexes for the income statement track the income and the factors that affect it. Of particular interest are sales, operating income, and comprehensive income.

The picture drawn for Hypee is one of sales growing slowly at first, and then accelerating over the five years, resulting in growth in operating income from sales, after tax, of 93.0 percent and growth in comprehensive income of 137.0 per cent over the five years. The indexes for specific line items indicate where the growth has come from, and year-to-year changes indicate the periods that have contributed most to growth. Cost of sales has grown slower than sales and, correspondingly, gross margins have grown at a higher rate than sales. From the balance sheet trends, we observe that net operating assets have grown slower than sales, indicating that, as time has evolved, more sales have been earned for each rupee invested in these assets.

Exhibit 3.15 Trend Analysis of Selected Financial Statement Items for Hypee, Inc., 2008- 2012, Base = 100 for 2007 (Reference: Exhibit 3.10 and Box 3.1) Trend analysis reveals the growth or decline in financial statements items over time:

	2012	2011	2010	2009	2008	Base in 2007 (₹ in millions)
Sales	139.6	121.9	112.7	108.1	102.5	8,777
Cost of sales	127.4	114.9	109.3	105.3	98.4	5,494
Gross margin	160.0	133.5	118.4	112.8	109.4	3,283
Operating expenses	153.5	131.3	115.3	111.3	107.4	2,461
Operating income from sales (before tax)	179.3	140.1	127.9	117.5	115.3	822
Operating income from sales (after tax)	193.0	152.2	138.4	124.1	119.9	498
Operating income	202.4	192.4	147.9	128.5	124.1	449
Comprehensive income to equity shareholders	237.0	94.2	139.3	127.6	124.9	430
Balance Sheet						
Accounts receivable	137.7	135.3	117.3	105.3	101.8	1,540
Inventories	139.5	129.4	117.3	121.6	123.5	1,171
Property, plant, and equipment	125.3	128.0	127.5	127.9	125.1	1,266
Operating assets	132.0	122.4	116.1	109.8	111.4	5,099
Accounts payable	151.9	110.3	98.7	91.1	114.8	474
Accrued liabilities	166.5	180.7	138.9	85.4	112.5	553
Operating liabilities	196.7	172.6	132.0	92.9	115.3	1,107
Net operating assets	114.0	108.5	111.7	114.6	110.3	3,992
Net financial obligations	-43.9	45.9	93.6	162.5	191.6	658
Shareholders' equity	145.1	120.8	115.3	105.1	64.4	3,335



Notes: Growth or decline in sales can be calculated as follows: (₹ in million)

- (i) For 2008 = $\frac{₹ 8,995}{₹ 8,777} = 1.02$ or 102.5%
- (ii) For 2009 = $\frac{₹ 9,489}{₹ 8,777} = 1.08$ or 108.1% and so on.

Income Statement Ratios

Profit Margin Ratios

Profit margins are the percentage of sales that yield profits:

$$\text{Operating Profit Margin (PM)} = \frac{\text{OI (after tax)}}{\text{Sales}}$$

This profit margin is based on the total operating income on the last line of operating income before financial items. It can be divided into profit margin from income generated by sales and profit margin from income that does not come from sales:

$$\text{Sales PM} = \frac{\text{OI (after tax) from sales}}{\text{Sales}}$$

$$\text{Other items PM} = \frac{\text{OI (after tax) from other items}}{\text{Sales}}$$

These two margins sum to the operating profit margin. The most common other item in the income statement is the share of income (or loss) of subsidiaries. This income is from sales reported in the subsidiary, not from the reported sales in the parent's income statement. Including it in the analysis of the profitability of the sales in the parent's income statement results in an incorrect assessment of the profit margin on sales. Hypee's sales PM is 7.8 percent in Exhibit 3.13, its other items PM is 0.6 percent, so its total operating profit margin is 8.4 percent.

The bottom-line margin ratio is

$$\text{Net (comprehensive) income profit margin} = \frac{\text{Comprehensive income}}{\text{Sales}}$$

Hypee's bottom-line margin in 2012 is 8.3 percent.

Expense Ratios

Expense ratios calculate the percentage of sales revenue that is absorbed by expenses. They have the form

$$\text{Expense ratio} = \frac{\text{Expense}}{\text{Sales}}$$

This ratio is calculated for each expense item in operating income from sales so

$$1 - \text{Sales PM} = \text{Sum of expense ratios}$$

Expense ratios are given in Exhibit 3.13 for Ricky, cost of sales absorb 60.4 percent of sales. The firm's total expense ratios sum of 92.5 per cent before tax and 94.3 percent after tax, with the remaining 5.7 percent of sales providing operating income after tax.

Year-to-year changes in the index represent year-to-year growth rates. For example, Hypee's 2012 sales growth rate was $(139.6 - 121.9)/121.9$, or 14.5 percent, compared with the 2011 growth rate of $(121.9 - 112.7)/112.7$, or 8.2 percent. Comparisons of growth rates raise questions for the analyst. In

2008, sales grew by 2.5 percent, but inventories grew by a much larger amount, 23.5 percent. Why? Was the inventory buildup due to Hypee having trouble moving inventory, indicating lower demand and sales revenue in the future? Or was Hypee building up inventory in anticipation of higher demand in the future? Why did operating expenses grow faster than sales revenue in 2008? Such questions provoke the analyst to further investigation.

Common-size and trend analysis can be combined by preparing trend statements on a common-size basis. This facilitates the comparison of one firm's trends with those of comparable firms.

Ratio Analysis

From the reformulated statements we can calculate the two ratios to summarize the profitability of the operating activities and the financing activities: return on net operating assets (RNOA), which is operating income after tax relative to net operating assets, and net borrowing cost (NBC), which is a net financial expense after tax relative to net financial obligations. (Reference: Exhibit 3.3 and 3.13)

For Hypee, Inc., the return on net operating assets for 2012 was

$$\text{RNOA} = \frac{1,036}{\frac{1}{2}(4,552 + 4,330)} = 23.3\%$$

Hypee's 2011 net borrowing cost was

$$\text{NBC} = \frac{18}{\frac{1}{2}(302 + 616)} = 3.9\%$$

For Arian, the 2010 RNOA was (Reference: Exhibit 3.12 and Reformulated Balance Sheet of Asian Corp.)

$$\text{RNOA} = \frac{6,277}{\frac{1}{2}(11,574 + 14,083)} = 48.9\%$$

and, as net financial expenses were negative, the return on net financial asset (RNFA) was

$$\text{RNFA} = \frac{1,548}{\frac{1}{2}(40,606 + 33,206)} = 4.2\%$$

These returns are, of course, after tax (and after the tax benefit of debt). The calculations use the average of beginning and ending balances in the denominator; they can be inaccurate if there are large changes in balance sheet items other than halfway through the year. Net borrowing cost is particularly sensitive to the timing of large changes in balance sheet items other than halfway through the year. Net borrowing cost is particularly sensitive to the timing of large changes in debt. Always compare the NBC against the cost of debt reported in the debt footnotes, as a check.

These profitability ratios will be analyzed in detail in study note 5. The common size analyses of the statements yield a number of ratios that will be used in that analysis.

Both profitability and growth are relevant for forecasting residual earnings. Trend analysis that documents past growth yields a number of growth ratios that will be used in the analysis of growth in study note 6.

Balance Sheet Ratios

Composition Ratios: the percentages in common-size balance sheets (as in Exhibit 9.13) are composition ratios:

$$\text{Operating Asset Composition Ratio} = \frac{\text{Operating asset}}{\text{Total operating assets}}$$

$$\text{Operating liability composition ratio} = \frac{\text{Operating liability}}{\text{Total operating liabilities}}$$



The ratios for individual items sum to 100 per cent within their category.

Operating Liability Leverage

The composition of net operating assets can be highlighted by comparing operating liabilities to net operating assets:

$$\text{Operating Liability Leverage (OLLEV)} = \frac{\text{Operating liabilities}}{\text{Net operating assets}}$$

The operating liability leverage ratio gives an indication of how the investment in net operating assets has been reduced by operating liabilities. It is called a leverage ratio because it can lever up the return on net operating assets (RNOA) with a lower denominator. For Hypee, the operating liability leverage ratio at the end of 2012 is 47.8 per cent compared to 56.8 percent for Ricky. The operating liability composition ratios reveal which liabilities have contributed to the operating liability leverage.

Financial Leverage

A second leverage ratio gives the relative size of net financial assets or obligations. Hypee has net debt in 2011 while Arian and Ricky hold net financial assets. The differences are captured by ratios that compare totals for net operating assets and net financing obligations to owners' equity. These ratios are

$$\text{Capitalization Ratio} = \text{NOA/SE}$$

and

$$\text{Financial Leverage Ratio (FLEV)} = \text{NFO/SE}$$

Here NOA = Net Operating Assets

SE = Shareholders' Equity

NFO = Net Financial Obligations

this is negative if the firm has positive net financial assets. Financial leverage is the degree to which net operating assets are financed by common equity. It is always the case that

$$\text{Capitalization ratio} - \text{Financial leverage ratio} = 1.0$$

Thus either measure can be used as an indication of the degree to which net financial assets are financed by common equity or net financial debt, but it is usual to refer to the financial leverage ratio. It is called a leverage ratio because, as we will see in study note 5, borrowing levers the ROE up or down.

Hypee had a capitalization ratio of 107.5 percent and a financial leverage ratio of 7.5 percent in 2011, but its financial leverage turned negative by the end of 2012, giving it a capitalization ratio of 94.0 percent and a financial leverage ratio of -6.0 percent. Arian's financial leverage ratio in 2010 was 77.8 percent and its capitalization ratio was 22.2 percent.

Growth Ratios

Trend analysis reveals growth. Four particular year-to-year growth rates are important to the growth component of valuation.

$$\text{Growth rate in share} = \frac{\text{Change in sales}}{\text{Prior period's sales}}$$

$$\text{Growth rate in operating income} = \frac{\text{Change in operating income (after tax)}}{\text{Prior period's OI}}$$

$$\text{Growth in NOA} = \frac{\text{Change in net operating assets}}{\text{Beginning NOA}}$$

$$\text{Growth in SE} = \frac{\text{Change in SE}}{\text{Beginning SE}}$$

3.5 ANALYSIS OF CHANGES IN INCOME

An Overview

We would analyze the income of a concern in this study note. In general sense, income refers to the excess of revenue over expense. Therefore, income of a concern changes due to changes in revenue or due to changes in expense or due to changes in both. In this study note, we would examine the impact of changes in revenue and expense on income. More clearly, we would examine how income changes due to changes in revenue and expense.

Concept of Income

Generally, income is denoted by different terms such as Profit, Net Profit or Net Income. Now, the prime question is what does income actually mean? Income may be defined differently from different viewpoints.

According to Harry Norris, income is generally conceived to be a residue which emerges out of matching expired cost against revenue. This definition of income is given from the viewpoint of the Income Statement (i.e. Profit & Loss A/c). As per this definition, income is the excess of revenue over expired cost (i.e., benefit of expense already exhausted).

According to Morton Backer, income is defined as aggregate of value received in exchange of goods and services of an enterprise that results in augmentation of Enterprise Assets. This definition of income has been given from the viewpoint of the Balance Sheet of an enterprise. As per this definition, income is the net increase in Net Assets of the enterprise during an accounting period. Actually, during an accounting period, Net Assets of a firm increases due to profit earned during that period, which is referred as 'income' for that period.

These different concepts of income are individually discussed in the following sections.

Accounting Concept of Income

From the accounting perspective, income is defined as the excess of total revenue earned over expired cost. Here, total revenue includes the revenue earned from operating activities and gains from other incidental activities of the concern. On the other hand, expired cost consists of expenses incurred for generating revenue for the business and losses from other incidental activities of the concern. Therefore, Accounting Concept of Income can be mathematically expressed as follows:

Accounting Income (I) = [Revenue earned from operating activities (R) + Other incidental gains (G)] - [Expenses (E) + Other incidental losses (L)]

i.e., $I = (R + G) - (E + L)$

Therefore, from the accounting viewpoint, income is the excess of revenue earned from operating activities and gains from other incidental activities of the concern over the expenses incurred for generating revenue and losses from other incidental activities of the concern.

Economic Concept of Income

From the economists' perspective, income is defined as the maximum amount which a firm can distribute to its owners during a period. In other words, as per economic concept, income refers to the net increase in capital of the firm during a period. This net increase in capital is the difference between closing capital and opening capital of the firm for a period after adjustment of capital consumed and fresh capital introduced during that period. Therefore, Economic Concept of Income can be mathematically expressed as follows:

Economic Income (E) = Consumption of capital during the period (C_c) + [Capital at the end of the period (C_1) - Capital at the beginning of the period (C_0)] - Fresh capital introduced during the period (C_i)

i.e. $E = C_c + (C_1 - C_0) - C_i$



Therefore, from the economic viewpoint, income is the difference between the capital employed in a firm at two points of time. For ascertaining economic income, Opening and Closing Capital are to be taken at Fair Market Value and not at Historical Cost.

Measurement of Income

There are several approaches of Income Measurement, of which two approaches are commonly followed for measurement of income. These are: Transaction Approach of Income Measurement and Balance Sheet Approach of Income Measurement. These two approaches of Income Measurement are individually discussed in the following sub-sections.

Transaction Approach of Income Measurement

Under Transaction Approach, income is measured by deducting related expired cost from the revenue received out of the transactions. This approach considers the business transactions as the main tool for measurement of income. This approach takes into account the changes between valuations of Assets and Liabilities as results of transactions. Under this approach, revenue and gains arisen out of transactions are considered on realized basis. On the other hand, expired cost arisen out of transaction is taken into account. Income is measured by matching the total revenue realized during an accounting period against the expired costs allocated for that period.

Therefore, under Transaction Approach, measurement of income maybe mathematically expressed as follows:

$$\text{Income (I)} = [\text{Revenue earned from operating activities (R)} + \text{Other revenue gains (G)}] - [\text{Expenses (E)} + \text{Other revenue losses (L)}]$$

$$\text{i.e., } I = (R + G) - (E + L)$$

This approach of Income Measurement is most popular and is widely used.

Balance Sheet Approach of Income Measurement

Under Balance Sheet Approach, income is measured by net change in net assets of the firm during an accounting period. More clearly, net increase in net assets between two Balance Sheet dates of a firm is measured as the income of the firm for that period. Net Assets refer to Total Assets minus Total Liabilities. For this purpose, Assets and Liabilities are valued at their Historical Costs. While calculating the net change in Net Assets of the firm for measuring income, adjustment is also made for fresh capital introduced and withdrawal of capital, if any, during that period.

Therefore, under Balance Sheet Approach, measurement of income may be mathematically expressed as follows:

$$\text{Income (I)} = \text{Net Assets at the end of the period (NA}_1\text{)} - \text{Net Assets at the beginning of the period (NA}_0\text{)} + \text{Withdrawal of capital during the period (W)} - \text{Fresh capital introduced during the period (F)}$$

$$\text{i.e., } I = \text{NA}_1 - \text{NA}_0 + W - F$$

Under Balance Sheet Approach of Income Measurement, main emphasis is given on the principle of Capital Maintenance. Here, income is recognized when capital increases.

Analysis of Income

Different phases of income may be analysed as follows:

		₹
	Net Sales	—
Less:	Factory Cost of Goods Sold Gross	—
	Gross Income/Gross Profit (GP)	—
Less:	Operating Expenses	—
	Operating Income	—
Add:	Non-operating Incomes and Gains	—
		—
Less:	Non-operating Expenses and Losses	—
	Earnings/Profit Before Interest & Tax (EBIT/PBIT)	—
Less:	Interest on Debt	—
	Earnings/Profit Before Tax (EBT/PBT)	—
Less:	Income Tax	—
	Earnings/Profit After Tax (EAT/PAT)	—
Less:	Preference Dividend	—
	Earnings/Profit Available to Equity Shareholders	—

Factors Responsible For Changes in Income

For any or all of the following reasons, income/profit of a firm changes:

A. Factors responsible for increase in income/profit are:

- i. Increase in sales volume
- ii. Increase in unit selling price
- iii. Decrease in unit cost price

B. Factors responsible for decrease in income/profit are:

- i. Decrease in sales volume
- ii. Decrease in unit selling price
- iii. Increase in unit cost price

Concept of Revenue

Revenue may be defined as actual or expected inflows of cash or other assets or reduction of liabilities resulting from normal/operating activities of the business. Revenue increases value of assets of the firm. As per Indian Accounting Standard-9 (AS-9), revenue is defined as gross inflow of cash, receivables or other consideration arising in the course of the ordinary activities of an enterprise from the sale of goods, from rendering of services and from the use by others of enterprise resources yielding interest, royalties and dividend. As per International Accounting Standard-18 (IAS-18), revenue is the gross inflow of economic benefits during the course of ordinary activities of an entity when those inflows result in increase in equity, except increases relating to contribution from equity participants.

Therefore, revenue is the gross inflow of Cash or other Assets resulting from business activities, such as sale of goods or rendering of services, of an enterprise. Revenue is measured by the charges made to the customers against sale of goods or services rendered to them. It increases the value of owners' equity of the enterprise.



Recognition of Revenue

Revenue Recognition refers to the consideration of revenue by an enterprise in its books of accounts as an income. Revenue from sale of goods should be recognized by an enterprise when the following conditions are satisfied:

- I. The seller of the goods has transferred the property of the goods to the buyer for a price, or all significant risks and rewards of ownership have been transferred to the buyer.
- II. No significant uncertainty exists regarding the amount of consideration that would be derived from the sale of goods.
- III. The seller retains no effective control of the goods transferred to a degree associated with the ownership.

Concept of Expense

Expense may be defined as the monetary value of resources consumed by an enterprise for the purpose of generating revenue for the enterprise. It is the cost incurred for earning revenue. Expense results in reduction of assets or augmentation of liabilities of the enterprise. It also reduces owners' equity of the concern. The benefit derived from an expense is exhausted during the accounting year in which it is incurred. More clearly, benefit from an expense is consumed during one accounting year. On the other hand, the cost whose benefit is expired during the accounting year in which it is incurred is called 'expired cost'. As the generation of benefit from an expense ceases within the accounting year in which it is incurred, expense is nothing but the expired cost for earning revenue. Accordingly, expense incurred during an accounting period is charged to the Income Statement/Profit & Loss A/c prepared at the end of that accounting period. Therefore, expense is the cost incurred for earning revenue of the enterprise whose effect is consumed during the accounting period in which it is incurred.

Concept of Gain

Gain refers to the net income received from incidental activities of a firm. In other words, gain refers to the surplus arising from an activity of a firm other than its operating activities. Gain is not procured out of the regular activity of the concern; rather gain is non-recurring in nature. Gain is not generated from the main activity (i.e., operating activity) of a concern; rather, it is generated from other incidental activity (i.e., non-operating activity) of the concern. Surplus from sale of fixed assets, surplus from sale of investments, compensation received from a claim for damages, receipt of donation, etc. are examples of gain. Gain is recognized in the books of accounts only if it is realized. Therefore, gain should not be recognized in the books until it is realized.

Concept of Loss

Loss may be defined as that part of expired cost from which no benefit can be derived for generating revenue from the incidental activities of the enterprise. Loss should not be mixed up with operating or trading loss. Operating or trading loss is the expired cost from which no benefit can be derived towards revenue generation from the operating/normal activity of the business. On the other hand, loss arises from other incidental activities of a concern, and not from the operating/normal activity of the business. Loss is just the reverse side of gain. Loss is definitely an expired cost, but unlike expense, loss does not help to generate revenue. Loss on sale of Fixed Assets, loss on sale of Investments, loss due revaluation of assets and liabilities, foreign exchange loss, etc. are examples of loss.

Technique of Income Analysis

Changes in sales, cost and income/profit can be analysed by applying the following techniques:

A. Technique for analysing change in sales

	₹
1. Change in sales due to change in sales quantity [Change in sales quantity x Base year's unit selling price]	—
2. Change in sales due to change in unit selling price [Change in unit selling price x Base year's sales quantity]	—
3. Change in sales due to change in price and quantity [Changes in unit selling price x Change in sales quantity]	—
Change in Sales	—

B. Technique for analysing change in cost

	₹
1. Change in cost due to change in quantity [Change in quantity x Base year's unit cost price]	—
2. Change in cost due to change in unit cost price [Change in unit cost price x Base year's quantity]	—
3. Change in cost due to change in price and quantity [Changes in unit cost price x Change in quantity]	—
Change in Cost	—

C. Technique for analysing change in income/profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Change in profit due to change in sales quantity [Change in quantity x Base year's unit selling price]	—	—
2. Change in profit due to change in unit selling price [Change in unit selling price x Base year's quantity]	—	—
3. Change in profit due to change in price and quantity [Changes in unit selling price x Change in quantity]	—	—
Changes in profit due to changes in cost:		
1. Change in profit due to change in quantity [Change in quantity x Base year's unit cost price]	—	—
2. Change in profit due to change in unit cost price [Change in unit cost price x Base year's quantity]	—	—
3. Change in profit due to change in price and quantity [Change in unit cost price x Change in quantity]	—	—
Change in Profit /Income		

**Illustration 1.**

Following figures have been extracted from the records of a company:

Year	2011	2012
Sales (₹)	5,00,000	8,40,000
Units Sold	10,000	14,000

Account for changes in sales value due to changes in sales quantity, selling price and both.

Solution:

Particulars	2011	2012	Changes
Sales Value (₹)	5,00,000	8,40,000	(+) 3,40,000
Sales Units	10,000	14,000	(+) 4,000
Selling Price per Unit (₹) [Sales Value ÷ Sales Units]	50	60	(+)10

Statement showing account for changes in Sales

₹

1.	Increase in sales due to increase in sales quantity [Change in sales quantity x Base year's unit selling price = (14,000-10,000) x ₹50]	2,00,000
2.	Increase in sales due to increase in selling price [Change in unit selling price x Base year's sales quantity = (₹60 - ₹50) x 10,000]	1,00,000
3.	Increase in sales due to increase in price and quantity [Changes in unit selling price x Change in sales quantity = (₹60 - ₹50) x (14,000 - 10,000)]	40,000
	Increase in Sales	3,40,000

Note: Here, the base year is 2011.

Illustration 2.

The comparative information for two years relating to P Ltd. are as follows:

Year	2011	2012
Sales (₹)	12,00,000	14,62,500
Units sold	4,000	4,500
Sales price per unit (₹)	300	325

Account for the change in sales (amount) due to:

- Change in quantity
- Change in price
- Change in quantity and price taken together

Solution:

	2011	2012	Changes
Sales Value (₹)	12,00,000	14,62,500	(+) 2,62,500
Sales Units	4,000	4,500	(+) 500
Selling Price per Unit (₹) [Sales Value ÷ Sales Units]	300	325	(+)25

Statement showing account for changes in Sales

	₹
1. Change in sales due to change in quantity [Change in quantity x Base year's unit selling price = [(4,500 - 4,000) x ₹300]	1,50,000
2. Change in sales due to change in price [Change in unit selling price x Base year's quantity = (₹325 - ₹300) x 4,000]	1,00,000
3. Change in sales due to change in quantity and price taken together [Changes in unit selling price x Change in quantity = (₹325 - ₹300) X (4,500 - 4,000)]	12,500
Total Increase in Sales	2,62,500

Note: Here, the base year is 2011.

Illustration 3.

Following figures have been extracted from the records of a company:

Year	2011	2012
Sales (₹)	4,00,000	5,25,000
Units Sold	10,000	15,000

Account for changes in sales value due to changes in sales quantity, selling price and both.

Solution:

Particulars	2011	2012	Changes
Sales Value (₹)	4,00,000	5,25,000	(+) 1,25,000
Sales Units	10,000	15,000	(+) 5,000
Selling Price per Unit (₹) [Sales Value ÷ Sales Units]	40	35	(-)5

Statement showing account for changes in Sales

	₹
1. Increase in sales due to increase in sales quantity [Change in sales quantity x Base year's unit selling price = (15,000-10,000) x ₹ 40]	2,00,000
2. Decrease in sales due to decrease in selling price [Change in unit selling price x Base year's sales quantity = (₹ 35-₹ 40) x 10,000]	(50,000)
3. Decrease in sales due to change in price and quantity [Changes in unit selling price x Change in sales quantity = (₹ 35 - ₹ 40) x (15,000 - 10,000)]	(25,000)
Increase in Sales	1,25,000

Note: Here, the base year is 2011.



Illustration 4.

Following figures have been extracted from the records of a company:

Year	2011	2012
Cost of Goods Sold (₹)	4,00,000	7,50,000
Units Sold	20,000	30,000

Account for changes in cost due to changes in sales quantity, cost price and both.

Solution:

Particulars	2011	2012	Changes
Cost of Goods Sold (₹)	4,00,000	7,50,000	(+) 3,50,000
Units Sold	20,000	30,000	(+) 10,000
Cost Price per Unit (₹) [Cost ÷ Units Sold]	20	25	(+)5

Statement showing account for changes in Cost

Particulars	₹
1. Increase in cost due to increase in sales quantity [Change in sales quantity x Base year's unit cost price = (30,000 - 20,000) x ₹20]	2,00,000
2. Increase in cost due to increase in unit cost price [Change in unit cost price x Base year's sales quantity = (₹25 - ₹20) x 20,000]	1,00,000
3. Increase in cost due to increase in price and quantity [Changes in unit cost price x Change in sales quantity = (₹25 - ₹20) x (30,000 - 20,000)]	50,000
Increase in Cost	3,50,000

Note: Here, the base year is 2011.

Illustration 5.

Following figures have been extracted from the records of a company:

Year	2011	2012
Cost of Goods Sold (₹)	3,60,000	5,60,000
Units Sold	12,000	20,000

Account for changes in cost due to changes in sales quantity, cost price and both.

Solution:

Particulars	2011	2012	Changes
Cost of Goods Sold (₹)	3,60,000	5,60,000	(+) 2,00,000
Units Sold	12,000	20,000	(+) 8,000
Cost Price per Unit (₹) [Cost ÷ Units Sold]	30	28	(-)2

Statement showing account for changes in Cost

Particulars	₹
1. Increase in cost due to increase in sales quantity [Change in sales quantity x Base year's unit cost price = (20,000-12,000) x ₹30]	2,40,000
2. Decrease in cost due to decrease in unit cost price [Change in unit cost price x Base year's sales quantity = (₹28 - ₹30) x 12,000]	(24,000)
3. Decrease in cost due to change in price and quantity [Changes in unit cost price x Change in sales quantity = (₹28 - ₹30) x (20,000 - 12,000)]	(16,000)
Increase in Cost	2,00,000

Note: Here, the base year is 2011.

Illustration 6.

The following figures have been extracted from the records of a company:

Year	2011	2012
Sales (₹)	1,50,000	2,70,000
Cost of Goods Sold (₹)	1,00,000	1,80,000
Units Sold	10,000	15,000

Account for changes in profit due to changes in sales quantity, cost price and selling price.

Solution:

Particulars	2011	2012	Changes
(a) Sales (₹)	1,50,000	2,70,000	(+) 1,20,000
(b) Cost of Goods Sold (₹)	1,00,000	1,80,000	(+) 80,000
Gross Profit (₹) [a - b]	50,000	90,000	(+) 40,000
(c) Units Sold	10,000	15,000	(+) 5,000
(d) Selling Price per Unit (₹) [a ÷ c]	15	18	(+) 3
(e) Cost Price per Unit (₹) [b ÷ c]	10	12	(+) 2

Statement showing account for changes in Profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in sales quantity [Change in sales quantity x Base year's unit selling price = (15,000-10,000) x ₹15]		75,000
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's sales quantity = (₹18- ₹15) x 10,000]		30,000
3. Increase in profit due to increase in price and quantity [Changes in unit selling price x Change in sales quantity = (₹18 - ₹15) x (15,000 - 10,000)]		15,000
		1,20,000



Changes in profit due to changes in cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (15,000 - 10,000) x ₹10]	(50,000)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = (₹12 - ₹10) x 10,000]	(20,000)	
3. Decrease in profit due to increase in price and quantity [Change in unit cost price x Change in quantity = (₹12 - ₹10) X (15,000 - 10,000)]	(10,000)	
		(80,000)
Net Increase in Gross Profit		40,000

Note: Here, the base year is 2011.

Illustration 7.

Following figures have been extracted from the records of a company:

Year	2011	2012
Sales (₹)	6,00,000	8,40,000
Cost of Goods Sold (₹)	4,00,000	6,30,000
Units Sold	20,000	30,000

Account for changes in profit due to changes in sales quantity, cost price and selling price.

Solution:

Particulars	2011	2012	Changes
(a) Sales (₹)	6,00,000	8,40,000	(+) 2,40,000
(b) Cost of Goods Sold (₹)	4,00,000	6,30,000	(+) 2,30,000
Gross Profit (₹) [a - b]	2,00,000	2,10,000	(+) 10,000
(c) Units Sold	20,000	30,000	(+) 10,000
(d) Selling Price per Unit (₹) [a ÷ c]	30	28	(-)2
(e) Cost Price per Unit (₹) [b ÷ c]	20	21	(+)1

Statement showing account for changes in Profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in quantity [Change in quantity x Base year's unit selling price = (30,000-20,000) x ₹30]		3,00,000
2. Decrease in profit due to decrease in unit selling price [Change in unit selling price x Base year's quantity = (₹28 - ₹30) x 20,000]		(40,000)
3. Decrease in profit due to change in price and quantity [Changes in unit selling price x Change in quantity = (₹28 - ₹30) x (30,000 - 20,000)]		(20,000)
		2,40,000

Changes in profit due to changes in cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (30,000 - 20,000) x ₹20]	(2,00,000)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = (₹21 - ₹20) x 20,000]	(20,000)	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹21 - ₹20) x (30,000 - 20,000)]	(10,000)	(2,30,000)
Net Increase in Gross Profit		10,000

Note: Here, the base year is 2011.

Illustration 8.

Following figures have been extracted from the records of Coral Company:

Year	2011	2012
Sales (₹)	3,75,000	3,96,000
Cost of Goods Sold (₹)	3,25,000	2,64,000
Units Sold	25,000	22,000

Account for changes in profit due to changes in sales quantity, cost price and selling price.

Solution:

	2011	2012	Changes
(a) Sales (₹)	3,75,000	3,96,000	(+) 21,000
(b) Cost of Goods Sold (₹)	3,25,000	2,64,000	(-) 61,000
Gross Profit (₹) [a - b]	50,000	1,32,000	(+) 82,000
(c) Units Sold	25,000	22,000	(-) 3,000
(d) Selling Price per Unit (₹) [a ÷ c]	15	18	(+) 3
(e) Cost Price per Unit (₹) [b ÷ c]	13	12	(-) 1

Statement showing account for changes in Profit

	₹	₹
Changes in profit due to changes in sales:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit selling price = (22,000-25,000) x ₹15]		(45,000)
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's quantity = (₹18 - ₹15) x 25,000]		75,000
3. Decrease in profit due to change in price and quantity [Changes in unit selling price x Change in quantity = (₹18 - ₹15) x (22,000 - 25,000)]		(9,000)
		21,000



Changes in profit due to changes in cost:		
1. Increase in profit due to decrease in quantity [Change in quantity x Base year's unit cost price = (25,000-22,000) x ₹13]	39,000	
2. Increase in profit due to decrease in unit cost price [Change in unit cost price x Base year's quantity = (₹13 - ₹12) x 25,000]	25,000	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹13 - ₹12) X (25,000 - 22,000)]	(3,000)	
		61,000
Net Increase in Gross Profit		82,000

Note: Here, the base year is 2011.

Illustration 9.

Following figures have been extracted from the records of Tulip Ltd.:

Year	2011	2012
Sales (₹)	5,00,000	7,20,000
Cost of Goods Sold (₹)	4,00,000	6,00,000
Gross Profit (₹)	1,00,000	1,20,000

It is learnt that sales volume for the year 2012 has increased by 20% over the year 2011. Account for changes in gross profit in the year 2012.

Solution:

Let the number of units sold in 2011 be 100.

Then, the number of units sold in 2012 = 100 + 20% of 100 = 120

	2011	2012	Changes
(a) Sales (₹)	5,00,000	7,20,000	(+) 2,20,000
(b) Cost of Goods Sold (₹)	4,00,000	6,00,000	(+) 2,00,000
Gross Profit (₹) [a - b]	1,00,000	1,20,000	(+) 20,000
(c) Units Sold	100	120	(+) 20
(d) Selling Price per Unit (₹) [a ÷ c]	5,000	6,000	(+) 1,000
(e) Cost Price per Unit (₹) [b ÷ c]	4,000	5,000	(+) 1,000

Statement showing account for changes in Profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in quantity [Change in quantity x Base year's unit selling price = (120-100)x₹5,000]		1,00,000
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's quantity = (₹ 6,000-₹ 5,000) x 100]		1,00,000

3. Increase in profit due to change in price and quantity [Changes in unit selling price x Change in quantity] = (₹ 6,000 - ₹ 5,000) x (120 - 100)]		20,000
		2,20,000
Changes in profit due to changes in cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (120 - 100) x ₹ 4,000]	(80,000)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = (₹ 5,000 - ₹ 4,000) x 100]	(1,00,000)	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹ 5,000 - ₹ 4,000) x (120 - 100)]	(20,000)	
		(2,00,000)
Net Increase in Gross Profit		20,000

Note: Here, the base year is 2011.

Illustration 10.

M & Co. furnished the following data for the years 2011 and 2012. You are required to calculate: (i) Percentage Change in Cost Price; (ii) Percentage Change in Selling Price and (iii) Account for Changes in Gross Profit in the year 2012.

Year	2011	2012
Sales (₹)	2,25,000	2,32,875
Cost of Goods Sold (₹)	1,65,000	1,60,380
Gross Profit (₹)	60,000	72,495

During 2012 there was a decrease in volume by 10%.

Solution:

Let the number of units sold in 2011 be 100.

Then, the number of units sold in 2012 = 100 - 10% of 100 = 90

	2011	2012	Changes
(a) Sales (₹)	2,25,000	2,32,875	(+) 7,875
(b) Cost of Goods Sold (₹)	1,65,000	1,60,380	(-) 4,620
Gross Profit (₹) [a-b]	60,000	72,495	(+) 12,495
(c) Units Sold	100	90	(-) 10
(d) Selling Price per Unit (₹) [a-c]	2,250	2,587.50	(+) 337.50
(e) Cost Price per Unit (₹) [b-c]	1,650	1,782	(+) 132

i. Percentage change in cost price in the year 2012:

Percentage increase in cost price per unit = $132/1,650 \times 100 = 8\%$

Percentage decrease in total cost = $4,620/1,65,000 \times 100 = 2.80\%$



ii. **Percentage change in selling price in the year 2012.**

Percentage increase in selling price per unit = $337.50/2,250 \times 100 = 15\%$

Percentage increase in total sales = $7,875/2,25,000 \times 100 = 3.50\%$

iii. **Statement showing account for changes in profit**

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Decrease in profit due to decrease in quantity [Change in quantity x Base year's unit selling price = $(100-90) \times ₹2,250$]		(22,500)
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's quantity = $(₹2,587.50 - ₹2,250) \times 100$]		33,750
3. Decrease in profit due to change in price and quantity [Changes in unit selling price x Change in quantity = $(₹2,587.50 - ₹2,250) \times (100 - 90)$]		(3,375)
		7,875
Changes in profit due to changes in cost:		
1. Increase in profit due to decrease in quantity [Change in quantity x Base year's unit cost price = $(100-90) \times ₹1,650$]	16,500	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = $(₹1,782 - ₹1,650) \times 100$]	(13,200)	
3. Increase in profit due to change in price and quantity [Change in unit cost price x Change in quantity = $(₹1,782 - ₹1,650) \times (100 - 90)$]	1,320	
		4,620
Net Increase in Gross Profit		12,495

Note: Here, the base year is 2011.

Illustration 11.

From the following information of Z Ltd., you are required to calculate the following:

- Percentage Change in Cost Price
- Percentage Change in Selling Price
- Changes in Gross Profit on various accounts

Year	2011-12	2012-13
Sales (₹)	6,00,000	7,92,000
Cost of Goods Sold (₹)	4,00,000	5,76,000
Increase in Volume	—	20%

Solution:

Let the volume of sales made in 2011-12 be 100 units.

Then, the volume of sales made in 2012-13 = $100 + 20\% \text{ of } 100 = 120$

Particulars	2011-12	2012-13	Changes
(a) Sales (₹)	6,00,000	7,92,000	(+)1,92,000
(b) Cost of Goods Sold (₹)	4,00,000	5,76,000	(+) 1,76,000
Gross Profit (₹) [a - b]	2,00,000	2,16,000	(+) 16,000
(c) Units Sold	100	120	(+)20
(d) Selling Price per Unit (₹) [a ÷ c]	6,000	6,600	(+) 600
(e) Cost Price per Unit (₹) [b ÷ c]	4,000	4,800	(+) 800

i. **Percentage change in cost price in the year 2012-13:**

Percentage increase in cost price per unit = $800/4,000 \times 100 = 20\%$

Percentage increase in total cost = $1,76,000/4,00,000 \times 100 = 44\%$

ii. **Percentage change in selling price in the year 2012-13:**

Percentage increase in selling price per unit = $600/6,000 \times 100 = 10\%$

Percentage increase in total sales = $1,92,000/6,00,000 \times 100 = 32\%$

iii. **Statement showing account for changes in profit**

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in quantity [Change in quantity x Base year's unit selling price = $(120-100) \times ₹6,000$]		1,20,000
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's quantity = $(₹6,600 - ₹6,000) \times 100$]		60,000
3. Increase in profit due to change in price and quantity [Changes in unit selling price x Change in quantity = $(₹6,600 - ₹6,000) \times (120 - 100)$]		12,000
		1,92,000
Changes in profit due to changes in cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = $(120-100) \times ₹4,000$]	(80,000)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = $(₹4,800 - ₹4,000) \times 100$]	(80,000)	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = $(₹4,800 - ₹4,000) \times (120 - 100)$]	(16,000)	
		(1,76,000)
Net Increase in Gross Profit		16,000

Note: Here, the base year is 2011-12.



Illustration 12.

Following figures have been extracted from the records of Simul Ltd.:

Year	2011	2012
Sales (₹)	3,00,000	3,85,000
Cost of Goods Sold (₹)	2,25,000	3,01,000
Gross Profit (₹)	75,000	84,000

It is learnt that selling price for the year 2012 has increased by 10% over the year 2011. Account for changes in gross profit in the year 2012.

Solution:

Let the selling price per unit in 2011 be ₹ 100.

Then, the selling price per unit in 2012 = 100 + 10% of 100 = ₹ 110

Particulars	2011	2012	Changes
(a) Sales (₹)	3,00,000	3,85,000	(+) 85,000
(b) Cost of Goods Sold (₹)	2,25,000	3,01,000	(+) 76,000
Gross Profit (₹) [a - b]	75,000	84,000	(+) 9,000
(c) Selling Price per Unit (₹)	100	110	(+)10
(d) Units Sold [a ÷ c]	3,000	3,500	(+) 500
(e) Cost Price per Unit (₹) [b ÷ d]	75	86	(+)11

Statement showing account for changes in Profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in quantity [Change in quantity x Base year's unit selling price = [(3,500-3,000) x ₹100]		50,000
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's quantity = [₹110 - ₹100] x 3,000]		30,000
3. Increase in profit due to change in price and quantity [Changes in unit selling price x Change in quantity] = [(₹110 - ₹100) X (3,500 - 3,000)]		5,000
		85,000
Changes in profit due to changes in cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price (3,500-3,000) x ₹75]	(37,500)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = [(₹86 - ₹75) x 3,000]	(33,000)	

3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity] = [(₹86 - ₹75) x (3,500 - 3,000)]	(5,500)	
		(76,000)
Net Increase in Gross Profit		9,000

Note: Here, the base year is 2011.

Illustration 13.

Following figures have been extracted from the records of Pa Ltd.:

Year	2011	2012
Sales (₹)	2,50,000	3,60,000
Cost of Goods Sold (₹)	2,00,000	3,30,000
Gross Profit (₹)	50,000	30,000

It is learnt that cost price for the year 2012 has increased by 10% over the year 2011. Account for changes in gross profit in the year 2012.

Solution:

Let the cost price per unit in 2011 be ₹ 100.

Then, the cost price per unit in 2012 = 100 + 10% of 100 = ₹ 110

Particulars	2011	2012	Changes
(a) Sales (₹)	2,50,000	3,60,000	(+) 1,10,000
(b) Cost of Goods Sold (₹)	2,00,000	3,30,000	(+) 1,30,000
Gross Profit (₹) [a - b]	50,000	30,000	(-) 20,000
(c) Cost Price per Unit (₹)	100	110	(+)10
(d) Units Sold [b ÷ c]	2,000	3,000	(+) 1,000
(e) Selling Price per Unit (₹) [a ÷ d]	125	120	(-)5

Statement showing account for changes in Profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in quantity [Change in quantity x Base year's unit selling price = (3,000-2,000) x ₹125]		1,25,000
2. Decrease in profit due to decrease in unit selling price [Change in unit selling price x Base year's quantity = (₹120- ₹125) x 2,000]		(10,000)
3. Decrease in profit due to change in price and quantity [Changes in unit selling price x Change in quantity = (₹120 - ₹125) x (3,000 - 2,000)]		(5,000)
Changes in profit due to changes in cost:		1,10,000



1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (3,000-2,000) x ₹100]	(1,00,000)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = (₹110-₹100) x 2,000]	(20,000)	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹110 - ₹100) x (3,000 - 2,000)]	(10,000)	
		(1,30,000)
Net Increase in Gross Profit		(20,000)

Note: Here, the base year is 2011.

Illustration 14.

Following figures have been extracted from the records of Babanchu Ltd.:

Year	2011	2012
Sales (₹)	7,50,000	9,90,000
Cost of Goods Sold (₹)	5,00,000	5,70,000
Gross Profit (₹)	2,50,000	4,20,000

It is learnt that selling price for the year 2012 has increased by 10% and cost price for the year 2012 has reduced by 5% over the year 2011.

Account for changes in gross profit in the year 2012.

Solution:

Let the cost price per unit in 2011 be ₹ 100.

Then, the cost price per unit in 2012 = 100 - 5% of 100 = ₹ 95

Particulars	2011	2012	Changes
(a) Sales (₹)	7,50,000	9,90,000	(+) 2,40,000
(b) Cost of Goods Sold (₹)	5,00,000	5,70,000	(+) 70,000
Gross Profit (₹) [a - b]	2,50,000	4,20,000	(-) 1,70,000
(c) Cost Price per Unit (₹)	100	95	(-)5
(d) Units Sold [b ÷ c]	5,000	6,000	(+) 1,000
(e) Selling Price per Unit (₹) [a ÷ d]	150	165	(+)15

Statement showing account for changes in Profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in quantity [Change in quantity x Base year's unit selling price] = (6,000 - 5,000) x ₹150]		1,50,000
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's quantity = (₹165 - ₹150) x 5,000]		75,000

3. Increase in profit due to change in price and quantity [Changes in unit selling price x Change in quantity = (₹165 - ₹150) x (6,000 - 5,000)]		15,000
		2,40,000
Changes in profit due to changes in cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (6,000 - 5,000) x ₹100]	(1,00,000)	
2. Increase in profit due to decrease in unit cost price [Change in unit cost price x Base year's quantity = (₹100 - ₹95) x 5,000]	25,000	
3. Increase in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹100 - ₹95) x (6,000 - 5,000)]	5,000	
		(70,000)
Net Increase in Gross Profit		1,70,000

Note: Here, the base year is 2011.

Illustration 15.

Following figures have been extracted from the records of Debya Ltd.:

Year	2011 (₹)	2012 (₹)
Sales	5,00,000	6,32,500
Cost of Goods Sold:		
Materials	2,50,000	3,30,000
Labour	1,50,000	1,65,000
Variable Overheads	30,000	35,200
Fixed Expenses	50,000	60,000
Net Profit	20,000	42,300

It is learnt that sales volume for the year 2012 has gone up by 10% over the year 2011. Moreover, cost of materials, labour and overhead have gone up by 10% each. Account for changes in net profit in the year 2012.

Solution:

Let the number of units sold in 2011 be 100.

Then, the number of units sold in 2012 = 100 + 10% of 100 = 110

	2011	2012	Changes
(a) Sales (₹)	5,00,000	6,32,500	(+) 1,32,500
(b) Material Cost (₹)	2,50,000	3,30,000	(+) 80,000
(c) Labour Cost (₹)	1,50,000	1,65,000	(+) 15,000
(d) Variable Overhead (₹)	30,000	35,200	(+) 5,200
(e) Gross Profit (₹) [a - b - c - d]	70,000	1,02,300	(+) 32,300



(f) Fixed Expenses (₹)	50,000	60,000	(+) 10,000
Net Profit (₹) [e-f]	20,000	42,300	(+) 22,300
(g) Units Sold	100	110	(+)10
(h) Selling Price per Unit (₹) [a ÷ g]	5,000	5,750	(+) 750
(i) Material Cost per Unit (₹) [b ÷ g]	2,500	3,000	(+) 500
(j) Labour Cost per Unit (₹) [c ÷ g]	1,500	1,500	0
(k) Variable Overhead Cost per Unit (₹) [d ÷ g]	300	320	(+)20

Statement showing account for changes in Profit

Particulars	₹	₹
Changes in profit due to changes in sales:		
1. Increase in profit due to increase in quantity [Change in quantity x Base year's unit selling price = (110 - 100) x ₹5,000]		50,000
2. Increase in profit due to increase in unit selling price [Change in unit selling price x Base year's quantity = (₹5,750 - ₹5,000) x 100]		75,000
3. Increase in profit due to change in price and quantity [Changes in unit selling price x Change in quantity = (₹5,750 - ₹5,000) x (110 - 100)]		7,500
		1,32,500
Changes in profit due to changes in material cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (110- 100) x ₹2,500]	(25,000)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = (₹3,000 - ₹2,500) x 100]	(50,000)	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹3,000 - ₹2,500) x (110 - 100)]	(5,000)	(80,000)
Changes in profit due to changes in labour cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (110-100) x ₹1,500]	(15,000)	
2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = (₹1,500 - ₹1,500) x 100]	0	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹1,500 - ₹1,500) x (110 - 100)]	0	(15,000)
Changes in profit due to changes in variable overhead cost:		
1. Decrease in profit due to increase in quantity [Change in quantity x Base year's unit cost price = (110-100)x ₹300]	(3,000)	

2. Decrease in profit due to increase in unit cost price [Change in unit cost price x Base year's quantity = (₹320-₹300)x100]	(2,000)	
3. Decrease in profit due to change in price and quantity [Change in unit cost price x Change in quantity = (₹320 - ₹300) x (110 - 100)]	(200)	
		(5,200)
Net Increase in Gross Profit		32,300
Change in profit due to change in fixed expenses		(10,000)
Net Increase in Net Profit		22,300

Note: Here, the base year is 2011.

3.6 DISTRESS ANALYSIS

Meaning of Corporate Distress or Corporate Sickness

Under the purview of the topic discussed here distress means acute financial hardship/crisis. Corporate Distress/Sickness means such a situation of a firm when it is unable to meet its debt. In other words, when value of the Total Assets of a company is insufficient to discharge its Total External Liabilities, the said company can be said a 'Distress Company'. Corporate Distress also includes the following: (a) Unfavourable liquidity position; (b) Adverse long-term solvency position; (c) Outdated production process; (d) Deteriorating selling status; (e) Poor administrative set-up; and (f) Overall adverse economic condition.

In short, Corporate Distress is a situation when the financial status of a company moves towards bankruptcy/ insolvency.

Concept of Distress Analysis

Under the purview of the current topic, Distress Analysis refers to the process of analysis of financial crisis/hardship faced by a concern. It analyses various causes responsible for the Financial Distress/ Sickness of a firm, provides effective tools for prediction of distress and advocates remedial measures to get out of financial hardship. The process of prediction of distress plays a significant role in the revival of a firm.

Various Ways of Identification of Sick/Distress Firm

As per the Sick Industrial Companies (Special Provisions) Act, 1985, a business unit may be treated as sick if the following conditions are satisfied:

- The unit must be registered for not less than 7 years period.
- Its accumulated losses at the end of the financial year are equal to or exceed its net worth.
- Its accumulated losses at the end of the financial year have resulted in an erosion of 50% or more of its peak net worth immediately preceding 4 financial years.

As per Section 2 (46AA) of the Indian Companies Act, 1956, a company is considered as sick if:

- Its accumulated losses in any financial year is equal to or more than its average net worth during 4 years immediately preceding such financial year.
- It failed to repay its debt within any three consecutive quarters on demand made in writing for its repayment by a creditor or creditors of such company.



According to the Reserve Bank of India, an industrial unit should be considered as sick if it has incurred cash loss in the previous accounting year and is likely to continue to incur cash loss in the current accounting year as well as the following year and has an erosion of its net worth on account of cumulative cash losses to the extent of 50%.

According to the ICICI, a sick is one whose financial viability is threatened by adverse factors present and continuing. The adverse factors might relate to management, market fiscal burden, labour relations or any other. When the impact of factors reaches a point where a company begins to incur cash losses leading to erosion of its funds, there is threat to its financial stability.

According to NCAER, an industrial undertaking may be financially viable, if its three elements are proved to be positive. The NCAER Study on Corporate Distress Prediction prescribed the following three elements/ parameters for predicting the stages of corporate sickness:

- i. Cash profit position (a profitability measure).
- ii. Net working capital position (a liquidity measure).
- iii. Net worth position (a solvency measure).

In a firm, if any of the above three elements/parameters are found to be negative, it may be considered that the firm has a 'tendency of becoming sick'. If any two of the above three elements/parameters are found to be negative in a firm, it may be considered that the firm possesses 'incipient sickness'. If all the above three elements/parameters are found to be negative in a firm, it may be considered that the firm is 'fully sick'.

Causes of Corporate Distress

There are a number of factors responsible for Corporate Distress/Sickness. These factors may be classified into two parts, namely, internal factors and external factors. The causes within the company responsible for Corporate Distress are the internal factors, while the causes outside the company responsible for Corporate Distress are the external factors. These are individually stated in the following sections:

Internal Factors Responsible for Corporate Distress

The following are the internal factors responsible for Corporate Distress:

- i. Outdated production process.
- ii. High material cost.
- iii. Poor labour productivity.
- iv. Lack of efficient personnel/skilled labour.
- v. High wastage in production process.
- vi. Excessive manpower.
- vii. High labour turnover.
- viii. Lack of quality leadership.
- ix. Labour agitation.
- x. Improper staff recruitment policy.
- xi. Huge overhead cost.
- xii. Poor production capacity utilization.
- xiii. Wrong site selection.
- xiv. Wrong estimation of demand.
- xv. Production of goods without market survey.

- xvi. Improper sales strategy.
- xvii. Defective pricing policy.
- xviii. Poor customer service.
- xix. Poor/defective financial planning.
- xx. Overtrading.
- xxi. Defective cash management.
- xxii. Defective inventory management.
- xxiii. Defective receivables management.

External Factors Responsible for Corporate Distress

The following are external factors responsible for Corporate Distress:

- i. Shortage/non-availability of raw materials.
- ii. Shortage of power.
- iii. Shortage of water.
- iv. Problem of transportation.
- v. Problem of communication.
- vi. High cost of funds.
- vii. Non-availability of fund.
- viii. Imposition of Government price control.
- ix. Unfavourable Taxation Policy of the Government.
- x. Unfavourable SEBI and RBI Guidelines.
- xi. Unfavourable Excise Policy of the Government.
- xii. Unfavourable Exchange Rate Fluctuation.
- xiii. Unfavourable Export and Import Policies.
- xiv. Market saturation of the product.
- xv. Change in fashion and taste of customers.
- xvi. Threats from multinational companies.
- xvii. War.
- xviii. Natural calamities like flood, earthquake, cyclone, etc.
- xix. Strike and lockout.
- xx. Political unrest.
- xxi. Economic recession.
- xxii. Social problems.

Indicators of Corporate Distress

Bankruptcy of a concern does not materialize in a day. A firm goes bankrupt gradually. Every firm exhibits some manifestations of financial distress before it goes bankrupt. These manifestations towards bankruptcy are the indicators/symptoms of financial distress of a firm. Following are the indicators/symptoms of financial distress of a firm:



i. In the area of operating activities

- (a) Low production capacity utilization.
- (b) High operating cost.
- (c) High rate of rejection of goods manufactured.
- (d) Regular default in making payment to suppliers.
- (e) Delay in payment of wages.
- (f) High rate labour turnover.
- (g) Declining or stagnant sales volume.
- (h) Accumulation of finished stock in godown.
- (i) Failure of distribution network.
- (j) Cut down in advertisement expenditure.

ii. In the area of financing activities

- (a) Rapidly increasing debts.
- (b) Regular default in repayment of debt.
- (c) Failure in payment of statutory liabilities.
- (d) Continuous irregularity in cash credit/overdraft account.
- (e) Repayment of one debt taking another debt.
- (f) Deteriorating liquidity position of the business.

iii. In the area of books of accounts

- (a) Finalization of accounts long after the end of the accounting year.
- (b) Non-submission of financial information to the bankers.
- (c) Window dressing in Balance Sheet.
- (d) Frequent changes in accounting policies.
- (e) Delay in conducting audit.

iv. In other areas

- (a) Fall in market value of shares.
- (b) High rate of turnover of key personnel.
- (c) Frequent changes in management.

Distress Prediction

Distress Prediction is an essential issue in the field of finance. It is a very important tool used for the purpose of prediction of future probable financial condition of a corporate entity so that any financial crisis-that may crop up in the near future can be predicted in advance. Using various models of Distress Prediction, the management of a company comes to know about its future probable financial condition beforehand and accordingly, it may adopt appropriate remedial measures to avoid the financial crisis as predicted through the various models of Distress Prediction. Distress Prediction is considered a very significant tool for sustainment of a company in the long-run. As a company can have a predicted notion about occurrence of its financial hardship in future, it gets a scope to avoid such a situation by taking proper preventive measures in advance. Therefore, Distress Prediction plays a very significant role in the survival of a company in the long-run.

Following are the two types of models generally used for prediction of Corporate Distress/Sickness:

- i. **Univariate Model:** In this model, a single variable is used for Corporate Distress Prediction.
- ii. **Multivariate Model:** In this model, a number of variables are used for Corporate Distress Prediction.

Univariate Model of Distress Prediction

Univariate Model of Distress Prediction refers to a model of prediction of Corporate Distress where a single variable is used. More clearly, under this model, analysis of Corporate Distress Prediction is made with the help of a single set of financial information, e.g., a single ratio. Here, variable generally refers to Accounting Ratio of the concerned corporate entity. In this model, a single Accounting Ratio, viz. Current Ratio or Debt-Equity Ratio or Total Debt to Total Asset, etc., of different corporate entities considered for analysis is taken into consideration for their Distress Prediction.

This model of Distress Prediction is based on the following assumptions:

- i. The distribution of the variable (i.e., ratio) for distressed firms (i.e., failed firms) differs systematically from the distribution of the variable for the non-distressed firms (i.e., non-failed firms).
- ii. The systematic difference can be exploited for prediction purpose.

Steps Followed Under Univariate Model of Distress Prediction

Techniques used under Univariate Model of Distress Prediction are as follows:

- i. An Accounting Ratio, viz. Current Ratio or Debt-Equity Ratio or Total Debt to Total Asset, etc., is selected for analysis of financial distress of companies.
- ii. A number of distressed companies (i.e., failed companies) and non-distressed companies (i.e., non-failed companies) are arbitrarily chosen for analysis.
- iii. The Accounting Ratio as selected for analysis of the companies as chosen under (ii) is calculated.
- iv. Comparison of Accounting Ratios as calculated under (iii) for the companies chosen for analysis are made for prediction of their Financial Distress.
- v. Conclusion is made about the prediction of Financial Distress of the companies on the basis of the comparison done under (iv).

Some Studies of Univariate Analysis

Univariate Model of Corporate Distress Prediction Analysis had been effectively applied by the analysts in the early 1930s. In 1931, Ramser and Foster observed that the distressed firms had lower ratios as compared to the ratios of the non-distressed firms while they studied and analysed 11 types of ratios for 173 distressed and nondistressed firms. In 1932, P. J. Fitzpatrick also observed that the distressed firms had inferior ratios as compared to the ratios of the non-distressed firms and the Net Income to Net Worth and Net Worth to Debt were the best indicators of Corporate Distress while he studied and analysed ratios of 19 pairs of distressed and non-distressed firms. In 1935, Winakor and Smith also observed a distinct deterioration in the mean values of Accounting Ratios of the distressed firms while they studied and analysed Accounting Ratios of 183 distressed firms.

All these studies though established the systematic difference between the Financial Ratios of the distressed and non-distressed firms, they were not sufficient enough to provide a well-accepted general model for Corporate Distress Prediction on a scientific basis.

The study of William H. Beaver in the year 1966 was very significant in the field of Corporate Distress Analysis as he, for the first time, scientifically emphasized on the ability of Financial Ratios for prediction of Corporate Distress. In 1979, L. C. Gupta, for the first time, studied and analysed the issue of prediction of Corporate Distress in a scientific manner from the perspective of the Indian scenario. These studies are individually discussed in the following sections.



Beaver's Study on Univariate Analysis of Corporate Distress Prediction

For the first time in the history of Corporate Distress Analysis, W. H. Beaver scientifically emphasized on the ability of Financial Ratios for prediction of Corporate Distress. Beaver selected 79 failed and 79 non-failed firms for comparison of their Financial Ratios. He defined failure as the inability of a firm to meet its financial obligations as and when they mature. For each failed firm, a non-failed firm of comparable size operating in the same industry was selected. For both types of firms, he examined 30 conventional Financial Ratios for 5 years immediately preceding the failure. Beaver's study was based on the following two stages of examination:

Stage 1: A comparison of mean values of Financial Ratios taken into consideration of two types of firms.

Stage 2: Examination of predictive power of Financial Ratio with the help of Dichotomous Classification Test.

Dichotomous Classification Test under Beaver's Model

The Dichotomous Classification Test under Beaver's study covers the following steps:

- i. First, actual position of two types of a number of firms (i.e., failed firm and non-failed firm) is randomly chosen for consideration.
- ii. A single uniform ratio (say, Current Ratio or Debt-Equity Ratio or Operating Cost to Sales Ratio, etc.) for all the firms under consideration is calculated.
- iii. Firms are arranged in descending order of the value of ratio as calculated in (ii).
- iv. The simple average of two consecutive ratios at every stage as arranged under (iii) above is calculated. (which is called Cut-off Point).
- v. Now, the ratio of every firm [as calculated in (ii)] is compared with the Cut-off Point (as calculated in (iv)) at every stage. Say, in a study, the ratio of Total Debts to Total Assets has been selected for consideration. In this context, it is to be remembered that lower Total Debts to Total Assets Ratio indicates better position of the firm. If the actual ratio of a firm (in such a case) is lower than the respective Cutoff Point, the condition of the firm is predicted as non-failed firm. If the actual ratio of a firm (in such a case) is higher than the respective Cut-off Point, the condition of the firm is predicted as failed firm. But where Current Ratio is taken as variable, situation would be reverse, as higher Current Ratio indicates better position of the firm, i.e., if the actual Current Ratio of a firm is higher than the respective Cut-off Point, the condition of the firm is predicted as non-failed. If the actual Current Ratio of a firm is lower than the respective Cut-off Point, the condition of the firm is predicted as failed.
- vi. Now, if any deviation of such prediction from the actual position of the firm is observed, then count such a deviation as an error. If the actual position of a firm is failed but predicted as non-failed, count such an error as Type 1 Error. If the actual position of a firm is non-failed but predicted as failed, count such an error as Type 2 Error.
- vii. Determination of the Optimum Cut-off Point where the number of total errors is minimum.
- viii. Determination of percentage of error included in total prediction.

Findings of Beaver's Study

In the first stage of Beaver's Study, his findings on comparison of Mean Ratios between failed and non-failed firms reveal the following:

- i. The Financial Ratios of the failed firms were remarkably poor than those of the non-failed firms.
- ii. The Financial Ratios of the failed firms showed deteriorating trend over the period of last 5 years.
- iii. Non-failed firms had zero slope trend line.

In the second stage of Beavers Study, his findings on application of Dichotomous Test to judge predictive ability of ratios reveal the following:

- i. The most successful predictor of Corporate Distress is the Cash Flow to Total Debts Ratio. He found that only 10% of the firms were misclassified using this ratio in the first year before failure whereas only 22% of the firms were misclassified using this ratio in the fifth year before failure.
- ii. As per his findings, the second best Distress Predictor Ratio is the Net Income to Total Assets. He found that the percentage of misclassification using this ratio was 12% and 25% in the first year and in the fifth year, respectively, before failure.
- iii. As per his findings, the third best Distress Predictor Ratio is the Total Debts to Total Assets. He found that the percentage of misclassification using this ratio was 20% and 31% in the first year and in the fifth year, respectively, before failure.
- iv. As per his findings, the fourth best Distress Predictor Ratio is the Working Capital to Total Assets. He found that the percentage of misclassification using this ratio was 24% and 41% in the first year and in the fifth year, respectively, before failure.
- v. As per his findings, the worst Distress Predictor Ratio is the Cash Assets to Current Liabilities. He found that the percentage of misclassification using this ratio was the maximum in the first year as well as in the fifth year before failure.
- vi. Beaver also found that the Mixed or Composite Ratio (i.e., taking one item from the Income Statement and other item from the Balance Sheet) outperformed the Liquidity or Short-term Solvency Ratio (e.g., Current Ratio) which is traditionally used as the best predictor for measuring the liquidity or short-term solvency of a firm.

Multivariate Models of Distress Prediction

When a number of variables (normally some ratios) are used in a model of Corporate Distress Prediction, it is called Multivariate Model of Corporate' Distress Prediction. Under this approach, Altman's Model is significantly -unique and is discussed in the following section.

Steps Followed Under Multivariate Model of Distress Prediction

Following are the steps followed under Multivariate Model of Corporate Distress Prediction:

- i. A number of distressed companies (i.e., failed companies) and non-distressed companies (i.e., non-failed companies) are arbitrarily chosen and classified for the analysis.
- ii. Relevant Accounting Ratios of the companies selected which are deemed effective for Distress Prediction are calculated for obtaining various economic conditions of the companies, viz. liquidity, long-term solvency, profitability, etc.
- iii. A linear function of all or some of these Accounting Ratios that best discriminates between the two classes of companies as selected under (i) has been derived in the following manner:

$$Z = a_1x_1 + a_2x_2 + a_3x_3 + \dots + a_nx_n$$

where

Z = Discriminant Index

x_i = Accounting Ratios as selected under (ii) ($i = 1, 2, 3, \dots, n$)

a_i = Co-efficient of Accounting Ratios as selected under (ii) ($i = 1, 2, 3, \dots, n$)

- iv. From the above-mentioned linear function, the value of discriminant score Z has been calculated.
- v. If the sample companies have higher score than the calculated value of Z -score, then the companies are to be considered non-distressed companies (i.e., non-failed companies). On the other hand, if the sample companies have lower score than the calculated value of Z -score, then the companies are to be considered distressed companies (i.e., failed companies).



Edward I. Altman's Multivariate Analysis

Edward I. Altman developed a Multivariate Model of Corporate Distress Prediction on the basis of Multiple Discriminant Analysis (MDA). In his study, Altman selected 33 failed and 33 non-failed firms, of which 22 Accounting and Non-accounting Ratios, which had been deemed to be the predictors of Corporate Distress, were taken into consideration. Of the 22 Accounting Ratios, Prof. Altman selected 5 ratios which had been deemed as the best predictors of Corporate Distress Prediction. The purposes of these five selected ratios are as follows:

- i. To measure liquidity position of the firms.
- ii. To measure reinvestment of earnings of the firms.
- iii. To measure profitability of the firms.
- iv. To measure financial leverage condition of the firms.
- v. To measure sales-generating ability of firm's Assets.

In 1968, the following Discriminant Function was developed by Altman:

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$$

Where

Z = Overall Index of Multiple Index Function

And the five variables are

X_1 = Working Capital to Total Assets (a liquidity measure)

X_2 = Retained Earnings to Total Assets (a measure of reinvestment of earnings)

X_3 = EBIT to Total Assets (a profitability measure)

X_4 = Market Value of Equity & Preference to Book Value of Total Debt (a measure of leverage)

X_5 = Sales to Total Assets (a measure of sales-generating ability of the firm's assets)

In 1983, Prof. Altman developed his earlier model of Discriminant Function in the following terms:

$$Z = 0.717 X_1 + 0.847 X_2 + 3.107 X_3 + 0.420 X_4 + 0.998 X_5$$

The only change in respect of variables that he made from his earlier model is the X_4 .

In this model,

X_4 = Book Value of Equity & Preference to Book Value of Total Debt (a measure of leverage).

However, Altman's Model of Corporate Distress Prediction as developed in 1968 (i.e., earlier model) has been generally used by analysts over the years. If not otherwise stated, we will follow Altman's 1968 Model of Corporate Distress Prediction while solving problems in the subsequent part of this study note.

Analysis of Value of Z-score

- i. If the calculated value of Z-score is greater than 2.99, it is predicted that the firm belongs to non-bankrupt class (i.e., non-failed firm).
- ii. If the calculated value of Z-score is smaller than 1.81, it is predicted that the firm belongs to bankrupt class (i.e., failed firm).
- iii. If the calculated value of Z-score of a firm falls between 1.81 and 2.99 (referred to as Grey Area), it is predicted that the firm consists of both bankrupt and non-bankrupt class (i.e., mixture of failed and non-failed elements) and, therefore, requires further investigation to determine its solvency status.

As per Altman's Multivariate Model of Distress Prediction

- i. If $Z > 2.99$: Non-failed or non-distressed firm.
- ii. If $Z < 1.81$: Failed or distressed firm.
- iii. If $Z \geq 1.81$ but ≤ 2.99 : Mixture of failed and non-failed elements which requires further investigation to determine its solvency status.

Illustration 16.

From the information given below relating to Bad Past Ltd., calculate Altman's Z-score and comment:

$$\left(\frac{\text{Working capital}}{\text{Total assets}} \right) = 25\%$$

$$\left(\frac{\text{Retained earnings}}{\text{Total assets}} \right) = 30\%$$

$$\left(\frac{\text{Earnings before interest and taxes}}{\text{Total assets}} \right) = 15\%$$

$$\left(\frac{\text{Market value of equity}}{\text{Book value of total debt}} \right) = 150\%$$

$$\left(\frac{\text{Sales}}{\text{Total assets}} \right) = 2\%$$

Solution:

As per Altman's Model (1968) of Corporate Distress Prediction

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$$

Here, the five variables are as follows:

$$X_1 = \text{Working Capital to Total Assets} = 25\%$$

$$X_2 = \text{Retained Earnings to Total Assets} = 30\%$$

$$X_3 = \text{EBIT to Total Assets} = 15\%$$

$$X_4 = \text{Market Value of Equity Shares to Book Value of Total Debt} = 150\%$$

$$X_5 = \text{Sales to Total Assets} = 2\%$$

$$\text{Hence, Z-score} = (1.2 \times 25\%) + (1.4 \times 30\%) + (3.3 \times 15\%) + (0.6 \times 150\%) + (1 \times 2\%)$$

$$= 0.30 + 0.42 + 0.495 + 0.90 + 0.02 = 2.135$$

Note: As the calculated value of Z-score lies in between 1.81 and 2.99, which is marked as Grey Area, it is predicted that the company consists of both bankrupt and non-bankrupt elements (i.e., mixture of failed and non-failed elements) and therefore, requires further investigation to determine its conclusive solvency status.

Illustration 17.

From the information given below relating to Unfortunate Ltd., calculate Altman's Z-score and comment:

$$\left(\frac{\text{Working capital}}{\text{Total assets}} \right) = 0.45$$



$$\left(\frac{\text{Retained earnings}}{\text{Total assets}} \right) = 0.25$$

$$\left(\frac{\text{Earnings before interest and taxes}}{\text{Total assets}} \right) = 0.30$$

$$\left(\frac{\text{Market value of equity}}{\text{Book value of total debt}} \right) = 2.50$$

$$\left(\frac{\text{Sales}}{\text{Total assets}} \right) = 3 \text{ times}$$

Solution:

As per Altman's Model (1968) of Corporate Distress Prediction

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$$

Here, the five variables are as follows:

$$X_1 = \text{Working Capital to Total Assets} = 0.45$$

$$X_2 = \text{Retained Earnings to Total Assets} = 0.25$$

$$X_3 = \text{EBIT to Total Assets} = 0.30$$

$$X_4 = \text{Market Value of Equity Shares to Book Value of Total Debt} = 2.50$$

$$X_5 = \text{Sales to Total Assets} = 3 \text{ times}$$

$$\text{Hence, Z-score} = (1.2 \times 0.45) + (1.4 \times 0.25) + (3.3 \times 0.30) + (0.6 \times 2.50) + (1 \times 3) = 0.54 + 0.35 + 0.99 + 1.50 + 3 = 6.38$$

Note: As the calculated value of Z-score is much higher than 2.99, it can be strongly predicted that the company is a non-bankrupt company (i.e., non-failed company).

Illustration 18.

Using Altman's Multiple Discriminant Function, calculate Z-score of S & Co. Ltd., where the five accounting ratios are as follows and comment about its financial position:

$$\text{Working Capital to Total Assets} = 0.250$$

$$\text{Retained Earnings to Total Assets} = 50\%$$

$$\text{EBIT to Total Assets} = 19\%$$

$$\text{Book Value of Equity to Book Value of Total Debt} = 1.65$$

$$\text{Sales to Total Assets} = 3 \text{ times}$$

Solution:

As the Book Value of Equity to Book Value of Total Debt is given in the problem in place of Market Value of Equity to Book Value of Total Debt, the value of Z-score is to be computed as per Altman's 1983 Model of Corporate Distress Prediction instead of Altman's 1968 Model of Corporate Distress Prediction that we followed earlier.

As per Altman's Model (1983) of Corporate Distress Prediction,

$$Z = 0.717 X_1 + 0.847 X_2 + 3.107 X_3 + 0.420 X_4 + 0.998 X_5$$

Here, the five variables are as follows:

$$X_1 = \text{Working Capital to Total Assets} = 0.250$$

$$X_2 = \text{Retained Earnings to Total Assets} = 0.50$$

$$X_3 = \text{EBIT to Total Assets} = 0.19$$

$$X_4 = \text{Market Value of Equity Shares to Book Value of Total Debt} = 1.65$$

$$X_5 = \text{Sales to Total Assets} = 3 \text{ times}$$

$$\begin{aligned} \text{Hence, Z-score} &= (0.717 \times 0.25) + (0.847 \times 0.50) + (3.107 \times 0.19) + (0.420 \times 1.65) + (0.998 \times 3) \\ &= 0.17925 + 0.4235 + 0.59033 + 0.693 + 2.994 = 4.88 \end{aligned}$$

Note: As the calculated value of Z-score is much higher than 2.99, it can be strongly predicted that the company is a non-bankrupt company (i.e., non-failed company).

Illustration 19.

From the information provided relating to a company, calculate Altman's Z-score and comment on the financial condition of the company:

Particulars	₹
Equity Share Capital (of ₹ 10 each)	2,00,000
12% Preference Share Capital (of ₹ 100 each)	1,00,000
Fixed Assets	3,00,000
Current Assets	2,00,000
Fictitious Assets	25,000
Current Liabilities	1,00,000

Particulars	₹
10% Debentures	2,00,000
General Reserve	75,000
Profit & Loss A/c (Cr.)	50,000
Sales	10,00,000
Earnings before Tax	1,30,000
Interest on Debentures	20,000
Market Value of each Equity Share	15
Market Value of each Preference Share	150

Solution:

As per Altman's Model (1968) of Corporate Distress Prediction

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$$

Here, the five variables are as follows:

$$X_1 = \text{Working Capital to Total Assets} = \left(\frac{1,00,000}{5,00,000} \right) = 0.20$$

$$X_2 = \text{Retained Earnings to Total Assets} = \left(\frac{1,00,000}{5,00,000} \right) = 0.20$$



$$X_3 = \text{EBIT to Total Assets} = \left(\frac{1,50,000}{5,00,000} \right) = 0.30$$

$$X_4 = \text{Market Value of Equity and Preference Shares to Book Value of Total Debt} = \left(\frac{4,50,000}{3,00,000} \right) = 1.50$$

$$X_5 = \text{Sales to Total Assets} = \left(\frac{10,00,000}{5,00,000} \right) = 2 \text{ times}$$

$$\begin{aligned} \text{Hence, Z-score} &= (1.2 \times 0.20) + (1.4 \times 0.20) + (3.3 \times 0.30) + (0.6 \times 1.50) + (1 \times 2) \\ &= 0.24 + 0.28 + 0.99 + 0.90 + 2 = 4.41 \end{aligned}$$

Notes:

1. Calculation of Working Capital

Working Capital = Current Assets - Current Liabilities

Here, Working Capital

$$= ₹ (2,00,000 - 1,00,000) = ₹ 1,00,000$$

2. Calculation of Total Assets

Total Assets = Fixed Assets + Current Assets

Here, Total Assets = ₹ (3,00,000 + 2,00,000) = ₹ 5,00,000

3. Calculation of Retained Earnings

Retained Earnings = Reserves & Surplus - Miscellaneous Expenditure

= General Reserve + Profit & Loss A/c (Cr.) - Fictitious Assets = ₹ (75,000 + 50,000 - 25,000) = ₹ 1,00,000

4. Calculation of Earnings before interest & Tax (EBIT)

EBIT = EBT + Interest on Debts

Here, EBIT = ₹ (1,30,000 + 20,000) = ₹ 1,50,000

5. Calculation of Market Value of Equity & Preference Shares

Market Value of Equity Shares	20,000 shares x ₹15	₹ 3,00,000
Market Value of Preference Shares	1,000 shares x ₹150	₹ 1,50,000
		₹ 4,50,000

6. Calculation of Book Value of Total Debts

Book Value of Total Debts = Long-term Debts + Current Liabilities

Here, Book Value of Total Debts = 10% Debentures + Current Liabilities = ₹ (2,00,000 + 1,00,000) = ₹ 3,00,000

As the calculated value of Z-score is much higher than 2.99, it can be strongly predicted that the company is a non-bankrupt company (i.e., non-failed company).

Illustration 20.

Using Altman's Model, compute the value of Z from the provided data (Balance Sheet extract):

Liabilities	₹	Assets	₹
Share Capital (@ ₹10 each)	2,00,000	Fixed Assets	4,20,000
Reserves & Surplus	60,000	Inventory	1,80,000
10% Debentures	3,00,000	Book Debts	70,000
Sundry Creditors	80,000	Loans & Advances	20,000
Outstanding Expenses	60,000	Cash at Bank	10,000
	7,00,000		7,00,000

Additional Information

- Market value per share ₹ 12.50.
- Operating Profit (20% on sales) ₹ 1,40,000.

Solution:

As per Altman's Model (1968) of Corporate Distress Prediction

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$$

Here, the five variables are as follows:

$$X_1 = \text{Working Capital to Total Assets} = \left(\frac{1,40,000}{7,00,000} \right) = 0.20$$

$$X_2 = \text{Retained Earnings to Total Assets} = \left(\frac{60,000}{7,00,000} \right) = 0.0857$$

$$X_3 = \text{EBIT to Total Assets} = \left(\frac{1,50,000}{5,00,000} \right) = 0.30$$

$$X_4 = \text{Market Value of Equity and Preference Shares to Book Value of Total Debt} = \left(\frac{2,50,000}{4,40,000} \right) = 0.568$$

$$X_5 = \text{Sales to Total Assets} = \left(\frac{7,00,000}{7,00,000} \right) = 1$$

$$\text{Hence, Z-score} = (1.2 \times 0.20) + (1.4 \times 0.0857) + (3.3 \times 0.20) + (0.6 \times 0.568) + (1 \times 1)$$

$$= 0.24 + 0.11998 + 0.66 + 0.3408 + 1 = 2.36078$$

Notes:

1. Calculation of Working Capital

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Here, Working Capital = (Inventory + Book Debts + Loans & Advances + Cash at Bank) - (Sundry Creditors + Outstanding Expenses)

$$= ₹(1,80,000 + 70,000 + 20,000 + 10,000) - (80,000 + 60,000)$$

$$= ₹1,40,000$$

2. Calculation of Total Assets

$$\text{Total Assets} = \text{Fixed Assets} + \text{Current Assets}$$

$$\text{Here, Total Assets} = ₹ [4,20,000 + (1,80,000 + 70,000 + 20,000 + 10,000)] = ₹ 7,00,000$$



3. Calculation of Retained Earnings

Retained Earnings = Reserves & Surplus = ₹60,000

4. Calculation of Earnings before Interest & Tax (EBIT)

EBIT = Operating Profit = ₹1,40,000

5. Calculation of Market Value of Equity

Market Value of Equity Shares = 20,000 shares × ₹12.50 = ₹2,50,000

6. Calculation of Book Value of Total Debts

Book Value of Total Debts = Long-term Debts + Current Liabilities

Here, Book Value of Total Debts = 10% Debentures + (Sundry Creditors + Outstanding Expenses)
= ₹ [3,00,000 + (80,000 + 60,000)] = ₹4,40,000

7. Calculation of Sales

Here, Operating Profit = 20% on Sales = ₹1,40,000

Hence, Sales = $\left(\frac{100}{20}\right) \times ₹1,40,000 = ₹7,00,000$

As the calculated value of Z-score lies between 1.81 and 2.99, which is marked as Grey Area, it is predicted that the company consists of both bankrupt and non-bankrupt elements (i.e., a mixture of failed & non-failed elements) and, therefore, requires further investigation to determine its conclusive solvency status.

Illustration 21.

Following is the Balance Sheet of a company as on 31 March, 2010:

Liabilities	₹	Assets	₹
Equity Share Capital (₹100)	4,00,000	Fixed Assets	10,00,000
Reserves & Surplus	2,25,000	Trade Investment	2,00,000
12% Debentures	3,00,000	Stock	1,25,000
10% Bank Loan	2,00,000	Debtors	75,000
Current Liabilities	3,00,000	Preliminary Expenses	25,000
	14,25,000		14,25,000

Additional Information

- Net sales for 2009-10 were ₹ 20,00,000.
- Price-Earnings Ratio is ₹ 10.
- Dividend Pay-out Ratio is 50%.
- Dividend per Share in 2009-10 is ₹ 20.
- Corporate Tax Rate is 50%.

Using Altman's Model, calculate the Z-score of the company and interpret the result.

Solution:

As per Altman's Model (1968) of Corporate Distress Prediction

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 1.0 X_5$$

Here, the five variables are as follows:

$$X_1 = \text{Working Capital to Total Assets} = \frac{(1,00,000)}{14,00,000} = (0.07143)$$

$$X_2 = \text{Retained Earnings to Total Assets} = \frac{2,00,000}{14,00,000} = 0.1428$$

$$X_3 = \text{EBIT to Total Assets} = \frac{3,76,000}{14,00,000} = 0.2686$$

$$X_4 = \text{Market Value of Equity to Book Value of Total Debt} = \frac{16,00,000}{8,00,000} = 2$$

$$X_5 = \text{Sales to Total Assets} = \frac{20,00,000}{14,00,000} = 1.4286$$

$$\begin{aligned} \text{Therefore, Z-score} &= \{1.2 \times (-) 0.07143\} + (1.4 \times 0.1428) + (3.3 \times 0.2686) + (0.6 \times 2) + (1 \times 1.4286) \\ &= -0.0857 + 0.1999 + 0.8864 + 1.2 + 1.4286 = 3.6292 \end{aligned}$$

Notes:

1. Calculation of Working Capital

Working Capital = Current Assets - Current Liabilities

$$\begin{aligned} \text{Here, Working Capital} &= (\text{Stock} + \text{Debtors}) - \text{Current Liabilities} \\ &= ₹ [(1,25,000 + 75,000) - 3,00,000] \\ &= (₹ 1,00,000) \end{aligned}$$

2. Calculation of Total Assets

Total Assets = Fixed Assets + Investments + Current Assets

$$\text{Here, Total Assets} = ₹ [10,00,000 + 2,00,000 + (1,25,000 + 75,000)] = ₹ 14,00,000$$

3. Calculation of Retained Earnings

$$\begin{aligned} \text{Retained Earnings} &= \text{Reserves \& Surplus} - \text{Preliminary Expenses} = ₹ (2,25,000 - 25,000) \\ &= ₹ 2,00,000 \end{aligned}$$

4. Calculation of Earnings before Interest & Tax (EBIT)

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend per share (DPS)}}{\text{Earnings per share (EPS)}}$$

Here dividend payout ratio = 50% and DPS in 2009-10 = ₹20.

$$\text{Hence, EPS} = \frac{\text{DPS}}{\text{Dividend payout ratio}} = \frac{20}{50\%} = ₹ 40.$$

$$\text{Here, number of equity shares} = ₹ \left(\frac{4,00,000}{100} \right) = 4,000$$



Particulars	₹
Earnings available to equity shareholders = 4,000 x ₹40	1,60,000
Add: Corporate tax added back $\left(\frac{50}{50} \times 1,60,000\right)$	1,60,000
Earnings before Tax (EBT)	3,20,000
Add: Interest on loan added back: On Debentures (12% on 3,00,000) = ₹ 36,000 On Bank Loan (10% on 2,00,000) = ₹ 20,000	56,000
Earnings before Interest & Tax (EBIT)	3,76,000

5. Calculation of Market Value of Equity Shares

$$\text{Price Earnings Ratio} = \frac{\text{Market value per equity shares (MPS)}}{\text{Earnings per share (EPS)}}$$

Here, Price Earnings Ratio = 10 and EPS in 2009-10 = ₹40

Hence, Market Value per Equity Share (MPS) = Price Earnings Ratio x EPS

$$= 10 \times ₹40 = ₹400$$

$$\text{Market Value of Equity Shares} = 4,000 \text{ shares} \times ₹400 = ₹16,00,000$$

6. Calculation of Book Value of Total Debts

Book Value of Total Debts = Long-term Debts + Current Liabilities

Here, Book Value of Total Debts = 12% Debentures + 10% Bank Loan + Current Liabilities

$$= ₹ (3,00,000 + 2,00,000 + 3,00,000) = ₹ 8,00,000$$

7. Calculation of Sales

Here, Operating Profit = 20% on Sales = ₹1,40,000

$$\text{Hence, sales} = \frac{100}{20} \times ₹1,40,000 = ₹7,00,000.$$

As the calculated value of Z-score is much more greater than 2.99, it can be strongly predicted that the company is a non-bankrupt company (i.e., non-failed company).

Illustration 22.

Balance Sheet of Q Ltd. as on 31 March 2008

Liabilities	₹ in Crores	Assets	₹ in Crores
Equity Shares	20.80	Fixed Assets	105.60
Long-term Liabilities	104.00	Current Assets	57.60
Current Liabilities	78.40	Profit & Loss A/c	40.00
	203.20		203.20

Additional Information:

- Depreciation written off ₹8 crores.
- Preliminary Expenses written off ₹1.60 crores.
- Net Loss ₹25.60 crores.

Ascertain the stage of sickness.

Solution:

The NCAER Study on Corporate Distress Prediction prescribed the following three parameters for predicting the stage of Corporate Sickness:

- i. Cash profit position (a profitability measure)
- ii. Net working capital position (a liquidity measure)
- iii. Net worth position (a solvency measure)

In the given case, we need to judge the above-mentioned parameters to ascertain the stage of sickness of the company.

$$i. \text{ Cash profit} = \text{Net profit} + \frac{\text{Non-cash expenses}}{\text{Losses debited to Profit \& Loss A/c}} - \frac{\text{Non-cash incomes}}{\text{Gains credited to Profit \& Loss A/c}}$$

Here, Cash Profit = Net Profit + Depreciation Written Off + Preliminary Expenses Written Off

$$= ₹[(25.60) + 8 + 1.60] = (₹16 \text{ crores})$$

$$ii. \text{ Net Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

$$= ₹[57.60 - 78.40] = (₹ 20.80 \text{ crores})$$

$$iii. \text{ Net Worth} = \text{Share Capital} + \text{Reserves \& Surplus} - \text{Miscellaneous Expenditure} - \text{Profit \& Loss A/c (Dr.)}$$

Here, Net Worth = Equity Share Capital - Profit & Loss A/c (Dr.)

$$= ₹[20.80 - 40.00] = (₹ 19.20 \text{ crores})$$

Prediction about Corporate Sickness: As per NCAER Research Study, out of mentioned three parameters, if any one parameter becomes negative in case of a firm, it can be predicted that the firm has a tendency towards sickness. In the given company, all the three parameters [as calculated under (a), (b) and (c)] show negative value. Therefore, it can strongly be predicted that the company is a sick company and its stage of sickness is 'fully sick'. Immediate necessary drastic revival measures are essentially required for the survival of the company.

Illustration 23.

Following information is available in respect of five companies:

Company	Total Debt to Total Assets	Actual Status of the Company
P	0.50	Non-failed
Q	0.80	Non-failed
R	0.40	Non-failed
S	0.60	Failed
T	0.70	Failed

- i. Determine the Optimum Cut-off Point for the ratio of Total Debt to Total Asset.
- ii. Determine the percentage of error in Corporate Distress Prediction.

**Solution:**

Company	Total Debts to Total assets	Actual status	Cut-off Ratio	Type 1 Error	Type 2 Error	Total Error
Q	0.80	NF				
			$\frac{(0.8 + 0.7)}{2} = 0.75$	0.75	1	2+1=3
T	0.70	F				
			$\frac{(0.7 + 0.6)}{2} = 0.65$	0.65	1	1+1=2
S	0.60	F				
			$\frac{(0.6 + 0.5)}{2} = 0.55$	0.55	1	0+1=1
P	0.50	NF				
			$\frac{(0.5 + 0.4)}{2} = 0.45$	0.45	2	0+2=2
R	0.40	NF				

Observations of the Study

- The ratio considered for the study is Total Debts to Total Assets. Accordingly, lower Total Debts to Total Assets Ratio indicates better solvency position of the business and higher Total Debts to Total Assets Ratio indicates worse solvency position of the business.
- Sample companies are arranged in descending order of their, Total Debts to Total Assets Ratio.
- For every two consecutive ratios as arranged, a 'Cut-off Ratio' is calculated by simple average of two ratios.
- Now, each ratio is compared with every Cut-off Ratio as calculated in 3 in the following manner:
 - If the actual ratio of a company is lower than the respective Cut-off Ratio, then the company is predicted as non-failed (NF). If the actual status of the company is non-failed, then there is no error in the study. If the actual status of the company is failed (F), but it is predicted as non-failed (NF), then there exists an error in the study, which is termed as Type 1 Error.
 - If the actual ratio of a company is higher than the respective Cut-off Ratio, then the company is predicted as failed (F). If the actual status of the company is failed, then there is no error in the study. If the actual status of the company is non-failed (NF), but it is predicted as failed (F), then there exists an error in the study, which is termed as Type 2 Error.
 - Selection of 'Optimum Cut-off Ratio' where the number of total error is minimum. Companies having Total Debts to Total Assets Ratio above this 'Optimum Cut-off Ratio' can be predicted as failed firms and companies having Total Debts to Total Assets Ratio below this 'Optimum Cut-off Ratio' can be predicted as non-failed firms.
- Observations at different Cut-off Ratios:
 - At the Cut-off Ratio of 0.75
 - Actual ratio (i.e., 0.80) of Company Q is greater than the Cut-off Ratio of 0.75. Hence, Company Q is predicted as failed firm, but its actual status is non-failed firm. Therefore, there is an error in the study which is marked as Type 2 Error (i.e., one Type 2 Error).

- Actual ratios of Company T (i.e., 0.70) and Company S (i.e., 0.60) are lower than the Cut-off Ratio of 0.75. Hence, Companies T and S can be predicted as the non-failed firms, but their actual status is failed firm. Therefore, there is an error in the study which is marked as Type 1 Error (i.e., two Type 1 Errors).
 - Actual ratios of Company P (i.e., 0.50) and Company R (i.e., 0.40) are lower than the Cut-off Ratio of 0.75. Hence, Companies P and R can be predicted as the non-failed firms and their actual status is also non-failed firm. Therefore, there is no error in this area of the study.
 - Therefore, at the Cut-off Ratio of 0.75, there exists two Type 1 Errors and one Type 2 Error. Hence, number of total errors is 3 at the Cut-off Ratio of 0.75.
- b. At the Cut-off Ratio of 0.65
- Actual ratio (i.e., 0.80) of Company Q is greater than the Cut-off Ratio of 0.65. Hence, Company Q is predicted as failed firm, but its actual status is non-failed firm. Therefore, there is an error in the study which is marked as Type 2 Error (i.e., one Type 2 Error).
 - Actual ratio of Company T (i.e., 0.70) is higher than the Cut-off Ratio of 0.65. Hence, Company T can be predicted as the failed firm and its actual status is also failed firm. Therefore, there is no error in this area of the study.
 - Actual ratio of Company S (i.e., 0.60) is lower than the Cut-off Ratio of 0.75. Hence, Company S can be predicted as the non-failed firms, but its actual status is failed firm. Therefore, there is an error in the study which is marked as Type 1 Error (i.e., one Type 1 Error).
 - Actual ratios of Company P (i.e., 0.50) and Company R (i.e., 0.40) are lower than the Cut-off Ratio of 0.65. Hence, Companies P and R can be predicted as the non-failed firms and their actual status is also non-failed. Therefore, there is no error in this area of the study.
 - Therefore, at the Cut-off Ratio of 0.65, there exists one Type 1 Error and one Type 2 Error. Hence, the number of total errors is 2 at the Cut-off Ratio of 0.65.
- c. At the Cut-off Ratio of 0.55
- Actual ratio (i.e., 0.80) of Company Q is greater than the Cut-off Ratio of 0.55. Hence, Company Q is predicted as failed firm, but its actual status is non-failed firm. Therefore, there is an error in the study which is marked as Type 2 Error (i.e., one Type 2 Error).
 - Actual ratios of Company T (i.e., 0.70) and Company S (i.e., 0.60) are higher than the Cut-off Ratio of 0.55. Hence, Companies T and S can be predicted as the failed firm and their actual status is also failed. Therefore, there is no error in this area of the study.
 - Actual ratios of Company P (i.e., 0.50) and Company R (i.e., 0.40) are lower than the Cut-off Ratio of 0.55. Hence, Companies P and R can be predicted as the non-failed firms and their actual status is also non-failed. Therefore, there is no error in this area of the study.
 - Therefore, at the Cut-off Ratio of 0.55, there exists no Type 1 Error, but there is one Type 2 Error. Hence, the number of total errors is 1 at the Cut-off Ratio of 0.55.
- d. At the Cut-off Ratio of 0.45
- Actual ratios of Company Q (i.e., 0.80) and Company P (i.e., 0.50) are greater than the Cut-off Ratio of 0.45. Hence, Companies Q and P can be predicted as failed firms, but their actual status is non-failed. Therefore, there is an error in the study which is marked as Type 2 Error (i.e., two Type 2 Error).
 - Actual ratios of Company T (i.e., 0.70) and Company S (i.e., 0.60) are higher than the Cut-off Ratio of 0.45. Hence, Companies T and S can be predicted as the failed firms and their actual status is also failed. Therefore, there is no error in this area of the study.



- Actual ratio of Company R (i.e., 0.40) is lower than the Cut-off Ratio of 0.45. Hence, Company R can be predicted as the non-failed firms and its actual status is also non-failed. Therefore, there is no error in this area of the study.
 - Therefore, at the Cut-off Ratio of 0.45, there exist no Type 1 Error, but there are two Type 2 Errors. Hence, the number of total errors is 2 at the Cut-off Ratio of 0.45.
- vi. From the above study, it has been observed that the minimum number of total errors has occurred at the Cut-off Ratio of 0.55. Therefore, 0.55 is the Optimum Cut-off Ratio. This Optimum Cut-off Ratio of 0.55 indicates that the company having Total Debts to Total Assets Ratio equal to or above 0.55 can be predicted as failed firm and the company having Total Debts to Total Assets Ratio below 0.55 can be predicted as non-failed firm.
- vii. At the Optimum Cut-off Ratio of 0.55, error in prediction of distress has been occurred in case of Company Q only (i.e., only one error). At this Optimum Cut-off Ratio, there is no error in prediction of distress in case of other four companies (i.e., Companies P, R, S and T). Therefore, while studying five companies at the Optimum Cut-off Ratio of 0.55, error occurred in case of only one company.
- ∴ Percentage of error at the Optimum Cut-off Ratio of 0.55 = $1/5 \times 100 = 20\%$.

3.7 OFF BALANCE SHEET ITEMS

Definition of 'Off Balance Sheet - OBS'

An asset or debt that does not appear on a company's balance sheet. Items that are considered off balance sheet are generally ones in which the company does not have legal claim or responsibility for. For example, loans issued by a bank are typically kept on the bank's books. If those loans are securitized and sold off as investments, however, the securitized debt is not kept on the bank's books. One of the most common off-balance sheet items is an operating lease. Off balance Sheet (OBS) usually means an asset or debt or financial activity not on the Company's balance sheet. It could involve a lease or a separate subsidiary or a contingent liability such as a letter of credit. It also involves loan commitments, futures, forwards and other derivatives, when-issued securities and loans sold.

Some companies may have significant amounts of off-balance sheet assets and liabilities. For example, financial institutions often offer asset management or brokerage services to their clients. The assets in question (often securities) usually belong to the individual clients directly or in trust, while the company may provide management, depository or other services to the client. The company itself has no direct claim to the assets, and usually has some basic fiduciary duties with respect to the client. Financial Institutions may report off-balance sheet items in their accounting statements formally, and may also refer to "assets under management," a figure that may include on and off-balance sheet items.

Off-Balance-Sheet Financing

A form of financing in which large capital expenditure are kept off of a company's balance sheet through various classification methods. Companies will often use off-balance-sheet financing to keep their debt to equity (D/E) and leverage ratio low, especially if the inclusion of a large expenditure would break negative debt covenants.

Contrast to loans, debt and equity, which do appear on the balance sheet. Examples of Off-balance – sheet financing includes joint ventures, research and development partnerships, and operating leases (rather than purchases of capital equipment).

Operating lease are one of the most common forms of off-balance-sheet financing. In these cases, the asset itself is kept on the lessor's balance sheet and the lessee reports only the required rental expenses for use of the asset. Generally Accepted Accounting Principles in the U.S. have set numerous rules for companies to follow in determining whether a lease should be capitalized (including on the balance sheet) or expensed.

This term came into popular use during the Enron bankruptcy. Many of the energy traders' problems stemmed from setting up inappropriate off-balance-sheet entities.

Off-Balance Sheet Items for NBFCs (Non Banking Financial Companies):

A. General

NBFCs will calculate the total risk weighted off-balance sheet credit exposure as the sum of the risk-weighted amount of the market related and non-market related off-balance sheet items. The risk-weighted amount of an off-balance sheet item that gives rise to credit exposure will be calculated by means of a two-step process:

- (a) the notional amount of the transaction is converted into a credit equivalent amount, by multiplying the amount by the specified credit conversion factor or by applying the current exposure method; and
- (b) the resulting credit equivalent amount is multiplied by the risk weight applicable viz; zero percent for exposure to Central Government/State Governments, 20 percent for exposure to banks and 100 percent for others.

B. Non-market-related off- balance sheet items

The credit equivalent amount in relation to a non-market related off-balance sheet item will be determined by multiplying the contracted amount of that particular transaction by the relevant credit conversion factor (CCF).

Sr. No.	Instruments	Credit Conversion Factor
i.	Financial & other guarantees	100
ii.	Share/debenture underwriting obligations	50
iii.	Partly-paid shares/debentures	100
iv.	Bills discounted/rediscounted	100
v.	Lease contracts entered into but yet to be executed	100
vi.	Sale and repurchase agreement and asset sales with recourse, where the credit risk remains with the NBFC.	100
vii.	Forward asset purchases, forward deposits and partly paid shares and securities, which represent commitments with certain draw down.	100
viii.	Lending of NBFC securities or posting of securities as collateral by NBFC, including instances where these arise out of repo style transactions	100
ix.	Other commitments (e.g., formal standby facilities and credit lines) with an original maturity of up to one year over one year	20 50
X.	Similar commitments with an original maturity upto one year, or which can be unconditionally cancelled at any time.	0



xi.	Take-out Finance in the books of taking-over institution	
	(i) Unconditional take-out finance	100
	(ii) Conditional take-out finance:	50
	Note: As the counter-party exposure will determine the risk weight, it will be 100 percent in respect of all borrowers or zero percent if covered by Government guarantee.	
xii.	Commitment to provide liquidity facility for securitization of standard asset transactions	100
xiii.	Second loss credit enhancement for securitization of standard asset transactions provided by third party	100
xiv.	Other contingent liabilities (To be specified)	50

Note:

- (a) Cash margins/deposits shall be deducted before applying the conversion factor
- (b) Where the non-market related off-balance sheet item is an undrawn or partially undrawn fund-based facility, the amount of undrawn commitment to be included in calculating the off-balance sheet non-market related credit exposures is the maximum unused portion of the commitment that could be drawn during the remaining period to maturity. Any drawn portion of a commitment forms a part of NBFC's on-balance sheet credit exposure'.

C. Market Related Off-Balance Sheet Items

- (a) NBFCs should take into account all market related off-balance sheet items (OTC derivatives and Securities Financing Transactions such as repo / reverse repo/ CBLO etc.) while calculating the risk weighted off-balance sheet credit exposures.
- (b) The credit risk on market related off-balance sheet items is the cost to an NBFC of replacing the cash flow specified by the contract in the event of counterparty default. This would depend, among other things, upon the maturity of the contract and on the volatility of rates underlying the type of instrument.
- (c) Market related off-balance sheet items would include:
 - I. interest rate contracts - including single currency interest rate swaps, basis swaps, forward rate agreements, and interest rate futures;
 - II. foreign exchange contracts, including contracts involving gold, - includes cross currency swaps (including cross currency interest rate swaps), forward foreign exchange contracts, currency futures, currency options;
 - III. Credit Default Swaps; and
 - IV. any other market related contracts specifically allowed by the Reserve Bank which give rise to credit risk.
- (d) Exemption from capital requirements is permitted for -
 - I. foreign exchange (except gold) contracts which have an original maturity of 14 calendar days or less; and
 - II. instruments traded on futures and options exchanges which are subject to daily mark-to-market and margin payments.

- (e) The exposures to Central Counter Parties (CCPs), on account of derivatives trading and securities financing transactions (e.g. Collateralised Borrowing and Lending Obligations - CBLOs, Repos) outstanding against them will be assigned zero exposure value for counterparty credit risk, as it is presumed that the CCPs' exposures to their counterparties are fully collateralised on a daily basis, thereby providing protection for the CCP's credit risk exposures.
- (f) A CCF of 100 per cent will be applied to the corporate securities posted as collaterals with CCPs and the resultant off-balance sheet exposure will be assigned risk weights appropriate to the nature of the CCPs. In the case of Clearing Corporation of India Limited (CCIL), the risk weight will be 20 per cent and for other CCPs, the risk weight will be 50 percent.
- (g) The total credit exposure to counterparty in respect of derivative transactions should be calculated according to the current exposure method as explained below:

D. Current Exposure Method

The credit equivalent amount of a market related off-balance sheet transaction calculated using the current exposure method is the sum of (a) current credit exposure and (b) potential future credit exposure of the contract.

- (a) Current credit exposure is defined as the sum of the gross positive mark-to-market value of all contracts with respect to a single counterparty (positive and negative marked-to-market values of various contracts with the same counterparty should not be netted). The Current Exposure Method requires periodical calculation of the current credit exposure by marking these contracts to market.
- (b) Potential future credit exposure is determined by multiplying the notional principal amount of each of these contracts, irrespective of whether the contract has a zero, positive or negative mark-to-market value by the relevant add-on factor indicated below according to the nature and residual maturity of the instrument.

Credit Conversion Factors for interest rate related, exchange rate related and gold related derivatives		
Credit Conversion Factors (%)		
	Interest Rate Contracts	Exchange Rate Contracts & Gold
One year or less	0.50	2.00
Over one year to five years	1.00	10.00
Over five years	3.00	15.00

- I. For contracts with multiple exchanges of principal, the add-on factors are to be multiplied by the number of remaining payments in the contract.
- II. For contracts that are structured to settle outstanding exposure following specified payment dates and where the terms are reset such that the market value of the contract is zero on these specified dates, the residual maturity would be set equal to the time until the next reset date. However, in the case of interest rate contracts which have residual maturities of more than one year and meet the above criteria, the CCF or add-on factor is subject to a floor of 1.0 per cent.
- III. No potential future credit exposure would be calculated for single currency floating / floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.
- IV. Potential future exposures should be based on 'effective' rather than 'apparent notional amounts'. In the event that the 'stated notional amount is leveraged or enhanced by the structure of the transaction, the 'effective notional amount' must be used for determining potential future exposure.



Impacts of Off-balance sheet-Items

Some of the examples of impacts of off-balance sheet items are-

Derivative instruments

The companies enter into derivative contracts in the normal course of business for market making, positioning and arbitrage purposes, as well as for own risk management needs, including mitigation of interest rate, foreign exchange and credit risk.

Derivatives are generally either privately negotiated OTC contracts or standard contracts transacted through regulated exchanges. The most frequently used freestanding derivative products include interest rate, cross-currency and credit default swaps, interest rate and foreign exchange options, foreign exchange forward contracts and foreign exchange and interest rate futures.

The replacement values of derivative instruments correspond to their fair values at the dates of the consolidated balance sheets and arise from transactions for the account of customers and for our own account. Positive replacement values constitute a receivable, while negative replacement values constitute a payable. Fair value does not indicate future gains or losses, but rather the unrealized gains and losses from marking to market all derivatives at a particular point in time. The fair values of derivatives are determined using various methodologies, primarily observable market prices where available and, in their absence, observable market parameters for instruments with similar characteristics and maturities, net present value analysis or other pricing models as appropriate.

Guarantees and similar arrangements

In the ordinary course of business, guarantees and indemnifications are provided that contingently obligate the companies to make payments to a guaranteed or indemnified party based on changes in an asset, liability or equity security of the guaranteed or indemnified party. The companies may be contingently obligated to make payments to a guaranteed party based on another entity's failure to perform, or companies may have an indirect guarantee of the indebtedness of others. Guarantees provided include, but are not limited to, customary indemnifications to purchasers in connection with the sale of assets or businesses; to investors in private equity funds sponsored by us regarding potential obligations of its employees to return amounts previously paid as carried interest; to investors in our securities and other arrangements to provide gross-up payments if there is a withholding or deduction because of a tax assessment or other governmental charge; and to counterparties in connection with securities lending arrangements.

In connection with the sale of assets or businesses, we sometimes provide the acquirer with certain indemnification provisions. These indemnification provisions vary by counterparty in scope and duration and depend upon the type of assets or businesses sold. They are designed to transfer the potential risk of certain unquantifiable and unknowable loss contingencies, such as litigation, tax or intellectual property matters, from the acquirer to the seller. We closely monitor all such contractual agreements in order to ensure that indemnification provisions are adequately provided for in our consolidated financial statements.

US GAAP requires disclosure of the maximum potential payment obligations under certain guarantees to the extent that it is possible to estimate them and requires recognition of a liability for the fair value of obligations undertaken for guarantees issued or amended after December 31, 2002.

Unidentified Contingent Liabilities

It is one of the most common off-balance sheet items which were not identified on the balance sheet date or on during audit period. For example Re-assessment proceeding under section 147 of the Income Tax Act, 1961 on which assessment has been completed under Section 143(1). For example retrospective order of the Government for payment of settled cases etc.

3.8 CORPORATE DEBT INSTRUMENT ANALYSIS (BOND ANALYSIS)

Corporate debt instruments are financial obligations of a corporation that have priority over its equity shares and preference shares in the case of bankruptcy. Corporate debt instruments can be classified as follows: (1) corporate bonds, (2) medium-term notes, (3) commercial paper, and (4) asset-backed securities. In this study note we discuss these instruments.

(1) Corporate Bonds

Corporate bonds are classified by the type of issuer. The four general classifications are (1) public utilities, (2) transportations, (3) banks/finance, and (4) industrials. Finer breakdowns are often made to create more homogeneous groupings. For example, public utilities are subdivided into electric power companies, gas distribution companies, water companies, and communication companies. Transportations are divided further into airlines, railroads, and trucking companies. Banks/finance includes money center banks and regional banks, savings and loans, brokerage firms, insurance companies, and finance companies. Industrials are the catchall class and the most heterogeneous of the groupings with respect to investment characteristics. Industrials include manufacturers, mining companies, merchandising, retailers, energy companies, and service-related industries.

In the bond market indexes, there was a corporate bond sector. Today, corporate bonds are included in the credit sector of the major bond indexes such as the Lehman Brothers U.S. Aggregate Bond Index. Within the credit sector, corporate bonds are categorized into industrial, utility, and finance subsectors.

Features of a Corporate Bond Issue

The essential features of a corporate bond are relatively simple. The corporate issuer promises to pay a specified percentage of par value on designated dates (the coupon payments) and to repay par or principal value of the bond at maturity. Failure to pay either the principal or interest when due constitutes legal default, and investors can go to court to enforce the contract. Bondholders, as creditors, have a prior legal claim over common and preferred stockholders as to both income and assets of the corporation for the principal and interest due them.

(2) Medium-Term Notes

A medium-term note (MTN) is a corporate debt instrument, with the unique characteristic that notes are offered continuously to investors by an agent of the issuer. Investors can select from several maturity ranges: nine months to one year, more than one year to 18 months, more than 18 months to two years, and so on up to 30 years. Medium-term notes give a corporation the maximum flexibility for issuing securities on a continuous basis.

The term medium-term note to describe this corporate debt instrument is misleading. Traditionally, the term note or medium-term note was used to refer to debt issues with a maturity greater than one year but less than 15 years. Certainly, this is not a characteristic of MTNs because they have been sold with maturities from nine months to 30 years and even longer. For example, in July 1993, Walt Disney Corporation issued a security with a 100-year maturity off its MTN shelf registration.

General Motors Acceptance Corporation first used MTNs in 1972 to fund automobile loans with maturities of five years and less. The purpose of the MTN was to fill the funding gap between commercial paper and long-term bonds. It is for this reason that they are referred to as "medium term." The MTNs were issued directly to investors without the use of an agent. Only a few corporations issued MTNs in the 1970s. About \$800 million of MTNs were outstanding by 1981. The market was hampered from developing for two reasons. First, because the issues must be registered with the SEC, registration costs made the issuance of MTNs expensive relative to other funding sources. This cost could be avoided by placing MTNs privately. However, as we explained earlier in this study note, private placements carry a higher interest cost. Second, there was no secondary market for MTNs.

The modern-day MTN was pioneered by Merrill Lynch in 1981. The first MTN issuer was Ford Motor Credit Company. By 1983, GMAC and Chrysler Financial used Merrill Lynch as an agent to issue MTNs. Merrill



Lynch and other investment banking firms committed funds to make a secondary market for MTNs, thereby improving liquidity. In 1982, Rule 415 was adopted, making it easier for issuers to sell registered securities on a continuous basis.

Although we elected to discuss MTNs in our discussion of domestic corporate debt, they are also issued by foreign corporations, federal agencies, supranational institutions, and sovereign countries.

Borrowers have flexibility in designing MTNs to satisfy their own needs. They can issue fixed- or floating-rate debt. The coupon payments can be denominated in U.S. dollars or in a foreign currency. Earlier in this study note we described the various security structures; MTNs have been designed with the same features. For example, there are MTNs backed by equipment trust certificates issued by railways and subordinated notes issued by bank holding companies.

When the treasurer of a corporation is contemplating an offering of either an MTN or corporate bonds, there are two factors that affect the decision. The most obvious is the cost of the funds raised after consideration of registration and distribution costs. This cost is referred to as the **all-in-cost of funds**. The second is the flexibility afforded to the issuer in structuring the offering. The tremendous growth in the MTN market is evidence of the relative advantage of MTNs with respect to cost and flexibility for some offerings. However, the fact that there are corporations that raise funds by issuing both bonds and MTNs is evidence that there is no absolute advantage in all instances and market environments.

Structured Medium-Term Notes

At one time the typical MTN was a fixed-rate debenture that was noncallable. It is common today for issuers of MTNs to couple their offerings with transactions in the derivative markets (options, futures/forwards, swaps, caps, and floors) so as to create debt obligations with more interesting risk-return features than are available in the corporate bond market. Specifically, an issue can be floating-rate over all or part of the life of the security, and the coupon reset formula can be based on a benchmark interest rate, equity index or individual stock price, a foreign exchange rate, or a commodity index. Inverse floaters are created in the structured MTN market. MTNs can have various embedded options included.

MTNs created when the issuer simultaneously transacts in the derivative markets are called **structured notes**. The most common derivative instrument used in creating structured notes is a swap. The development of the MTN market has been fostered by commercial banks involved in the swap market. By using the derivative markets in combination with an offering, borrowers are able to create investment vehicles that are more customized for institutional investors to satisfy their investment objectives, even though they are forbidden from using swaps for hedging. Moreover, it allows institutional investors who are restricted to investing in investment-grade debt issues the opportunity to participate in other asset classes to make a market play. For example, an investor who buys an MTN whose coupon rate is tied to the performance of the S&P 500 is participating in the equity market without owning equity shares. If the coupon rate is tied to a foreign stock index, the investor is participating in the equity market of a foreign country without owning foreign equity shares. In exchange for creating a structured note product, borrowers can reduce their funding costs.

How do borrowers or their agents find investors who are willing to buy structured notes? In a typical offering of a corporate bond, the sales force of the underwriting firm will solicit interest in the offering from its customer base. That is, the sales force will make an inquiry. In the structured note market, the process is often quite different. Because of the small size of an offering and the flexibility to customize the offering in the swap market, investors can approach an issuer through its agent about designing a security for their needs. This process of customers inquiring of issuers or their agents to design a security is called a **reverse inquiry**. Transactions that originate from reverse inquiries account for a significant share of MTN transactions.

(3) Commercial Paper

Commercial paper is a short-term unsecured promissory note that is issued in the open market and that represents the obligation of the issuing corporation. The primary purpose of commercial paper was to

provide short-term funds for seasonal and working capital needs. Corporations use commercial paper for other purposes. For example, it has been used for bridge financing. Suppose that a corporation needs long-term funds to build a plant or acquire equipment. Rather than raising long-term funds immediately, the corporation may elect to postpone the offering until more favorable capital market conditions prevail. The funds raised by issuing commercial paper are used until longer-term securities are sold. Moreover, the interest-rate-swaps market encouraged the use of the commercial paper market. In an interest-rate swap, one party exchanges a fixed rate for a floating rate. Corporate issuers would issue commercial paper and use the interest-rate swap to convert the floating interest rate on commercial paper into a fixed interest rate.

The minimum round-lot transaction is \$100,000, although some issuers will sell commercial paper in denominations of \$25,000. There is very little secondary trading of commercial paper. Typically, an investor in commercial paper is an entity that plans to hold it until maturity. This is understandable because an investor can purchase commercial paper in a direct transaction with the issuer that will issue paper with the specific maturity the investor desires.

Yields on Commercial Paper

Like Treasury bills, commercial paper is a discount instrument. That is, it is sold at a price that is less than its maturity value. The difference between the maturity value and the price paid is the interest earned by the investor, although there is some commercial paper that is issued as an interest-bearing instrument. For commercial paper, a year is treated as having 360 days.

The yield offered on commercial paper tracks that of other money market instruments. The commercial paper rate is higher than that on Treasury bills for the same maturity. There are three reasons for this. First, the investor in commercial paper is exposed to credit risk. Second, interest earned from investing in Treasury bills is exempt from state and local income taxes. As a result, commercial paper has to offer a higher yield to offset this tax advantage. Finally, commercial paper is less liquid than Treasury bills. The liquidity premium demanded is probably small, however, because investors typically follow a buy-and-hold strategy with commercial paper and so are less concerned with liquidity.

The yield on commercial paper is higher by a few basis points than the yield on certificates of deposit for the same maturity. The higher yield available on commercial paper is attributable to the poorer liquidity relative to certificates of deposit.

(4) Bank Loans

Bank loans to corporate borrowers are divided into two categories: investment-grade loans and leveraged loans. An **investment-grade loan** is a bank loan made to corporate borrowers that have an investment-grade rating. These loans are typically originated by and held in the originating bank in its portfolio. The reason is that the loans are revolving lines of credit. In such a loan arrangement, a bank sets a maximum amount that can be borrowed by a corporation, and the corporation can take down any part of that amount and repay it at any time. Because of the ability of the corporate borrower to repay at any time and the absence of a maturity date for the loan, an investment-grade bank loan is not sold by the originating bank to institutional investors.

In contrast, a **leveraged loan** is a bank loan to a corporation that has a below-investment-grade rating. A leverage loan has a maturity, and the interest rate is a floating rate with the reference rate being LIBOR. In fact, when market participants refer to corporate bank loans, they typically mean a leveraged loan. These loans can be sold to institutional investors. A corporation may have as its debt obligations both leveraged loans and high-yield bonds.

Syndicated Bank Loans

A **syndicated bank loan** is one in which a group (or syndicate) of banks provides funds to the borrower. The need for a group of banks arises because the amount sought by a borrower may be too large for



any one bank to be exposed to the credit risk of that borrower. Therefore, the syndicated bank loan is used by borrowers who seek to raise a large amount of funds in the loan market rather than through the issuance of securities.

These bank loans are called **senior bank loans** because of their priority position over subordinated lenders (bondholders) with respect to repayment of interest and principal. The interest rate on a syndicated bank loan is a rate that periodically resets at the reference rate plus a spread. The reference rate is typically LIBOR, although it could be the prime rate (that is, the rate that a bank charges its most creditworthy customers) or the rate on certificates of deposits. The term of the loan is fixed. A syndicated loan is typically structured so that it is amortized according to a predetermined schedule, and repayment of principal begins after a specified number of years (typically not longer than five or six years). Structures in which no repayment of the principal is made until the maturity date can be arranged and are referred to as **bullet loans**.

A syndicated loan is arranged by either a bank or a securities house. The arranger then lines up the syndicate. Each bank in the syndicate provides the funds for which it has committed. The banks in the syndicate have the right to sell their parts of the loan subsequently to other banks.

Syndicated loans are distributed by two methods: assignment or participation. Each method has its relative advantages and disadvantages, with the method of assignment being the more desirable of the two.

The holder of a loan who is interested in selling a portion can do so by passing the interest in the loan by the **method of assignment**. In this procedure, the seller transfers all rights completely to the holder of the assignment, now called the **assignee**. The assignee is said to have **privity of contract** with the borrower. Because of the clear path between the borrower and assignee, assignment is the more desirable choice of transfer of ownership.

A **participation** involves a holder of a loan "participating out" a portion of the holding in that particular loan. The holder of the participation does not become a party to the loan agreement and has a relationship not with the borrower but with the seller of the participation. Unlike an assignment, a participation does not confer privity of contract on the holder of the participation, although the holder of the participation has the right to vote on certain legal matters concerning amendments to the loan agreement. These matters include changes regarding maturity, interest rate, and issues concerning the loan collateral. Because syndicated loans can be sold in this manner, they are marketable.

A special reference is given on bond analysis in the following matters.

Pricing a Bond

The price of any financial instrument is equal to the present value of the expected cash flows from the financial instrument. Therefore, determining the price requires

1. an estimate of the expected cash flows
2. an estimate of the appropriate required yield.

The expected cash flows for some financial instruments are simple to compute; for others, the task is more difficult. The required yield reflects the yield for financial instruments with **comparable risk**, or **alternative (or substitute) investments**.

The first step in determining the price of a bond is to determine its cash flows. The cash flows for a bond that the issuer cannot retire prior to its stated maturity date (i.e., an option-free bond) consist of

1. periodic coupon interest payments to the maturity date
2. the par (or maturity) value at maturity

Our illustrations of bond pricing use three assumptions to simplify the analysis:

1. The coupon payments are made every six months. (For most domestic bond issues, coupon interest is, in fact, paid semiannually.)

1. The next coupon payment for the bond is received exactly six months from now.

2. The coupon interest is fixed for the term of the bond.

Consequently, the cash flow for an option-free bond consists of an annuity of a fixed coupon interest payment paid semiannually and the par or maturity value. For example, a 20-year bond with a 10% coupon rate and a par or maturity value of ₹1,000 has the following cash flows from coupon interest:

Annual coupon interest = ₹1,000 X 0.10

= ₹100

semiannual coupon interest = ₹100/2

= ₹50.

Therefore, there are 40 semiannual cash flows of ₹50 and a ₹1,000 cash flow 40 six-month periods from now. Notice the treatment of the par value. It is not treated as if it is received 20 years from now. Instead, it is treated on a basis consistent with the coupon payments, which are semiannual.

The required yield is determined by investigating the yields offered on comparable bonds in the market. By comparable, we mean option-free bonds of the same credit quality and the same maturity. The required yield typically is expressed as an annual interest rate. When the cash flows occur semiannually, the market convention is to use one-half the annual interest rate as the periodic interest rate with which to discount the cash flows.

Given the cash flows of a bond and the required yield, we have all the analytical tools to price a bond. As the price of a bond is the present value of the cash flows, it is determined by adding these two present values:

1. the present value of the semiannual coupon payments

2. the present value of the par or maturity value at the maturity date

In general, the price of a bond can be computed using the following formula:

$$P = \frac{C}{1+r} + \frac{C}{(1+r)^2} + \frac{C}{(1+r)^3} + \dots + \frac{C}{(1+r)^n} + \frac{M}{(1+r)^n}$$

Or,

$$P = \sum_{t=1}^n \frac{C}{(1+r)^t} + \frac{M}{(1+r)^n}$$

Where

P = price (in rupees)

n = number of periods (number of years times 2)

C = semiannual coupon payment (in rupees)

r = periodic interest rate (required annual yield divided by 2)

M = maturity value

t = time period when the payment is to be received



Because the semiannual coupon payments are equivalent to an ordinary annuity, applying equation for the present value of an ordinary annuity gives the present value of the coupon payments:

$$C \left[\frac{1 - \frac{1}{(1+r)^n}}{r} \right]$$

To illustrate how to compute the price of a bond, consider a 20-year 10% coupon bond with a par value of ₹1,000. Let's suppose that the required yield on this bond is 11%. The cash flows for this bond are as follows:

1. 40 semiannual coupon payments of ₹50.
2. ₹1,000 to be received 40 six-month periods from now.

The semiannual or periodic interest rate (or periodic required yield) is 5.5% (11% divided by 2). The present value of the 40 semiannual coupon payments of ₹50 discounted at 5.5% is ₹802.31, calculated as

$$C = ₹50$$

$$n = 40$$

$$r = 0.055$$

$$= ₹50 \left[\frac{1 - \frac{1}{(1.055)^{40}}}{0.055} \right]$$

$$= ₹50 \left[\frac{1 - \frac{1}{8.51332}}{0.055} \right]$$

$$= ₹50 \left[\frac{1 - 0.117463}{0.055} \right]$$

$$= ₹50[16.04613]$$

$$= ₹ \mathbf{802.31}$$

The present value of the par or maturity value of ₹1,000 received 40 six-month periods from now, discounted at 5.5%, is ₹117.46, as follows:

$$\frac{₹1,000}{(1.055)^{40}} = \frac{₹1,000}{8.51332} = ₹117.46$$

The price of the bond is then equal to the sum of the two present values:

Present value of coupon payments	₹802.31
+ <u>Present value of par (maturity value)</u>	<u>₹117.46</u>
Price	₹919.77

Suppose that, instead of an 11% required yield, the required yield is 6.8%. The price of the bond would then be ₹1,347.04, demonstrated as follows.

The present value of the coupon payments using a periodic interest rate of 3.4% (6.8%/2) is

$$= ₹50 \left[\frac{1 - \frac{1}{(1.034)^{40}}}{0.034} \right]$$

$$= ₹50 [21.69029]$$

$$= ₹1,084.51$$

The present value of the par or maturity value of ₹1,000 received 40 six-month periods from now discounted at 3.4% is

$$\frac{₹1,000}{(1.034)^{40}} = ₹262.53$$

The price of the bond is then as follows:

Present value of coupon payments	₹1,084.51
+ <u>Present value of par (maturity value)</u>	<u>₹262.53</u>
Price	₹1,347.04

If the required yield is equal to the coupon rate of 10%, the price of the bond would be its par value, ₹1,000, as the following calculations demonstrate.

Using a periodic interest rate of 5.0% (10%/2), the present value of the coupon payments is

$$= ₹50 \left[\frac{1 - \frac{1}{(1.050)^{40}}}{0.050} \right]$$

$$= ₹50 [17.15909]$$

$$= ₹857.95$$

The present value of the par or maturity value of ₹1,000 received 40 six-month periods from now discounted at 5% is

$$\frac{₹1,000}{(1.050)^{40}} = ₹142.05$$

The price of the bond is then as follows:

Present value of coupon payments	₹857.95
+ <u>Present value of par (maturity value)</u>	<u>₹142.05</u>
Price	₹1,000.00



Pricing Zero-Coupon Bonds

Some bonds do not make any periodic coupon payments. Instead, the investor realizes interest as the difference between the maturity value and the purchase price. These bonds are called **zero-coupon bonds**. The price of a zero-coupon bond is calculated as follows:

$$P = \frac{M}{(1+r)^n}$$

The above equation states that the price of a zero-coupon bond is simply the present value of the maturity value. In the present value computation, however, the number of periods used for discounting is not the number of years to maturity of the bond, but rather double the number of years. The discount rate is one-half the required annual yield. For example, the price of a zero-coupon bond that matures 15 years from now, if the maturity value is ₹1,000 and the required yield is 9.4%, is ₹252.12, as shown:

$$\begin{aligned} M &= ₹1,000 \\ r &= 0.047 \left[= \frac{0.094}{2} \right] \\ n &= 30 (= 2 \times 15) \\ P &= \frac{₹1,000}{(1.047)^{30}} \\ &= \frac{₹1,000}{3.96644} \\ &= ₹252.12 \end{aligned}$$

Conventional Yield Measures

There are several bond yield measures commonly quoted by dealers and used by portfolio managers. In this section, we discuss each yield measure and show how it is computed. In the next section, we critically evaluate yield measures in terms of their usefulness in identifying the relative value of a bond.

Current Yield

Current yield relates the annual coupon interest to the market price. The formula for the current yield is

$$\text{current yield} = \frac{\text{annual rupees coupon interest}}{\text{price}}$$

For example, the current yield for a 15-year 7% coupon bond with a par value of ₹1,000 selling for ₹769.40 is 9.10%:

$$\text{current yield} = \frac{₹70}{₹769.40} = 0.0910 \text{ or } 9.10\%$$

The current yield calculation takes into account only the coupon interest and no other source of return that will affect an investor's yield. No consideration is given to the capital gain that the investor will realize when a bond is purchased at a discount and held to maturity; nor is there any recognition of the capital loss that the investor will realize if a bond purchased at a premium is held to maturity. The time value of money is also ignored.

Yield to Maturity

The yield is the interest rate that will make the present value of the cash flows equal to the price (or initial investment). The yield to maturity is computed in the same way as the yield (internal rate of return); the cash flows are those that the investor would realize by holding the bond to maturity. For a semiannual pay bond, the yield to maturity is found by first computing the periodic interest rate, y that satisfies the relationship

$$P = \frac{C}{1+y} + \frac{C}{(1+y)^2} + \frac{C}{(1+y)^3} + \dots + \frac{C}{(1+y)^n} + \frac{M}{(1+y)^n}$$

$$P = \sum_{t=1}^n \frac{C}{(1+y)^t} + \frac{M}{(1+y)^n}$$

Where

P = price of the bond

C = semiannual coupon interest (in rupees)

M = maturity value (in rupees)

n = number of periods (number of years $\times$ 2)

For a semiannual pay bond, doubling the periodic interest rate or discount rate (y) gives the yield to maturity. However, recall from our discussion of annualizing yields that doubling the periodic interest rate understates the effective annual yield. Despite this, the market convention is to compute the yield to maturity by doubling the periodic interest rate, y that satisfies the above equation. The yield to maturity computed on the basis of this market convention is called the **bond-equivalent yield**.

The computation of the yield to maturity requires a trial-and-error procedure. To illustrate the computation, consider the bond that we used to compute the current yield. The cash flow for this bond is (1) 30 coupon payments of ₹35 every six months, and (2) ₹1,000 to be paid 30 six-month periods from now.

To get y in above equation, different interest rates must be tried until the present value of the cash flows is equal to the price of ₹769.42. The present value of the cash flows of the bond for several periodic interest rates is as follows:

Annual Interest Rate (%)	Semiannual Rate y (%)	Present Value of Periods 30 Payments of ₹35 (₹)	Present Value of ₹1,000 30 periods from now (₹)	Present Value of Cash Flows (₹)
9.00	4.50	570.11	267.00	837.11
9.50	4.75	553.71	248.53	802.24
10.00	5.00	538.04	231.38	769.42
10.50	5.25	532.04	215.45	738.49
11.00	5.50	508.68	200.64	709.32



The present value of the coupon payments is found using the formula

$$₹35 \left[\frac{1 - \frac{1}{(1+y)^{30}}}{y} \right]$$

The present value of the maturity value is found using the formula

$$₹1000 \left[\frac{1}{(1+y)^{30}} \right]$$

When a 5% semiannual interest rate is used, the present value of the cash flows is ₹769.42. Therefore, y is 5%, and the yield to maturity on a bond-equivalent basis is 10%. It is much easier to compute the yield to maturity for a zero-coupon bond as follows:

$$y = \left[\frac{M}{P} \right]^{1/n} - 1$$

For example, for a 10-year zero-coupon bond with a maturity value of ₹1,000, selling for ₹439.18, y is 4.2%:

$$\begin{aligned} y &= \left[\frac{₹1,000}{₹439.18} \right]^{1/20} - 1 \\ &= (2.27697)^{0.05} - 1 \\ &= 1.042 - 1 \\ &= 0.042 \end{aligned}$$

Note that the number of periods is equal to 20 semiannual periods, which is double the number of years. The number of years is not used because we want a yield value that may be compared with alternative coupon bonds. To get the bond-equivalent annual yield, we must double y , which gives us 8.4%.

The yield-to-maturity calculation takes into account not only the current coupon income but also any capital gain or loss that the investor will realize by holding the bond to maturity. In addition, the yield to maturity considers the timing of the cash flows. The relationship among the coupon rate, current yield, and yield to maturity looks like this:

Bond Selling at:

Relationship

Par	Coupon rate = current yield = yield to maturity
Discount	Coupon rate < current yield < yield to maturity
Premium	Coupon rate > current yield > yield to maturity

Computing the Total Return for a Bond

The idea underlying total return is simple. The objective is first to compute the total future rupees that will result from investing in a bond assuming a particular reinvestment rate. The total return is then computed as the interest rate that will make the initial investment in the bond grow to the computed total future rupees.

The procedure for computing the total return for a bond held over some investment horizon can be summarized as follows. For an assumed reinvestment rate, the rupees return that will be available at the end of the investment horizon can be computed for both the coupon interest payments and the interest-on-interest component. In addition, at the end of the planned investment horizon the investor will receive either the par value or some other value (based on the market yield on the bond when it is sold). The total return is then the interest rates that will make the amount invested in the bond (i.e., the current market price plus accrued interest) grow to the future rupees available at the end of the planned investment horizon.

More formally, the steps for computing the total return for a bond held over some investment horizon are as follows:

Step 1: Compute the total coupon payments plus the interest on interest based on the assumed reinvestment rate. The coupon payments plus the interest on interest can be computed using equation discussed later. The reinvestment rate in this case is one-half the annual interest rate that the investor assumes can be earned on the reinvestment of coupon interest payments.

Step 2: Determine the projected sale price at the end of the planned investment horizon. The projected sale price will depend on the projected required yield at the end of the planned investment horizon. The projected sale price will be equal to the present value of the remaining cash flows of the bond discounted at the projected required yield.

Step 3: Sum the values computed in steps 1 and 2. The sum is the total future rupees that will be received from the investment, given the assumed reinvestment rate and the projected required yield at the end of the investment horizon.

Step 4: To obtain the semiannual total return, use the formula

$$\left[\frac{\text{total future rupees}}{\text{purchase price of bond}} \right]^{1/h} - 1$$

where h is the number of six-month periods in the investment horizon.

Step 5: As interest is assumed to be paid semiannually, double the interest rate found in step 4. The resulting interest rate is the total return.

To illustrate computation of the total return, suppose that an investor with a three-year investment horizon is considering purchasing a 20-year 8% coupon bond for ₹828.40. The yield to maturity for this bond is 10%. The investor expects to be able to reinvest the coupon interest payments at an annual interest rate of 6% and that at the end of the planned investment horizon the then-17-year bond will be selling to offer a yield to maturity of 7%. The total return for this bond is found as follows:

Step 1: Compute the total coupon payments plus the interest on interest, assuming an annual reinvestment rate of 6%, or 3% every six months. The coupon payments are ₹40 every six months for three years or six periods (the planned investment horizon). Applying equation, the total coupon interest plus interest on interest is

$$\begin{aligned} \text{Coupon interest + interest on interest} &= ₹40 \left[\frac{(1.03)^6 - 1}{0.03} \right] \\ &= ₹40 [6.4684] \\ &= ₹258.74 \end{aligned}$$

Step 2: Determining the projected sale price at the end of three years, assuming that the required yield to maturity for 17-year bonds is 7%, is accomplished by calculating the present value of 34 coupon payments of ₹40 plus the present value of the maturity value of ₹1,000, discounted at 3.5%. The projected sale price is ₹1,098.51.



Step 3: Adding the amounts in steps 1 and 2 gives total future dollars of ₹1,357.25.

Step 4: To obtain the semiannual total return, compute the following:

$$\begin{aligned} & \left[\frac{₹1,357.25}{₹828.40} \right]^{1/6} - 1 \\ &= (1.63840)^{0.16667} - 1 \\ &= 1.0858 - 1 \\ &= 0.0858 \text{ or } 8.58\% \end{aligned}$$

Step 5: Double 8.58%, for a total return of 17.16%.

There is no need in this case to assume that the reinvestment rate will be constant for the entire investment horizon. An example will show how the total return measure can accommodate multiple reinvestment rates.

Suppose that an investor has a six-year investment horizon. The investor is considering a 13-year 9% coupon bond selling at par. The investor's expectations are as follows:

1. The first four semiannual coupon payments can be reinvested from the time of receipt to the end of the investment horizon at a simple annual interest rate of 8%.
2. The last eight semiannual coupon payments can be reinvested from the time of receipt to the end of the investment horizon at a 10% simple annual interest rate.
3. The required yield to maturity on seven-year bonds at the end of the investment horizon will be 10.6%.

Using these three assumptions, the total return is computed as follows:

Step 1: Coupon payments of ₹45 every six months for six years (the investment horizon) will be received. The coupon interest plus interest on interest for the first four coupon payments, assuming a semiannual reinvestment rate of 4%, is

$$\begin{aligned} \text{Coupon interest + interest on interest} &= ₹45 \left[\frac{(1.04)^4 - 1}{0.04} \right] \\ &= ₹191.09 \end{aligned}$$

This gives the coupon plus interest on interest as of the end of the second year (four periods). Reinvested at 4% until the end of the planned investment horizon, four years or eight periods later, ₹191.09 will grow to

$$₹191.09(1.04)^8 = ₹261.52$$

The coupon interest plus interest on interest for the last eight coupon payments, assuming a semiannual reinvestment rate of 5%, is

$$\begin{aligned} \text{Coupon interest + interest on interest} &= ₹45 \left[\frac{(1.05)^4 - 1}{0.05} \right] \\ &= ₹429.71 \end{aligned}$$

The coupon interest plus interest on interest from all 12 coupon interest payments is ₹691.23 (₹261.52 + ₹429.71).

Step 2: The projected sale price of the bond, assuming that the required yield is 10.6%, is ₹922.31.

Step 3: The total future rupees are ₹1,613.54 (₹691.23 + ₹922.31).

Step 4: Compute the following:

$$\begin{aligned} & \left[\frac{₹1,613.54}{₹1,000.00} \right]^{1/12} - 1 \\ &= (1.61354)^{0.08333} - 1 \\ &= 1.0407 - 1 \\ &= 0.0407 \text{ or } 4.07\% \end{aligned}$$

Step 5: Doubling 4.07% gives a total return of 8.14%.

Provisions for Paying Off Bonds

Most corporate issues have a call provision allowing the issuer an option to buy back all or part of the issue prior to the stated maturity date. Some issues specify that the issuer must retire a predetermined amount of the issue periodically. Various types of corporate call provisions are discussed in the following sections.

(1) Call and refund provisions: An important question in negotiating the terms of a new bond issue is whether the issuer shall have the right to redeem the entire amount of bonds outstanding on a date before maturity. Issuers generally want this right because they recognize that at some time in the future the general level of interest rates may fall sufficiently below the issue's coupon rate that redeeming the issue and replacing it with another issue with a lower coupon rate would be attractive. This right is a disadvantage to the bondholder. A company wanting to retire a debt issue prior to maturity usually must pay a premium over the par value for the privilege. The initial call premium on long-term debt traditionally has been the interest coupon plus par or the initial reoffering price (in some cases it is the higher of the two). Thus, a 30-year bond initially priced at 100 with a 10% coupon may have a call price of 110% for the first year, scaled down in relatively equal amounts to par starting in year 21 to maturity.

Instead of a specified fixed premium that must be paid by the issuer if the bond is called, a bond may have a **make-whole premium provision**, also called a **yield-maintenance premium provision**. The provision specifies a formula for determining the premium that the issuer must pay to call an issue and is such that the amount of the premium, when added to the principal amount and reinvested at the redemption date in U.S. Treasury securities having the same remaining life, would provide a yield equal to the original yield. The premium plus the principal at which the issue is called is referred to as the **make-whole redemption price**. The purpose of the make-whole premium is to protect the yield of those investors who purchased the issue at issuance.

(2) Sinking fund provision: Corporate bond indentures may require the issuer to retire a specified portion of an issue each year. This is referred to as a **sinking fund requirement**. This kind of provision for repayment of corporate debt may be designed to liquidate all of a bond issue by the maturity date, or it may be arranged to pay only a part of the total by the end of the term. If only a part is paid, the remainder is called a **balloon maturity**. The purpose of the sinking fund provision is to reduce credit risk.

Generally, the issuer may satisfy the sinking fund requirement by either (1) making a cash payment of the face amount of the bonds to be retired to the corporate trustee, who then calls the bonds for redemption using a lottery, or (2) delivering to the trustee bonds purchased in the open market that have a total face value equal to the amount that must be retired. If the bonds are retired using the first method, interest payments stop at the redemption date.



Usually, the periodic payments required for sinking fund purposes will be the same for each period. A few indentures might permit variable periodic payments, where payments change according to certain prescribed conditions set forth in the indenture. Many corporate bond indentures include a provision that grants the issuer the option to retire more than the amount stipulated for sinking fund retirement. This is referred to as an **accelerated sinking fund provision**.

Usually, the sinking fund call price is the par value if the bonds were originally sold at par. When issued at a price in excess of par, the call price generally starts at the issuance price and scales down to par as the issue approaches maturity.

Accrued Interest

In addition to the agreed-upon price, the buyer must pay the seller accrued interest. Market convention for determining the number of days in a corporate bond coupon period and the number of days from the last coupon payment to settlement date differs from that for a Treasury coupon security. Whereas a calendar year has 365 days (366 days in the case of a leap year), corporate bond interest is computed as if the year were 360 days. Each month in a corporate bond year is 30 days, whether it is February, April, or August. A 12% coupon corporate bond pays ₹120 per year per ₹1,000 par value, accruing interest at ₹10 per month or ₹0.33333 per day. The accrued interest on a 12% corporate bond for three months is ₹30; for three months and 25 days, ₹38.33, and so on. The corporate calendar is referred to as “30/360.”

Basic Analytics and Concepts for Convertible Bond Analysis

In this section, we will describe some basic measures and concepts used in convertible bond analysis. We shall use the following hypothetical convertible bond in our example:

convertible bond	ABC bond
maturity	10 years
coupon rate	10%
conversion ratio	50
par value	₹1,000
current market price of ABC bond	₹950
current market price	₹17
dividends per share	₹1

We will assume that this convertible bond is neither callable nor putable.

The conversion price for the ABC bond is

$$\text{Conversion price} = \frac{\text{₹1,000}}{50} = \text{₹20}$$

Minimum Value of a Convertible Bond

The conversion value of a convertible bond is the value of the bond if it is converted immediately. That is,

Conversion value = market price of equity shares × conversion ratio

The minimum price of a convertible bond is the greater of

1. its conversion value, or
2. its value as a corporate bond without the conversion option—that is, based on the convertible bond's cash flows if not converted (i.e., a plain vanilla bond). This value is called its straight value.

To estimate the straight value, we must determine the required yield on a nonconvertible bond with the same quality rating and similar investment characteristics. Given this estimated required yield, the straight value is then the present value of the bond's cash flows using this yield to discount the cash flows.

If the convertible bond does not sell for the greater of these two values, arbitrage profits could be realized. For example, suppose that the conversion value is greater than the straight value, and the bond trades at its straight value. An investor can buy the convertible bond at the straight value and convert it. By doing so, the investor realizes a gain equal to the difference between the conversion value and the straight value. Suppose, instead, that the straight value is greater than the conversion value, and the bond trades at its conversion value. By buying the convertible at the conversion value, the investor will realize a higher yield than a comparable straight bond.

Example 1.

For the ABC convertible bond,

$$\text{Conversion value} = ₹17 \times 50 = ₹850$$

To determine the straight value, it is necessary to determine what comparable bonds are trading for in the market. Suppose that comparable bonds are trading to yield 14%. The straight value is then the price of a 10% 10-year bond selling to yield 14%. The price for such a bond would be ₹788.

Given a conversion value of ₹850 and a straight value of ₹788, the minimum price for the ABC bond is ₹850. To see this, note that if the bond is selling at its straight value rather than its conversion value, an investor could buy the bond for ₹788 and simultaneously sell 50 shares of ABC stock at ₹17 per share. When the short sale of the stock is covered when the bond is converted, the transaction would produce an arbitrage profit of ₹62 per ABC bond purchased. The only way to eliminate this arbitrage profit is for the ABC bond to sell for ₹850, its conversion value.

Suppose, instead, that comparable nonconvertible bonds are trading to yield 11.8%. Then the straight value of ABC bond would be ₹896. The minimum price for the ABC bond must be its straight value in this case because that is a value higher than the conversion value of ₹850. To see this, suppose that the market price of the ABC bond is ₹850. At this price, the yield would be about 12.7%, 90 basis points greater than comparable nonconvertible bonds. Investors would find the bond attractive. As investors buy the bond, they will bid up its price to where the new yield is 11.8%.

Market Conversion Price

The price that an investor effectively pays for the common stock if the convertible bond is purchased and then converted into the common stock is called the **market conversion price**. It is found as follows:

$$\text{conversion price} = \frac{\text{market price of convertible bond}}{\text{conversion ratio}}$$

The market conversion price is a useful benchmark because when the actual market price of the stock rises above the market conversion price, any further stock price increase is certain to increase the value of the convertible bond by at least the same percentage. Therefore, the market conversion price can be viewed as a break-even point.

An investor who purchases a convertible bond rather than the underlying share typically pays a premium over the current market price of the share. This premium per share is equal to the difference between the market conversion price and the current market price of the equity shares. That is,

$$\text{Market conversion premium per share} = \text{market conversion price} - \text{current market price}$$



The market conversion premium per share is usually expressed as a percentage of the current market price as follows:

$$\text{Market conversion premium per ratio} = \frac{\text{conversion premium per share}}{\text{market price of equity share}}$$

Example 2.

At a market price of ₹950, a share price of ₹17, and a conversion ratio of 50, the market conversion price, market conversion premium per share, and market conversion premium ratio of the ABC convertible bond are calculated as follows:

$$\text{Market conversion price} = \frac{₹950}{50} = ₹19$$

$$\text{Market conversion premium per share} = ₹19 - ₹17 = ₹2$$

$$\text{Market conversion premium ratio} = \frac{₹2}{₹17} = 0.118 \text{ or } 11.8\%$$

Current income of Convertible Bond versus Shares

As an offset to the market conversion premium per share, investing in the convertible bond rather than buying the share directly generally means that the investor realizes higher current income from the coupon interest paid on the convertible bond than would be received as dividends paid on the number of shares equal to the conversion ratio. Analysts evaluating a convertible bond typically compute the time it takes to recover the premium per share by computing the **premium payback period** (which is also known as the **break-even time**). This is computed as follows:

$$\frac{\text{market conversion premium per share}}{\text{favourable income differential per share}}$$

Where the favorable income differential per share is equal to

$$\frac{\text{coupon interest from bond} - (\text{conversion ratio} \times \text{dividend per share})}{\text{conversion ratio}}$$

Notice that the premium payback period does *not* take into account the time value of money.

Example 3.

For the ABC convertible bond, the market conversion premium per share is ₹2. The favorable income differential per share is found as follows:

$$\text{coupon interest from bond} = 0.10 \times ₹1,000 = ₹100$$

$$\text{conversion ratio} \times \text{dividend per share} = 50 \times ₹1 = ₹50$$

Therefore,

$$\text{favorable income differential per share} = \frac{₹100 - ₹50}{₹50} = ₹1$$

and

$$\text{premium payback period} = \frac{₹2}{₹1} = 2 \text{ year}$$

Without considering the time value of money, the investor would recover the market conversion premium per share in two years.

3.9 MISCELLANEOUS PROBLEMS

Illustration 24.

At the beginning of 2012, AB Road Construction entered into a contract to build a road for the government. Construction will take four years. The following information as of 31st December 2012 is available for the contract:

Total revenue according to contract	₹ 1,00,00,000
Total expected cost	₹ 80,00,000
Cost incurred during 2012	₹ 12,00,000

Under the completed contract method, how much revenue will be reported in 2012?

- A. None
- B. ₹ 3,00,000
- C. ₹ 15,00,000

Solution:

A is correct.

Under the completed contract method, no revenue would be reported until the project is completed. B is incorrect. This is the profit under the percentage – of- completion method. As per this method revenue for the year 2012 will be $\text{₹}(1,00,00,000 \times 12,00,000/80,00,000)$ or ₹15,00,000 and the cost is ₹12,00,000 for the year. So profit will be ₹ (15,00,000 – 12,00,000) or ₹3,00,000. C is incorrect. This is the revenue ₹15,00,000 under the percentage- of- completion method.

Illustration 25.

During 2012, Agro Company sold 10 acres of prime commercial zoned land to a builder for ₹50,00,000. The builder gave Agro a ₹10,00,000 down payment and will pay the remaining balance of ₹40,00,000 to Agro in 2013. Argo purchased the land in 2005 for ₹20,00,000. Using the installment method, how much profit will Argo report for 2012?

- A. None
- B. ₹6,00,000
- C. ₹10,00,000

Solution:

B is correct.

The installment method apportions the cash receipt between cost recovered and profit using the ratio of profit to sales value (i.e., $\text{₹}30,00,000 \div \text{₹}50,00,000 = 60\%$). Argo will, therefore, recognize ₹600,000 in profit for 2012 ($\text{₹}10,00,000 \text{ cash received} \times 60\%$). A uses the cost recovery method and C is the cash received.

Illustration 26.

During 2012, Arbic Toys, which began business in October of that year, purchased 10,000 units of its most popular toy at a cost of ₹10 per unit in October. In anticipation of heavy December sales, Arbic purchased 5,000 additional units in November at a cost of ₹11 per unit. During 2012, Arbic sold 12,000 units at a price of ₹15 per unit. Under the first in first out (FIFO) method, what is Arbic's cost of goods sold for 2012?

- A. ₹1,25,000
- B. ₹1,20,000
- C. ₹1,22,000

**Solution:**

C is correct.

Under the FIFO method, the first 10,000 units sold came from the October purchases at ₹10, and the next 2,000 units sold came from the November purchases at ₹11. A is incorrect; this is cost of goods sold under the LIFO method. As per this method, the first 5,000 units sold came from the November purchase at ₹11 and the next 7,000 units sold came from October purchase. B is incorrect because it places a cost of ₹10 on all units.

Illustration 27.

For 2012, Rytte Products had net income of ₹10,00,000. On 1st January 2012, there were 10,00,000 shares outstanding. On 1st July 2012, the company issued 1,00,000 new shares for ₹20 per share. The company paid ₹2,00,000 in dividends to equity shareholders. What is Rytte's basic earnings per share for 2012?

- A. ₹0.73
- B. ₹0.91
- C. ₹0.95

Solution:

C is correct.

The weighted average number of shares outstanding for 2012 is 1,050,000. Basic earnings per share would be $\text{₹}10,00,000 \div 10,50,000$, or ₹0.95. A subtracts the equity dividends from net income and uses 11,00,000 shares. B uses the proper net income but 11,00,000 shares.

Illustration 28.

Amri Services (ASI) had 10,00,000 average shares outstanding during all of 2012. During 2012, ASI also had 10,000 options outstanding with exercise prices of ₹10 each. The average share price of ASI during 2012 was ₹15. For purposes of computing diluted earnings per share, how many shares would be used in the denominator?

- A. 1,000,000
- B. 1,003,333
- C. 1,010,000

Solution:

B is correct.

With stock options, the treasury stock method must be used. Under that method, the company would receive ₹100,000 ($10,000 \times \text{₹}10$) and would repurchase 6,667 shares ($\text{₹}100,000 \div \text{₹}15$). The shares for the denominator would be:

Shares outstanding (A)	1,000,000
Options exercises	10,000
Less: Treasury shares purchased	(6,667)
(B)	3,333
Denominator (A+B)	1,003,333

Illustration 29.

Assume that XYZ Construction Corp. has a contract to build a ship for ₹1,000 and a reliable estimate of the contract's total cost is ₹800. Project costs incurred by XYZ are as follows:

XYZ Project Costs

Year	2010	2011	2012	Total
Cost incurred	₹400	₹300	₹100	₹800

Determine XYZ's net income from this project for each year using the percentage-of-completion and completed contract methods.

Solution:

Since one-half of the total contract cost [₹400/₹800] was incurred during 2010, the project was 50% complete at year-end. Under the percentage-of-completion method, 2010 revenue is ₹500 [₹1,000 x 50%]. Expenses (cost incurred) were ₹400; thus, net income for 2010 was ₹100 [₹500 revenue - ₹300 expenses].

At the end of 2011, the project is 87.5% complete [(₹400 + ₹300)/₹800]. Revenue to date should total ₹875 [₹1,000 x 87.5%]. Since XYZ already recognized ₹500 of revenue in 2010, 2011 revenue is ₹375 [₹875 - ₹500]. 2011 expenses were ₹300 so 2011 net income was ₹75 [₹375 revenue - ₹300 expense].

At the end of 2012, the project is 100% complete [(₹400 + ₹300 + ₹100)/₹800]. Revenue to date should total ₹1,000 [₹1,000 x 100%]. Since XYZ already recognized ₹875 of revenue in 2010 and 2011, 2012 revenue is ₹125 [₹1,000 - ₹875]. 2012 expenses were ₹100 so 2012 net income was ₹25 [₹125 revenue - ₹100 expense].

The table below summarizes the XYZ's revenue, expenses and net income over the term of project under the percentage-of-completion method.

XYZ Income Statements

	2010 (₹)	2011 (₹)	2012 (₹)	Total (₹)
Revenue	500	375	125	1,000
Expense	400	300	100	800
Net Income	100	75	25	200

Under the completed contract method, revenue, expenses, and profit are not recognized until the contract is complete. Therefore, at the end of 2012, XYZ reports revenue of ₹1,000, expense of ₹800, and net income of ₹200.

Illustration 30.

ABP Company recently purchased a machine at a cost of ₹12,000. The machine is expected to have a residual value of ₹2,000 at the end of its useful life in five years. Calculate depreciation expense for all five years using the double-declining balance method.

Solution:

The depreciation expense using the double-declining balance method is:

- Year 1: $(2/5) (\text{₹}12,000) = \text{₹}4,800$
- Year 2: $(2/5) (\text{₹}12,000 - \text{₹}4,800) = \text{₹}2,880$
- Year 3: $(2/5) (\text{₹}12,000 - \text{₹}7,680) = \text{₹}1,728$

In years 1 through 3, the company has recognized cumulative depreciation expense of ₹9,408. Since the total depreciation expense is limited to ₹10,000 (₹12,000 - ₹2,000 salvage value), the depreciation in year 4 is limited to ₹592, rather than the $(2/5) (\text{₹}2,000 - \text{₹}9,408) = \text{₹}1,036.80$ using the DDB formula.

Year 5: Depreciation expense is ₹0, since the asset is fully depreciated.

Note that the rate of depreciation is doubled $(2/5)$ from straight-line, and the only thing that changes from year to year is the base amount (book value) used to calculate annual depreciation.



Illustration 31.

Use the Inventory data in the table below to calculate the cost of goods sold and ending inventory under each of the three methods.

Inventory data

January 1 (beginning inventory)	2 units @ ₹2 per unit=	₹4
January 7 purchase	3 units @ ₹3 Per unit=	₹9
January 19 purchase	5 units @ ₹5 per unit=	₹25
Cost of goods available	10 units	₹38
Units sold during January	7 units	

Solution:

FIFO cost of goods sold: Value the seven units sold during the unit cost of first units purchased, start with the beginning inventory and the earliest units purchased and work down, as illustrated in the following table.

FIFO COGS Calculation		
From beginning inventory	2 units @ ₹2 per unit	₹4
From first purchase	3 units @ ₹3 per unit	₹9
From second purchase	2 units @ ₹5 per unit	₹10
FIFO cost of goods sold	7 units	₹23
Ending inventory	3 units @ ₹5 per unit	₹15

LIFO cost of goods sold: Value the seven units sold at unit cost of last units purchased. Start with the most recently purchased units and work up, as illustrated in the following table.

LIFO COGS Calculation		
From second purchase	5 units @ ₹5 per unit	₹25
From first purchase	2 units @ ₹3 per unit	₹6
LIFO cost of goods sold	7 units	₹31
Ending inventory	(2 units @ ₹2) +(1 units @ ₹3)	₹7

Average cost of goods sold: Value the seven units sold at the average unit cost of goods available.

Average COGS Calculation		
Average unit cost	₹38/10 units	₹3.80 per unit
Average cost of goods sold	7 unit@ ₹3.80 per unit	₹26.60
Ending inventory	3 units @ ₹3.80 per unit	₹11.40

The following table summarizes the calculations of COGS and ending inventory for each method.

Summary:

Inventory system	COGS	Ending Inventory
FIFO	₹23.00	₹15.00
LIFO	₹31.00	₹7.00
Average cost	₹26.60	₹11.40

Illustration 32.

During the past year, M & N Ltd., had net income of ₹1,00,000, paid dividends of ₹50,000 to its preferred stockholders, and paid ₹30,000 in dividends to its equity shareholders. M & N's equity share account showed the following:

January 1	Shares issued and outstanding at the beginning of the year	10,000
April 1	Shares issued	4,000
July 1	10% dividend on shares	
September 1	Shares repurchased for the treasury	3,000

Compute the weighted average number of equity shares outstanding during the year, and compute EPS.

Solution:

Step 1: Adjust the number of pre-dividend shares to post-dividend units (to reflect the 10% share dividend) by multiplying all share numbers prior to the share dividend by 1.1. Shares issued or retired after the share dividend are not affected.

January 1	Initial shares adjusted for the 10% dividend	11,000
April 1	Shares issued adjusted for the 10% dividend	4,400
September 1	Shares of treasury stock repurchased (no adjustment)	-3,000

Step 2: Compute the weighted average number of post-dividend shares:

Initial shares	11,000x12 months outstanding	1,32,000
Issued shares	4,400x9 months outstanding	39,600
Retired treasury shares	-3,000x4 months retired	-12,000
Total share month		1,59,600
Average shares	1,59,600/12	13,300

Step 3: Compute basic EPS:

$$\text{Basic EPS} = \frac{\text{net income} - \text{preference dividend}}{\text{weighted average no. of equity shares}} = ₹ \left(\frac{1,00,000 - 50,000}{13,300} \right) = ₹3.76$$

Illustration 33.

During 2012, ABC Ltd. reported net income of ₹1,15,600 and had 2,00,000 shares of equity shares outstanding for the entire year. ABC also had 1,000 shares of 10%, ₹100 par, preference shares outstanding during 2012. ABC Ltd. has 10,000 stock options (or warrants) outstanding the entire year. Each option allows its holder to purchase of one equity share at ₹15 per share. The average market price of ABC's equity share during 2012 is ₹20 per share. Compute the diluted EPS.

Solution:

Number of equity shares created if the options are exercised:	10,000 shares
Cash inflow if the options are exercised (₹15/share) (10,000):	₹1,50,000
Number of shares that can be purchased with these funds is: ₹1,50,000/₹20	7,500 shares
Net increase in equity shares outstanding from the exercise of the stock options (10,000-7,500)	2,500 shares



$$\text{Diluted EPS} = ₹ \left(\frac{1,15,600 - 10,000}{2,00,000 + 2,500} \right) = ₹0.52.$$

A quick way to calculate the net increase in equity shares from the potential exercise of stock options or warrants when the exercise price is less than the average market price is:

$$\left(\frac{\text{AMP} - \text{EP}}{\text{AMP}} \right) \times N$$

Where:

AMP = average market price over the year

EP = exercise price of the options or warrant

N = number of equity shares that the options and warrants can be converted into

$$\text{For ABC: } ₹ \left(\frac{20 - 15}{20} \right) \times 10,000 \text{ shares} = 2,500 \text{ shares.}$$

Illustration 34:

During 2012, PQR Ltd. reported net income of ₹1,15,600 and had 2,00,000 equity shares outstanding for the entire year. PQR had 1,000 shares of 10%, ₹100 par convertible preference share, convertible into 40 shares each, outstanding for the entire year. PQR also had 600, 7%, ₹1,000 par value convertible bonds, convertible into 100 shares each, outstanding for the entire year. Finally, PQR had 10,000 stock options outstanding during the year. Each option is convertible into one share of stock at ₹15 per share. The average market price of the share for the year was ₹20. What are PQR basic and diluted EPS? (Assume a 40% tax rate.)

Solution:

Step 1: We know that the convertible preference shares, convertible bonds and stock options are all dilutive.

$$\text{Basic EPS} = ₹ \left(\frac{1,15,600 - 10,000}{2,00,000} \right) = ₹0.53$$

Step 2: Review the number of shares created by converting the convertible securities and options (the denominator):

Converting the convertible preference shares	40,000 shares
Converting the convertible bonds	60,000 shares
Exercising the options	2,500 shares

Step 3: Review the adjustments to net income (the numerator):

Converting the convertible preference shares	₹10,000
Converting the convertible bonds	₹25,200
Exercising the options	₹0

Step 4: Compute PQR'S diluted EPS:

$$\text{Diluted EPS} = ₹ \left(\frac{1,15,600 - 10,000 + 10,000 + 25,200}{2,00,000 + 40,000 + 60,000 + 2,500} \right) = ₹0.47$$

Illustration 35.

Calculate comprehensive income for CC Corporation using the selected financial statement data found in the following table.

CC Corporation-selected Financial statement data	₹
Net income	1,000
Dividend received from available-for-sale-securities	60
Unrealized loss from foreign currency translation	(15)
Dividend paid	(110)
Reacquire equity shares	(400)
Unrealized gain from cash flow hedge	30
Unrealized loss from available-for-sale securities	(10)
Realized gain on sale of land	65

Solution:

Net Income	₹1,000
Unrealized loss from foreign currency translation	₹ (15)
Unrealized gain from cash flow hedge	₹30
Unrealized loss from available-for-sale securities	₹ (10)
Comprehensive income	₹1,005

Note: The dividend received for available-for-sale securities and the realized gain on the sale of land are already included in net income. Dividends paid and the reacquisition of equity shares is transactions with shareholders, so they are not included in comprehensive income.

Illustration 36.

Compute a conservative estimate of profit on a contract (which has been 80% complete) from the following particulars

Particulars	Amount (₹)
Total expenditure to date	85,000
Estimated further expenditure to complete the contract (including contingencies)	17,000
Contract price	1,53,000
Works certified	1,00,000
Works not certified	8,500
Cash received	81,600

**Solution:**

Particulars	Amount (₹)	Amount (₹)
Value of work certified		1,00,000
Work not certified		8,500
Total work done so far		1,08,500
Less: Total expenditure upto date		85,000
Notional profit		23,500
Contract price		1,53,000
Less: Expenditure upto date	85,000	
Estimated further expenditure to complete contract	17,000	1,02,000
Estimated total profit		51,000

Illustration 37.

Defining total asset turnover as revenue is divided by average total assets, all else equal, impairment write-downs of long-lived assets owned by a company will most likely result in an increase for that company in

- A. The debt-to-equity ratio but not the total asset turnover.
- B. The total asset turnover but not the debt-to-equity ratio.
- C. Both the debt –to-equity ratio and the total asset turnover.

Solution:

C is correct.

Impairment write-downs reduce equity in the denominator of the debt-to-equity ratio but do not affect debt, so the debt-to-equity ratio is expected to increase. Impairment write downs reduce total assets but do not affect revenue. Thus, total asset turnover is expected to increase.

Illustration 38.

For financial assets classified as trading securities, how are unrealized gains and losses reflected in shareholders' equity?

- A. They are not recognized.
- B. As an adjustment to paid-in capital.
- C. They flow through income into retained earnings.

Solution:

C is correct.

For financial assets classified as trading securities, unrealized gains and losses are reported on the income statement and flow to shareholders' equity as part of retained earnings

Illustration 39.

For financial assets classified as available for sale, how are unrealized gains and losses reflected in shareholders' equity?

- A. They are not recognized.
- B. They flow through retained earnings.
- C. As a separate line item (other comprehensive income).

Solution:

C is correct.

For financial assets classified as available for sale, unrealized gains and losses are not recorded on the income statement but do appear on the Balance Sheet. Shareholders' equity is adjusted through a separate line item for valuation gains and losses termed 'other comprehensive income'.

Illustration 40.

When a company buys shares of its own stock to be held in treasury, it records a reduction in

- A. Both assets and liabilities
- B. Both assets and shareholders' equity.
- C. Assets and an increase in shareholders' equity.

Solution:

B is correct.

Share repurchases reduce the company's cash (an asset). Shareholders' equity is reduced because there are fewer shares outstanding and treasury stock is an offset to owners' equity.

Illustration 41.

A common-size analysis of the Balance Sheet is most likely to signal investors that the company

- A. has increased sales.
- B. is using assets efficiently
- C. is becoming more leveraged.

Solution:

C is correct.

Common - size analysis tells investors how the composition of assets is changing over time. As a result, it can signal when the company is becoming more leveraged.

Illustration 42.

Hall corporation paid ₹600 million for the outstanding share of Triple C Corporation. At the acquisition date, Triple C reported the following condensed balance sheet.

Triple C Corporation — Condensed Balance Sheet

	Book value (₹ in millions)
Current assets	80
Plant and equipment, net	760
Goodwill	30
Liabilities	400
Shareholders' equity	470

The fair value of the plant and equipment was ₹120 million more than its recorded book value. The fair values of all other identifiable assets and liabilities were equal to their recorded book values. Calculate the amount of goodwill Hall should report on its consolidated balance sheet.

**Solution:**

	Book value (₹ in millions)
Current assets	80
Plant equipment, net	880
Liabilities	(400)
Fair value of net assets	560
Purchase price	600
Less: Fair value of net assets	(560)
Acquisition goodwill	40

Note: Goodwill is equal to the excess of purchase price over the fair value of identifiable assets and liabilities acquired. The plant and equipment was "written-up" by ₹120 million to reflect fair value. The goodwill reported on Triple C balance sheet is an unidentifiable asset and is thus ignored in the calculation of Hall's goodwill.

Illustration 43.

ASM Corporation purchased a 6% bond, at par, for ₹10,00,000 at the beginning of the year. Interest rates have recently increased and the market value of the bond declined by ₹20,000. Determine the bond's effect on ASM's financial statements under each classification of securities.

Solution:

If the bond is classified as a held-to-maturity security, the bond is reported on the balance sheet at ₹10,00,000. Interest income of ₹60,000 [$₹10,00,000 \times 6\%$] is reported in the income statement.

If the bond is classified as a trading security, the bond is reported on the balance sheet at ₹9,80,000. The ₹20,000 unrealized loss and ₹60,000 of interest income are both recognized in the income statement.

If the bond is classified as an available-for-sale security, the bond is reported on the balance sheet date at ₹980,000. Interest income of ₹60,000 is recognized in the income statement. The ₹20,000 unrealized loss is not recognized in the income statement. Rather, it is reported as a change in shareholders' equity.

Illustration 44.

Rido Corporation has created employee goodwill by recognising its retirement benefit package. An independent management consultant estimated the value of the goodwill at ₹2 million. In addition, Rido recently purchased a patent that was developed by a competitor. The patent has an estimated useful life of five years. Should Rido report the goodwill and patent on its balance sheet?

	<u>Goodwill</u>	<u>Patent</u>
A.	Yes	No
B.	No	Yes
C.	No	No

Solution:

Correct answer is B.

Goodwill developed internally is expensed as incurred. The purchased patent is reported on the balance sheet.

Illustration 45.

At the beginning of the year, ZP Ltd. Purchased all 5,00,000 shares of LS Ltd. for ₹15 per share. Just before the acquisition date, LS' balance sheet reported net assets of ₹6 million. ZP determined the fair value of LS' property and equipment was ₹1 million higher than reported by LS. What amount of goodwill should ZP report as a result of its acquisition of LS?

- A. ₹ 0.
- B. ₹ 5,00,000.
- C. ₹ 15,00,000.

Solution:

Correct answer is B.

Purchase price of ₹75,00,000 [₹15 per share × 5,00,000 shares] – fair value of net assets of ₹70,00,000 [₹60,00,000 book value + ₹10,00,000 increase in property and equipment] = goodwill of ₹5,00,000.

Illustration 46.

At the beginning of the year, H Ltd. purchased 1,000 shares of S Ltd. for ₹80 per share. During the year, S Ltd. paid a dividend of ₹4 per share. At the end of the year, S Ltd.'s share price was ₹75. Answer the following questions:

- (i) What amount should H Ltd. report on its balance sheet at year end if the investment is considered a trading security and what amount should be reported if the investment is considered an available-for-sale security?

	<u>Trading</u>	<u>Available-for-sale</u>
A.	₹ 75,000	₹ 75,000
B.	₹ 75,000	₹ 80,000
C.	₹ 80,000	₹ 80,000

- (ii) What amount of investment income should H Ltd. recognised in its income statement if the investment in S Ltd. is considered trading and what amount should be recognised if the investment is considered available-for-sale?

	<u>Trading</u>	<u>Available-for-sale</u>
A.	₹(1,000)	₹ (1,000)
B.	₹(1,000)	₹ 4,000
C.	₹(5,000)	₹ 4,000

Solution:

- (i) Correct answer is A.

Both trading securities and available-for-sale securities are reported on the balance sheet at their fair values. At year-end, the fair value is ₹75,000 [₹75 per share × 1,000 shares].

- (ii) A loss of ₹1,000 is recognised if the securities are considered trading securities (₹4 dividend × 1,000 shares) – (₹5 unrealised loss × 1,000 shares). Income is ₹4,000 if the investment in S Ltd. is considered available-for-sale (₹4 dividend × 1,000 shares).

**Illustration 47.**

Neon Corporation has 1,60,000 authorised equity shares. There are 92,000 shares issued and 84,000 shares outstanding. How many shares of treasury stock does Neon own?

- A. 8,000
- B. 68,000
- C. 76,000.

Solution:

Correct answer is A.

The difference between issued shares and the outstanding shares is the treasury shares. Here the difference is 8,000 shares [92,000 shares – 84,000 shares].

Illustration 48.

Selected data from A Co.'s balance sheet at the end of the year as follows:

Investment in B Co., at fair value	₹1,50,000
Deferred taxes	₹86,000
Equity share capital, ₹1 par value	₹5,50,000
Preference share capital, ₹100 par value	₹1,75,000
Retained earnings	₹8,93,000
Accumulated other comprehensive income	₹46,000

The investment in B Co. had an original cost of ₹1,20,000. Assuming the investment in B is classified as available-for-sale, A's total owners equity at the year-end is closet to:

- A. ₹16,18,000
- B. ₹16,64,000
- C. ₹17,14,000.

Solution:

Correct answer is B.

Total shareholders' equity consist of equity share capital of ₹5,50,000, preference share capital of ₹1,75,000, retained earnings of ₹8,93,000, and accumulated other comprehensive income of ₹46,000, for a total of ₹16,64,000. The ₹30,000 unrealised gain from the investment in B is already included in accumulated other comprehensive income.

Illustration 49.

Sarada Co. adheres to IFRS. It recently purchased inventory for ₹100 million and spent ₹5 million for storage prior to selling the goods. The amount it charged to inventory expense (in ₹ millions) was closest to

- A. ₹ 95.
- B. ₹ 100.
- C. ₹ 105.

Solution:

B is correct.

Inventory expense includes costs of purchase, costs of conversions, and other costs incurred in bringing the inventories to their present location and condition. It does not include storage costs not required as part of production.

Illustration 50.

Elora Corp. started business in 2011 and uses the weighted average cost inventory method. During 2011 it purchased 45,000 units of inventory at ₹10 each and sold 40,000 units for ₹20 each. In 2012 it purchased another 50,000 units at ₹11 each and sold 45,000 units for ₹22 each. Its 20 cost of goods sold (in ₹thousands) was closest to

- A. ₹490
- B. ₹491
- C. ₹495

Solution:

B is correct.

Elora uses the weighted average cost method, so in 2012, 5,000 units of inventory were at ₹10 each for 2011 and the 50,000 units were purchased at ₹11 in 2012. The weighted average cost of inventory during 2012 was thus $\text{₹}[(5,000 \times 10) + (50,000 \times 11)] = \text{₹}[50,000 + 550,000] = \text{₹}600,000$ and the weighted average cost was $\text{₹}600,000/55,000 = \text{₹}10.91$. Cost of goods sold were $\text{₹}10.9091 \times 45,000$, which is approximately ₹499,909.

Illustration 51.

Rang Ltd. started business in 2011 and uses the FIFO inventory method. During 2011 it purchased 45,000 units of inventory at ₹10 each and sold 40,000 units for ₹20 each. In 2012 it purchased another 50,000 units at ₹11 each and sold 45,000 units for ₹22 each. Its 2012 ending inventory balance (in ₹ thousands) was closest to

- A. ₹105
- B. ₹109
- C. ₹110

Solution:

C is correct

Rang uses the FIFO method, and thus the first 5,000 units sold in 2012 indicate the 2011 inventory. Of the inventory purchased in 2012, 40,000 units were sold and 10,000 units remain, valued at ₹11 each for a total of ₹110,000.

Illustration 52.

Neonex Factories produces pencils at a factory designed to produce 10 million pencils per year. In 2012 the fixed production overhead related to the factory was ₹1 million and the factory produced 9 million pencils. The inventory cost for each pencil related to the fixed production overhead is closet to

- A. ₹0.00
- B. ₹0.10
- C. ₹0.11

**Solution:**

B is correct.

Neonex can allocate to inventory cost a portion of fixed production overhead based on normal capacity levels. Normal capacity is 10 million pencils, and fixed production costs are ₹1 million, so the capitalized inventory cost will include 90% (9 million pencils produced ÷ 10 million capacity) of the fixed production overhead cost of ₹1 million. The inventory cost for each pencil related to the fixed production overhead allocated to each pencil is thus ₹0.10 (90% × ₹1 million ÷ 9 million pencils). The remaining ₹1,00,000 of fixed production overhead costs would be expensed as incurred.

Illustration 53.

Like many technology companies, RB Tools operates in an environment of declining prices. Its reported profits will tend to be highest if it accounts for inventory using the

- A. FIFO method.
- B. LIFO method.
- C. Weighted average cost method.

Solution:

B is correct.

In a declining price environment, the newest inventory is the lowest cost inventory. In such circumstances, using the LIFO method (selling the newer, cheaper inventory first) will result in lower cost of goods sold and higher profit.

Illustration 54.

ABC Company manufactures a single product. The following information has been taken from the company's production and cost record for last year:

Normal production capacity	50,00,000 units
Units produced	40,00,000 units
Conversion cost for finished goods	₹2,00,00,000
Raw materials	₹1,50,00,000
Fixed overhead	₹60,00,000
Freight inward	₹8,00,000
Storage cost for finished goods	₹5,00,000
Abnormal waste	₹1,00,000

Assuming no units remain unfinished at year-end, calculate the capitalized cost of one unit.

Solution:

Capitalized inventory cost includes the conversion cost, raw materials cost, freight inward, and the allocated fixed overhead. The allocation of fixed overhead is based on the units produced relative to normal production capacity. Since ABC Company operated at 80% of normal production capacity last year (40,00,000 units produced/50,00,000 units normal capacity), 80% of the fixed overhead is capitalized. The remaining 20% of fixed overhead is expensed.

Conversion cost for finished goods	₹2,00,00,000	
Raw materials	₹1,50,00,000	
Allocated fixed overhead	₹48,00,000	(₹60,00,000 fixed overhead x 80%)
Freight inward	₹8,00,000	
Total capitalized cost	₹4,06,00,000	
Units produced	40,00,000	
Capitalized cost per unit	₹10.15	(₹4,06,00,000/40,00,000 units produced)

Storage cost, abnormal waste, and the remaining unallocated fixed overhead are expensed in the period incurred.

Illustration 55.

Kamp Inc. sells digital cameras. Per-unit cost information pertaining to Kamp's inventory as follows:

Original cost	₹210
Estimated selling price	₹225
Estimated selling costs	₹22
Net realizable value	₹203
Replacement cost	₹197
Normal profit margin	₹12

What are the per unit carrying values of Kamp's inventory under IFRS?

Solution:

Under IFRS, inventory is reported on the balance sheet at the lower of cost or net realizable value. Since original cost of ₹210 exceeds net realizable value (₹225 - ₹22 = ₹203), the inventory is written down to the net realizable value of ₹203 and ₹7 loss (₹203 net realizable value - ₹210 original cost) is reported in the income statement.

Illustration 56.

Use the inventory data in the following figure to calculate the cost of goods sold and ending inventory under FIFO, LIFO and weighted average cost methods.

Inventory data

April 1 (beginning inventory)	2 units @ ₹3 per unit	₹6
April 7 purchase	3 unit @ ₹3 per unit	₹9
April 19 purchase	5 unit @ ₹6 per unit	₹30
Cost of goods available	10 unit	₹45
Units sold during April	7 units	

Solution:

FIFO cost of goods sold: Value the seven units sold at the unit cost of the first units purchased. Start with the earliest units purchased and work down, as illustrated in the following figure:

FIFO COGS Calculation



From beginning inventory	2 units@ ₹3 per unit	₹6
From first purchase	3 unit @ ₹3 per unit	₹9
From second purchase	2 units@ ₹6 per unit	₹12
FIFO cost of goods sold	7 units	₹27
Ending inventory	3 units @ ₹6	₹18

LIFO cost of goods sold: Value the seven units sold at the unit cost of the last unit purchased. Start with the most recently purchased units and work up, as illustrated in the following figure:

LIFO COGS Calculation

From second purchase	5 units @ ₹6 per unit	₹30
From first purchase	2 units @ ₹3 per unit	₹6
LIFO cost of goods sold	7 units	₹36
Ending inventory	2 units @ ₹3 + 1 unit @ ₹6	₹9

Average cost of goods sold: Value the seven unit sold at the average unit cost of goods available.

Average COGS Calculation

Average unit cost	₹45/10	₹4.50 per unit
Weighted average cost of goods sold	7 units @ ₹4.50 per unit	₹31.50
Ending inventory	3 unit @ ₹ 4.50 per unit	₹13.50

Summary

Inventory system	COGS	Ending inventory
FIFO	₹27.00	₹18.00
LIFO	₹36.00	₹9.00
Average cost	₹31.50	₹13.50

Illustration 57.

Sample balance sheet for 2011 and 2012 and an income statement for 2012 of PSP Ltd. are shown below. The sample balance sheet and income statement were prepared using the LIFO inventory cost flow method. Calculate the current ratio, inventory turnover, long term debt to equity ratio, and operating profit margin for 2012 under LIFO.

Name of the Company: PSP Ltd.**Balance Sheet as at : 31.03.2012****(Amount in ₹)**

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.11
I	EQUITY AND LIABILITIES			
1	Shareholders' fund			
	(a) Share capital	(1)	700	700
	(b) Reserves and surplus-	(2)	320	180
	(c) Money received against share warrants			
2	Share application money pending allotment			
3	Non-current liabilities			
	(a) Long-term borrowings		610	690
	(b)Deferred tax liabilities (Net)		105	95
	(c)Other Long term liabilities			
	(d) Long-term provisions			
4	Current Liabilities			
	(a) Short-term borrowings		160	140
	(b) Trade payables		110	90
	(c)Other current liabilities	(3)	55	45
	(d) Short-term provisions			
	Total		2,060	1,940
II	ASSETS			
1	Non-current assets			
	(a) Fixed assets			
	(i) Tangible assets	(4)	1,440	1,360
	(ii) Intangible assets			
	(iii) Capital work-in-progress			
	(iv) Intangible assets under development			
	(b) Non-current investments			
	(c)Deferred tax assets (Net)			
	(d) Long-term loans and advances			
	(e) Other non-current assets			
2	Current assets			
	(a)Current investments			
	(b) Inventories		310	290
	(c) Trade receivables		205	195
	(d) Cash and cash equivalents		105	95
	(e)Short-term loans and advances			
	(f) Other current assets			
	Total		2,060	1,940


Workings:
(Amount in ₹)

1. Share Capital	31.03.12	31.03.11
Equity share capital	300	300
Further issue of equity shares	400	400
Total	700	700
2. Reserve & Surplus	31.03.12	31.03.11
Retained earnings	320	180
Total	320	180
3. Other Current Liabilities	31.03.12	31.03.11
Current portion of long term debt	55	45
Total	55	45
4. Tangible Assets	31.03.12	31.03.11
Plant and equipment	1,800	1,700
Less: Accumulated depreciation	(360)	(340)
Total	1,440	1,360

Name of the Company: PSP Ltd.
Profit and Loss Statement for the year ended: 31.03.2012
(Amount in ₹)

	Particulars	Note No.	As at 31.03.12	As at 31.03.11
I	REVENUE FROM OPERATION		4,000	—
II	OTHER INCOME			
III	TOTAL REVENUE(I+II)		4,000	—
IV	EXPENSES:			
	(a) Cost of material consumed		3,000	—
	(b) Purchase of products for sale			
	(c) changes in inventories of finished goods, work-in-progress and products for sale			
	(d) Employees cost/ benefits expenses			
	(e) Finance cost	(1)	50	—
	(f) Depreciation and amortization expenses			
	(g) Product development expenses/ Engineering expenses			
	(h) Other expenses	(2)	650	—
	(i) Expenditure transfer to capital and other account			
	TOTAL EXPENSES		3,700	—

V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)			
VI	EXCEPTIONAL ITEMS			
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)			
VIII	EXTRAORDINARY ITEMS			
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)		300	—
X	Tax expenses:			
	(1) Current Tax		100	—
	(2) deferred tax			
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		200	—
XII	Profit (loss) from discontinuing operations			
XIII	Tax expenses from discontinuing operations			
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)			
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		200	—
	Balance brought forward from previous year			
	Profit available for appropriation			
	Appropriation:			
	Proposed dividend		60	—
	Transfer to General Reserve			
	Distribution Tax			
	Total			
	Balance carried forward			
XVI	Earning per equity share:			
	(1) Basic			
	(2) Diluted			

Workings:
(Amount in ₹)

1. Finance Costs	As at 31.03.2012	As at 31.03.2011
Interest	50	—
Total	50	—

2. Other Expenses	As at 31.03.2012	As at 31.03.2011
Operating expenses	650	—
Total	650	—

**Solution:****Current Ratio**

The current ratio (current assets/current liabilities) under LIFO is ₹620/₹325=1.9

Here Current Assets = ₹(105+205+310) = ₹620

Current liabilities = ₹(110+160+55) = ₹325

Inventory Turnover

The inventory turnover ratio (COGS/average inventory) for 2012 under LIFO is ₹3,000/₹300=10.0

Here COGS = ₹3,000

And average inventory = ₹300 or $\text{₹} \left(\frac{310 + 290}{2} \right)$.

Long-Term debt to equity

The long-term debt to equity ratio (long-term debt/ stockholders' equity) under LIFO is (₹610+₹105)/₹1,020 = Re. 0.70.

Operating Profit Margin

The operating profit margin (operating profit/ revenue) under LIFO is ₹350/₹4,000=8.8%.

Here operating profit = ₹350 or ₹(4,000-3,000-650)

Revenue = ₹4,000.

Illustration 58.

At the beginning of 2012, Small Manufacturing Company had 560 units of inventory as follows:

Year purchase	Number of units	Cost per unit (₹)	Total cost (₹)
2008	120	10	1,200
2009	140	11	1,540
2010	140	12	1,680
2011	160	13	2,080
	560		6,500

Due to a strike, no units were produced during 2012. During 2012, Small sold 440 units. Absent the strike, Small would have had a cost of ₹14 for each unit produced. Compute the artificial profit that resulted from the liquidation of inventory.

Solution:

Because of the LIFO liquidation, actual COGS was ₹5,300 as follows:

	Units	Cost (₹)	
Beginning inventory	560	6,500.00	
+ purchase	0	0.00	
- Ending inventory	(120)	(1,200.00)	(₹10 x 120 units)
= COGS (actual)	440	5,300.00	

Had Small replaced 440 units sold, COGS would have been ₹6,160 as follows:

	Units	Cost (₹)	
Beginning inventory	560	6,500.00	
+Purchase	440	6,160.00	(₹14 x 440 units)
-Ending inventory	(560)	(6,500.00)	
=COGS (if replaced)	440	6,160.00	

Due to the LIFO liquidation, COGS was lower by ₹860 (₹6,160 - ₹5,300); thus, pretax profit was higher by ₹860. The higher profit is unsustainable because Small 4 will eventually run out of inventory.

Illustration 59.

On 1st January 2011, CD purchased 30% of the ordinary share capital of EF for ₹280,000, which gave it significant influence over EF's activities. In the financial year ended 31st December 2011, EF reported pre-tax profits of ₹62,000. The tax charge was ₹20,000. During the financial year ended 31st December 2011, EF paid a total dividend of ₹5,000 to its shareholders.

In the year ended 31st December 2012, EF made a pre-tax loss of ₹18,000, with a tax credit of ₹4,000. A review of CD's investment in EF at 31st December 2012 concluded that impairment had taken place. An impairment loss of ₹45,000 was charged in CD's consolidated financial statements for the year.

The carrying amount of the investment in EF to be included in CD's consolidated balance sheet at 31st December 2012 was

- A. ₹2,41,900.
- B. ₹2,43,400.
- C. ₹2,46,700.
- D. ₹2,58,000.

Solution:

The correct answer is **A**.

Particulars	₹'000	₹'000
Cost of investment		280
2011 profit after tax (62 - 20)	42	
2011 dividend	(5)	
2012 loss after tax (18 - 4)	(14)	
	23	
Group share = 30% x ₹23,000		6.9
		286.9
Less: Impairment		(45)
		241.9

**Illustration 60.**

FAL owns 75% of the issued ordinary share capital and 25% of the issued irredeemable preference shares in PAL. The share capital and accumulated profits of PAL at 31st March 2013, the FAL group's year end, were:

		₹
Ordinary share capital		60,000
7% preference share capital	<u>20,000</u>	80,000
Accumulated profits		<u>215,000</u>
		<u>295,000</u>

Upon acquisition of FAL's interests in PAL, which took place on 30th September 2012, the fair values of PAL's net assets were the same as book values, with the exception of an item of plant. The carrying value of the plant at 30th September 2012 was ₹10,200, and its fair value was ₹15,600. Its estimated remaining useful life at that date was 4 years. Depreciation is charged for each month of ownership. No adjustment was made in PAL's own accounting records for the increase in fair value.

Calculate the minority interest in PAL at 31st March 2013 for inclusion in the group's consolidated balance sheet (to the nearest ₹).

Solution:

Particulars	₹	₹	₹
Minority share of preferred share capital: ₹20,000 x 75%			15,000
Ordinary share capital and reserves: ₹60,000 + ₹2,15,000		2,75,000	
Fair value uplift (₹15,600 – ₹10,200)	5,400		
Less: depreciation for 6 months: ₹5,400/4 x 6/12	(675)		
		4,725	
		2,79,725	
Minority share: 25%			69,931
Total minority share			84,931

Illustration 61.

AB owns a controlling interest in another entity, CD, and exerts significant influence over EF, an entity in which it holds 30% of the ordinary share capital.

During the financial year ended 30th April 2013, EF sold goods to AB valued at ₹80,000. The cost of the goods to EF was ₹60,000. 25% of the goods remained in AB's inventory at 30th April 2013.

Which ONE of the following is the correct consolidation adjustment in respect of the inventory?

A.	DR Consolidated reserves	₹5,000,	CR Inventory	₹5,000
B.	DR Consolidated reserves	₹1,500,	CR Inventory	₹1,500
C.	DR Consolidated reserves	₹5,000,	CR Investment in Associate	₹5,000
D.	DR Consolidated reserves	₹1,500,	CR Investment in Associate	₹1,500.

Solution:

The correct answer is B.

Unrealised profit = $(₹80,000 - ₹60,000) \times 25\% = ₹5,000$.

The group share of the figure is 30% i.e. ₹1,500 $(₹5,000 \times 30\%)$. The profit and inventory are located in the holding entity, so therefore the adjustment is to consolidated reserves and consolidated inventory.

Illustration 62.

AB owns 60% of the issued ordinary share capital of CD. CD owns 60% of the issued ordinary share capital of EF. Which ONE of the following statements is correct?

The effective interest of AB in EF is

- A. 20%
- B. 24%
- C. 36%
- D. 60%.

Solution:

The correct answer is C.

The effective of AB in EF is $60\% \times 60\% = 36\%$.

Illustration 63.

On 31st December 2012, LMN set up a joint venture entity, OPQ, with two partners. Each partner owns exactly one third of the issued share capital of OPQ and all business decisions are taken jointly.

Throughout its financial year ended 31st March 2013, LMN held 80% of the share capital of its subsidiary RST.

Revenue for the period ended 31st March 2013 recorded in the books of the three entities was as follows:

	₹
LMN	21,500
OPQ	5,400
RST	12,600

LMN's directors have decided to adopt the proportionate method of consolidation where permitted by IFRS. During the year, RST supplied LMN with goods with a sales value of ₹1,400. The cost to RST of these goods was ₹1,200.

What is the amount of consolidated revenue for inclusion in LMN's group income statement for the year ended 31 March 2013?

- A. 31,980
- B. 33,150
- C. 34,500
- D. 34,700.

**Solution:**

The correct answer is C.

Consolidated revenue:

	₹
LMN	21,500
OPQ (5,400/3)	1,800
RST	12,600
Less: Intragroup sales	<u>(1,400)</u>
	<u>34,500</u>

Illustration 64.

On 1st March 2012, XPR acquired control of YQS, purchasing 60% of its issued ordinary share capital. YQS is located in a country where compliance with most, but not all, IFRS is required by law. For example, there is no requirement to discount liabilities. No material fair value adjustments were identified at the date of acquisition of YQS, except in respect of a deferred liability to a supplier which will fall due on 1st March 2014. The amount payable on that date will be ₹300,000. The discount rate relevant to the liability is 8%.

YQS's profit for the period ended 29th February 2013 was ₹67,600 before taking into account any unwinding of the discount in respect of the liability referred to above.

Calculate the share of profit for the period attributable to equity shareholders of the parent, after taking into account any adjustment required in respect of the liability.

Solution:

At 29th February 2013, settlement of the liability of ₹3,00,000 will occur at the end of one year. Applying the discount factor of 0.926 (8% discount factor for one year from tables), the present value of the liability is ₹2,77,800. The present value of the liability at 1st March 2012, one year earlier was ₹3,00,000 x 0.857 (8% discount factor for Year 2 from tables) = ₹2,57,100. Therefore an adjustment in respect of the unwinding of the discount must be made as follows:

DR income statement	₹(2,77,800 – 2,57,100)	₹20,700
CR liability		₹20,700

The profit for the period of YQS is (₹67,600 - ₹20,700) = ₹46,900, after taking the adjustment into account. The share attributable to equity shareholders of XPR is 60% x ₹46,900 = ₹28,140.

Illustration 65.

DA controls another entity, CB, owning 60% of its ordinary share capital. At the group's year end, 31st December 2012, CB included ₹6,000 in its receivables in respect of goods supplied to DA. However, the payables of DA included only ₹4,000 in respect of amounts due to CB. The difference arose because, on 31st December 2012, DA sent a cheque for ₹2,000, which was not received by CB until 3rd January 2013.

Which ONE of the following sets of consolidation adjustments to current assets and current liabilities is correct?

- A. Deduct ₹6,000 from both consolidated receivables and consolidated payables.
- B. Deduct ₹3,600 from both consolidated receivables and consolidated payables.
- C. Deduct ₹6,000 from consolidated receivables and ₹4,000 from consolidated payables, and include cash in transit of ₹2,000.
- D. Deduct ₹6,000 from consolidated receivables and ₹4,000 from consolidated payables, and include inventory in transit of ₹2,000.

Solution:

The correct answer is C.

Deduct ₹6,000 from consolidated receivables and ₹4,000 from consolidated payables, and include cash in transit of ₹2,000.

Illustration 66.

At 1st April 2012, S held 80,000 of the 1,00,000 issued ordinary shares of T. The acquisition of T took place on 1st April 2011, and goodwill on acquisition was recorded at ₹1,20,000. The directors of S decided to amortise the goodwill on acquisition on the straight-line basis at the rate of 20% each year. On 1st October 2012, S disposes of 20,000 shares in T for ₹1,25,000. At that date, T's total net assets are ₹4,00,000. Calculate the consolidated profit or loss before tax on disposal of the shares.

Solution:

Disposal of 20,000 shares in T: consolidated profit before tax on disposal:

Particulars	₹ '000
Disposal proceeds	125
Share of net assets (20% x ₹400,000)	(80)
Less: unamortised goodwill: ₹120,000 x 3.5/5 x 20/80	(21)
Consolidated profit on disposal	24

Illustration 67.

As well as its investment in T (see illustration 16), S held 25% of the shares of U, and exerts a significant influence over it. U sells goods to S. During the year ending 31st March 2013, U sells goods to S for ₹100,000. The cost of the goods to U is ₹80,000. At the year end, S's inventories include ₹16,000 of goods purchased from U.

Calculate the adjustment required in respect of unrealised profit, and describe the accounting treatment of the adjustment in the consolidated income statement and the consolidated balance sheet.

Solution:

U charges a mark-up of 25% on cost (100 - 80/80), so unrealised profit in inventory at 31st March 2013 is ₹16,000 x 25/125 = ₹3,200.

In the consolidated balance sheet, consolidated inventory is reduced by ₹3,200. In the consolidated income statement, ₹3,200 is deducted from "share of profits of associates".

Study Note - 4

THE ANALYSIS OF THE CASH FLOW STATEMENT



This Study Note includes

- 4.1 The Analyst's Checklist**
- 4.2 GAAP Statement of Cash Flows and Reformulated Cash Flow Statements**
- 4.3 Analysis of Cash Flow Statement**
- 4.4 Quality of Earnings and Cash Flows**
- 4.5 Miscellaneous Problems**

4.1 THE ANALYST'S CHECKLIST

This study note consists of the preparation of the financial statements for analysis by reformulating the cash flow statement. The cash flow statement describes the cash generation in a business, and reformulation highlights the cash flows that are important to analysis.

If the equity analyst is using accounting-based valuation, he is concerned with profitability rather than cash flow, so his primary focus is on the balance sheet and income statement from which the profitability is calculated. But he cannot ignore the cash flow statement. Equity valuation relies on accrual accounting numbers and accrual accounting numbers can be distorted. A difference between accrual accounting earnings and operating cash flow is a "red flag" that could indicate manipulation, so the analyst must scrutinize the cash flows as well as accrual accounting earnings. Indeed earnings will be compared to cash flows in the analysis of the quality of earnings.

If the equity analyst chooses to apply discounted cash flow (DCF) analysis, the cash flow statement becomes the primary focus. This analyst has the primary task of forecasting free cash flows; to do so, he must have a good appreciation of the cash flow statement.

Equity valuation issues aside, the analysis of the cash flow statement is necessary for liquidity analysis and financial planning. Liquidity analysis is involved in assessing the risk of debt, for liquidity (Cash) is required to settle debt. So liquidity analysis is very much the tool of the credit analyst. Financial planning is the tool of the treasurer. She must ensure that financing is in place to meet the needs for cash – to make investments and cover dividends, as well as servicing debt. To understand the needs for cash, she must analyze the ability of the firm to generate cash. Like valuation analysis, liquidity analysis and financial planning are prospective: The credit analyst and the treasurer are concerned about the ability of the firm to generate cash in the future, and they use current financial statements to forecast future cash flow statement analysis here, like that if the other statements, prepares you for forecasting.

Unfortunately, GAAP statements of cash flow are not in the form that identifies the cash flows used in these analyses, and indeed they misclassify some cash flows. Operating cash flows are confused with financing flows. This study note reformulates the statement to distinguish the cash flows appropriately. The reformulation is important for preparing proforma future cash flow statements for DCF analysis, liquidity analysis, and financial planning the analyst forecasts GAAP cash flows, a DCF valuation will be incorrect and a misleading picture of liquidity and financing needs will be drawn.

An important lesson emerges from this study note. Forecasting free cash flow is best done by forecasting reformulated income statements and balance sheets. We can contemplate forecasting cash flow statements, but this is difficult without first forecasting the profitability operations, understood from reformulated income statements and balance sheets. Once those statements are forecasted, free

cash flow forecasts can be calculated immediately, as the first section of the study note shows. And GAAP cash flow statements are messy, as the second section of the study note shows; dealing with them requires considerable adjustment.

Checklist:

- How free cash flow can be calculated from reformulated income statements and balance sheets without a cash flow statement.
- How the cash conservation equation ties the cash flow statement together to equate free cash flow and financing cash flow.
- The difference between the direct and indirect calculations of cash from operations.
- Problems that arise in analyzing cash flows from GAAP statements of cash flow.
- What reformulated cash flow statements tell you?
- How to examine the quality of reported cash flow from operations.

The Calculation of Free Cash Flow

Free cash flow – the difference between cash flow from operations and cash investment in operations – is the main focus in DCF analysis, liquidity analysis, and financial planning. Free cash flow is the net cash generated by operations, which determines the ability of the firm to pay off its debt and equity claims.

If the analyst has gone through the analysis of the balance sheet and income statement in study note 3, he does not need a cash flow statement to get the free cash flow. If those statements are appropriately formatted, then the free cash flow is given by a quick calculation.

Hypee, Inc.: Calculation of Free Cash Flow for 2012 (₹ in millions)

Method 1:	$C - I = OI - \Delta NOA$			
	Operating income	2012		1,035
	Net operating assets	2012	4,551	
	Net operating assets	2011	4,330	(221)
	Free cash flow	2012		<u>814</u>
Method 2:	$C - I = NFE - \Delta NFO + d$			
	Net financial expenses	2012		16
	Net financial obligations	2012	(289)	
	Net financial obligations	2011	302	591
	Net dividend	2012		<u>207</u>
	Free cash flow	2012		<u><u>814</u></u>

Reference:

Hypee, Inc. Reformulated Balance Sheet (₹ in millions)

	2012	2011		2012	2011
Operating Assets (OA)	6,728	6,241	Financial Obligations (FO)	879	883
Operating Liabilities (OL)	2,177	1,911	Financial Assets (FA)	(1,168)	(581)
			Net Financial Obligations (NFO)	<u>(289)</u>	<u>302</u>
			Shareholders' Equity (SE)	4,840	4,028
Net Operating Assets	4,551	4,330		4,551	4,330



Free cash flow = Operating income – change in net operating assets

$$C - I = OI - \Delta NOA$$

That is, free cash flow is operating income (in a reformulated income statement) less the change in net operating assets in the balance sheet.

For this quick calculation to work, the operating income must, of course, be comprehensive. Just as comprehensive income and changes in the book value of equity explain dividends to shareholders, so comprehensive operating income and the change in the book value of the net operating assets explain the “dividend” from the operating activities to the financing activities, the free cash flow.

The numbers for operating income and net operating assets for Hypee, Inc., from Exhibits 3.3 and 3.10 in study note 3 are provided in above box and free cash flow is calculated from these numbers under method 1. Hypee generated income from operations of ₹1,035 million, but its additional investment in net operating assets of ₹221 million produced a free cash flow of ₹814 million.

There is a second way to calculate free cash flow from reformulated statements. Free cash flow is applied as follows:

Free cash flow = Net financial expense – Change in net financial obligations + Net dividends

$$C - I = NFE - \Delta NFO + d$$

that is, free cash flow is used to pay for net financial expense, reduce debt, and pay net dividends. If minority interests are involved, the calculation is

$C - I = NFE - \Delta NFO + d + \text{Minority interest in income} - \Delta \text{minority interest in the balance sheet}$

Again, the net financial expense must be comprehensive (of unrealized gains and losses on financial assets, for example, and of the tax benefit from interest expense). This second calculation is given for Hypee, Inc., under Method 2 in above box. The net dividend is from the reformulated statement of shareholders' equity in Exhibit 3.9 in study note 3.

Ricky International Ltd.: Calculation of Free Cash Flow for 2012 (₹ in millions)

Method 1:	$C - I = OI - \Delta NOA$			
	Operating income	2012		237
	Net operating assets	2012	1,212	
	Net operating assets	2011	731	(481)
	Free cash flow	2012		<u>(244)</u>
Method 2:	$C - I = NFE - \Delta NFO + d + \text{MI in income} - \Delta \text{MI in balance sheet}$			
	Net financial expenses	2012		18
	Net financial obligations	2012	(23)	
	Net financial obligations	2011	(316)	(293)
	Net dividend	2012		23
	Minority interest in income	2012		5
	Change in minority interest in balance sheet	2012		3
	Free cash flow (allow for refunding error)	2012		<u>(244)</u>

The two calculations must agree if the reformulation of the equity statement is done on comparative basis. The calculations in above box are based on the reformulated statement for Ricky in Exhibits 3.4

and 3.11 in study note 3 and, for the net dividend, the reformulated equity statement in Exhibits 3.9 in study note 3. Note that Ricky has minority interest.

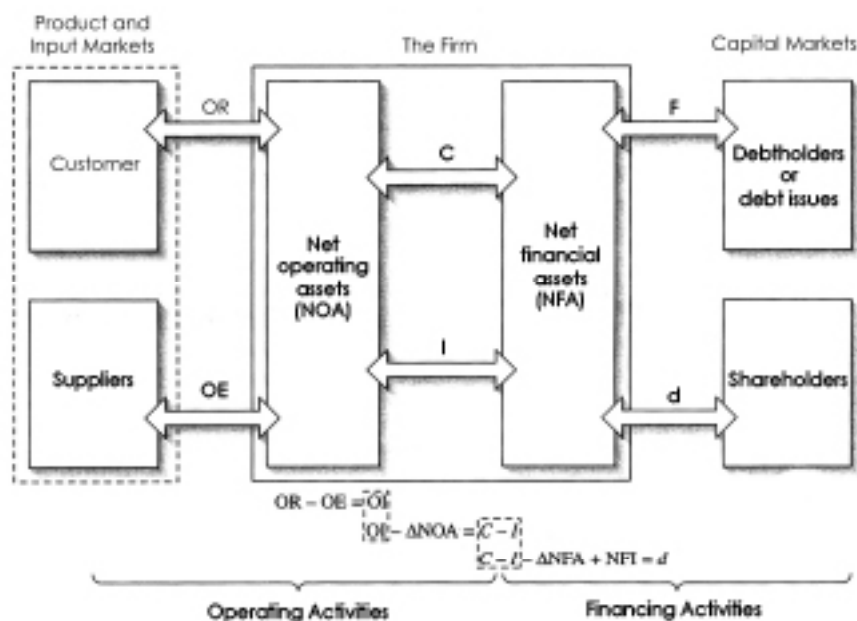
If the balance sheet and income statement have been reformulated, these calculation straightforward. You'll agree that these methods are much simpler than the seven-step approach to calculating free cash flow. But, you may ask, "can't I simply read the cash flow on the statement of cash flows"? This is not as easy as you would think.

4.2 GAAP STATEMENT OF CASH FLOWS AND REFORMULATED CASH FLOW STATEMENTS

For cash flow forecasting we need to distinguish clearly the cash generated by operations (the free cash flow) from the flows that involve paying that cash flow out to the firm's claimants. If operations use cash (and thus have negative free cash flow), we need to distinguish that negative free cash flow from the cash flows that involve claimants paying into the firm to cover the free cash flow deficit. An analyst forecasting free cash flow for discounted cash flow analysis must not confuse the free cash flow with the financing flows. And a treasurer forecasting the cash needs of the business must forecast the cash surplus or deficit as distinct from the financing flows that will dispose of the surplus or will be needed to meet the deficit.

As with the income statement and balance sheet, the reformulation of the cash flow statement to identify cash flows appropriately. Focus on Figure 4.1. Four types of cash flow are identified there. Two are cash flows generated by the operating activities within the firm: cash from operations (C) and cash investments in those operations (I). Two involve financing activities between the firm and its claimants outside the firm: net dividends to shareholders (d) and net payments to debtholders and issuers (F). The reformulated cash flow statement gives the details of these four flows.

Figure 4.1 All Stocks and Flows for a Firm: Net operating assets employed in operations generate operating revenue (by selling goods and services to customers) and incur operating expenses (by buying inputs from suppliers). Δ indicates changes.





The four cash flows are tied together according to the cash conservation equation.

Free cash flow = Net payments to shareholders + Net payments to debtholders and issuers

$$C - I = d + F.$$

Free cash flow from operations (on the left) is applied (on the right) to financing payments to shareholders (as net dividends, d) and debtholders and issuers (as interest and principal payments, F). Free cash flow can be negative, in which case the financing flows to claimants must be negative, in the form of cash from share issues, debt issues, or the sale of financial assets.

The GAAP statement of cash flows has the appearance of giving us the free cash flow and the flows for financing activities, but it somewhat confuses the two. The form of the statement appears below, along with the form of the reformulated statement that follows the cash conservation equation. The GAAP statement can come in two forms,

GAAP Statement of Cash Flows
Cash flow from operations
- Cash used in investing activities
+ <u>Cash from financing activities</u>
= <u>Change in cash and cash equivalents</u>
Reformulated Statement of Cash Flows
Cash flow from operations
- Cash investments
= <u>Free cash flow from operating activities</u>
Cash paid to shareholders
+ <u>Cash paid to debtholders and issuers</u>
= <u>Cash paid for financing activities</u>

one using the direct method and one using the indirect method. The direct and indirect presentations are explained below.

Reclassifying Cash Transactions

Exhibit 4.1 gives Hypee's 2012 comparative statement of cash flows. This statement uses the indirect method of presentation. Hypee reports cash from operations of ₹ 946.5 million so we might conclude that free cash flow equals the difference, ₹ 567.9 million. This number disagrees with our earlier calculation of ₹ 814 million. Which is correct?

The GAAP statement of cash flows is governed by FASB Statement No. 95. The statement suffers from a number of deficiencies for equity analysis purposes, including transparent misclassifications of cash flow. Here are the main problems we encounter in trying to discover free cash flow from the GAAP statement.

1. Change in cash and cash equivalents: The GAAP statement is set up to explain the change in cash and cash equivalents (flagged 1 in Hypee's statement in Exhibit 4.1). But cash generated has to be disposed of somewhere. Any change in cash needed for operations (working cash) is an investment in an operating asset that should be included in the cash investment section. The change in cash equivalents that earn interest is an investment of excess cash (over that needed for operations) in financial assets that should be in the debt financing section.

Box 4.1 Direct and Indirect Method Cash Flow Statements

The direct and indirect cash flow statements differ in their presentation of cash flow from operations.

Direct Method

The direct method lists the separate sources of cash inflow and cash outflow in operations in the following form:

Cash inflows
• Cash from sales
• Cash from rents
• Cash from royalties
• Cash from interest received
Cash outflows
• Cash paid to suppliers
• Cash paid to employees
• Cash paid for other operating activities
• Cash paid for interest
• Cash paid for income taxes

The difference between cash inflows and cash outflows is cash from operations.

The cash from operations section of the 2012 comparative cash flow statement for Northern Corp., the defense contractor, uses the direct method:

Year Ended 31st December ₹ in millions		
	2011	2012
Operating Activities		
Sources of cash:		
Cash received from customers		
Progress payments	3,102	1,438
Other collections	11,148	7,003
Interest received	17	17
Income tax refunds received	23	15
Other cash receipts	244	10
Cash provided by operating activities	<u>14,534</u>	<u>8,483</u>
Uses of cash:		
Cash paid to suppliers and employees	13,251	7,250
Interest paid	333	165
Income taxes paid	126	57
Other cash payments	7	1
Cash used in operating activities	<u>13,717</u>	<u>7,473</u>
Net cash provided by operating activities	817	1,010

Indirect Method

The indirect method calculates cash from operations by subtracting accrual (noncash) components of net income.

Net income
– Accruals
<u>= Cash from operations</u>

See Exhibit 4.1 for an example.

The indirect method has the feature of identifying the accruals made in calculating net income, and so it reconciles net income to cash flow. But the direct method has the advantage of listing the individual cash flows that generate the net cash, so it is more informative about the source of cash flows. (If the direct method is used, a reconciliation of cash flow from operations to net income must be supplied in footnotes.) Almost all firms use the indirect method.



Change in Cash: Hypee, Inc.

Hypee's cash and cash equivalents increased by ₹194 million in 2012. In the reformulated balance sheet in Exhibit 3.3 we attributed this to investment in cash equivalents (financial assets) of ₹186 million and an increase in operating cash of ₹8 million. So reclassify ₹8 million as cash investment in operations and ₹186 million as a debt financing flow for the purchase of financial assets.

Exhibit 4.1 GAAP Consolidated Statements of Cash Flows for Hypee, Inc., 2010-2012
(Numbers on the right-hand side flag the adjustments numbered in the text)

Hypee, Inc. GAAP Statement of Cash Flows (₹ in millions)				
	Year ended 31st May			
	2012	2011	2010	
Cash provided (used) by operations:				
Net income	945.6	474.0	663.3	(3)(4)
Income charges not affecting cash:				
Cumulative effect of accounting change	-	266.1	5.0	
Depreciation	252.1	239.3	223.5	
Deferred income taxes	19.0	55.0	15.9	
Amortization and other	58.3	23.2	48.1	
Income tax benefit from exercise of stock options	47.2	12.5	13.9	
Changes in certain working capital components:				
Decrease (increase) in accounts receivable	82.5	(136.3)	(135.2)	
(Increase) decrease in inventories	(55.9)	(102.8)	55.4	
(Increase) decrease in prepaid and other current assets	(103.5)	60.9	16.9	
Increase in accounts payable, accrued liabilities, and income taxes payable	269.1	30.1	175.4	
Cash provided by operations	1,514.4	922.0	1,082.2	
Cash provided (used) by investing activities:				
Purchases of short-term investments	(400.8)	-	-	(2)
Additions to property, plant and equipment and other	(213.9)	(185.9)	(282.8)	
Disposals of property, plant and equipment	11.6	14.8	15.6	
Increase in other assets	(53.4)	(46.3)	(28.7)	
(Decrease) increase in other liabilities	(0.9)	1.8	(6.9)	
Acquisition of subsidiary, net of cash acquired	(289.1)	-	-	
Cash used by investing activities	(946.5)	(215.6)	(302.8)	
Cash provided (used) by financing activities:				
Proceeds from long-term debt issuance	153.8	90.4	329.9	
Reductions in long-term debt including current portion	(206.6)	(55.9)	(80.3)	
Decrease in notes payable	(0.3)	(351.1)	(433.1)	
Proceeds from exercise of stock options and other shares issuances	253.6	44.2	59.5	
Repurchase of shares	(419.8)	(196.3)	(226.9)	
Dividends – on equity shares	(179.2)	(137.8)	(128.9)	
Cash used by financing activities	(398.5)	(606.5)	(479.8)	
Effect of exchange rate changes	24.6	(41.4)	(28.1)	

Net increase in cash and equivalents	194.0	58.5	271.5	(1)
Cash and equivalents, beginning of year	634.0	575.5	304.0	
Cash and equivalents, end of year	828.0	634.0	575.5	
Supplemental disclosure of cash flow information :				
Cash paid during the year for:				
Interest, net of capitalized interest	37.8	38.9	54.2	(3)(4)
Income taxes	418.6	330.2	262.0	

2. Transactions in financial assets: Investments in financial assets such as short-term marketable securities and long-term debt securities are included in the investments section rather than in the financing section in the GAAP statement. Hypee's investment in financial assets of ₹400.8 million is flagged in Exhibit 4.1. These investments are a disposition of free cash flow, not a reduction of free cash flow. If a firm invests its (surplus) free cash flow from operations in financial assets, the GAAP classification gives the appearance that the firm is reducing its free cash flow further. Similarly, sales of financial assets to provide cash for operations (or dividends) are classified in GAAP statements as investment flows rather than financing flows. These sales satisfy a free cash flow shortfall they do not create it. Consequently, the GAAP statement can give the wrong impression of a firm's liquidity. See below on Decent Technologies.

Transactions on Financial Assets: Decent Technologies

Decent Technologies is the telecommunications network supplier that was spun off from BT&T in 2009. The firm includes the research capabilities of the former Cell Laboratories. With the heavy network investment during the telecom boom of the late 2003, Decent became a "hot stock," with its share price rising to ₹60 by late 2012, yielding a P/E of 52. The firm was a good one of technology analysts, but some were concerned about the firm's declining cash flow from operations. Net income and cash from operations are given below for the year 2010-12, statement (in millions of rupees).

	Fiscal Year ending September 30th		
	2012	2011	2010
Net income	4,766	1,035	449
Accruals	(5,042)	825	1,680
Cash from operating activities	(276)	1,860	2,129
Cash in investing activities:			
Capital expenditures	(2,215)	(1,791)	(1,744)
Proceeds from the sale or disposal of property, plant, and equipment	97	57	108
Purchases of equity investments	(307)	(212)	(149)
Sales of equity investments	156	71	12
Purchases of investment securities	(450)	(1,082)	(483)
Sales or maturity of investment securities	1,132	686	356
Dispositions of businesses	72	329	181
Acquisitions of business – net of cash acquired	(264)	(1,078)	(1,584)
Cash from mergers	61	-	-
Other investing activities – net	(69)	(80)	(68)
Net cash used in investing activities	(1,787)	(3,100)	(3,371)



Despite increasing profits, free cash flow (the difference between cash from operating activities and cash used in investing activities) appears to be negative in each of the three years. This is not unusual if a firm is increasing its investment to generate profits. However, Decent reported a shortfall of cash from operations, before investment; of ₹276 million in 2012 (the shortfall after adding back after-tax net interest payments is ₹191 million). Cash investment also declined in 2012, but the ₹1,787 million number is misleading. This is the amount after selling interest-bearing investments for ₹1,132 million, as you see in the investing section of the statement. The net proceeds from these investments, after purchases of ₹450 million, is ₹682 million. So the actual investment in operations was $\text{₹}1,787 + \text{₹}682 = \text{₹}2,469$ million, not ₹1,787 million, and the deficits between reported cash flow from operations and the actual investment in operations is a ₹2,745 million.

Free cash flow calculated from GAAP numbers can be quite misleading. A firm like Decent, faced with a cash shortfall, can sell securities in which it is storing excess cash to satisfy the shortfall. Under GAAP reporting, it looks as if it is increasing free cash flow by doing so, making it look less serious than it is. GAAP reporting mixes the cash flow deficit with the means employed to deal with the deficit.

3. Net cash interest: Cash interest payments and receipts for financing activities are included in cash flow from operations rather than classified as a financing flow. In Hypee's statement they are in cash flow from operations because they are in net income from which the accruals are subtracted. See the explanation below for some more extreme examples.

An exception to including net interest in operations is interest capitalized during construction. This is classified, inappropriately, as cash investment because it is accounted for an investment in constructed assets (see the note on interest payments in Hypee's cash flow statement in Exhibit 4.1). But interest to finance construction projects is not part of the cost of construction and should be classified as a financing cash flow. Unfortunately, disclosure is usually not sufficient to sort this out.

Interest Payments: Westhome and Orient Broadcasting System.

An extreme case of interest payments distorting cash flow from operations appears in the 2012 cash flow statement for Westhome. The reported cash flow was ₹703 million but that was after ₹1.006 billion of interest payments. If these interest payments had been classified as financing outflows, the cash flow from operations figure, before tax, would have been ₹1.709 billion, or 243 per cent higher.

The peculiarity of treating interest as an operating flow can be seen in the case of zero coupon or deep discount debt. The repayment of the principal at face value is a financing flow, but GAAP requires the difference between face value and the issue amount (the issue discount) to be treated as an operating cash flow at maturity rather than part of the repayment of principal. So repayment of debt reduces operating cash flow. Accordingly, in 2011 Orient Broadcasting System deducted ₹206.1 million of issue discounts on zero coupon senior notes repaid in calculating an operating cash flow of ₹25.8 million. This is correct accounting according to GAAP, but the reported operating cash flow is an 89 per cent distortion of the actual ₹231.9 million number.

4. Tax on net interest: Just as cash from interest income and expense is confused with operating cash flows, so are taxes paid on financing and operating income. All tax cash flows are included in cash from operations, even though some apply to financial income or are reduced by financial expenses. We seek to separate after-tax operating cash flows from after-tax financing cash flows, but the GAAP statement blurs this distinction. The accompanying box calculates Hypee's after-tax net interest to adjust GAAP cash flow from operations.

Cash interest payments must be disclosed by firms in footnotes: Hypee's disclosure its interest payment is found at the bottom of the cash flow statement in Exhibit 4.1. Convert these interest payments to an after-tax basis at the marginal tax rate. Cash interest receipts are usually not reported. The accrual number in the income statement has to be used for interest receipts, this number will equal the cash number only if the opening and closing interest accruals are the same.

Taxes on Net Interest Payments: Hypee, Inc.

Hypee's 2012 net interest payments after tax are calculated as follows (in millions of rupees):

Interest payments	37.8
Interest income	(15.0)
Net interest payments before tax	22.8
Tax benefit (37.1%)	(8.5)
Net interest payments after tax	14.3

The after-tax net interest of ₹14.3 million is added back to cash from operations in the reformulated statement and classified instead as a financing payment to debtholders.

Note that interest payments, usually reported at the foot of the cash flow statement, are not the same as interest expense in the income statement (that includes accruals).

5. Noncash transactions: Hypee has no noncash transactions in 2012, but it did report non-cash transactions in 2008. See the example below. In a noncash transaction, an asset is acquired or an expense is incurred by the firm by assuming a liability (by writing a note, for example) or by issuing shares. An acquisition of another firm for share is a noncash transaction. Capitalized leases are recorded as assets and liabilities, but there is no cash flow for the purchase. A noncash transaction can involve an asset exchange (one asset for another) or a liability exchange, or a conversion of debt to equity or vice versa. With the exception of asset and liability exchanges within operating and financing categories, these noncash transactions affect the Method 1 and Method 2 calculations of free cash flow because they affect NOA or NFO. Implicitly we interpret these as if there were a sale of something for cash and an immediate purchase of something else with that cash. The GAAP statement recognizes these transactions as not involving cash flows. This of course is strictly correct but it obscures the investing and financing activities, and the "as-if" cash flow accounting uncovers them. Consider the following examples:

- Debt that is converted to equity is not indicated as a payment of a loan (in the financing section) in a GAAP statement even though the proceeds from the loan were recorded there in an earlier year when the debt was issued.
- If a firm acquires an asset by writing a note, the payment of the note is recorded in subsequent years but the original principal that is being paid off is not.
- For leases, nothing is recorded at the inception of the lease, but subsequent lease payments are divided between interest and principal repayments and recorded in the operating and financing sections, respectively, in the GAAP statement. The firm appears to be paying off a phantom loan.
- For an installment purchase of plant assets, only the initial installment is classified as investment. Subsequent payments are classified as financing flows. However, when a firm sells an asset, all installments are investing inflows from the liquidation. Obtaining details is difficult.

The upshot of all this is that we don't get a complete picture of firms' investment and financing activities in the GAAP statement. In all cases of noncash transactions, the "as-if" cash must be reported in supplemental disclosures so that implicit cash flows can be reconstructed.

Noncash Transactions: Hypee, Inc., 2008

At the foot of its 2008 statement of cash flows, Hypee reported the following :

Assumption of long-term debt to acquire property, plant, and equipment ₹108.9 million.

This transaction was not incorporated in the GAAP cash flow statement. To adjust the statement, add ₹108.9 million to cash investments and ₹108.9 million to issue of debt in financing activities.



Tying It Together

Box 4.2 summarizes the adjustments that must be made to the GAAP statement of cash flows and makes the adjustment to Hypee's statement. The numbers accompanying selected items flag them as one of the five adjustments above.

The free cash flow of ₹974 million in Hypee's reformulated statement differs from the ₹814 million calculated under Method 1 and Method 2 previously. This often happens. Because of incomplete disclosures, it is usually not possible to reconcile the cash flow statement to the income statement and balance sheet precisely. The likely reasons for the differences in the calculation are:

- "Other assets" and "other liabilities" can't be classified into operating and financing items appropriately. On particular, interest receivable and payable (financing items) cannot be distinguished from operating items in these "other" categories.
- Cash dividends (in the cash flow statement) differ from dividends in the statement of equity, implying a dividend payable that cannot be discovered, and (usually lumped into "other liabilities").
- Cash received in share issues (in the cash flow statement) differs from the amount for those share transactions in the statement of equity, as with Hypee. The difference implies a receivable (for shares issued but not paid for) that has not been discovered.
- The details for adjustments 3, 4, and 5 above are not available. Watch for acquisitions with shares rather than cash.
- When foreign subsidiaries are involved, balance sheet items are translated into rupees amounts at beginning and end-of-year exchange rates while cash flow items are translated at average exchange rates. This results in a difference between the changes in balance sheet numbers and the corresponding items in the cash flow statement.
- Cash flow from the tax benefit received from issue of shares in response to exercise of stock options is classified in the GAAP statement as cash from operations explains ₹47 million of the difference we are looking for. Effective 2013, firms must report this cash flow in financing activities under GAAP.
- The Method 1 and Method 2 calculations treat the cost of paying employees with shares when they exercise their option as an "as if" cash flow: The difference between the market price and exercise price of shares issued is effectively cash compensation, no different from issuing shares to employees at the market price and giving them cash for the difference. Strictly, there is no cash flow, and a credit analyst may treat it as such. But the equity analyst understands that cash-equivalent value is given up in operations, cash that the shareholders otherwise could have. Hypee's loss for the exercise of options in 2012 was ₹80 million. This, together with the ₹47 million of tax benefit explains most of the difference between the ₹974 million of free cash flow and the ₹814 million calculated previously.

The reconciliation of the two numbers is not only relevant to getting a sound free cash flow number. Any misclassification of operating and financing assets and liabilities that produces the difference also affects the calculation of operating profitability (RNOA) and net borrowing costs (NBC). So the exercise in calculating free cash flow using the different methods serves as a validity check on the analysis of the income statement and balance sheet. An error in reformatting the income statement or balance sheet produces a difference in the two free cash flow calculations. And an error in reformulating the income statement and balance sheet results in ratios (to be used in valuation) that are in error. So the analysis here is a prerequisite to sound ratio analysis in study notes 5 and 6.

But let's not miss the forest for the trees. Calculations aside, what is the picture drawn here? Following the reformulated statement, Hypee had a free cash flow from operations of ₹974 million because cash investments were less than cash from operations. The firm used this cash to pay out a net ₹629 million to debtholders and issuers and a net ₹345 million to shareholders.

Box 4.2 Adjusting GAAP Statements of Cash Flows:**Summary and Example**

(Number on the right hand side flag the adjustments numbered in the text)

Reformulating GAAP Cash Flow Statements

GAAP free cash flow	
- Increase in operating cash	1
+ purchase of financial assets	2
- Sales of financial assets	2
+ Net cash interest outflow (after tax)	3,4
- Noncash investments	5
= Free cash flow	
GAAP financing flow	
+ Increase in cash equivalents	1
+ Purchase of financial assets	2
- Sale of financial assets	2
+ Net cash interest outflow (after tax)	3,4
- Noncash financing	5
= Financing cash flow	

Hypee, Inc.**Reformulated Cash Flow statement, 2012**

(Number on the right hand side flag the adjustments numbered in the text)

(₹ in millions)

	Free cash flow		
	Reported cash from operations		1,514
3,4	Net interest payment(after tax)		14
			1,528
	Cash investments reported	947	
1	Investment in operating cash	8	
2	Investment in financial assets	(401)	554
	Free cash flow		974
	Financing flows to claimants		
	Debt financing		
	Issue of long term debt	(154)	
	Reductions in long term debt	207	
2	Investment in financial assets	401	
3,4	Net interest payments(after tax)	14	
1	Investments in cash equivalents	161	629
	(net of exchange rate effects on cash)		
	Equity financing:		
	Share issues	(254)	
	Shares repurchase	420	
	Dividends	179	345
	Total financing flows		974

The Quality of the Cash Flow from Operations Number

Commentators sometimes point to "cash from operations" as a pristine number on which to judge the operating performance of a firm. But the fundamental analyst is cynical.



Cash Flow and Noncash Charges

Cash flow from operations is often promoted as a better number than earnings on which to rely because it dismisses noncash charges like depreciation. Analysts often view those charges as coming from “bookkeeping rules” that do not affect the cash generation. However, one ignores depreciation to one’s peril. Depreciation is not a cash flow in the period when it is charged, but it certainly comes from cash outflows, made earlier, for investments. And those investments are necessary to generate cash from operations. If one refers to cash flows rather than earnings, one should refer to net cash flow – cash flow from operations less the cash invested to deliver cash from operations – which, of course, is free cash flow.

In 2011, Electrolux Data Systems Corporation (EDS), the computer systems vendor, reported cash flow from operations of ₹1,722 million. This was more than the ₹1,363 million reported in earnings. However, the cash flow number was the result of adding back ₹1,482 million from earnings for depreciation of plant and amortization of software costs. Looking at the investment section of the cash flow statement, the analyst would find that the current expenditure in plant and software was ₹1,279 million. These expenditures were necessary to maintain cash from operations in the future. Touting cash from operations without considering the cash expenditures (or depreciation) needed to maintain the cash from operations gives a false impression of the ability of the firm to generate cash from operations.

Delaying payments

Firms can increase cash flow simply by delaying payments on accounts payable and other operating obligations. The delay does not affect earnings. House Depot, the warehouse retailer, reported cash from operations of ₹5,942 million for fiscal year 2012, up from ₹2,977 million from the year earlier. But ₹1,643 million of the amount reported in 2012 came from an increase in accounts payable and taxes payable.

Advertising and R&D Expenditures

Because advertising and research and development expenditures are treated as cash from operations rather than cash investment under GAAP, cash from operations can be increased by reducing these expenditures (with adverse consequences for the future).

Advancing Payments of Receivables

Firms can increase cash flow by selling or securitizing receivables. This does not, however, represent an ability to generate cash from sales of products. In 2012, ABC Inc. earnings dropped to ₹68 million from ₹438 million in 2011 while operating cash flow increased by ₹338 million. Most of this increase was due to the firm selling receivables for ₹327 million (The firm disclosed this in footnotes.)

Noncash Transactions

Firms can increase cash from operations by paying for services with debt or share issues. Deferring the payment of wages with a payable or pension promise increases cash flow, as does compensation “paid” with stock options rather than cash.

Structured Finance

With the help of a friendly banker, firms might structure borrowing to make the cash flows received from the borrowing look like operating cash flows rather than financing cash flows. Kiosk was a case in point: Funneled through an off balance-sheet vehicle, loans were disguised as natural gas trades between Kiosk and its bank and the cash receipts from the effective loan were reported as cash from operations.

Capitalization Policy Affects Cash from Operations

If a cash outflow is treated as an investment and thus capitalized on the balance sheet, it falls into the investment section of the cash flow statement rather than the cash from operations sections. So, if a firm is aggressively capitalizing what would otherwise be operating costs, it increases its cash flow

from operations. Routine maintenance costs may be treated as property, plant, and equipment, for example.

Mismatching

The basic problem with cash flow from operations is that it does not match inflows and outflows well. You see this in the EDS example above. As another example, a firm making acquisitions increase cash flow from operations from new customers acquired. But the cost of acquiring those cash flows is not in the cash flow section of the statement.

Cash Flow from Operations

Our calculations following Methods 1 and 2 yield a number for free cash flow but do not distinguish the two components, cash flow from operations and cash investments, in the free cash flow number. For that we need to cash flow statement. But, again, we run into problems with the reporting. The reason is that some of the cash flows that we might view as investment flows are included in cash from operations rather than part of the investment section. And investments in short-term assets are classified as cash from operations. Consider inventories. Investments in inventory are necessary to carry out operations just like plant and equipment. But the cash spent on building up inventory reduces GAAP cash from operations just like cash spent in inventory that is shipped to customers.

Potentially we could make further adjustments to cash flow from operations for these investments. But that should be done only if there is a clear purpose. For many analysis tasks, it is free cash flow that is needed, and a misclassification of an investment as an operating rather than investment flow does not affect this number. Because expenditures on R&D activities, a long-run investment, are classified as a decrease in cash from operations in financial statements, the R&D expenditures are added back to calculate the appropriate cash from operations. But the misclassification does not affect the calculation of free cash flow from the statement. The treatment of investment in brand name through advertising, which also reduces GAAP cash flow from operations, is similar.

Cash flow from operations is best seen as a diagnostic to challenge the quality of accrual accounting. But the analyst must handle the "cash flow from operations" number carefully.

4.3 ANALYSIS OF CASH FLOW STATEMENT

In order to analyse and interpret the cash flow information, following ratios may be used:-

1. Interest coverage ratio = $\text{cash flow from operating activities} \div \text{interest payment}$. This ratio shows the firm's ability to meet its interest by the cash from operation. So a high coverage ratio is desirable.
2. Debt coverage ratio = $\text{Operating cash flows after interest} \div \text{total debt}$. This ratio indicates the extent to which existing debt can be redeemed at once by the net cash generated from operations. So a high debt coverage ratio is the sign of sound solvency position.
3. Ratio of dividend to operating cash flow = $(\text{dividend} \div \text{operating cash flow}) \times 100$. This ratio indicates the share of cash from operation, which is pay out outside the business in form of dividend. Higher the ratio, higher will be the rate of drainage of cash for non-earning purpose.
4. Earning cash flow ratio = $(\text{operating cash flow} \div \text{operating profit}) \times 100$. This ratio indicates the extent to which operating profit has been realised in cash. So it indicates the quality of earning of the firm. A high earning cash flow ratio is always desirable for sound liquidity position.
5. Ratio of depreciation to cash flow for new assets = $(\text{depreciation} \div \text{cash flow for new assets}) \times 100$. This ratio is the indicator of the rate of setting aside funds for asset replacement.
6. Rate of dependence of capital investment on internal fund = $(\text{operating cash flow after interest and dividend} \div \text{investing cash flow}) \times 100$. It indicates the stability of the firm.
7. Rate of depends on external fund for capital investment = $(\text{fresh external fund} - \text{redemption of debt}) \div \text{investing cash flow}$. If it is lower, then the firm is lesser dependent on external fund.



8. Cash return on total assets = $\text{operating cash flow} \div \text{total assets} \times 100$. It indicates the efficiency of asset utilisation in generating cash.
9. Cash return on net worth = $(\text{operating cash flow} - \text{interest payment}) \div \text{net worth} \times 100$. It indicates the efficiency of utilisation of shareholders fund in earning cash.
10. Cash flow per share = $\text{operating cash flow} - \text{interest} \div \text{number of shares}$. It shows cash generating capacity per share.
11. Price cash flow ratio = $\text{Market price per share} \div \text{cash flow per share}$. It shows overall performance of business.

4.4 QUALITY OF EARNINGS AND CASH FLOWS

A lot has been made lately about “opaqueness versus transparency” in financial reporting and an “aggressive” approach to accounting. These issues reflect a concern with obtaining information that is useful because it reflects the true financial condition of a company. After the country was caught off guard in the Enron disaster, there was much questioning about why information was not available about, for example, the amount of debt and risk the company had, the drag on earnings that poorly performing asset caused the presence of related-party situations that were not adequately disclosed the list could go on. Many shareholders needed to know about these things. Many shareholders now are pushing for improvements in the quality of financial reporting, including the quality of earnings.

The conventional wisdom is that information about historical net income is more predictive of future cash flows than are historical cash flows. Proponents of accrual net income can point out that the timing of cash flows can be manipulated. But proponents of cash flow information can point out that the amount of judgment involved in calculating net income can lead to manipulation of net income, or, in a better light, the management of net income. It is not unheard of that some companies “help” analysts predict earnings so that the company can hit the target earnings per share (EPS); there is pressure for a company to at least meet its target EPS because falling short of it can adversely affect the company's share price.

Quality of Earnings

In the long run, net income should be about equal to cash flows because a company is normally in business in order to earn cash. The timing may be slightly different. That is, a company may get cash and subsequently do something to earn it or the company may earn revenues by delivering services or products and then later receive the cash. The closer the amount of net earnings is to the amount of cash flow in the short run, the higher the perception of the quality of earnings.

Another issue is the sustainability of earnings. Earnings are higher quality if they will be ongoing rather than just a blip on the screen. For example, a company may convince customers at year end to go on and stock up on their product. There may also be included the implied promise or assumption that the company will buy back the product some time after year end if necessary. The result is a surge in sales at year end that will likely not be repeated for quite a while. So earnings in the current year may be greater than earnings in the following year.

The timing of expense recognition is also a way to increase earnings in the current year. For instance, managers could delay necessary maintenance from December to January in order to avoid the negative impact on earnings.

In addition to managing the timing of revenues and expenses, companies can engage in questionable transactions or poor business practices to boost revenues. Managers may extend credit to poor credit risks in order to boost sales; or they may postpone the write-down of obsolete inventory in order to avoid the charge against earnings; or they may engage in swaps of a product or service in order to increase revenue from sale of a product to another company and increase assets from purchase of the same product from the other party.

Differences between Net Income and Cash Flows

The cash flow statement has three main sections, the first of which is cash from operations. Most companies use the indirect method, which involves starting with net income and making adjustments to net income to arrive at cash from operations. Those adjustments are mainly the addition of noncash expenses (like depreciation and amortization), the subtraction of noncash gains, and additions or subtractions of changes in current accounts. We can show the calculation with the help of the following example: (Amount in ₹)

Net income	10,000
+ Depreciation and amortization	2,000
– Increases in accounts receivable	(500)
+ Decreases in inventory	600
+ Increases in accounts payable	300
– Decreases in wages payable	(200)
= Cash from operations	<u>12,200</u>

So the nice thing is that all the information is in the same place, and one can see at a glance why cash from operations is different from net income. In the above example, depreciation and amortization are the single biggest reason that the income and cash flow differ. For some companies it is apparent when depreciation is the main reason that cash from operations is positive but net income negative (i.e., a net loss). For example, in the above calculation, if there had been a net loss of ₹1,500, the cash from operations would be ₹700.

Depreciation and amortization, therefore, present a very obvious area in which to manage earnings since there are estimates needed and choices available.

Accounting Methods and Perceived Quality of Earnings

Companies choose among alternative accounting methods. When a company chooses an accounting method because it maximizes reported earnings, investors view the resulting reported earnings as lower quality. Studies have shown, for instance, that investors see a company that chooses to use straight-line depreciation as having lower-quality earnings than a company that uses an accelerated method.

Exhibit 4.2 shows the difference between straight-line and accelerated sum-of-the-years'-digits (SYD) depreciation for a ₹2,000 machine with a four-year life and no salvage value. SYD depreciation yields higher depreciation expense and lower net income than straight-line in the first two years of the machine's life, but the situation is exactly reversed in the last two years. Over the machine's four-year life, both methods result in the same total depreciation expense and earnings.

Also, regardless of the depreciation method used for financial reporting, a company is free for tax reporting to use the depreciation method that results in the lowest tax liability—so the choice of depreciation method for earnings does not result in different cash flows, only in different reported earnings.

In theory, investors (as a group) “see” the company's real earnings, regardless of the accounting method used, as long as appropriate disclosures are made. Thus, the higher earnings brought about solely by accounting treatment are “seen” as lower quality.

Exhibit 4.2 Straight-Line and Accelerated Depreciation Expense

Year	Straight-line Depreciation (₹) (1)	Sum-of-the-years'- digits Depreciation (₹) (2)	Difference (₹) (2) – (1)
1	500	800	300
2	500	600	100
3	500	400	(100)
4	500	200	(300)
Total	2,000	2,000	0



When companies choose between accounting methods, some choices affect cash flows because the same accounting method must be used for both financial reporting and tax reporting. Inventory methods fall into this group; a company must use the same inventory method for both financial and tax reporting. Last-in, first-out (LIFO) and first-in, first-out (FIFO) affect both reported earnings and cash flows for taxes. These two methods are used to illustrate the effect of such accounting methods on the quality of earnings.

Assume in a period of rising prices, a company has beginning inventory of one unit costing ₹15 and purchases two more units for ₹18 each.

Beginning inventory	1 unit @ ₹15/unit	₹15
Purchase	2 units @ ₹18/unit	₹36
Total available for sale	3 units	₹51

If the company sells one unit for ₹30, LIFO and FIFO inventory methods result in gross profit and ending inventory amounts as follows:

	LIFO (₹)	FIFO (₹)
In the income statement:		
Sales	30	30
Cost of goods sold	18	15
Gross profit	12	15
In the balance sheet:		
Inventory	33 (15+18)	36 (18+18)

When a company uses FIFO inventory during a period of rising inventory replacement costs, the company charges the cost of older, lower cost inventory to cost of goods sold: here, ₹15. This results in a cost of goods sold expense that is less than the cash required to replace the inventory sold. In our example, ₹18 is the cost of units most recently purchased. To replace the unit sold, the company can be expected to spend ₹18 cash or more. If the company must spend ₹18 (or more) to replace the unit sold, operating cash flows using FIFO are:

	₹
Cash inflow from sales	30
Cash outflow to replace the unit sold	18
Net cash inflow from operations	12
Reported gross profit	15
Excess gross profit over cash inflow	3

Reported earnings are greater than the increase in real net assets (cash from operations), and this reduces the quality of reported earnings.

If, instead, the company uses LIFO inventory, the ₹18 cost of the most recent inventory purchased is charged to cost of goods sold. If the company must spend ₹18 (or more) to replace the unit sold, operating cash flows using LIFO are

	₹
Cash inflow from sales	30
Cash outflow to replace the unit sold	18
Net cash inflow from operations	12
Reported gross profit	12
Excess gross profit over cash inflow	0

This cost of goods sold expense is much closer to the amount of cash required to replace the inventory sold and reported earnings are closer to cash from operations.

Thus, it would appear that earnings are of higher quality when companies use LIFO rather than FIFO. This is true when prices are rising or falling: The most current prices expensed using LIFO are always closer to replacement cost than the older costs expensed under FIFO.

The Effect of Taxes

In addition to the effect on the difference between reported earnings and cash flows, the choice in inventory methods also affects taxes paid, because a company must use the same method for filing taxes that was used to report income to shareholders. When prices are rising, companies that use FIFO pay more income tax than companies that use LIFO.

Assume in the example above that the company had ₹6 in other expenses and the tax rate was 35 percent.

	LIFO (₹)	FIFO (₹)
Sales	30	30
Cost of goods sold	18	15
Gross profit	12	15
Other expenses	6	6
Net income before tax	6	9
Income tax	2.1	3.2
Net income	3.9	5.8

The company pays higher taxes using FIFO than LIFO. If prices were falling instead of rising, the reverse would be true; the most current prices (charged to cost of goods sold under LIFO) would be the lowest, and LIFO would result in the highest income and the highest income tax paid.



4.5 MISCELLANEOUS PROBLEMS

Illustration 1.

Talkie Shop, a retailer of floral products, reported cost of goods sold for the year of ₹75 million. Total assets increased by ₹55 million, but inventory declined by ₹6 million. Total liabilities increased by ₹45 million, and accounts payable increased by ₹2 million. How much cash did the company pay to its suppliers during the year?

- A. ₹85 million
- B. ₹79 million
- C. ₹67 million

Solution:

C is correct.

Cost of goods sold of ₹75 million less the decrease in inventory of ₹6 million equals purchases from suppliers of ₹69 million. The increase in accounts payable of ₹2 million means that the company paid ₹67 million in cash (₹69 million minus ₹2 million),

Illustration 2.

An analyst gathered the following information from a company's 2012 financial statements :

(₹ millions)

Year ended 31st December	2011	2012
Net sales	245.80	254.60
Cost of goods sold	168.30	175.90
Accounts receivable	73.20	68.30
Inventory	39.00	47.80
Accounts payable	20.30	22.90

Based only on the information above, the company's 2012 statement of cash flows prepared using the direct method would include amounts (₹ millions) for cash received from customers and cash paid to suppliers, respectively, that are closest to:

	Cash Received from Customers (₹ millions)	Cash paid to Suppliers (₹ millions)
A.	249.70	182.10
B.	259.50	169.70
C.	259.50	182.10

Solution:

C is correct.

Cash received from customers = Sales + the Decrease in accounts receivable = ₹(254.6+4.9)million = ₹259.5million. Cash paid to suppliers = Cost of goods sold + the Increase in inventory – Increase in accounts payable = ₹ (175.9+8.8 -2.6) million = ₹182.1 million.

Illustration 3.

Akansa Incorporated, an international metals company, reported a loss on the sale of equipment of ₹2 million. In addition, the company's income statement shows depreciation expense of ₹8 million and the cash flow statement shows capital expenditure of ₹10 million, all of which was for the purchase of new equipment. Using the following information from the comparative balance sheets, how much cash did the company receive from the equipment sale?

Balance Sheet Item	31.12.2011	31.12.2012	Change
Equipment	₹100 million	₹105 million	₹5 million
Accumulated depreciation-equipment	₹40 million	₹46 million	₹6 million

- A. ₹6 million.
- B. ₹5 million.
- C. ₹1 million.

Solution:

C is correct.

Selling price (cash inflow) minus book value equals gain or loss on sale; therefore, gain or loss on sale plus book value equals selling price (cash inflow). The amount of loss is given, ₹2 million. To calculate the book value of the equipment sold, find the historical cost of the equipment and the accumulated depreciation on the equipment:

- Beginning balance of equipment of ₹100 million plus equipment purchased ₹10 million minus ending balance of equipment of ₹105 million equals the historical cost of equipment sold, or ₹5 million.
- Beginning accumulated depreciation of ₹40 million plus depreciation expense for the year of ₹8 million minus ending balance of accumulated depreciation of ₹46 million equals accumulated depreciation on the equipment sold, or ₹2 million.
- Therefore, the book value of the equipment sold was ₹5 million minus ₹2 million, or ₹3 million.
- Because the loss on the sale of equipment was ₹2 million, the amount of cash received must have been ₹1 million.

Illustration 4.

Pamkin Stores reported net income of ₹25 million, which equals the company's comprehensive income. The company has no outstanding debt. Using the following information from the comprehensive balance sheets (₹ in millions), what should the company report in the financing section of the statement of cash flows?

Balance Sheet Item	31.12.2011	31.12.2012	Change
Equity share capital	₹100	₹102	₹2
Further issue of equity shares	₹100	₹140	₹40
Retained earnings	₹100	₹115	₹15
Total shareholders' equity	₹300	₹357	₹57

- A. Issuance of equity shares ₹42 million; dividends paid of ₹10 million.
- B. Issuance of equity shares ₹38 million; dividends paid of ₹10 million.
- C. Issuance of equity shares ₹42 million dividends paid of ₹40 million.

Solution:

A is correct.

The increase of ₹42 million in equity share capital and further issue of equity shares indicates that the company issued shares during the year. The increase in retained earnings of ₹15 million indicates that the company paid ₹10 million in cash dividends during the year, determined as beginning retained earnings of ₹100 million plus net income of ₹25 million, minus ending retained earnings of ₹115 million, which equals ₹10 million in cash dividends.

**Illustration 5.**

Based on the following information for Dayam Inc. what are the total net adjustments that the company would make to net income in order to derive operating cash flow?

	Year Ended		
Income Statement Item	31.12.2012		
Net income	₹20 million		
Depreciation	₹2 million		
Balance Sheet Item	31.12.2011	31.12.2012	Change
Accounts receivable	₹25 million	₹22 million	(₹3 million)
Inventory	₹10 million	₹14 million	₹4 million
Accounts payable	₹8 million	₹13 million	₹5 million

- A. Add ₹6 million.
- B. Add ₹8 million.
- C. Subtract ₹6 million.

Solution:

A is correct.

To derive operating cash flow, the company would make the following adjustments to net income: add depreciation (a noncash expense) of ₹2 million; add the decrease in accounts receivable of ₹3 million; add the increase in accounts payable of ₹5 million; and subtract the increase in inventory of ₹4 million. Total additions would be ₹10 million and total subtractions would be ₹4 millions for net additions of ₹6 million.

Illustration 6.

Use the following balance sheet and income statement to prepare a statement of cash flow under the indirect method.

Name of the Company: ABC Company**Profit and Loss Statement for the year ended: 31.12.2012****(Amount in ₹)**

	Particulars	Note No.	As at 31.12.2012	As at 31.12.2011
I	REVENUE FROM OPERATION		1,00,000	—
II	OTHER INCOME	(1)	10,000	—
III	TOTAL REVENUE(I+II)		1,10,000	—
IV	EXPENSES:			
	(a) Cost of material consumed		40,000	—
	(b) Purchase of products for sale			
	(c) changes in inventories of finished goods, work-in-progress and products for sale			
	(d) Employees cost/ benefits expenses	(2)	5,000	—
	(e) Finance cost	(3)	500	—
	(f) Depreciation and amortization expenses	(4)	7,000	—
	(g) Product development expenses/Engineering expenses			

	(h) Other expenses			
	(i) Expenditure transfer to capital and other account			
	TOTAL EXPENSES		52,500	—
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		57,500	—
VI	EXCEPTIONAL ITEMS			
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)			
VIII	EXTRAORDINARY ITEMS			
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)			
X	Tax expenses:			
	(1) Current Tax		20,000	—
	(2) deferred tax			
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		37,500	—
XII	Profit (loss) from discontinuing operations			
XIII	Tax expenses from discontinuing operations			
XIV	Profit(loss) from discontinuing operations (after tax) (XII-XIII)			
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		37,500	—
	Balance brought forward from previous year			
	Profit available for appropriation			
	Appropriation:			
	Proposed dividend		8,500	—
	Transfer to General Reserve			
	Distribution Tax			
	Total			
	Balance carried forward			
XVI	Earning per equity share:			
	(1) Basic			
	(2) Diluted			

Workings:**(Amount in ₹)**

1. Other Income	As at 31.12.2012	As at 31.12.2011
Gain from sale of land	10,000	—
Total	10,000	—

2. Employees Cost/ Benefits Expenses	As at 31.12.2012	As at 31.12.2011
Wages	5,000	—
Total	5,000	—



3. Finance Costs	As at 31.12.2012	As at 31.12.2011
Interest	500	—
Total	500	—

4. Employees cost/ benefits expenses	As at 31.12.2012	As at 31.12.2011
Depreciation	7,000	—
Total	7,000	—

Name of the Company: ABC Company

Balance Sheet as at : 31.12.2012

(Amount in ₹)

Ref No.	Particulars	Note No.	As at 31.12.2012	As at 31.12.2011
			(₹)	(₹)
I	EQUITY AND LIABILITIES			
1	Shareholders' fund			
	(a) Share capital	(1)	40,000	50,000
	(b) Reserves and surplus-	(2)	59,000	30,000
	(c) Money received against share warrants			
2	Share application money pending allotment			
3	Non-current liabilities			
	(a) Long-term borrowings	(3)	15,000	10,000
	(b)Deferred tax liabilities (Net)		20,000	15,000
	(c)Other Long term liabilities			
	(d) Long-term provisions			
4	Current Liabilities			
	(a) Short-term borrowings			
	(b) Trade payables			
	(c)Other current liabilities	(4)	17,000	16,000
	(d) Short-term provisions	(5)	11,000	5,000
	Total		1,62,000	1,26,000
II	ASSETS			
1	Non-current assets			
	(a) Fixed assets			
	(i) Tangible assets	(6)	1,04,000	91,000
	(ii) Intangible assets	(7)	10,000	10,000
	(iii) Capital work-in-progress			
	(iv) Intangible assets under development			
	(b) Non-current investments			
	(c)Deferred tax assets (Net)			

		(d) Long-term loans and advances			
		(e) Other non-current assets			
	2	Current assets			
		(a) Current investments			
		(b) Inventories		5,000	7,000
		(c) Trade receivables	(8)	10,000	9,000
		(d) Cash and cash equivalents		33,000	9,000
		(e) Short-term loans and advances			
		(f) Other current assets			
		Total		1,62,000	1,26,000

Workings:**(Amount in ₹)**

1. Share Capital	As at 31.12.2012	As at 31.12.2011
Equity Share Capital	40,000	50,000
Total	40,000	50,000

2. Reserve & Surplus	As at 31.12.2012	As at 31.12.2011
Retained earnings	59,000	30,000
Total	59,000	30,000

3. Long- term Borrowings	As at 31.12.2012	As at 31.12.2011
Bonds	15,000	10,00
Total	15,000	10,000

4. Other Current Liabilities	As at 31.12.2012	As at 31.12.2011
Accounts payable	9,000	5,000
Wages payable	4,500	8,000
Interest payable	3,500	3,000
Total	17,000	16,000

5. Short-term Provisions	As at 31.12.2012	As at 31.12.2011
Taxes payable	5,000	4,000
Dividends payable	6,000	1,000
Total	11,000	5,000

6. Tangible Assets	As at 31.12.2012	As at 31.12.2011
Land	35,000	40,000



Gross Plant & Equipment	85,000	60,000
Less: Accumulated depreciation	(16,000)	(9,000)
Total	1,04,000	91,000

7. Intangible Assets	As at 31.12.2012	As at 31.12.2011
Goodwill	10,000	10,000
Total	10,000	10,000

8. Trade Receivable	As at 31.12.2012	As at 31.12.2011
Accounts receivable	10,000	9,000
Total	10,000	9,000

Any discrepancies between the changes in accounts reported on the balance sheet and those reported in the statement of cash flows are typically due to business combination and changes in exchange rates.

Solution:

Step 1: Start with net income of ₹37,500.

Step 2: Subtract gain from sale of land of ₹10,000.

Step 3: Add back noncash charges of depreciation of ₹7,000.

Step 4: Subtract increase in receivables and inventories and add increases of payable and deferred taxes.

	₹
Net income	37,500
Gain from sale of land	(10,000)
Depreciation	7,000
Subtotal	34,500
Changes in operating accounts:	
Increase in receivables	(1,000)
Decrease in inventories	2,000
Increase in accounts payable	4,000
Decrease in wages payable	(3,500)
Increase in interest payable	500
Increase in taxes payable	1,000
Increase in deferred taxes	5,000
Cash flow from operations	42,500

Investing cash flow:

In this question, we have two components of investing cash flow: the sale of land and the change in gross plant and equipment (P & E)

Cash from sale of land = decrease in asset + gain on sale = ₹5,000 + ₹10,000 = ₹15,000 (source)

Beginning land + land purchased - gross cost of land sold = ending land = ₹40,000 + 0 - ₹5,000 = ₹35,000.

Note: If the land had been sold at a loss, we would have subtracted the loss amount from the decrease in land.

P & E purchased = Ending gross P & E + gross cost of P & E sold - beginning gross P & E = ₹85,000 + 0 - ₹60,000 = ₹25,000 (use).

Beginning gross P & E + P & E purchased - gross cost of P & E sold = ending P & E = ₹60,000 + ₹25,000 - ₹0 = ₹85,000.

Cash from sale of land	₹15,000
Purchase of plant and equipment	₹ (25,000)
Cash flow from investments	₹ (10,000)

Financing cash flow:

Cash from bond issue = ending bonds payable + bonds repaid - beginning bonds payable = ₹15,000 + 0 - ₹10,000 = ₹5,000 (source)

Beginning bonds payable + bonds issued - bonds repaid = ending bonds payable = ₹10,000 + ₹5,000 - 0 = ₹15,000

Cash to reacquire shares = beginning equity shares + shares issued - ending equity shares = ₹50,000 + ₹0 - ₹40,000 = ₹10,000 (use, or a net share repurchase of ₹10,000)

Beginning equity shares + shares issued - share reacquired = ending equity shares = ₹50,000 + 0 - ₹10,000 = ₹40,000.

Cash dividends = increase in dividends payable - dividend declared = ₹5,000 - ₹8,500 = -₹3,500 (use)

Beginning dividends payable + dividends declared - dividends paid = ending dividends payable = ₹1,000 + ₹8,500 - ₹3,500 = ₹6,000.

Note: If the dividend declared amount is not provided, you can calculate the amount as follows: dividend declared = beginning retained earnings + net income - ending retained earnings. Here, ₹30,000 + ₹37,500 - ₹59,000 = ₹8,500.

Sale of bonds	₹5,000
Repurchase of shares	₹ (10,000)
Cash dividends	₹ (3,500)
Cash flow from financing	₹ (8,500)

Total cash flow:

Cash flow from operations	₹42,500
Cash flow from investments	₹ (10,000)
Cash flow from financing	₹ (8,500)
Total cash flow	₹24,000

The total cash flow of ₹24,000 is equal to the increase in the account. The difference between beginning cash and ending cash should be used as a check figure to ensure that the total cash flow calculation is correct.

Illustration 7.

Prepare Cash Flow Statement as per direct method using the balance sheet and income statement from the previous illustration.



Solution:

Cash from operations: Keep track of the balance sheet items to calculate CFO by making them off the balance sheet. They will not be needed again when determining CFI and CFF.

Cash collections = Sales – increase in account receivable = ₹1,00,000 - ₹1,000 = ₹99,000.

Beginning receivables + sales - cash collections = ending receivables = ₹9,000 + ₹1,00,000 - ₹99,000 = ₹10,000

Cash paid to suppliers = - COGS + decrease in inventory + increase in accounts payable = -₹40,000 + ₹2,000 + ₹4,000 = - ₹34,000.

Beginning inventory+ purchase- COGS = ending inventory = ₹7,000 + ₹38,000 (not provided) - ₹40,000 = ₹5,000

Beginning accounts payable + purchases- cash paid to suppliers = ending accounts payable= ₹5,000 + ₹38,000 (not provided) - ₹34,000 = ₹9,000

Cash wages = - wages - decrease in wages payable= - ₹5,000 - ₹3,500 = - ₹8,500

Beginning wages payable + wages expense - wages paid = ending wages payable = ₹8,000 + ₹5,000 - ₹8,500 = ₹4,500.

Cash interest= -interest expense+ increase in interest payable= - ₹500 + ₹500=0

Beginning interest payable + interest expense – interest paid = ending interest payable= ₹3,000+₹500-₹0=₹3,500

Cash taxes=-tax expense in tax payable + increase in deferred tax liability= - ₹20,000 + ₹1,000 + ₹5,000 = – ₹14,000.

Beginning taxes payable + beginning deferred tax liability + tax expense-taxes paid = ending taxes payable + ending deferred tax liability = ₹4,000 + ₹15,000 + ₹20,000 - ₹14,000 = ₹5,000 + ₹20,000.

Cash collections	₹99,000
Cash to suppliers	₹ (34,000)
Cash wages	₹ (8,500)
Cash interest	0
Cash taxes	₹ (14,000)
Cash flow from operations	₹42,500

Illustration 8.

MNC Corporation's common size cash flow statement is shown in the table below. Explain the decrease in MNC's total cash flow as a percentage of revenues.

MNC Corporation

Cash Flow Statement (percent of revenues)

Year	2012	2011	2010
Net income	13.4%	13.4%	13.5%
Depreciation	4.0%	3.9%	3.9%
Accounts receivable	-0.6%	-0.6%	-0.5%
Inventory	-10.3%	-9.2%	-8.8%
Prepaid expenses	0.2%	-0.2%	0.1%
Accrued liabilities	5.5%	5.5%	5.6%

Operating cash flow	12.2%	12.8%	13.8%
Cash from sale of fixed assets	0.7%	0.7%	0.7%
Purchase of plant and equipment	-12.3	-12.0%	-11.70%
Investing cash flow	-11.6%	-11.3%	11.0%
Sale of bonds	2.6%	2.5%	2.6%
Cash dividends	-2.1%	-2.1%	-2.1%
Financing cash flow	.5%	.4%	.5%
Total cash flow	1.1%	1.9%	3.3%

Solution:

Operating cash flow has decreases as a percentage of revenues. This appears to be due largely to accumulating inventories. Investing activities, specifically purchases of plant and equipment, have also required an increasing percentage of firm's cash flow.

Illustration 9.

Using following information, what is the firm's cash flow from operations?

Particulars	(₹)
Net income	120
Decrease in accounts receivables	20
Depreciation	25
Increase in inventory	10
Increase in accounts payable	7
Decrease in wages payable	5
Increase in deferred tax liabilities	15
Profit from the sale of land	2

- A. ₹158.
- B. ₹170.
- C. ₹174.

Solution:

Correct answer is B.

Net income – profit from sale of land + depreciation + decrease in receivables – increase in inventories + increase in accounts payable – decrease in wages payable + increase in deferred tax liabilities.

= ₹(120 – 2 + 25 + 20 – 10 + 7 – 5 + 15) = ₹170. Note that the profit on the sale of land should be subtracted from net income to avoid double counting the gain in net income and investing activities.



Illustration 10.

Use the following data to answer the following questions.

Name of the Company: AB Ltd.

Balance Sheet as at : 31.03.2012

(Amount in ₹)

Ref No.	Particulars	Note No.	As at 31.03.12	As at 31.03.11
I	EQUITY AND LIABILITIES			
1	Shareholders' fund			
	(a) Share capital	(1)	430	400
	(b) Reserves and surplus-	(2)	350	300
	(c) Money received against share warrants			
2	Share application money pending allotment			
3	Non-current liabilities			
	(a) Long-term borrowings	(3)	635	585
	(b) Deferred tax liabilities (Net)			
	(c) Other Long term liabilities			
	(d) Long-term provisions			
4	Current Liabilities			
	(a) Short-term borrowings			
	(b) Trade payables			
	(c)Other current liabilities	(4)	485	460
	(d) Short-term provisions	(5)	10	5
	Total		1,910	1,750
II	ASSETS			
1	Non-current assets			
	(a) Fixed assets			
	(i) Tangible assets	(6)	630	650
	(ii) Intangible assets			
	(iii) Capital work-in-progress			
	(iv) Intangible assets under development			
	(b) Non-current investments			
	(c) Deferred tax assets (Net)			
	(d) Long-term loans and advances			
	(e) Other non-current assets			
2	Current assets			
	(a) Current investments			
	(b) Inventories		740	800
	(c) Trade receivables		250	200
	(d) Cash and cash equivalents		290	100
	(e) Short-term loans and advances			
	(f) Other current assets			
	Total		1,910	1,750

Workings:**(Amount in ₹)**

1. Share Capital	As at 31.03.12	As at 31.03.11
Equity share capital	430	400
Total	430	400

2. Reserve & Surplus	As at 31.03.12	As at 31.03.11
Retained earnings	350	300
Total	350	300

3. Long term Borrowings	As at 31.03.12	As at 31.03.11
Mortgage	535	585
Bank note	100	0
Total	635	585

4. Other Current Liabilities	As at 31.03.12	As at 31.03.11
Accounts payable	470	450
Interest payable	15	10
Total	485	460

5. Short term Provisions	As at 31.03.12	As at 31.03.11
Dividends payable	10	5
Total	10	5

6. Tangible Assets	As at 31.03.12	As at 31.03.11
Property, plant & equipment	920	900
Less: Accumulated depreciation	(290)	(250)
Total	630	650

Name of the Company: AB Ltd.**Profit and Loss Statement for the year ended: 31.03.2012****(Amount in ₹)**

	Particulars	Note No.	As at 31.03.12	As at 31.03.11
I	REVENUE FROM OPERATION		1,425	—
II	OTHER INCOME	(1)	10	—
III	TOTAL REVENUE(I+II)		1,435	—
IV	EXPENSES:			
	(a) Cost of material consumed		1,200	—
	(b) Purchase of products for sale			
	(c) changes in inventories of finished goods, work-in-progress and products for sale			
	(d) Employees cost/ benefits expenses			
	(e) Finance cost	(2)	30	—
	(f) Depreciation and amortization expenses	(3)	100	—



	(g) Product development expenses/Engineering expenses			
	(h) Other expenses			
	(i) Expenditure transfer to capital and other account			
	TOTAL EXPENSES		1,330	—
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		105	—
VI	EXCEPTIONAL ITEMS			
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)			
VIII	EXTRAORDINARY ITEMS			
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)		105	—
X	Tax expenses:			
	(1) Current Tax		45	—
	(2) deferred tax			
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION(IX-X)		60	—
XII	Profit (loss) from discontinuing operations			
XIII	Tax expenses from discontinuing operations			
XIV	Profit(loss) from discontinuing operations (after tax) (XII-XIII)			
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		60	—
	Balance brought forward from previous year			
	Profit available for appropriation			
	Appropriation:			
	Proposed dividend		—	—
	Transfer to General Reserve			
	Distribution Tax			
	Total			
	Balance carried forward			
XVI	Earning per equity share:			
	(1) Basic			
	(2) Diluted			

Workings:

(Amount in ₹)

1. Other Income	As at 31.03.2012	As at 31.03.2011
Gain on sale of old machine	10	—
Total	10	—

2. Finance Costs	As at 31.03.2012	As at 31.03.2011
Interest	30	—
Total	30	—

3. Depreciation and Amortization	As at 31.03.2012	As at 31.03.2011
Depreciation	100	—
Total	100	—

Notes:

- Dividends declared to shareholders were ₹10.
- New equity shares were sold at par for ₹30.
- Fixed assets were sold for ₹30. Original costs of these assets was ₹80 and ₹60 of accumulated depreciation has been charged to their original costs.
- The company borrowed ₹100 on a 10-year bank note — the proceeds of the loan were used to pay for new fixed assets.
- Depreciation for the year was ₹100 (accumulated depreciation of ₹40 and depreciation on sold assets ₹60).

- (A) Calculate cash flow from operations using indirect method.
- (B) Calculate total cash collections, cash paid to suppliers and other cash expenses.
- (C) Calculate cash flow from operations using direct method.
- (D) Calculate cash flow from financing activity, cash flow from investing activity and total cash flow.
- (E) Calculate free cash flow to equity owners.
- (F) What would the impact on investing cash flow and financing cash flow have been if the company leased the new fixed assets instead of borrowing the money and purchasing the equipment?

Solution:

- (A) Cash flow from operations (CFO) = net income – gain on sale of machinery + depreciation – increase in receivables + decrease in inventories + increase in accounts payable + increase in interest payable = ₹(60 – 10 + 100 – 50 + 60 + 20 + 5) = ₹185.

- (B) Cash collections = sales – increase in receivables = ₹(1,425 – 50) = ₹1,375.

- (C) Cash flow from operations (CFO) = cash collection – cash to suppliers – other cash expenses = ₹(1,375 – 1,120 – 70) = ₹185. This must be matched with answer to the part of same illustration A, because CFO using the direct method will be the same as CFO under the indirect method.

- (D) Cash flow from financing activity (CFF) = sale of shares + new bank note – payment of mortgage – dividend + increase in dividends payable = ₹(30 + 100 – 50 – 10 + 5) = ₹75.

Cash flow from investing activity (CFI) = sale of fixed assets – new fixed assets = ₹(30 – 100) = ₹(70).
The company sold assets for ₹30 and bought assets for ₹100.

The easiest way to determine total cash flow is to simply take the change in cash from the balance sheet. However, adding the three components of cash flow will yield ₹(185 – 70 + 75) = ₹190.

- (E) Free cash flow to equity owners (FCFE) = cash flow from operations – capital spending + sale of fixed assets + debt issued – debt repaid = ₹(185 – 100 + 30 + 100 – 50) = ₹165. No adjustment is necessary for interest since FCFE includes debt services.
- (F) Investing cash flow would be higher and financing cash flow would be lower. The company would spend less on investment but would not have inflows from the borrowing.



Illustration 11.

On 1st March 2012, NS acquired 30% of the shares of TP. The investment was accounted for as an associate in NS's consolidated financial statements. Both NS and TP have an accounting year end of 31 October. NS has no other investments in associates.

Net profit for the year in TP's income statement for the year ended 31 October 2012 was ₹230,000. It declared and paid a dividend of ₹100,000 on 1st July 2012. No other dividends were paid in the year.

What amount will be shown as an inflow in respect of earnings from the associate in the consolidated cash flow statement of NS for the year ended 31 October 2012?

- A. ₹20,000
- B. ₹26,000
- C. ₹30,000
- D. ₹46,000

Solution:

The correct answer is C.

The amount that should appear in the cash flow statement is the cash inflow from the associate. This is the dividend received by the holding company:

$$₹1,00,000 \times 30\% = ₹30,000.$$

Illustration 12.

STB is preparing its consolidated cash flow statement for the year ended 31 October 2012. Its consolidated opening balance at net book value for property, plant and equipment was ₹207,000. During the year the STB group disposed of plant for proceeds of ₹8,500 that had cost ₹62,000 several years ago and which was fully written down at 1st November 2011. There were no other disposals. The depreciation charge for the year ended 31 October 2012 was ₹32,000. The consolidated closing book value for property, plant and equipment was ₹228,000.

What was the cash outflow in respect of purchases of property, plant and equipment for inclusion in the consolidated cash flow statement of STB group for the year ended 31 October 2012?

- A. ₹11,000
- B. ₹44,500
- C. ₹53,000
- D. ₹1,15,000.

Solution:

The correct answer is C

STB

	₹ '000
Opening balance	207
Less: Depreciation	(32)
Add: Purchases (balancing figure)	53
Closing balance	228

Illustration 13.

On 31st August 2011, the consolidated balance sheet of MIP included minority interests of ₹77,600. One year later, on 31st August 2012, the minority interests' balance was ₹64,700. During the year ended 31st August 2012, MIP had disposed of its holding of 75% of the ordinary share capital of its subsidiary NJZ. At the date of disposal the net assets of NJZ totalled ₹64,000. The minority interests in the MIP group's profits for the year ended 31st August 2012 was ₹6,500.

What amount was included in the consolidated cash flow statement as a dividend paid to the minority interests during the year ended 31st August 2012?

- A. ₹3,100
- B. ₹3,400
- C. ₹19,400
- D. ₹22,400.

Solution:

The correct answer is B.

	₹
Balance brought forward	77,600
Disposal (25% x 64,000)	(16,000)
Share of profit for the period	6,500
Dividend paid (balancing fig)	(3,400)
Balance carried forward	64,700

Illustration 14.

GPX's financial statements included an investment in associate at ₹66,00,000 in its consolidated balance sheet at 30th September 2011. At 30th September 2012, the investment in associate had increased to ₹67,50,000. GPX's pre-tax share of profit in the associate was ₹4,20,000, with a related tax charge of ₹1,80,000. The net amount of ₹2,40,000 was included in the consolidated income statement for the year ended 30th September 2012.

There were no impairments to the investment in associate, or acquisitions or disposals of shares during the financial year.

What is the amount of the cash flow related to this investment for inclusion in the consolidated cash flow statement for the year ended 30th September 2012?

- A. ₹90,000
- B. ₹240,000
- C. ₹390,000
- D. ₹420,000.

Solution:

The correct answer is A.

	₹
Opening investment in associate	7,600
Add: share of profit of associate	240
Cash flow (dividend paid) (balancing figure)	(90)
Closing investment in associate	6,750



Illustration 15.

The consolidated financial statements of P for the year ended 31st March 2013 showed the following balances:

Minority interest in the consolidated balance sheet at 31st March 2013 is ₹6 million [₹3.6 million at 31st March 2012].

Minority interest in the consolidated income statement for the year ended 31st March 2013 is ₹2 million.

During the year ended 31st March 2013, the group acquired a new 75% subsidiary whose net assets at the date of acquisition were ₹6.4 million. On 31st March 2013, the group revalued all its properties and the minority interest in the revaluation surplus was ₹1.5 million. There were no dividends payable to minority shareholders at the beginning or end of the year.

Required:

What is the dividend paid to minority shareholders that will be shown in the consolidated cash flow statement of P for the year ended 31st March 2013?

Solution:

The reconciliation of the movement on the minority interest account is as follows:

	₹ in million
Opening balance	3.6
Profit for the year	2.0
Acquisition (25% x ₹6.4 million)	1.6
Revaluation	1.5
Dividend (balance)	(2.7)
Closing balance	6.0

Study Note - 5

THE ANALYSIS OF PROFITABILITY



This Study Note includes

- 5.1 The Analyst's Checklist**
- 5.2 Cutting to the Core of Operations : The Analysis of Profitability**
- 5.3 DU Pont Analysis**
- 5.4 Miscellaneous Problems**

5.1 THE ANALYST'S CHECKLIST

The price-to-book valuation model directs us to forecast future residual earnings to value equities. The price-earnings valuation model directs us to forecast abnormal earnings growth. Residual earnings are determined by the profitability of shareholders' investment, ROE, and the growth in investment. Earnings growth is also determined by growth in investment and the profitability of that investment. So forecasting involves forecasting profitability and growth. To forecast, we need to understand what drives ROE and growth. The analysis of the drivers of ROE is called profitability analysis and the analysis of growth is called growth analysis. This study note covers profitability analysis. The next study note covers growth analysis.

The reformulation of financial statements in the preceding study notes readies the statements for profitability and growth analysis. This and the next study note complete the financial statement analysis.

Profitability analysis establishes where the firm is now. It discovers what drives current ROE. With this understanding of the present, the analyst begins to forecast by asking how future ROE will be different from current ROE. She aims to forecast ROE, and to do so she forecasts the drivers that we lay out in this study note. The forecasts, in turn, determine the value, so much so that the profitability drivers of this study note are sometimes referred to as value drivers.

Value is generated by economic factors, of course. Accounting measures capture these factors. In identifying the profitability drivers, it is important to understand the aspects of the business that determine them. As you analyze the drivers, you learn more about the business. Profitability analysis has a mechanical aspect, and the analysis here can be transcribed to a spreadsheet program where the reformulated statements are fed in and numerous ratios are spat out. But the purpose is to identify the sources of the value generation. So as you go through the mechanics, continually think of the activities of the firm that produce the ratios. Profitability analysis focuses the lens on the business.

With this thinking, profitability analysis becomes a tool for management planning, strategy analysis, and decision making, as well as valuation. The manager recognizes that generating higher profitability generates value. What drives profitability? How will profitability change as a result of a particular decision and how does the change translate into value created for shareholders? If a retailer decides to reduce advertising and adopt a "frequent buyer" program instead, how does this affect ROE and the value of the equity? What will be the effect of an expansion of retail floor space? Of an acquisition of another firm?

The purpose of analysis is to get answers to questions like these. So you will find a number of "what-if" questions in this study note. And you will see how analysis provides the answers to these questions.

Checklist:

- How ratios aggregate to explain return on equity (ROE).
- How economic factors determine ratios.
- How financial leverage affects ROE.
- How operating liability leverage affects ROE.
- The difference between return on net operating assets (RNOA) and return on assets (ROA).
- How profit margins, asset turnovers, and their composite ratios drive RNOA.
- How borrowing costs are analyzed.
- How profitability analysis can be used to ask penetrating questions regarding the firm's activities.

5.2 CUTTING TO THE CORE OF OPERATIONS: THE ANALYSIS OF PROFITABILITY

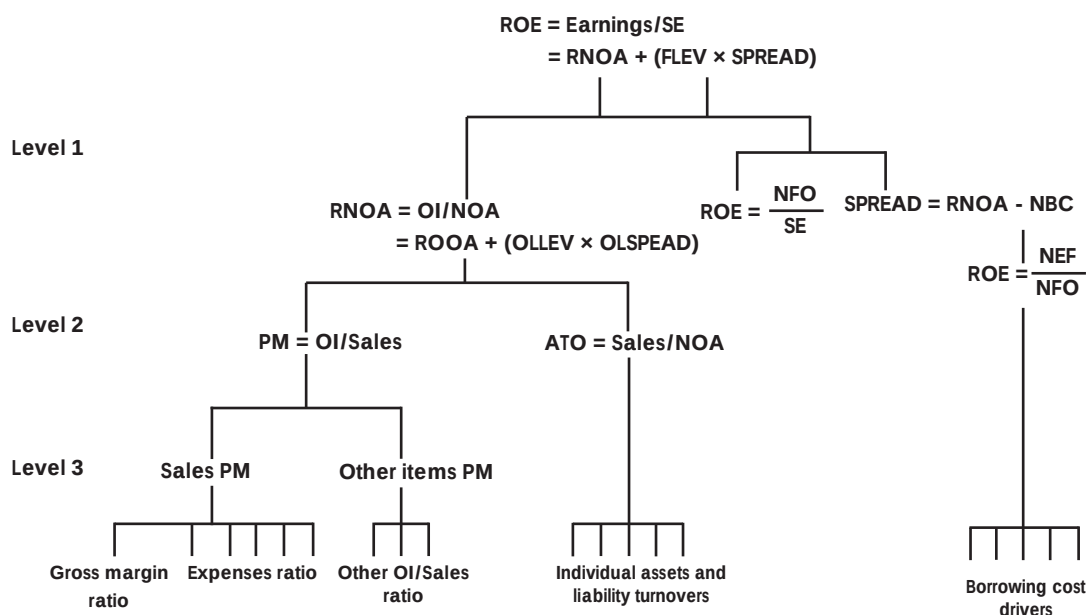
As we have seen, the return on shareholders' equity (SE) is calculated as

$$\text{Return on Equity (ROE)} = \frac{\text{Comprehensive income}}{\text{Average SE}}$$

The ROE is broken down into its drivers over three levels of analysis. These three levels are depicted in Figure 5.1, so follow this figure as we go through the analysis. The abbreviations and acronyms used are defined in the figure key.

Figure 5.1 The Analysis of Profitability

Return on equity is broken down into its drivers over three levels of analysis. The first level identifies the effect of financing and operating liability leverage; the second level identifies effect of profit margins and asset turnovers on operating profitability, and the third level identifies the drivers of profit margins, asset turnovers, and the borrowing cost.



Financial statement line items:

Earnings = Comprehensive income
SE = Shareholders' equity
OI = Operating income (after tax)
NOA = Net operating assets
NFE = Net financial expenses
NFO = Net financial obligations

Ratios:

ROE = Return on equity
RNOA = Return on net operating assets
ROOA = Return on operating assets
NBC = Net borrowing cost
OLLEV = Operating liability leverage
OLSPREAD = Operating liability leverage spread
FLEV = Financial leverage
SPREAD = Operating spread
PM = Operating profit margin
ATO = Asset turnover

First-Level Breakdown:

Distinguishing Financing and Operating Activities and the Effect of Leverage

We have seen that both operating activities (which produce operating income) and financing activities (which produce financial income or expense) affect the return to equity shareholders. The first breakdown of ROE distinguishes the profitability of these two activities. It also distinguishes the effect of leverage, which "levers" the ROE up or down through liabilities. Leverage is also sometimes referred to as "gearing".

Financial Leverage

Financial leverage is the degree to which net operating assets are financed by borrowing with net financial obligations (NFO) or by equity. The measure $FLEV = NFO/SE$, introduced in study note 3, captures financial leverage. To the extent that net operating assets are financed by net financial obligations rather than equity, the return on the equity is affected. The typical FLEV is about 0.4, but there is considerable variation among firms.

ROE is Determined by Operating Profitability, Financial Leverage, and the Operating Spread

$$ROE = \frac{\text{Comprehensive earnings}}{\text{Average SE}}$$

Comprehensive earnings in the numerator of ROE are composed of operating income and net financial expense, as depicted in a reformulated income statement. Shareholders' equity (SE) in the denominator is net operating assets minus net financial obligations. Thus

$$ROE = \frac{OI - NFE}{NOA - NFO}$$

(Balance sheet amounts are often averages over the period). The operating income (OI) is generated by the net operating assets (NOA), and the operating profitability measure, RNOA, gives the percentage return on the net operating assets. The net financial expense (NFE) is generated by the net financial obligations (NFO), and the rate at which the NFE is incurred is the net borrowing cost (NBC). So the ROE can be expressed as

$$ROE = \left(\frac{NOA}{SE} \times RNOA \right) - \left(\frac{NFO}{SE} \times NBC \right)$$

Where, to remind you, $RNOA = OI/NOA$ and $NBC = \text{Net financial expense}/NFO$. This expression for ROE is a weighted average of the return from operations and the (negative) return from financing activities.

We get more insights by rearranging this expression:

$$\begin{aligned} ROE &= RNOA + \left[\frac{NFO}{SE} \times (RNOA - NBC) \right] \\ &= RNOA + (\text{financial leverage} \times \text{Operating spread}) \\ &= RNOA + (FLEV \times SPREAD) \end{aligned}$$

Financial leverage affects ROE as follows :

Return on equity = Return on net operating assets + (Financial leverage x Operating spread)

[Equation 5.1]

$$ROE = RNOA + [RNOA - NBC]$$

This expression for ROE says that the ROE can be broken down into three drivers:

1. Return on net operating assets ($RNOA = OI/NOA$).
2. Financial leverage ($FLEV = NFO/SE$).
3. Operating spread between the return on net operating assets and the net borrowing cost ($SPREAD = RNOA - NBC$).

Both operating income and net financial expense must be after tax and comprehensive of all components, as in the reformulated income statements of study note 3, otherwise this breakdown will not work.

This formula says that the ROE is levered up over the return from operations if the firm has financial leverage and the return from operations is greater than the borrowing cost. The firm earns more on its equity if the net operating assets are financed by net debt, provided those assets earn more than the cost of debt.



Figure 5.2 How Financial Leverage Affects the Difference between ROE and RNOA for Different Amounts of Operating Spread: FLEV is financial leverage and the SPREAD is the difference between RNOA and the net borrowing cost.

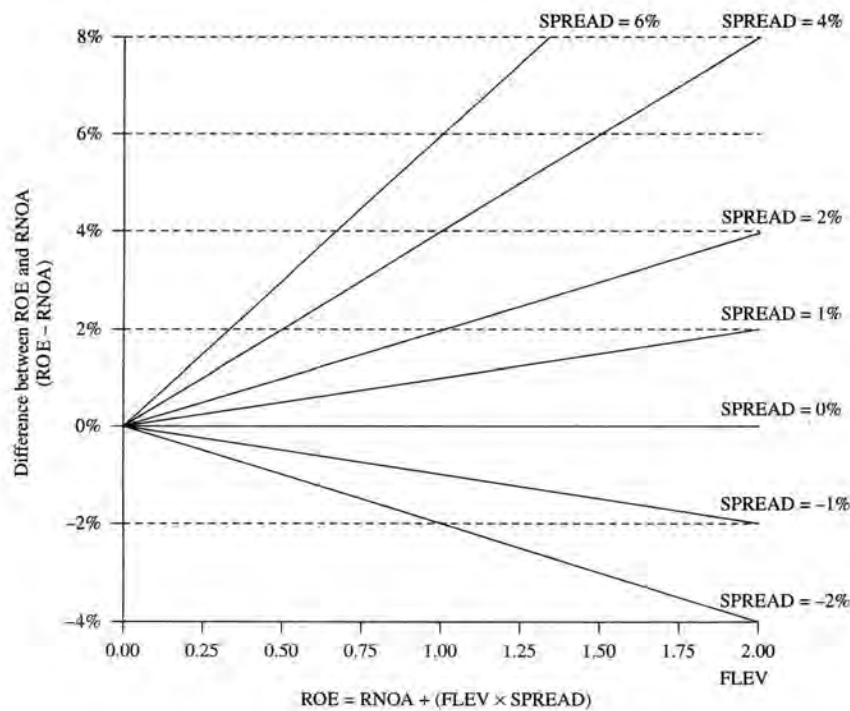


Figure 5.2 depicts how the difference between ROE and RNOA changes with financial leverage according to the formula. If a firm has zero financial leverage, equation (5.1) says that ROE equals RNOA. If the firm has financial leverage, then the difference between ROE and RNOA is determined by the amount of the leverage and the operating spread between RNOA and the net borrowing cost. We will simply refer to the operating spread as the SPREAD. If a firm earns an RNOA greater than its after-tax net borrowing cost, it is said to have favorable financial leverage or favorable gearing: The RNOA is “levered up” or “geared up” to yield a higher ROE. If the SPREAD is negative, the leverage effect is unfavorable, as shown for Century Mills in Box 5.1. This highlights the “good news/bad news” nature of financial leverage: Financial leverage generates a higher return for shareholders if the firm earns more on its operating assets than its borrowing cost, but financial leverage hurts shareholder return if it doesn’t. Accordingly, leverage is a component of the risk of equity as well as its profitability. We will also ask the following question: Can a firm increase its equity value by increasing its ROE through financial leverage, or will it reduce its equity value because of the increase in risk?

How does the analysis change when a firm like Arian (see Box 5.2) has net financial assets (NFA) rather than net financial obligations (NFO)? In this case financial income will be greater than financial expense and the firm will have a positive return on financing activities (RNFA) rather than net borrowing costs. Return on equity is related to RNOA as follows:

$$ROE = RNOA - \left[\frac{NFA}{SE} \times (RNOA - RNFA) \right]$$

Where (as in study note 3) RNFA = Net Financial Income/NFA, the return on net financial assets. Here a positive spread reduces the ROE: Some of shareholders’ equity is invested in financial assets and if financial assets earn less than operating assets, ROE is lower than RNOA.

Operating Liability Leverage

Just as financial liabilities can lever up the ROE, so can operating liabilities lever up the return on net operating assets. Operating liabilities are obligations incurred in the course of operations and are distinct from financial obligations incurred to finance the operations. Study note 3 gave a measure of the extent to which the net operating assets (NOA) are comprised of operating liabilities (OL), the operating liability leverage:

$$\text{Operating Liability Leverage (OLLEV)} = \frac{\text{OL}}{\text{NOA}}$$

The typical OLLEV is about 0.4. Operating liabilities reduce the net operating assets that are employed and so lever the return on net operating assets. To the extent that a firm can get credit in its operations with no explicit interest, it reduces its investment in net operating assets and levers its RNOA. But credit comes with a price. Suppliers who provide credit without interest also charge higher prices for the goods and services they supply than would be the case if the firm paid cash. And so operating liability leverage, like financial leverage, can be unfavourable as well as favourable.

Box 5.1 The Effect of Financial Leverage: Century Mills, Inc.

Century Mills, a large manufacturer of packaged foods, has had considerable share repurchases over the years, leaving it fairly highly leveraged. For fiscal 2012 its average shareholders' equity was ₹4.712 billion on net operating assets of ₹12.578 billion. Its financial leverage was 1.670, based on average balance sheet amounts.

The firm's ROE for 2012 was 26.5 percent. Further analysis reveals that this number was driven by the high leverage:

$$\text{ROE} = \text{RNOA} + [\text{FLEV} \times (\text{RNOA} - \text{NBC})]$$

$$26.5\% = 12.5\% + [1.670 \times (12.5\% - 4.1\%)]$$

ROE can exaggerate underlying operating profitability: RNOA is 12.5 per cent but the high financial leverage, combined with a SPREAD over a borrowing cost of 4.1 per cent, yields a much higher ROE. Beware of firms boasting high ROE: is it driven by financial leverage rather than operations?

A What-If Question

What if the RNOA at Century Mills fall to 2 percent? What would be the effect on ROE?

The answer is that the ROE would fall to -1.5 per cent:

$$-1.5\% = 2.0\% + [1.670 \times (2.0\% - 4.1\%)]$$

The unfavorable leverage would produce a negative ROE on a positive RNOA.

To compute the leverage effect, first estimate the implicit interest that a supplier would charge for credit, using the firm's short-term borrowing rate for financial debt:

Implicit interest on operating liabilities = Short-term borrowing rate (after tax) × Operating liabilities

Then calculate a return on operating assets, ROOA, as if there were no operating liabilities:

$$\text{Return on Operating Assets (ROOA)} = \frac{\text{OI} + \text{Implicit interest (after tax)}}{\text{Operating assets}}$$

Then RNOA is driven by operating liability leverage as follows:

Return on net operating assets = Return on operating assets + (Operating liability leverage × Operating liability leverage spread)

$$\text{RNOA} = \text{ROOA} + (\text{OLLEV} \times \text{OLSPREAD})$$



Where OLSPREAD is the operating liability leverage spread, that is, the spread of the return on operating assets over the after-tax short-term borrowing rate:

$$\text{OLSPREAD} = \text{ROOA} - \text{Short-term borrowing rate (after tax)}$$

Box 5.2 The Effect of Negative Financial Leverage: Arian Corporation

Arian has been very profitable. Look at the firm's reformulated statements for fiscal year 2010 in Exhibits 3.5 and 3.12 in study note 3. For fiscal 2012 the firm reported an ROE of 15.7 percent on average equity of ₹49.735 billion. But Arian had no financing debt. Instead Arian had considerable (average) financial assets of ₹36.906 billion from cash generated from its operations, giving it an average financial leverage that was negative: -0.742. The firm's return on average net financial assets was 4.2 per cent.

The ROE masks the profitability of operations of 48.9 percent.

$$\text{ROE} = \text{RNOA} - [\text{NPA/SE} \times (\text{RNOA} - \text{RNFA})]$$

$$15.7\% = 48.9\% - [0.742 \times (48.9\% - 4.2\%)]$$

The RNOA of 48.9 per cent is weighted down by the lower return on financing activities in the overall ROE.

A What-If Question

In 2012 the company used ₹33.0 billion of its financial assets to pay a special dividend. What would the ROE have been in 2010 had it paid the dividend then?

The answer is that with ₹33.0 billion more in average financial assets and equity, the average financial leverage would have been - 0.233 rather than -0.742, and the ROE would have been

$$38.5\% = 48.9\% - [0.233 \times (48.9\% - 4.2\%)]$$

Share repurchases (and dividends) increase ROE.

This leverage expression for RNOA is similar to the financial leverage equation (5.1) for ROE: RNOA is driven by the rate of return on operating assets as if there were no operating liability leverage, ROOA, plus a leverage premium that is determined by the amount of operating liability leverage, OLLEV, and the operating liability leverage spread, OLSPREAD. The effect can be favorable operating liability leverage – if ROOA is greater than the short-term borrowing rate – or unfavorable – if ROOA is less than the short-term borrowing rate.

In calculating operating liability leverage and the implicit interest, ignore any operating liabilities, like pensions, where the accounting explicitly includes interest in operating expenses, and ignore liabilities for which there is no implicit interest. Deferred tax liabilities are in the latter class because the government does not charge interest on the liabilities.

Operating liability leverage can add value for shareholders, so it is important to identify if the analyst is to discover the source of the value generation. A firm that carries ₹400 million in inventory but has ₹400 million in accounts payable to the suppliers of the inventory effectively has zero net investment in inventory. The suppliers are carrying the investment in inventory which represents investment in the operations that the shareholders do not have to make (and can, rather, invest elsewhere to generate returns).

Summing Financial Leverage and Operating Liability Leverage Effects on Shareholder Profitability

Shareholder profitability, ROE, is affected by both financial leverage and operating liability leverage. Without either type of leverage, ROE would be equal to ROOA, the rate of return on operating assets. Operating liability leverage levers RNOA over ROOA and financial leverage levers ROE over RNOA:

$$\text{ROE} = \text{ROOA} + (\text{RNOA} - \text{ROOA}) + (\text{ROE} - \text{RNOA})$$

So, for the Century Mills examples in Boxes 5.1, and 5.3, the ROE of 26.5 percent is determined by:

$$26.5\% = 10.4\% + (12.5\% - 10.4\%) + (26.5\% - 12.5\%)$$

Box 5.3 The Effect of Operating Liability Leverage: Century Mills, Inc.

Century Mills had average net operating assets of ₹12.578 billion during fiscal year 2012 of which ₹3.068 billion was in operating liabilities other than deferred taxes. Thus its operating liability leverage ratio was 0.244. Its borrowing rate on its short-term notes payable was 2.5 per cent, or 1.6 per cent after tax. It reported operating income of ₹1,575 million, but applying the after-tax short-term borrowing rate to operating liabilities other than deferred tax liabilities, this operating income includes implicit after-tax interest charges of ₹49.1 million. So

$$\text{ROOA} = \frac{1,575.0 + 49.1}{15,646.0} = 10.4\%$$

The effect of operating liability leverage is favorable.

$$\text{RNOA} = 12.5\% = 10.4\% + [0.244 \times (10.4\% - 1.6\%)]$$

A What-If Question

What if suppliers were to charge the short-term borrowing rate of 2.5 percent explicitly for the credit in accounts payable? What would be the effect on ROE?

The answer is probably none. The interest would be an additional expense. But to stay competitive, the supplier would have to reduce prices of goods sold to the firm by a corresponding amount so that the total price charged (in implicit plus explicit interest) remains the same. But supplier markets may not work as efficiently as this supposes, so firms can exploit operating liability leverage if they have power over their suppliers.

Table 5.1 analyzes the effect of leverage on shareholder profitability for the two firms, Hypee and Ricky, for which we prepared reformulated statements in study note 3. The analysis, of course, uses the reformulated statements (the balance sheets are in Exhibits 3.3 and 3.4 and the income statements are in Exhibits 3.10 and 3.11). Table 5.1 compares the profitability of the two firms for 2012 and 2011 and gives examples of how their profitability was affected by both financing and operating liability leverage. Hypee had very little financial leverage in 2012, so its ROE and RNOA are similar. But in 2011 Hypee's ROE of 10.3% was levered up over its RNOA of 9.6% by net borrowing. The calculations show how financial leverage of 0.117 worked in that year via the financing leverage equation. Ricky, with net financial assets on its balance sheet, had negative leverage in both 2012 and 2011, so its ROE was less than its RNOA. Both Hypee and Ricky levered up RNOA with operating liability leverage, and the calculations in Table 5.1 show how this was achieved for Ricky in 2012 via the leveraging equation for operating liabilities.

A couple of complications can arise when analyzing leverage effects. First, the presence of a minority interest calls for a modification. See Box 5.5. Second, if net borrowing is close to zero, it can happen that firm's report net interest expense (interest expense greater than interest income) in the income statement but an average net financial asset position in the balance sheet (or vice versa). You observe this with Ricky. Also, because of small average net financial obligations (in the denominator), you can sometimes calculate a very high net borrowing cost. These problems arise because, strictly, average net borrowing should be average of daily balances, not just the beginning and ending balances. An analyst typically does not have access to these numbers, although using amounts from quarterly reports alleviates the problem. The problem is not very important; for firms with net borrowing close to zero, the investigation of financing leverage effects is uninteresting.



Return on Net Operating Assets and Return on Assets

A common measure of the profitability of operations is the return on assets (ROA):

$$\text{ROA} = \frac{\text{Net income} + \text{Interest expense (after tax)}}{\text{Average total assets}}$$

Box 5.4 A Case of Extreme Operating Liability Leverage: Diana, Inc.

Diana, Inc. is recognized as an innovator in the process of producing and selling computers. Its direct-to-customer sales cut out the retail distribution layer and the higher markup that retailing requires. Its just-in-time inventory system means it carries little inventory, so not only does Diana have less investment in inventory but it also runs less risk of holding inventory as computer prices fall and technology changes, making inventory obsolete. As production is outsourced, Diana has a relatively low investment in plant, as well. It exerts pressure on its suppliers to carry inventory and delays payments to suppliers. Accordingly it carries, high accounts payable relative to its investment in inventories and plant.

A reformulation of Diana's 2012, balance sheet gives the following composition of net operating assets (in millions of rupees):

Operating Assets		
Operating cash		25
Accounts receivable		2,269
Inventories		278
Property, plant, and equipment		826
Other assets		1,875
		<u>5,273</u>
Operating Liabilities		
Accounts payable	5,075	
Accrued liabilities	2,444	
Other liabilities	802	<u>8,321</u>
Net Operating Assets		<u>(3,048)</u>
Net Financial Assets		<u>7,742</u>
Shareholders' Equity		<u>4,694</u>

Diana has ₹7.742 billion invested in financial assets. But (remarkably for a manufacturer), shareholders have a negative investment in operations: Net operating assets are - ₹3.048 billion. On ₹31.168 billion in sales, Diana carries only ₹278 million in inventories and has only ₹826 million in property, plant, and equipment. With ₹5.075 billion in accounts payable and another ₹2.444 billion in accrued liabilities for services, operating liabilities exceed operating assets: The operating creditors are providing the investment in operations rather than the shareholders. Diana has extreme operating liability leverage.

Does this structure of the operations add value? Certainly, yes, for Diana has considerable power over its suppliers. Diana earned ₹1.284 billion from operations in 2012. Residual income from operations, on a (negative) investment in operations of -₹3.048 billion (with a 9 percent required return), is

$$\text{Residual income} = ₹1.284 - (0.09 \times -3.048) = ₹1.558 \text{ billion}$$

The charge, at the required return, against a negative investment yields residual income greater than income. Effectively, shareholders add value in two ways. First they get value from the ₹1.284 billion in operating income and, second, they get further value from investing the ₹3.048 billion they would otherwise have had to put into the business had the suppliers not supplied the investment. The suppliers are essentially providing a "float" that shareholders can invest elsewhere. The residual income calculation captures both sources of value.

Reference for the above:

Diana Computer Corporation
Consolidated Statement of Financial Position (Extract) (₹ in millions)

Liabilities and Shareholders' Equity	Feb 1,2012	Feb 1, 2011
Shareholders' equity:		
Equity shares and capital in excess of Re. 0.01 par value: Shares authorized: 7,000 million; shares issued: 2,654 million and 2,601 million respectively	5,605	4,795
Preference shares and capital in excess of Re. 0.01 par value: Shares issued and outstanding: none	—	—
Treasury stock at cost; 52 million shares and no shares respectively	(2,249)	—
Retained earnings	1,364	839
Other comprehensive income	38	62
Other	(64)	(74)
Liabilities:		
Long term debt	520	509
Other	802	761
Commitments and contingent liabilities	—	—
Accounts Payable	5,075	4,286
Accrued and other	2,444	2,492
Total liabilities and shareholders' equity	13,535	13,670
Assets		
Property, plant and equipment, net	826	996
Investments	4,373	2,418
Other noncurrent assets	459	530
Cash and cash equivalent	3,641	4,910
Short-term investment	273	525
Accounts Receivable, net	2,269	2,424
Inventories	278	400
Other	1,416	1,467
Total assets	13,535	13,670

(Minority interest in income, if any, is added to the numerator.) The net income in the numerator is usually reported net income rather than comprehensive income. But, this aside, the ROA calculation mixes up financing and operating activities. Interest income, part of financing activities, is in the numerator. Total assets are operating assets plus financial assets, so financial assets are in the base. Thus, the measure mixes the return on operations with the (usually lower) return from investing excess cash in financial assets. Operating liabilities are excluded from the base. Thus the measure includes the cost of operating



liabilities in the numerator (in the form of higher input prices as the price of credit) but excludes the benefit of operating liability leverage in the base. The RNOA calculation appropriately distinguishes operating and financial items. As interest-bearing financial assets are negative financial obligations, they do not affect the return on operations. Operating liabilities reduce the needed investment in operating assets, providing operating liability leverage, so they are subtracted in the base.

Thus ROA typically measures a lower rate of return than RNOA. The median ROA for all U.S. nonfinancial firms from 1963 to 2004 was 6.8 percent. This is below what we would expect from a return to risky business investment: It looks more like a bond rate. The median RNOA was 10.4 percent, more in line with what we expect as a typical return from running businesses. ROA is a poor measure of operating profitability.

Table 5.1 First Level Breakdown : Hypee and Ricky

Analysis of Financial leverage: Hypee 2011

$$ROE = \frac{\text{Earnings}}{\text{Ave SE}} = \frac{405}{3,936} = 10.29\%$$

$$RNOA = \frac{OI}{\text{Ave NOA}} = \frac{423}{4,395} = 9.62\%$$

$$\text{Financial Leverage} \left(FLEV = \frac{\text{Ave NFO}}{\text{Ave SE}} \right) = \frac{459}{3,936} = 0.117$$

$$\text{Net Borrowing Cost} \left(NBC = \frac{NFE}{\text{Ave NFO}} \right) = \frac{18}{459} = 3.92\%$$

$$SPREAD = RNOA - NBC = 9.62\% - 3.92\% = 5.70\%$$

$$ROE = RNOA + (FLEV \times SPREAD)$$

$$10.29\% = (9.62 + (0.117 \times 5.70)\%)$$

Analysis of Operating Liability Leverage: Ricky 2012

$$RONA = \frac{OI}{\text{Ave NOA}} = \frac{237}{971.5} = 24.40\%$$

Short-term borrowing rate (after tax) = 3.2%¹

Implicit borrowing cost on ₹636 million of operating liabilities = ₹636 × 0.032 = ₹20.4 million

$$ROOA = \frac{OI + 20.4}{\text{Ave OA}} = \frac{237 + 20.4}{971.5 + 636.0} = 16.01\%$$

$$\text{Operating liability leverage (OLLEV)} = \frac{\text{Ave OL}}{\text{Ave NOA}} = \frac{636}{971.5} = 0.655$$

Operating liability leverage spread = ROOA – Short-term borrowing rate

$$= 16.01\% - 3.2\%$$

$$= 12.81\%$$

$$RNOA = ROOA + (OLLEV \times OLSREAD)$$

$$24.40\% = (16.01 + (0.655 \times 12.81)\%)$$

Note: ¹ Short-term borrowing rate is based on a before-tax rate of 5%. The after tax rate is $5\% \times (1 - 0.36) = 3.2\%$.

Table 5.2 compares ROA and RNOA for selected firms for 2012. That year was a very good profit year for many corporations and the high fliers included the high-tech firms you see in the table. In good profit years we expect the differences between RNOA and ROA to be higher because of favorable operating liability leverage, as it is for all firms in the table.

Box 5.5 Dealing with Minority Interests

The presence of minority interest (MI) calls for a slight revision in the calculations of the effect of financial leverage. Minority interest, unlike debtholder interests, does not affect the overall profitability of equity, the leverage of the SPREAD. It just affects the division of rewards between different equity claimants. The minority, like the majority equityholders, shares the costs and benefits of leverage. So the additional step with minority interest (MI) is to distinguish ROE for all equity claimants from that for the (majority) equity owners of the parent corporation in the consolidation.

$$\text{ROE} = \text{ROE before MI} \times \text{MI sharing ratio}$$

Where ROE, is the return on common equity to the shareholders to the parent company (the majority) and

$$\text{ROE before MI} = \frac{\text{Comprehensive income before MI}}{\text{SE} + \text{MI}}$$

$$\text{Minority interest sharing ratio} = \frac{\text{Comprehensive income} / \text{Comprehensive income before MI}}{\text{SE} / (\text{SE} + \text{MI})}$$

The first ratio here gives the return to total equity, minority and majority, as reported for Ricky in Table 5.1. The second ratio gives the sharing of the return. Use ROE before minority interest when applying the financing leveraging equation 5.1

This calculation is cumbersome. It can be avoided if the minority interests' shares of operating and financing assets, liabilities, and income in subsidiaries can be identified and then subtracted from the relevant categories in the reformulated balance sheet. One can (as an approximation) treat minority interest as a reduction in consolidated operating income and net operating assets.

Indeed you can see that ROA understates operating profitability. As a case in point, look at Emerge and SSS. The ROAs for these firms look lackluster, to say the least. They are below what we could expect their cost of capital to be. The RNOA's on the other hand, look respectable. And the RNOA measures identify Arian, Orion, and Common Systems as the exceptional companies they indeed are.



Table 5.2. Return on Net Operating Assets (RNOA) and Return on Assets (ROA) for Selected Firms for 2012 Fiscal Year

ROA typically understates operating profitability because it fails to incorporate operating liability leverage and includes the profitability of financial assets.

Industry and Firm	RNOA,%	ROA,%	Operating Liability Leverage (OLLEV)	Financial Assets /Total Assets,%
Biotech				
I-tech, Inc.	11.2	5.7	0.37	52.8
Hellogen, Inc.	63.5	26.2	0.51	41.0
Chitra Corp.	6.2	3.8	0.31	10.3
High-tech				
Arian Corp.	197.0	25.4	1.69	64.7
Origon Corp.	68.4	21.0	1.52	26.5
Common Systems, Inc.	121.8	32.5	0.87	48.5
Retailers				
Sel-Mart Stores, Inc.	12.7	9.3	0.35	1.0
Smart Corp.	0.5	0.4	0.35	4.1
Baisakhi, Inc.	39.7	30.1	0.56	24.1
Oil producers and refiners				
Emerge Corp.	14.8	8.3	0.73	1.9
SSS Corp.	13.9	8.2	0.64	4.4
Footwear and apparel manufacturers				
Hypee, Inc.	22.6	16.3	0.37	6.1
Ricky Intl., Ltd.	14.1	9.8	0.32	7.2

Operating liability leverage (OLLEV) and the amount of financial assets relative to total assets explain the difference between RNOA and ROA, and you can see in the table that firms with the largest differences have high numbers for these ratios. Arian had an RNOA of 197.0 percent in 2012, but inclusion of financial assets (64.7 per cent of total assets) in the ROA measure and the omission of the operating liability leverage of 1.69 reduces the profitability measure to 25.4 percent.

These observations reinforce two points. To analyze profitability effectively, two procedures must be followed:

1. Income must be calculated on a comprehensive (clean-surplus) basis.
2. There must be a clean distinction between operating and financing items in the income statement and balance sheet.

You will get “clean” measures only if these two elements are in place. So you can see the payoff to your work in this and the preceding study notes.

Financial Leverage and Debt-to-Equity Ratios

A common measure of financial leverage is the debt-to-equity ratio, calculated as total debt divided by equity. This measure is useful in credit analysis but, for the analysis of profitability, it confuses operating liabilities (which create operating liability leverage) with financial liabilities (which create financial leverage). And, as usually defined, it does not net out financial liabilities against financial assets.

The difference can be sizable: Arian had 60.0 percent of its assets in financial assets at the end 2010 and, with an operating liability leverage of 0.428, had no financial obligations. Its debt-to-equity ratio was 0.22, but all the debt in the debt-to-equity ratio was operating debt. So using the firm's debt-to-equity ratio as an indication of financial leverage would be quite misleading: Arian's FLEV (which includes the financial assets as negative debt) was -0.742.

Second-Level Breakdown: Drivers of Operating Profitability

In the first-level breakdown, RNOA is isolated as an important driver of the ROE. RNOA can be broken down further into its drivers so that

$$\begin{aligned}\text{ROE} &= \text{RNOA} + [\text{FLEV} \times (\text{RNOA} - \text{NBC})] \\ &= (\text{PM} \times \text{ATO}) + [\text{FLEV} \times (\text{RNOA} - \text{NBC})]\end{aligned}$$

The two drivers of RNOA are

1. Operating Profit Margin (PM):

$$\text{PM} = \text{OI (after tax)} / \text{Sales}$$

This we calculated as a common-size ratio in study note 3. The profit margin reveals the profitability of each rupee of sales.

2. Asset turnover (ATO):

$$\text{ATO} = \text{Sales} / \text{NOA}$$

This asset turnover reveals the sales revenue per rupee of net operating assets put in place. It measures the ability of the NOA to generate sales. It is sometimes referred to as its inverse, $1/\text{ATO} = \text{NOA}/\text{Sales}$, which indicates the amount of NOA used to generate a rupee of sales: If the ATO is 2.0, the firm is using 50 paise of net operating assets to generate a rupee of sales.

This decomposition of operating profitability is known as the Du Pont model. It says that profitability in operations comes from two sources. First, RNOA is higher the more of each rupee of sales ends up in operating income; second, RNOA is higher the more sales are generated from the net operating assets. The first is a profitability measure; the second is an efficiency measure. A firm generates profitability by increasing margins and can lever the margins up by using operating assets and operating liabilities more efficiently to generate sales.

The average profit margin is about 5.3 percent and the average asset turnover is about 2.0. But it is clear that a firm can produce a given level of RNOA with a relatively high profit margin but low turnover, or with a relatively high turnover but a low margin. Figure 5.3 plots median PM and ATO for 238 industries from 1979 to 2012. You see from the figure that industries with low asset turnovers tend to have high profit margins, and industries with high asset turnovers tend to have low profit margins. One could draw a curve – sloping down to the right – that connects dots with the same RNOA but different PMs and ATOs. An industry with a 10 percent margin and an ATO of 1.0 has the same 10 percent RNOA as a firm with a 3.33 percent margin and an ATO of 3.0.



Figure 5.3 Profit Margin and Asset Turnover Combinations for 238 Industries, 1979-2012 Industries with high profit margins tend to have low asset turnovers, and industries with low profit margins tend to have high asset turnovers.

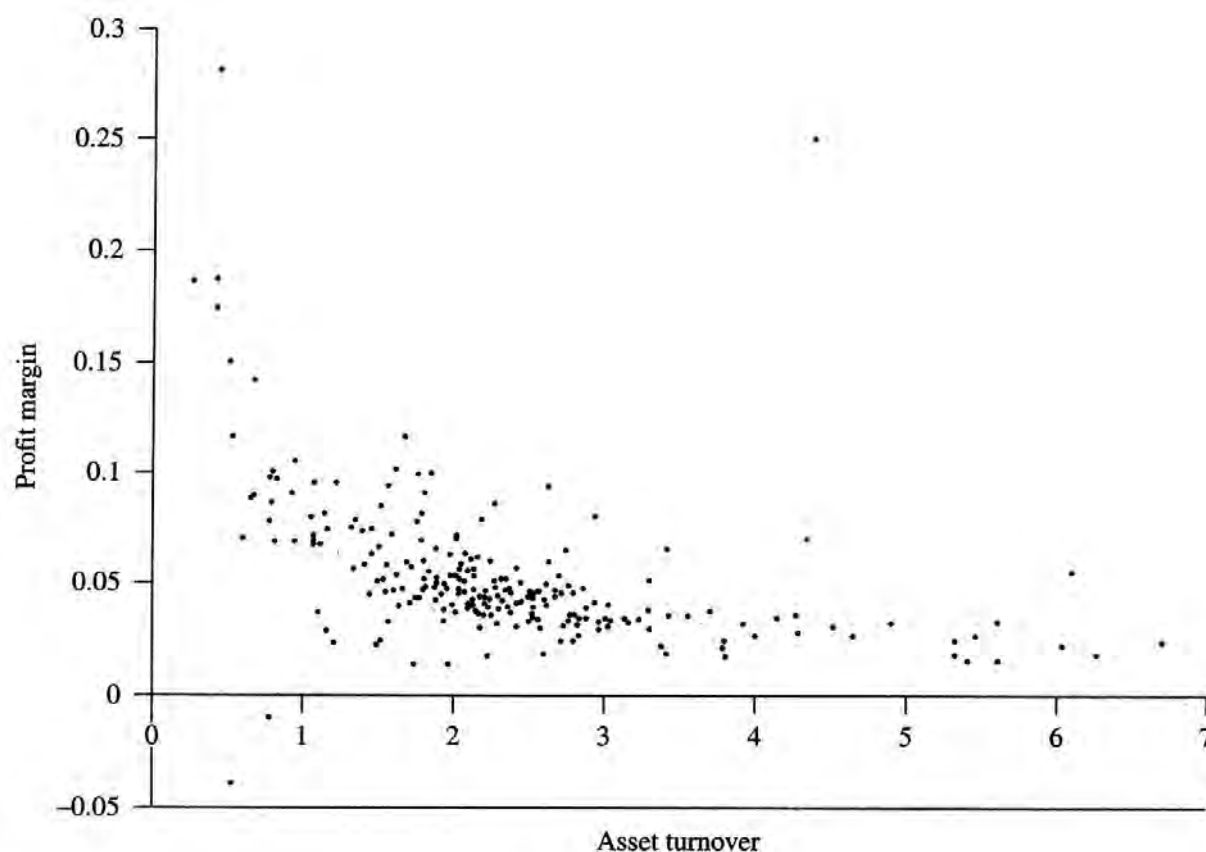


Table 5.3 gives median RNOAs, PMs, and ATOs for number of industries. It ranks industries on their median ROE and also gives their median financial leverage (FLEV) and operating liability leverage (OLLEV). This table will give you a sense of the typical amounts for these measures. The median ROE over all industries is 12.2 percent, and the median RNOA is 10.3 percent. The difference is due to financial leverage and a positive SPREAD. The median FLEV over all industries is 0.403, but there is considerable variation, particularly in financial leverage. You can see that some industries – pipelines, utilities, and hotels – have produced ROE through highly favourable financial leverage. Others-business services, printing and publishing, and chemicals – use little financial leverage to yield a high ROE. Some – such as business services-have used operating liability leverage rather than financial leverage to lever ROE. Others-such as trucking and airlines – have used both forms of leverage.

Table 5.3 Median Return on Equity (ROE), Financial Leverage (FLEV), Operating Liability Leverage (OLLEV), Return on Net Operating Assets (RNOA), Profit Margins (PM), and Asset Turnovers (ATO) for Selected Industries, 1979-2012

Industry	ROE, %	FLEV	OLLEV	RNOA, %	PM, %	ATO
Pipelines	17.1	1.093	0.154	12.0	27.8	0.40
Tobacco	15.8	0.307	0.272	14.0	9.3	1.70
Restaurants	15.6	0.313	0.306	14.2	5.0	2.83
Printing and publishing	14.6	0.154	0.374	13.6	6.5	2.20
Business services	14.6	0.056	0.488	13.5	5.2	2.95
Chemicals	14.3	0.198	0.352	13.4	7.1	1.91
Food stores	13.8	0.364	0.559	12.0	1.7	7.39
Trucking	13.8	0.641	0.419	10.1	3.8	2.88
Food products	13.7	0.414	0.350	12.1	4.4	2.74
Communications	13.4	0.743	0.284	9.1	12.5	0.76
General stores	13.2	0.389	0.457	11.3	3.5	3.55
Petroleum refining	12.6	0.359	0.487	11.2	6.0	1.96
Transportation equipment	12.5	0.369	0.422	11.2	4.5	2.47
Airlines	12.4	0.841	0.516	9.0	4.3	1.99
Utilities	12.4	1.434	0.272	8.2	14.5	0.59
Wholesales, nondurable goods	12.2	0.584	0.461	10.2	2.3	3.72
Paper products	11.8	0.436	0.296	10.2	5.9	1.74
Lumber	11.7	0.312	0.384	10.4	4.0	2.60
Apparel	11.6	0.408	0.317	10.1	4.0	2.55
Hostels	11.5	1.054	0.201	8.5	8.2	1.04
Shipping	11.4	0.793	0.205	9.1	12.6	0.61
Amusements and recreation	11.4	0.598	0.203	10.1	9.5	1.10
Building and construction	11.4	0.439	0.409	10.6	4.5	2.06
Wholesalers, durable goods	11.2	0.448	0.354	9.9	3.4	2.84
Textiles	10.4	0.423	0.266	9.3	4.3	2.09
Primary metals	9.9	0.424	0.338	9.4	5.0	1.80
Oil and gas extraction	9.1	0.395	0.263	8.3	13.0	0.57
Railroads	7.3	0.556	0.362	7.1	9.7	0.78



The PM and ATO tradeoff is apparent from the table. Some industries – printing and publishing and chemicals – produce a higher than average RNOA with both high profit margins and high asset turnovers. But industries with high margins typically have lower turnovers, and vice versa. Compare pipelines with food stores: similar RNOAs are generated with quite dissimilar margins and turnovers. Capital-intensive industries such as pipelines, shipping, utilities, and communications have low turnovers but high margins. Firms in competitive business – food stores, wholesalers, apparel, and general retail – often have low profit margins but generate RNOA through higher turnover.

Margins and turnovers reflect the technology for delivering products. Businesses with large capital investments – like telecommunications – typically have low turnovers and high margins. Firms that generate customers with advertising – like apparel makers – typically have lower margins (after advertising expense) but, as a result of the advertising, high turnovers. Margins and turnovers also reflect competition. An industry where high turnover can be achieved – food stores that can generate a lot of sales per square foot of retail space – will attract competition. That competition erodes margins, if there is little barrier to entry, as sales prices fall to maintain turnover (as with food stores).

Third-Level Breakdown

Profit Margin Drivers

The common-size analysis of the income statement in study note 3 broke the profit margin into two components:

$$\text{PM} = \text{Sales PM} + \text{Other items PM} \quad \text{[Equation 5.2]}$$

Other items in the income statement include shares of subsidiary income, special items, and gains and losses. These sources of income are not a result of sales revenue at the top of the income statement. So calculating a PM that includes these items distorts the profitability of sales. The sales PM, based on operating income before other items, includes only expenses incurred to generate sales, thus isolating the profitability of sales.

The two components of the profit margin have further components:

$$\text{Sales PM} = \text{Gross margin ratio} - \text{Expense ratios} \quad \text{[Equation 5.3]}$$

$$= \frac{\text{Gross margin}}{\text{Sales}} - \frac{\text{Administrative expense}}{\text{Sales}} - \frac{\text{Selling expense}}{\text{Sales}} - \frac{\text{R \& D}}{\text{Sales}} - \frac{\text{Operating taxes}}{\text{Sales}}$$

$$\text{Other operating items PM} \quad \text{[Equation 5.4]}$$

$$= \frac{\text{Subsidiary income}}{\text{Sales}} + \frac{\text{Other equity income}}{\text{Sales}} + \frac{\text{Special items}}{\text{Sales}} + \frac{\text{Other gains and losses}}{\text{Sales}}$$

These component ratios are known as profit margin drivers. A good part of managerial accounting and cost accounting texts is devoted to an analysis of these drivers. The drivers should be analyzed further by segment if segment disclosures are available. Clearly, profit margins are increased by adding to gross margins (reducing cost of sales), by adding other items income, and by reducing expenses per rupee sales.

Turnover Drivers

The net operating assets are made up of many operating assets and liabilities and so the overall ATO can be broken down into ratios for the individual assets and liabilities:

$$\begin{aligned} \frac{1}{\text{ATO}} &= \frac{\text{Cash}}{\text{Sales}} + \frac{\text{Accounts receivable}}{\text{Sales}} + \frac{\text{Inventory}}{\text{Sales}} + \dots + \frac{\text{PPE}}{\text{Sales}} \\ &+ \dots - \frac{\text{Accounts payable}}{\text{Sales}} - \frac{\text{Pension obligations}}{\text{Sales}} - \dots \end{aligned} \quad \text{[Equation 5.5]}$$

Again, the balance sheet amounts are averages over the year. The turnover is expressed here as a reciprocal of the ATO, which is the amount of net operating assets to support a rupee of sales, as are the individual turnovers. Thus the individual turnovers aggregate conveniently (in a spreadsheet, for example) to the overall turnover. However, conventionally, individual turnover ratios are expressed as sales per rupee of investment in the asset. For example,

$$\text{Accountsreceivable turnover} = \frac{\text{Sales}}{\text{Accountsreceivable (net)}}$$

and

$$\text{PPE turnover} = \frac{\text{Sales}}{\text{Property, plant, and equipment (net)}}$$

(This is sometimes called the fixed asset turnover.)

A firm increases its turnover (and thus RNOA) by maintaining operating assets at a minimum while increasing sales. But the ATO is also affected by operating liability turnovers, and this of course reflects operating liability leverage: Operating liability leverage increases ATO and, if operating liability leverage is favorable, RNOA.

Turnover ratios are sometimes referred to as activity ratios or asset utilization ratios. Some activity ratios are calculated in different ways but with the same concept in mind. So, for example,

$$\text{Days in accounts receivable} = \frac{365}{\text{Accounts receivable turnover}}$$

(sometimes called days sales outstanding). This gives the typical number of days it takes to collect cash from sales. It highlights that efficiency is increased by turning sales into cash quickly and is often used as a metric to evaluate collection departments. The inventory turnover ratio is sometimes measured as

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$

This differs from the sales/inventory calculation by not being affected by changes in profit margins. Using this definition, the efficiency of inventory management is sometimes expressed in terms of the average number of days that inventory is held, its shelf life:

$$\text{Days in inventory} = \frac{365}{\text{Inventory turnover}}$$

This ratio is best applied in wholesaling or retailing concerns where there is just one type of inventory, finished goods inventory. In a manufacturing concern, inventories include materials and work-in-progress, which take different times to complete into finished goods. Footnotes sometimes break down inventory into finished goods and other inventories, in which case ratios for finished goods inventory can be calculated.

A metric that assesses the ability to get operating liability leverage by extending credit from suppliers is

$$\text{Days in accounts payable} = \frac{365 \times \text{Accounts payable}}{\text{Purchases}}$$

Where

$$\text{Purchases} = \text{Cost of goods sold} + \text{Change in inventory}$$

The turnover drivers can be reduced to two summary drivers, the operating working capital driver and the long-term net operating asset driver:

$$\frac{1}{\text{ATO}} = \frac{\text{Operating working capital}}{\text{Sales}} + \frac{\text{Long-term NOA}}{\text{Sales}}$$



Working capital is often defined as current assets minus current liabilities, but these may include financial items not involved in generating sales. So Operating working capital = Current assets – Current liabilities – Current financial assets + Current financial liabilities. The long-term NOA of course also exclude financial items and are usually made up of property, plant, and equipment, intangibles, and investments in equities.

The profit margins and turnovers for Hypee and Ricky are given in Table 5.4, along with their drivers. The profit margin drivers sum to the overall PM, and the inverse of turnover drivers sum to the inverse of the overall ATO, as laid out in equations (5.2), (5.3), and (5.5). Then look at sources of the differences in RNOA for the two firms.

Table 5.4 Second- and Third-Level Breakdown: Hypee and Ricky

	2012				2011			
	Hypee		Ricky		Hypee		Ricky	
Second Level								
RNOA		23.31%		24.40%		9.62%		27.88%
Profit Margin		8.45%		6.26%		3.95%		5.48%
Asset Turnover		2.759		3.896		2.434		5.088
Third Level								
Profit margin drivers (%)								
Gross margin ratio	42.9		39.6		41.0		38.4	
Administrative Expense ratio	(18.9)		(28.2)		(18.5)		(26.9)	
Advertising expense ratio	(11.2)		(3.6)		(10.9)		(4.3)	
Amortization expense ratio	(0.7)		(0.1)		(0.8)		(0.0)	
Sales PM before tax	12.1		7.7		10.8		7.2	
Tax expense ratio	(4.2)		(1.9)		(3.7)		(2.2)	
Sales PM	7.9		5.8		7.1		5.0	
Other items PM	0.6		0.6		(3.1)		0.5	
Asset Turnover drivers (inverse)		8.5		6.4		4.0		5.5
Cash turnover	0.005		0.005		0.005		0.005	
Accounts receivable turnover	0.172		0.158		0.182		0.137	
Inventory turnover	0.128		0.107		0.136		0.108	
Prepayment turnover	0.029		0.015		0.075		0.012	
PPE turnover	0.131		0.044		0.151		0.041	
Intangibles turnover	0.028		0.051		0.029		0.019	
Other asset turnover	0.037		0.049		0.039		0.042	
Operating asset turnover	0.530		0.429		0.617		0.364	
Accounts payable turnover	(0.051)		(0.045)		(0.046)		(0.046)	
Accrued expenses turnover	(0.078)		(0.101)		(0.083)		(0.104)	
Taxes payable turnover	(0.010)		(0.013)		(0.010)		(0.010)	
Other liability turnover	(0.028)		(0.009)		(0.019)		(0.009)	
		0.363		0.261		0.459		0.195

What If Questions: Hypee and Ricky

What if Hypee increased its accounts receivable turnover from 5.83 to Ricky's level of 6.35 while maintaining the current level of sales? How would RNOA change?

Answer: The increase would reduce average accounts receivable by ₹172 million to ₹1,930 million, increase the overall asset turnover from 2.76 to 2.87, and increase RNOA from 23.31 percent to 24.25 percent. However, this is only if the reduction in customers' payment terms has no effect on sales and margins. A complete sensitivity analysis traces the effects through to all the determinants of RNOA.

What if Hypee's gross margin ratio of 42.9 percent in 2012 is likely to decline to the 41.0 percent in 2011 due to higher production costs?

Answer: A reduction in the gross margin ratio of 1.9 percent is an after-tax reduction of 1.20 percent at Hypee's 37.1 percent tax rate. This results in a drop in the (after-tax) overall profit margin from 8.45 percent to 7.25 percent and a drop on RNOA from 23.31 percent to 20.0 percent.

What if Ricky increased its annual advertising expenditures by ₹100 million to ₹1,167 million, resulting in ₹500 million in additional sales at the same gross margin percentage?

Answer: The increased advertising would result in an extra ₹198 million of gross margin at the current gross margin ratio of 39.6 percent. Net of the ₹100 million in additional advertising expenses, the additional pretax income would be ₹98 million or ₹62.8 million after tax. Accordingly, the profit margin ratio would increase to 7.0 percent. If receivables, inventory, and other net assets increase proportionally to support the sales, the ATO remains the same, so RNOA increases to 7.0 percent $\times$ 3.896 = 27.27 percent. Clearly, if the increased sales that the advertising draws were lower margin sales, the RNOA would be less.

Ricky's higher RNOA for both 2012 and 2011 is due to a higher asset turnover, not the profit margin. Indeed, Hypee has a higher gross margin ratio (lower production costs) and a lower administrative expense ratio, indicating that, with respect to the main operating expense, Hypee is more efficient in squeezing income from sales. Hypee's advertising expense ratio is higher than Ricky's, but the higher advertising outlays delivery sales with higher gross margin. In 2011, Hypee's lower profit margin is due to "other items", not the profitability of sales. Ricky's higher asset turnovers are due to its carrying lower receivables and inventory per rupee to sales and significantly lower carrying amounts for property, plant, and equipment to support sales. Hypee, on the other hand, maintains higher accounts payable per rupee of sales, though overall has a lower operating liability leverage than Ricky.

Asset turnover calculations are affected by the accounting for net assets. So, for example, a firm using LIFO methods for inventory will report a higher inventory turnover than one using FIFO, all else constant. Rapid depreciation methods produce higher PPE turnovers. So one must ask whether Ricky's higher asset turnovers are due to its accounting policies, not the efficiency with which it deploys assets and optimizes operating liabilities. In fact, both Hypee and Ricky use FIFO inventory valuation methods, so the inventory turnover ratios are comparable.

Analysis does not end with the calculation of ratios. Indeed the calculations are the tools of analysis. The analyst takes these tools and asks what-if questions – and gets answers.

Borrowing Cost Drivers

The final component of ROE is the operating spread, RNOA – NBC. As the RNOA component of this spread has been analyzed, this leaves the analysis of the net borrowing cost or, in the cost of net financial assets, the return from net financial assets.



The net borrowing cost (NBC) is a weighted average of the cost for the different sources of net financing. It can be calculated as

$$\begin{aligned} \text{NBC} = & \left[\frac{\text{FO}}{\text{NFO}} \times \frac{\text{After-tax interest on financial obligations (FO)}}{\text{FO}} \right] \\ & - \left[\frac{\text{FA}}{\text{NFO}} \times \frac{\text{After-tax interest on financial assets (FA)}}{\text{FA}} \right] \\ & - \left(\frac{\text{FA}}{\text{NFO}} \times \frac{\text{Unrealized gains on FA}}{\text{FA}} \right) + \left(\frac{\text{Preference shares}}{\text{NFO}} \times \frac{\text{Preference dividend}}{\text{Preference shares}} \right) + \dots \end{aligned}$$

Here,

FO = Financial Obligations

NFO = Net Financial Obligations

FA = Financial Assets

Hypee's 2011 after-tax net borrowing cost of 3.92 percent, calculated in Table 5.1, is made up of interest expense and interest income components, weighted as follows. Refer again to the reformulated statements in Exhibits 3.3 and 3.10 (the very small preference dividend is not material).

$$\begin{aligned} \text{NBC} &= \left[\frac{1,013}{459} \times \frac{43 \times (1 - 0.375)}{1,013} \right] - \left[\frac{554}{459} \times \frac{14 \times (1 - 0.375)}{554} \right] \\ &= \left[\frac{1,013}{459} \times 2.65\% \right] - \left[\frac{554}{459} \times 1.58\% \right] \\ &= 3.92\% \text{ (allow for rounding error).} \end{aligned}$$

The weights are calculated from average NFO (₹459 million), average financial obligations (₹1.013 million), and average financial assets (₹554 million). This calculation separates the after-tax borrowing cost for the obligations (2.65 percent) from the return on financial assets (1.58 percent).

A lower rate of return on financial assets than the borrowing rate on obligations increases the composite net borrowing cost over that for the obligations (3.92 percent versus 2.65 percent). The difference in the rates for the two components is called the spread between lending and borrowing rates (-1.07 percent here). Banks make money with higher lending than borrowing rates and thus (if they are successful) their overall net rate, their RNFA, is higher than the borrowing rate spread (typical of nonfinancial firms) and the overall contribution of financing activities to ROE could be improved by selling off the financial assets and using the proceeds to reduce the financial obligations. Alternatively, Hypee may wish to buy operating assets by selling off its financial assets and improve the ROE through the RNOA driver.

As with all calculations, these numbers should be checked for their reasonableness. If your calculated borrowing costs seem "out of line," it may be that you have misclassified operating and financing items (and this means that your RNOA is also incorrect). It may be that disclosures are not sufficient to make a clear distinction. To the extent this is material, it will affect not only the net borrowing cost but also financial and operating leverage calculations. The inability to unravel capitalized interest will introduce errors. And errors will be made if the averaging of balance sheet amounts does not reflect the timing of changes in those amounts during the period.

Tracking Hypee's Profitability: 2004-2012

The profitability-analysis for Hypee provides a full analysis of the firm from 2004-2012. Here are some of the salient numbers:

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Sales revenue (₹billions)	6.5	9.2	9.6	8.8	9.0	9.5	9.9	10.7	12.3
Profitability:									
Return on equity (%)	24.3	27.8	12.0	13.0	16.6	16.5	17.0	10.3	23.0
Return on net operating assets (%)	22.6	25.0	10.6	11.2	13.3	12.9	14.4	9.6	23.3
Profit margin (%)	8.5	8.7	4.3	5.1	6.2	6.1	6.5	4.0	8.5
Asset turnover	2.7	2.9	2.5	2.2	2.1	2.1	2.2	2.4	2.8
Net borrowing cost (%)	5.9	5.1	4.1	2.6	2.1	2.5	2.7	3.9	--
Leverage:									
Financial leverage	0.107	0.140	0.202	0.218	0.295	0.342	0.216	0.117	0.001
Operating liability leverage	0.369	0.369	0.315	0.277	0.290	0.258	0.283	0.384	0.46

You see that Hypee's return on equity (ROE) declined subsequent to 2004, even though financial leverage increased and net borrowing cost declined (as interest rates generally declined). The reason, of course, was a decline in operating profitability (RNOA), due to a decline in profit margins, assets turnovers, and operating liability leverage. The next study note analyzes the growth or decline in profitability in more depth. Study note 6 also shows how changes in profitability combine with growth in investment to determine growth in earnings and residual earnings.

5.3 DU PONT ANALYSIS

Since it is important to understand how the company's profitability, efficiency, and leverage are linked in its financial performance, students are required to demonstrate and evaluate its Du Pont system over time. The company's return on assets, ROA (=net income/assets), can be expressed as:

$$\text{ROA} = (\text{Net Income/Revenue}) \times (\text{Revenue/Assets}) = \text{Profit Margin} \times \text{Asset Turnover}$$

And the company's return on equity, ROE (=net income/equity), can be expressed as

$$\text{ROE} = (\text{Net Income/Revenue}) \times (\text{Revenue/Assets}) \times (\text{Assets/Equity}) = \text{ROA} \times \text{Equity Multiplier}$$

Both the company's profitability (as measured in terms of profit margin) and efficiency (as measured in terms of asset turnover) determine its ROA. This ROA, along with the company's financial leverage (as measured in terms of its equity multiplier), contributes to its ROE. As the company's use of leverage magnifies its ROE, students are required to examine ROE carefully. The changes in the company's ROE are to be noted and explained through its profit margin, asset turnover, and equity multiplier over time. The objective is to identify the company's strong area that can be capitalized upon and/or its weak area that must be improved upon. See Table 5.5 (below) for a sample Du Pont analysis for Tulip.

**Table 5.5. Tulip Du Pont Analysis**

Item / Ratio	2012	2011	2010	2009	Evaluation
Net Income, ₹ in million (from Income statements)	6,068	6,945	5,157	3,566	
Revenue, ₹ in million (from Income statements)	26,273	25,070	20,847	16,202	
Assets, ₹ in million (from balance sheets)	31,471	28,880	23,735	17,504	
Equity, ₹ in million (from balance sheets)	23,377	19,295	16,872	12,140	
Profit Margin % (Net Income/Revenue)	23.1	27.7	24.7	22.0	Drop in profitability during 2012
Asset Turnover (Revenue/Assets)	0.835	0.868	0.878	0.926	Lower efficiency since 2009
Return on Assets % (Profit Margin× Asset Turnover)	19.3	24	21.7	20.4	Drop in ROA during 2012
Equity Multiplier (Assets/Equity)	1.35	1.50	1.41	1.44	Decrease in leverage during 2012
Return on Equity % (ROA× Equity Multiplier)	26.0	36.0	30.6	29.4	Sharp decline in ROE during 2012

5.4 MISCELLANEOUS PROBLEMS

Illustration 1.

You are the management accountant of Expand, a company incorporated in Dollarland. The company is seeking to grow by acquisition and has identified two potential investment opportunities. One of these, Hone, is also a company incorporated in Dollarland. The other, Over, is a company incorporated in Francland.

You have been presented with financial information relating to both companies. The financial information is extracted from their published financial statements. In both cases, the financial statements conform to domestic Accounting Standards. The financial statements of Hone were drawn up in \$s while those of Over were drawn up in Francs. The information relating to Over has been expressed in \$s by taking the figures in Francs and dividing by 1.55 – the \$/Franc exchange rate at 31st December 2012. The financial information is given below.

Income Statement

Year ended	Hone		Over	
	31st March	31st March	31st Dec	31st Dec
	2013	2012	2012	2011
	\$m	\$m	\$m	\$m
Revenue	600	550	620	560
Cost of sales	(300)	(250)	(320)	(260)
Gross profit	300	300	300	300
Other operating expenses	(120)	(105)	(90)	(85)

Profit from operations	180	195	210	215
Finance cost	(20)	(18)	(22)	(20)
Profit before tax	160	177	188	195
Income tax expense	(50)	(55)	(78)	(90)
Net profit for the period	110	122	110	105

Statements of changes in equity

Year ended	Hone		Over	
	31st March	31st March	31st Dec	31st Dec
	2013	2012	2012	2011
	\$m	\$m	\$m	\$m
Balance brought forward	470	418	265	240
Net profit for the period	110	122	110	105
Dividends	(70)	(70)	(80)	(80)
Balance carried forward	510	470	295	265

	Hone		Over	
	31st March	31st March	31st Dec	31st Dec
	2013	2012	2012	2011
	\$m	\$m	\$m	\$m
Non-current assets	600	570	455	440
Inventories	60	50	55	50
Trade receivables	80	75	90	80
Cash	10	20	15	15
	750	715	615	585
Share capital	150	150	110	110
Reserves	360	320	185	155
	510	470	295	265
Interest-bearing borrowings	150	150	240	240
Current liabilities	90	95	80	80
	750	715	615	585

Expand is more concerned with the profitability of potential investment opportunities than with liquidity. You have been asked to review the financial statements of Hone and Over with this concern in mind.

Required:

(a) Prepare a short report to the directors of Expand that, based on the financial information provided, assesses the relative profitability of Hone and Over.



(b) Discuss the validity of using this financial information as a basis to compare the profitability of the two companies.

Solution:

(a) **REPORT**

To: The directors of Expand
From: The Management Accountant
Date: XX-XX-XX
Subject: Profitability of Hone and Over

This report assesses the relative profitability of Hone and Over, based on each company's most recent published financial statements translated, where necessary, into dollars. Detailed calculations of accounting ratios are shown in the appendix to this report.

Based on the financial information provided, it appears that Over is the more profitable company, since it has a higher return on capital employed. However it should be noted that the profitability of both companies has fallen somewhat over the last year.

Return on capital employed can be broken down into its component parts of operating profit percentage and asset turnover. Since the asset turnover for both companies has been fairly steady, the decline in profitability can be traced to a fall in operating profit percentage for both companies.

A key difference between the two companies is the higher operating expenses reported by Hone. This may be partly explained by Hone's higher depreciation charge paid on its greater amount of non-current assets held.

Over appears to pay a lower interest rate on its borrowings than Hone, which may explain why Over carries a higher level of borrowings in its balance sheet than Hone. Since borrowings represent a cheap source of finance, this fact has contributed to Over's better relative profitability. However the tax rate paid by Over appears to be greater than the rate paid by Hone.

In conclusion the information provided shows that Over generates a greater return of profits from the capital employed in its business, so Over is relatively more profitable than Hone. However, before any decision is taken to invest in either of these companies, more investigations should be carried out, particularly in respect of any forecast future earnings and information concerning the future prospects of the companies. Historical information alone is insufficient to decide on a possible investment in a company now.

Appendix – Key accounting ratios assessing profitability

	Hone		Over	
	3/2013	3/2012	12/2012	12/2011
Return on capital employed	180/660=27%	195/620=31%	210/535=39%	215/505=43%
Gross profit percentage	300/600=50%	300/550=55%	300/620=48%	300/560=54%
Operating profit percentage	180/600=30%	195/550=35%	210/620=34%	215/560=38%
Asset turnover	600/660=0.91	550/620=0.89	620/535=1.16	560/505=1.11
Interest rate paid on borrowings	20/150=13.3%	18/150=12%	22/240=9.2%	20/240=8.3%
Effective tax rate	50/160=31.3%	55/177=31.1%	78/188=41.5%	90/195=46.2%

(b) There are serious limitations in using the financial information provided as a basis to compare the profitability of the two companies. First, we must consider the translation of the Over results. This has been done using a single exchange rate that is in force at 31st December 2012. It would have been better to translate the 31st December 2011 balance sheet using the exchange rate at that date, and to have used average exchange rates for 2011 and 2012 to translate the income statements respectively for 2011 and 2012.

A further problem arises in that the two companies have different year-end dates. If both companies earn their profits evenly over each year, then this will not be a problem. However it is more likely that there will be seasonal variations in the financial performance of each company, in which case the balance sheets comparisons in particular will not be comparing like with like.

A further problem arises in that each company has drawn up their financial statements in accordance with the domestic accounting standards of the country in which they operate. No information is given of how similar the GAAP in Dollarland is to the GAAP in Francland. Different accounting practices could have a major effect on the reported profitability of the companies, such that a direct comparison is not valid.

Finally we have no information on whether the two companies operate in a similar business sector. If they operate in different sectors (e.g. house building and publishing), then one would expect the financial statements to present a different pattern of operations. A direct comparison would only be valid if the two sets of statements were prepared in the same currency, for the same accounting periods, in accordance with the same accounting practices, and for companies in the same business sector in the same country. The analysis in part (a) is a long way short of this ideal.

Signed: The Management Accountant

Illustration 2.

You are the management accountant of Expand – a large group that seeks to grow by acquisition. The directors of Expand have identified two potential target entities (A and B) and obtained copies of their financial statements. Extracts from these financial statements, together with notes providing additional information, are given below:

Income statements – year ended 31st December 2012

	A	B
	\$000	\$000
Revenue	68,000	66,000
Cost of sales	(42,000)	(45,950)
Gross profit	26,000	20,050
Other operating expenses	(18,000)	(14,000)
Profit from operations	8,000	6,050
Finance cost	(3,000)	(4,000)
Profit before tax	5,000	2,050
Income tax expense	(1,500)	(1,000)
Net profit for the period	3,500	1,050

**Statements of changes in equity – year ended 31st December 2012**

	A	B
	\$000	\$000
Balance at 1st January 2012	22,000	16,000
Surplus on revaluation of properties	Nil	6,000
Net profit for the period	3,500	1,050
Dividends paid	(2,000)	(1,000)
Balance at 31st December 2012	23,500	22,050

Balance sheets at 31 December 2012

	A		B	
	\$000	\$000	\$000	\$000
Non-current assets:				
Property, plant and equipment	32,000		35,050	
		32,000		35,050
Current assets:				
Inventories	6,000		7,000	
Trade receivables	12,000		10,000	
		18,000		17,000
		50,000		52,050
Equity:				
Share capital (\$1 shares)		16,000		12,000
Revaluation reserve		—		5,000
Retained earnings		7,500		5,050
		23,500		22,050
Non-current liabilities				
Long-term borrowings		16,000		18,000
Current liabilities				
Trade payables	5,000		5,000	
Income tax	1,500		1,000	
Short-term borrowings	4,000		6,000	
		10,500		12,000
		50,000		52,050

Notes to the financial statements**(1) Sale by A to X**

On 31st December 2012, A supplied goods, at the normal selling price of \$2.4 million, to another company, X. A's normal selling price is at a mark up of 60% on cost. X paid for the goods in cash on the

same day. The terms of the selling agreement were that A repurchases these goods on 30th June 2013 for \$2.5 million. A has accounted for the transaction as a sale.

(2) Revaluation of non-current assets by B

B revalued its non-current assets for the first time on 1st January 2012. The non-current assets of A are very similar in age and type to the non-current assets of B. However, A has a policy of maintaining all its non-current assets at depreciated historical cost. Both companies charge depreciation of non-current assets to cost of sales. B has transferred the excess depreciation for the year of \$1 million on the revalued assets from the revaluation reserve to retained earnings.

Expand uses ratio analysis to appraise potential investment opportunities. It is normal practice to base the appraisal on four key ratios:

- return on capital employed
- gross profit margin
- asset utilization
- gearing (debt / debt + equity)

For the purposes of the ratio analysis, expand compute

- capital employed as capital and reserves plus borrowings;
- Borrowings as long-term borrowings plus short-term borrowings.

Your assistant has computed the four key ratios for the two enterprises from the financial statements provided and the results are summarised below:

Ratio	A	B
Return on capital employed	18.4%	13.1%
Gross profit margin	38.2%	30.4%
Asset utilization	1.6	1.4
Gearing	46.0%	52.1%

Your assistant has informed you that, on the basis of the ratios calculated, the performance of A is superior to that of B in all respects. Therefore, Expand should carry out a more detailed review of A with a view to making a bid to acquire it. However, you are unsure whether this is necessarily the correct conclusion given the information provided in Notes 1 and 2.

Required:

- (a) Explain and compute the adjustments that would be appropriate in respect of Notes 1 and 2 so as to make the financial statements of A and B comparable for analysis.
- (b) Recalculate the four key ratios mentioned in the question for both A and B AFTER making the adjustments you have recommended in your answer to part (a). You should provide appropriate workings to support your calculations.
- (c) In the light of the work that you have carried out in answer to parts (a) and (b), evaluate your assistant's conclusion that a more detailed review of A should be carried out, with a view to making a bid to acquire it.

**Solution:****(a) Adjustments**

Note 1: The substance of this transaction is not a sale but a loan. Therefore the following adjustments are necessary to reverse the effect of the sale:

Dr. Revenue	\$2,400,000	
Dr. Inventories ($24,00,000 \times 100/160$)	\$1,500,000	
Cr. Cost of sales		\$1,500,000
Cr. Loan		\$2,400,000

Note 2: Expand needs to be able to make meaningful comparisons between the accounts of A and B. As far as possible, both sets of accounts should be based on the same accounting policies. The only practical way of achieving this is to restate the accounts of B so that both sets of properties are stated at historic cost:

Dr. Revaluation reserve	\$5,000,000	
Cr. Tangible non-current assets		\$5,000,000
Dr. Retained earnings (excess depreciation)	\$1,000,000	
Cr. Cost of sales		\$1,000,000

These adjustments affect the accounts as follows:

	Before	Adjustment	After
	\$000	\$000	\$000
Company A			
Revenue	68,000	(2,400)	65,600
Cost of sales	(42,000)	1,500	(40,500)
Gross profit	26,000	(900)	25,100
Profit from operations	8,000	(900)	7,100
Borrowings (4,000 + 16,000)	20,000	2,400	22,400
Capital and reserves	23,500	(900)	22,600
Capital employed	43,500		45,000
Company B			
Revenue	66,000		66,000
Cost of sales	(45,950)	1,000	(44,950)
Gross profit	20,050	1,000	21,050
Profit from operations	6,050	1,000	7,050
Borrowings (6,000 + 18,000)	24,000		24,000
Capital and reserves	22,050	(5,000)	17,050
Capital employed	46,050		41,050

(b) Ratios

	A	B
Return on capital employed $\frac{\text{Profit from operations}}{\text{Capital employed}}$	$\frac{7,100}{45,000}$ =15.8%	$\frac{7,050}{41,050}$ =17.2%
Gross profit margin $\frac{\text{Gross profit}}{\text{Revenue}}$	$\frac{25,100}{65,600}$ =38.3%	$\frac{21,050}{66,000}$ =31.9%
$\frac{\text{Revenue}}{\text{Capital employed}}$	$\frac{65,600}{45,000}$ =1.5	$\frac{66,000}{41,050}$ =1.6
$\frac{\text{Total borrowings}}{\text{Capital employed}}$	$\frac{22,400}{45,000}$ =49.8%	$\frac{24,000}{41,050}$ =58.5%

(c) Evaluation

The ratios based on the adjusted accounts show that A is not necessarily the better acquisition.

The adjustments have had the effect of reducing the profits of A and slightly improving the profits of B. Although A still clearly has the better gross profit margin, B now has the better return on capital employed. There appear to be two reasons for this:

- the turnover of capital employed ratio shows that B is slightly better at generating sales revenue from its capital base than A; and
- A has operating expenses of \$4 million more than B, although both companies have similar levels of revenue.

For these reasons B may be the better company to acquire, particularly if the operating expenses of A cannot be reduced. B has significantly higher leverage (gearing) than A, but this may not be a critical factor if Expand can change the capital structure or provide the company with additional finance.

Study Note - 6

THE ANALYSIS OF GROWTH AND SUSTAINABLE EARNING



This Study Note includes

- 6.1 The Analyst's Checklist**
- 6.2 Introduction to Growth Analysis**
- 6.3 The Analysis of changes in Profitability and Sustainable Earnings**
- 6.4 The Analysis of Growth in Shareholders' Equity**
- 6.5 Growth, Sustainable Earnings, and the Evaluation of P/B Ratios and P/E Ratios**

6.1 THE ANALYST'S CHECKLIST

The price-to-book (P/B) valuation model showed that firms increase their price-to-book ratios if they can grow residual earnings. The price-earning (P/E) valuation model showed that firms increase their price-earning ratios if they can grow abnormal earnings. Clearly, then, an assessment of a firm's ability to deliver growth is critical to valuation. This study note lays out the analysis of growth.

Analysts often talk of growth in terms of a firm's ability to grow earnings. The study note begins by reminding you that earnings growth is not a valid growth concept for valuation because firms can grow earnings without adding value. Rather, residual earnings growth and abnormal earnings growth are the relevant measures. Residual earnings growth is the focus when evaluating P/B ratios, and abnormal earnings growth is the focus when evaluating P/E ratios.

Growth in residual earnings is driven by increases in return on equity (ROE) and growth in equity investment. So the analysis of growth for the evaluation of P/B ratios amounts to an analysis of how ROE and investment change over time. As earnings are just investment multiplied by the rate of return on investment, abnormal earnings growth is driven by the same factors that determine residual earnings growth. The analysis of growth uncovers these factors.

The question of whether future earnings will grow over current earnings involves further issues: Will current earnings perpetuate, or are there aspects of current earnings that are not likely to be repeated in the future? Earnings temporarily depressed by a labour strike are not indicative of future earnings. Earnings that reflect a one-time special contract may be abnormally high. Earnings reduced by restructuring charges may not be a good forecast of the future earnings that will likely benefit from the restructurings. Earnings that are indicative of a firm's long-run earning ability are called sustainable earnings, persistent earnings, or core earnings. Earnings based on temporary factors are called unusual earnings or transitory earnings. Sustainable earnings are the basis for growth, so this study note outlines an analysis that distinguishes sustainable earnings from transitory earnings.

The common-size analysis of study note 3 is a prerequisite for the profitability analysis of the last study note. Correspondingly, the trend analysis of study note 3 is a prerequisite for the analysis of growth in this study note, for trend analysis documents the historical growth in "bottom-line" numbers such as equity, net operating income, and it explains their growth by growth in their component parts.

The analysis of growth bears on the determination of intrinsic P/B and P/E ratios. So the study note by introducing the topic from that perspective and the study note ends by tying the analysis back to those ratios, in preparation for the forecasting and valuation.

Checklist:

- Why the analysis of growth is important for valuation.
- Why growth analysis focuses on residual earning growth and abnormal earning growth, rather than earnings growth.
- How abnormal earning growth is equal to growth in residual earnings.
- What a growth firm is.
- What constitutes sustainable earnings.
- What transitory earnings are.
- What “quality of earnings” means.
- How operating leverage affects earnings as sales change.
- How changes in ROE can be created by borrowing.
- What the drivers of growth of the equity shareholder’s investment are.
- How P/E and P/B ratios relate to each other.

What is Growth?

The term growth is often used vaguely, or with a variety of meanings. People talk of “growth firms” – and of paying more for a growth firm – but their meanings is not always clear. Sometimes the term is used to mean growth in sales, sometimes growth in earnings, and sometimes growth in assets. Generally growth is seen as a positive attribute, an ability to generate value. But what is a **growth firm**?

The valuation models provide the answer to this question. One pays a premium over book value based on the ability of a firm to grow residual earnings (RE), where residual earnings is the difference between earnings and the required return on book value. For any year t ,

$$\text{Residual earnings}_t (\text{RE}_t) = \text{Earnings}_t - [(\rho_E - 1) \times \text{Shareholders' equity}_{t-1}]$$

where $(\rho_E - 1)$ is the required return for equity. Shareholders invest in firms, and the book value of their equity — the firm’s net assets — measures this investment. Firms apply the net assets in operations to add value for shareholders. Residual earning measure the value added to book value over that required to cover the cost of capital. So a sensible way of viewing growth that ties into value creation is into terms of growth in residual earning: A growth firm is one that can grow residual earnings.

One pays more than a normal P/E based on the ability of a firm to generate abnormal earnings growth (AEG), where abnormal earnings growth is the difference between cum-dividend earnings and a charge for the prior year’s earnings growing at the required rate. For any year t ,

$$\text{Abnormal earnings growth}_t (\text{AEG}_t) = [\text{Earnings}_t + (\rho_E - 1)d_{t-1}] - \rho_E \text{Earnings}_{t-1}$$

Where d_{t-1} is the net dividend paid in the prior year. Firms do not add to their P/E ratio if they can only grow earnings at the required rate of growth. They add value only if they can grow earnings at a rate greater than the required rate, that is, if they can deliver abnormal earnings growth. So another way of viewing growth that ties into the value creation is in terms of the ability of a firm to deliver abnormal earnings growth.



We should be warned against paying too much for earnings growth. We emphasized that earnings growth alone is not a good measure of growth because earnings growth can be created by investment (that does not add value) and by accounting methods (that also do not add value). We showed how residual earnings and abnormal earnings growth measures isolate that part of earning growth that is to be valued from that part which is not. Charging earnings for required earnings- required earnings on book value in the case of residual earnings and required earnings on prior earnings in the case of abnormal earnings growth – protects the investor from paying too much for earnings growth created by investment and accounting methods. In short, residual earnings growth and abnormal earnings growth are the growth measures we must focus on if we have valuation in mind.

Residual earnings are the relevant growth measure when evaluating the price-to-book (P/B) ratio. Abnormal earnings growth is the relevant growth measure when evaluating the price-earnings (P/E) ratio. However, the two measures are just different ways of looking at the same thing: Abnormal earnings growth is equal to the change in residual earnings. If a firm has no growth in residual earnings, its abnormal earnings growth must be zero: The firm is a “no growth” firm. If a firm has residual earning growth it must also have abnormal earnings growth: The firm is a “growth company.” For most of this study note, we will analyze growth in residual earnings with the understanding that the factors that grow residual earnings also produce abnormal earnings growth. Residual earnings growth involves both balance sheet and income statement features, so we gain a better appreciation of the determinants of growth from the analysis of growth in residual earnings.

Box 6.1 introduces you to some growth and no-growth firms. In each case, observe that abnormal earnings growth is equal to the change in residual earnings.

Box 6.1 Growth and No – Growth Firms

A Growth Firm: Genuine Electric		(₹ amounts in millions)						
	2012	2011	2010	2009	2008	2007	2006	2005
Sales	1,31,698	1,25,913	1,29,853	1,11,630	1,00,469	90,840	79,179	70,028
Sales growth rate	4.6%	(3.0%)	16.3%	11.1%	10.6%	14.7%	13.1%	16.5%
Equity	63,706	54,824	50,492	42,557	38,880	34,438	31,125	29,609
Equity growth rate	16.2%	8.6%	18.6%	9.5%	12.9%	10.6%	5.1%	16.7%
ROE	25.8%	27.1%	29.9%	27.6%	26.2%	27.2%	22.5%	23.9%
Residual earnings (12%)	7,539	7,625	7,628	6,065	5,221	4,994	3,190	3,273
Abnormal earnings growth (12%)	(86)	(3)	1,563	844	227	1,804	(83)	1,620

Genuine Electric has maintained a high growth rate in sales, which translates into both increasing ROE and increasing investment. Accordingly, with the exception of 2006, residual earning (based on a required return of 12 percent) was on a growth path up to 2010 and abnormal earnings growth was (mainly) positive. Growth slowed after 2010. Can GE generate more growth in the future?

A Growth Firm: Hypee		(₹ amounts in millions)					
	2012	2011	2010	2009	2008	2007	2006
Sales	12,253	10,697	9,893	9,489	8,995	8,777	9,553
Sales growth rate	14.6%	8.1%	4.3%	5.5%	2.5%	-8.1%	4.0%
Equity	4,840	4,028	3,839	3,495	3,136	3,335	3,262
Equity growth rate	19.8%	4.0%	9.8%	11.4%	-6.0%	2.2%	3.4%
ROE	23.0%	10.3%	19.1%	18.8%	17.4%	13.0%	12.0%
Residual earnings (11.1%)	642	(71)	280	241	210	64	28
Abnormal earnings growth (11.1%)	572	(209)	39	31	146	36	-

Apart from 2011, Hypee grew sales and earned a high ROE, increasing investment, increasing residual earnings, and delivering positive abnormal earnings growth. Can Hypee maintain growth in the future?

A No-Growth Firm: Ricky

(₹ amounts in millions)

	2009	2008	2007	2006	2005	2004	2003	2002
Sales	2,993	2,865	2,900	3,225	3,644	3,479	3,481	3,280
Sales growth rate	4.5%	-1.2%	-10.1%	- 11.5%	4.7%	-0.1%	6.1%	13.3%
Equity	720	608	529	524	507	381	941	999
Equity growth rate	18.4%	14.9%	1.0%	3.4%	33.1%	-59.5%	-5.8%	16.7%
ROE	16.9%	15.3%	2.1%	5.8%	24.3%	17.6%	18.6%	28.7%
Residual earnings (12%)	30	17	(52)	(32)	55	43	64	155
Abnormal earnings growth (12%)	13	69	(20)	(87)	12	(21)	(91)	39

Ricky generated increasing residual earnings and abnormal earnings growth in the early 2000s but, with declining sales growth rates and lower ROE, was not able to maintain the growth. From 2003 to 2008, Ricky reported little growth in residual earnings, with both lower ROE and investment growth. Correspondingly, abnormal earnings growth was negative in many years. Subsequent analysis in this study note shows that Ricky moved to a growth path in 2010- 2012.

Growth and No-growth Firms
A Cyclical Firm: Central Airlines

(₹ amounts in millions)

	2012	2011	2010	2009	2008	2007	2006	2005
Sales	19,703	17,730	16,299	15,856	15,136	15,610	14,837	14,731
Sales growth rate	11.1%	8.8%	2.8%	4.8%	-3.0%	5.2%	0.7%	8.5%
Equity	7,176	6,858	6,428	5,354	4,528	3,646	3,233	3,168
Equity growth rate	4.6%	6.7%	20.1%	18.2%	24.2%	12.8%	2.1%	1.4%
ROE	11.9%	15.3%	18.0%	16.2%	16.7%	6.0%	8.4%	0.7%
Residual earnings (14%)	(147)	85	238	107	112	(274)	(180)	(397)
Abnormal earnings growth(14%)	(232)	(153)	131	(5)	386	(94)	217	-

Central Airlines, the air carrier, grew residual earnings from 2008 to 2010. (Residual earnings are calculated using a 14 percent required return, as befits a risky airlines.) But airlines are cyclical, as the residual earnings growth for the earlier and later years show. Sales growth has been modest and the increase in ROE from 2008 to 2010 was also modest, with growth coming from growth in investment. ROE declined after 2010, even with growing sales, and residual earning also declined.

In analyzing growth, the analyst has her eye on the future: Can the firm grow residual earnings in the future? Past growth is only an indicator of future growth. So, in asking whether Central Airlines, Ricky, Hypee, and Genuine Electric, are growth companies, the question is whether past growth can be sustained in the future.

6.2 INTRODUCTION TO GROWTH ANALYSIS

To understand whether current growth will continue in the future, the analyst analyzes the drivers of growth. Hypee grew residual earnings in 2007 (in Box 6.1), but on an 8.1 percent decline in sales. Why? Should this growth be given different weight from that in 2011 when sales increased by 8.1 percent but residual earnings declined? What factors indicate persistent growth?

Residual earnings are driven by return on equity (ROE), the amount of shareholder investment (SE), and the cost of capital:

$$\text{Residual earnings}_t = (\text{ROE}_t - \text{cost of equity capital}_t) \times \text{SE}_{t-1}$$

So, changes in residual earnings are driven by changes in ROE, in the cost of equity capital, and changes in shareholder's equity. We defer cost of capital, focusing here on the analysis of changes in ROE and the analysis of changes in SE.

Box 6.2 shows how growth in residual earning is formally broken down into its three components. The box continues the analysis of Hypee and Ricky that was begun in the last study note. Some of the numbers



from the last study note are summarized in Box 6.2. Both Hypee and Ricky grew residual earning in 2012 through a combination of enhancement in profitability (ROE) and growth in equity investment. The box shows how much the two drivers contributed.

We turn now to analyze the change in ROE and growth in equity that drive the growth in residual earnings.

Box 6.2 Analyzing Growth in Residual Earnings: Hypee and Ricky

A simple formula calculates the change in residual earnings (RE) from its two drivers, the change in ROE, the change in the cost of capital and the change in the shareholder's investment (SE). For the change in residual earning from year 0 to year 1,

Change in residual earnings = Change due to change in ROE over the cost of capital

+ Change due to change in equity

$$\Delta RE_1 = [\Delta(\text{ROE} - \text{Cost of capital})_1 \times SE_0] + [\Delta SE_1 \times (\text{ROE} - \text{Cost of capital})_1]$$

Where Δ indicates changes. As abnormal earnings growth is the change in residual earning, this calculation also explains abnormal earnings growth.

Hypee, Inc.

Hypee, Inc. was introduced in the last study note. Some of the numbers from that study note that are pertinent, to an analysis of its growth are summarized here (₹ in millions). All balance sheet numbers are averages for the year.

	2012	2011
Net operating Assets	₹4,441	₹4,395
Net financial obligations	₹7	₹459
Shareholder's equity	₹4,434	₹3,936
Sales	₹12,253	₹10,697
Operating income	₹1,035	₹423
Return on equity (ROE)	22.98%	10.29%
Return on net operating assets (RNOA)	23.31%	9.62%
Profit margin (PM)	8.45%	3.95%
Asset turnover (ATO)	2.76	2.43
Financial leverage (FLFV)	0.001	0.117

In 2012, Hypee had residual earning of ₹642.0 million from a ROE of 22.98 percent as follows:

$$\begin{aligned} \text{Residual earnings}_{2012} &= (22.98\% - 8.5\%) \times ₹4,434 \text{ million} \\ &= ₹642.0 \text{ million} \end{aligned}$$

(using average SE, as in the ROE calculation). And for 2011, Hypee's residual earning were

$$\begin{aligned} \text{Residual earnings}_{2011} &= (10.29\% - 8.5\%) \times ₹3,936 \text{ million} \\ &= ₹70.5 \text{ million} \end{aligned}$$

(A required return of 8.5 percent is used for these years. In contrast to the 11.1 percent Box 6.1. This is due to the low risk – free rate at the time and a drop in Hypee's beta. See the footnote to Box 6.1.)

The increase in residual earning of ₹571.5 million is also the abnormal earnings growth for 2012. With no change in the cost of capital, the growth was driven by an increase in ROE of 12.69 percent, from 10.29 percent to 22.98 percent, and growth in SE of ₹498 million to earn at this higher ROE. Applying the simple the simple formula,

$$\begin{aligned} \Delta RE_{2012} &= (12.69\% \times ₹3,936 \text{ million}) + [₹498 \text{ million} \times (22.98\% - 8.5\%)] \\ &= ₹499.5 \text{ million} + ₹72.1 \text{ million} \\ &= ₹571.6 \text{ million} \end{aligned}$$

The calculation shows that Hypee's growth in residual earnings and its abnormal earnings growth – came from two components. First, ₹499.5 million growth came from the 2011 equity earning at a 22.98 percent higher rate; second, ₹72.1 million of the growth came from the additions to equity in 2012 of ₹498 million that earned at the 2012 rate of 22.98 percent.

Ricky International Ltd.

Ricky's financial statement numbers are summarized below:

(₹ in million)

	2012	2011
Net operating assets	₹972	₹685
Net financial obligations	₹(170)	₹(286)
Minority interest	₹11	₹10
Shareholders' equity	₹1,131	₹961
Sales	₹3,785	₹3,485
Operating income	₹237	₹191
Return on equity(ROE)	18.93%	18.12%
Return on equity (before minority interest)	19.19%	18.45%
Return on net operating assets(RNOA)	24.40%	27.88%
Profit margin (PM)	6.26%	5.48%
Asset turnover (ATO)	3.90	5.09
Financial leverage (FLEV)	-0.149	-0.294

Ricky's 2012 growth in residual earning was less impressive than that for Hypee:

Residual earnings = $(18.93\% - 9.0\%) \times ₹1,131$ million

= ₹112.3 million

(Again using average SE for the year). And for 2011,

Residual earnings₂₀₁₁ = $(18.12\% - 9.0\%) \times ₹961$ million

= ₹87.6 million

The cost of capital of 9.0 percent is estimated using the CAPM. Ignoring any changes in the cost of capital, Ricky's residual earnings increased by ₹24.7 million or 28.7 percent. It also had abnormal earnings growth of ₹24.7 million. This was due to both an increase in the ROE of 0.81percent, from 18.12 percent to 18.93 percent, and increase of equity investment of ₹170 million:

 $\Delta RE_{2012} = (0.81\% \times ₹961\text{million}) + [₹170\text{million} \times (18.93\% - 9.0\%)]$

= ₹7.8 million + ₹16.9 million

= ₹24.7 million

6.3 THE ANALYSIS OF CHANGES IN PROFITABILITY AND SUSTAINABLE EARNINGS

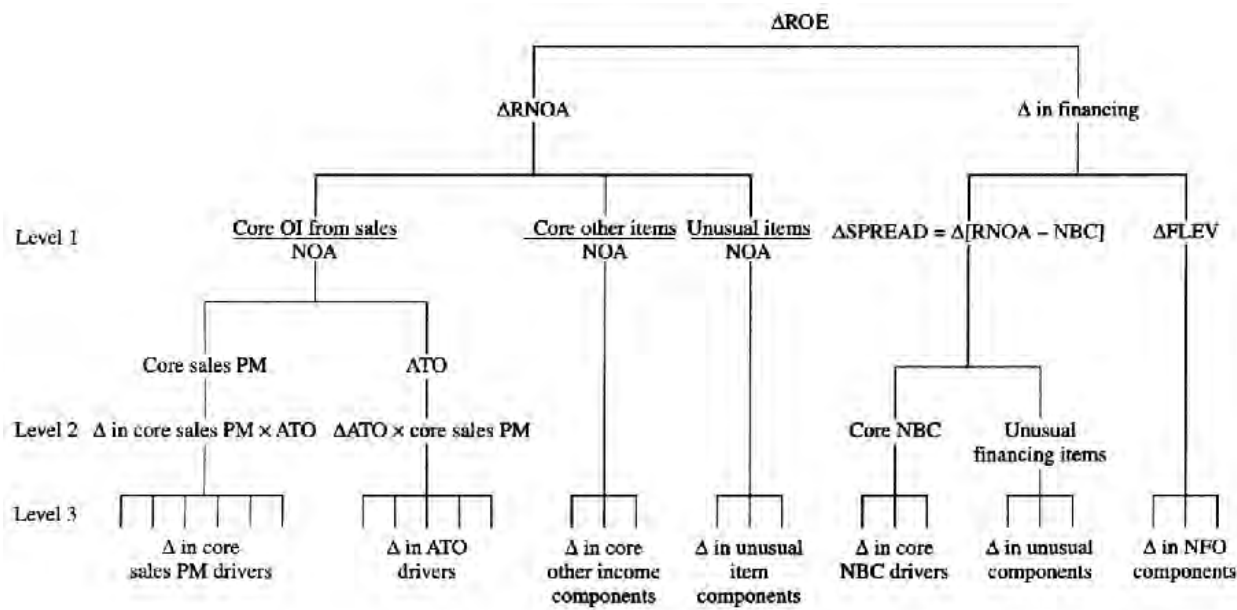
Return on equity (ROE) is driven by operations and by the financing of the operations. So the change in ROE is explained by change in the profitability of operations and by changes in financing.

Figure 6.1 guides the analysis of the changes in these two components. This figure corresponds to figure 5.1 in the last study note but directs the analysis of changes in ROE rather than the level of ROE. Both changes in profitability ($\Delta RNOA$) and changes in financing are analyzed through three levels of investigation. Remember that, as with the analysis of the level of ROE in the last study note, the financial statement drivers of changes in profitability are themselves driven by the business, so the analyst identifies the aspects of the business that produce the changes in the financial statement drivers.

Figure 6.1 The Analysis of Changes in Return on Equity (ROE)

Changes in ROE are analyzed by analyzing changes in the operating profitability component ($\Delta RNOA$) and changes in the financing component of ROE. Each of these two components is investigated through three levels of analysis. Δ Indicates changes.

Analysis of Changes in Operations



To analyze changes in RNOA, proceed through the three levels in Figure 6.1

Level 1. Distinguish Core and Unusual Components of RNOA

Changes in profitability can be partially explained by components of operating income that apply to a particular period, and so are nonrecurring. Non repeating components are referred to as **unusual items (UI)** or **transitory items**. Components that are generated by repetitive business are called **core income, persistent earning, sustainable earning, or underlying earnings**. Thus

Return on net operating assets = Core RNOA + unusual items to net operating assets

$$RNOA = \frac{\text{Core OI}}{\text{NOA}} + \frac{\text{UI}}{\text{NOA}}$$

The first component is the core RNOA. Separating income from sales from other operating income within the core RNOA,

$$RNOA = \frac{\text{Core OI from sales}}{\text{NOA}} + \frac{\text{Core other OI}}{\text{NOA}} + \frac{\text{UI}}{\text{NOA}}$$

To the extent that RNOA is driven by unusual, transitory items, it is said to be of "low quality." It is not sustainable. Identifying core earnings is sometimes referred to as **normalizing earning** because it establishes "normal" ongoing earning unaffected by onetime components.

Exhibit 6.1 lays out a template that adds to the reformulation of income statements in study note 3 to distinguish core (sustainable) and unusual operating income. Typical unusual items are listed there but the list is not exhaustive. The standard income statement identifies some items as "extraordinary" and these are of course unusual. But unusual items often appear above the extraordinary items section of the income statement also. Indeed you might identify aspects of the gross margin that are unusual because they are due to a special order or the effect of a strike that won't be repeated. Read the footnotes and management discussion and analysis for clues. See Box 6.3. The better you know the business, the better you will be in identifying these items. See Box 6.4.

With forecasting in mind we are interested in components that don't have bearing in the future. Thus the unusual items category should include not only items that won't be repeated in the future but

also items that appear each period but can't be forecast. Currency gains and losses and gains and losses from derivatives trading for an industrial firm are good examples. We might expect these as a normal feature of operations each period but presumably we cannot predict them: There will be either gains or losses in the future but we can't predict which, so their expected value is zero. A currency gain or loss is transitory; we don't expect it to persist. And so with all income items that are a result of marking balance sheet items to market value, because changes in market values are typically not predictable. Separate these gains and losses from current core income; otherwise core income will be affected by an item that is not representative of the future. Accordingly, we establish core operating income, which is a basis for predicting future operating income. Of course, if the firm is in the business of currency trading or securities trading, these gains and losses are part of core income: The firm attempts to exploit inefficiencies in the market or makes money from its lower transaction costs.

Box 6.3 Reading the Management Discussion and Analysis

The Management discussion and analysis (MD & A) is management's report on the business and its prospects. It can sometimes be too optimistic, brushing over problems. But it often identified elements of the business that are unusual. Indeed the SEC requires the MD&A to "describe any unusual or infrequent events or transactions or any significant economic changes that materially affected the amount of income from continuing operations and, in each case, indicate the extent to which income was so affected".

As well as discussing unusual items, the MD & A often reveals management's plants for the future that can indicate how the business might change and, accordingly, features of the current business that might not persist.

Focus on the results of operations section. It compares results over the recent three years, or more, with accompanying discussion of the changes. Be particularly sensitive to the discussion of changes in gross margins, because small percentage changes in those margins can have a large effect on the bottom line.

Exhibit 6.1 Reformulation of the Operating Income Section of the Income Statement to Identify Core and Unusual Items

Reformulated Operating Income
Core operating income
Core sales revenue
- <u>Core cost of sales</u>
= Core gross margin
- Core operating expenses
= Core operating income from sales before tax
- Tax on core operating income from sales
+ Tax as reported
+ Tax benefit from net financial expenses
- Tax allocated to core other operating income
- <u>Tax allocated to unusual items</u>
= Core operating income from sales
+ Core other operating income
+ Equity income in subsidiaries
+ Earnings on pension assets
+ Other income not from sales
- <u>Tax on core other operating income</u>
= Core operating income

**± Unusual items**

- Special charges
- Special liability accruals
- ± Nonrecurring items
- Asset write-downs
- ± Changes in estimates
- Start-up costs expensed
- ± Profits and losses from asset sales
- Restructuring charges
- ± Profit and losses from discontinued operations
- ± Extraordinary operating items
- ± Accounting changes
- ± Unrealised gains and losses on equity investments
- ± Gains from share issues in subsidiaries
- ± Currency gains and losses
- ± Derivative gains and losses (operations)
- Tax allocated to unusual items

= Comprehensive operating income**Box 6.4 Knowing the Core Business Strategy**

As with all analysis, knowing the firm's business is essential to identifying its core income. A firm's core business is defined by its business strategy, so the analyst must know the firm's business model before classifying items in the income statement.

Start – up costs for beginning new business are expensed in the income statement and would appear to be one – time charges. But for a retail chain like The Horizon, the clothes retailer, or Mcpiper, the coffee vendor, which are continually opening new stores as a matter of business strategy, these costs are ongoing.

Research and development expenditures on a special project might be considered an one – time expense, but R & D expenditures as part of a continuing R & D program – as is the case for a drug company like Poco & Co. – are persistent.

The Analysis of R & D : Poco & Co.

(₹ in billion)

	2012	2011	2010
Sales	₹22.9	₹22.5	₹21.4
R & D	₹4.0	₹3.3	₹2.7
R& D/sales	17.5%	14.7%	12.5%
Sales growth rate	2.0%	4.8%	1.2%
Income from continuing operations	₹9.1	₹9.7	₹9.9

Poco's sales growth rates are low. Expenditures for R & D are persistent and growing, and increasing as a percentage of sales. The analyst views R&D expenses as core expenses but sees the increase in R&D as a percentage of sales as a red flag. Will R&D, as a percentage of sales revert to pre- 2012 levels in the future? Is research becoming less successful in producing new products? Is the lower operating income in 2012 due to temporarily high R&D that will decline in the future?

The Analysis of Advertising Costs:**Mando Co.**

Marketing is an essential part of most firm's core strategy. A firm like Mando spends heavily on advertising to maintain its brand name. A one-time marketing campaign might be a transitory items but repetitive advertising, like Mandarin's, is persistent.

(₹ in billions)

	2012	2011	2010
Revenues	22.0	21.0	19.6
Cost of goods sold	7.6	7.8	7.1
Gross profit	14.4	13.2	12.5
Selling, administrative, and general	8.7	8.0	7.0
Operating income(before tax)	5.7	5.2	5.5
Advertising expenses	2.2	1.8	1.7
Advertising expenses/ sales	10.0%	8.6%	8.7%

Mandarin's income statement is very aggregated, with only two operating expense items. Advertising expenses are included in selling, administrative, and general expenses but are detailed in footnotes. Advertising expenses historically have been a reasonably constant percentage of sales, at about 8.6% , so an analyst might apply this ratio to sales forecasts to estimate future advertising expenses. But, as with R&D, the analyst must be sensitive to a change in the advertising – to – sales ratio. Is the increase in 2012 to 10.0% temporary? Is it due to higher advertising expenditures or lower sales growth? If the latter, why are sales declining with higher advertising?

Issues in Identifying Sustainable Earnings

Here are the main issues in identifying sustainable operating income:

1. Restructuring charges, asset impairments, and special charges: These are mostly unusual, but note that firms can have repetitive restructuring charges. Western Photos, the photographic company, reported restructuring charges every from 1998 to 2009 as it adapted its technology to the arrival of the digital age, and in 2010 Western Photos indicated that ₹1.5 billion more charges would be made from 2010 to 2012.

Restructuring charges and asset impairments must be handled with care – their effects may not be just “one – time.” If a firm writes down inventory, future cost of goods sold will be lower if the inventory is subsequently sold. If a firm writes down property, plant, and equipment, future depreciation will be lower. Lower expenses mean higher future core income; the perceptive analyst recognizes this and adjusts her forecasts accordingly. Worse, if a firm overestimates a restructuring charge, it must “bleed it back” to future core income, creating earnings. See Box 6.5. As a reminder, the accounting based valuation models protect us from paying too much for the earning generated by these write- downs, but the analyst must identify the multiperiod effects in her forecasts to be protected.

Merger charges taken to cover the costs of mergers and acquisition also require scrutiny. Is the firm lumping operating expense into these charges? Is the overestimating the charge in order to increases future income to make the merger appear more profitable?

Box 6.5 Bleeding Back Restructuring Charges

When firm decide to restructure, they often write off the expected costs of restructuring against income before the actual restructuring begins, and recognize an associated liability, or “restructuring reserve” that is reduced as restructuring costs are incurred. If the firm later finds that it has overestimated the charge, it must increase income from the correction. This is known as bleeding back the charge to income.

In moving its business away from computer hardware to a focus on information technology in the early 1998s, CLT wrote off considerable income with restructuring charges- ₹3.7 billion, ₹11.6 billion, and ₹8.9 billion, respectively for 1999 – 2001, a total of ₹24.2 billion. Examination of the firm's cash flow statements for subsequent years reveals the following item as an adjustment to net income to calculate cash from operations:

	2002	2003	2004	2005	2006
Effect of restructuring charges(₹ in millions)	(2,772)	(2,119)	(1,491)	(445)	(355)

These amounts are negative; that is, they are deduction from net income to get cash from operations. So, income would have been lower by these amounts had the charges been recorded as incurred. But a further issue needs to be investigated: If CLT had overestimated the restructuring charges in 1999 – 2001, the differences between subsequent income and cash from operations could, in part, be due to the reversal of the restructuring charges. Was CLT bleeding back the earlier restructuring charges to increase operating income?

When new management arrives at a firm, they are tempted to take restructuring charges to show they are innovating. The market often greets the restructuring as good news. If the new managers overestimate the restructuring charge, they get an added benefit; they can bleed it back to future income and report earnings improvements on their watch. This is a scheme to grow earnings. The diligent analyst is attuned to these schemes.

FASB statement 146, issued in 2002, restricts firm's ability to manipulate income with restructuring charges. Firms must recognize the restructuring liability when an obligation to pay restructuring costs is incurred, not when the firm merely develops a plan to restructure.



2. Research and development: A drop in R&D expenditure increases current earnings but may damage future earnings. Investigate whether changes in R&D are temporary. See Box 6.4.
3. Advertising: A drop in advertising expenditures increases current earning but may damage future earnings. Investigate whether changes in advertising are temporary. See Box 6.4.
4. Pension expense: Firms report the cost of providing defined benefit pension plans as part of the cost of operating expenses. Pension expense, however, is a composite number, and the analyst must be aware of its makeup. The following summarizes the pension expense footnote for CLT from 2009 to 2012.

Central Line Tools (CLT)
Components of Pension Expense, 2009-2012

(₹ in millions)

	2012	2011	2010	2009
Service cost	1,263	1,113	1,155	1,076
Interest cost	4,071	3,995	3,861	3,774
Expected return on plan assets	(5,987)	(5,931)	(6,253)	(6,264)
Amortization of transition asset	(82)	(159)	(156)	(153)
Amortization of prior service cost	66	78	89	80
Actuarial losses(gains)	764	101	105	(24)
Net pension expense	95	(803)	(1,199)	(1,511)

Pension expense has six components, and you see all six components in CLT's summary.

- Service cost: The present value of the actuarial cost of providing future pensions for services of employees in the current year. This is, in effect, wages for employees to be paid in pension benefits when employees retire.
- Interest cost: The interest cost on the obligation to pay benefits, the effect of the time value of money as the date to pay pensions comes closer and the net present value of the obligation increases.
- Expected return on plan assets: The expected earnings on the assets of the pension fund, which reduce the cost of the plan to the employer. The expected earnings on plan assets is the market value of the assets multiplied by an expected rate of return. To make the pension expense less volatile in the financial statements, the expected return on plan assets is deducted in the calculation of pension expense, not actual gains and losses. If the difference between accumulated actual and expected gains and losses exceeds a limit, the difference is amortized into pension expense (none appears in CLT's pension expense).
- Amortization of prior service cost: The amortization of the cost of pension entitlements for service periods prior to the adoption or amendment of a plan. The amortization is over the estimated remaining service years for employees at the time of the change in the plan.
- Amortization of transition asset or liability: The amortization of the initial pension asset or liability established when pension accounting was first adopted.
- Actuarial gains and losses: Changes in the pension liability due to changes in actuaries' estimates of employees' longevity and gains and losses that occur when actual returns on plan assets differ from expected returns.

Service cost is a part of the core cost of paying employees. Interest cost is also a core cost; it is the cost, effectively paid to employees, to compensate them for the time value of money from receiving wages later, as a pension, rather than in the current year. Like service cost, interest cost is repetitive.

Amortizations of prior service costs and transition assets and liabilities smooth out these items so, while they may eventually disappear, the smoothing is done over such a long period that they should be treated as repetitive rather than unusual. Actuarial gains and losses are also smoothed, but are subject to shocks.

Expected returns on plan assets, however, must be handled with care. You will notice that, from 2009 to 2011, CLT's net pension expenses were negative (that is, gains), primarily because of this item. These earnings on pension plan assets reduce CLT's obligation to support employees in retirements, so they are legitimately part of income. However, they are not earnings from the core business (of selling computers and technology in the case of CLT). The analyst must be careful to disentangle these earnings and attribute them to the profitability of the pension fund rather than the profitability of the business. For this reason they are identified outside of core income from sales in the template in Exhibit 6.1. Other dangers lurk in the pension expense number. See Box 6.6.

Accounting Clinic takes you through the accounting for pensions.

5. Changes in estimates: Some expenses like bad debts, warranty expenses, depreciation, and accrued expenses are estimates. When estimates for previous years turn out to be incorrect, the correction is made in the current year. Bad debts are usually estimated as a percentage of accounts receivable that is likely to go bad. If it is discovered that the estimate for last year (say) was too high – fewer debtors went bad than expected – the correction is made to the current year's bad debt expense. Thus the reported expense does not reflect the credit costs of the current period's sales. Firms also change estimates of residual values of lease receivables. The effect of these changes in estimates should be classified as unusual, leaving the core expense to reflect current operations. Unfortunately, published reports often do not give the necessary detail. A particularly pernicious change in estimate can follow restructuring changes. See Box 6.5.
6. Realized gains and losses: Many realized gains and losses (on asset sales, for example) are not detailed in the income statement. But they can be found cash flow statement in the reconciliation of cash flow from operations and net income. Beware of "cherry picking." See box 6.7.
7. Unrealized gains and losses on equity investments: These arise from equity holdings of less than 20 percent. They are due to marking the holding to market value in the balance sheet. The market value of the holding indicates their value, but changes in market value do not. Market values follow a "random walk", so changes in market value do not predict future changes in market value. Treat these unrealized gains and losses as transitory.
8. Income taxes: Unusual aspects of income tax expense such as one – time or expiring credits and loss carry forwards can be found in the tax footnote.
9. Other income: Often interest income is included with operating income in "other income".

Accounting Clinic

Accounting for Pensions

Accounting Clinic gives a more thorough coverage of the accounting for pensions. The clinic explains how pension plans work and how defined benefit plans differ from defined contribution plans. The clinic also explains how the pension liability in the balance sheet is calculated as well as providing more detail on the pension expense in the income statements.

Most operating items reported in other comprehensive income (in the equity statement) are unusual only items rather than core income. Although including these items in a reformulated statement only to take them out again to identify core income seems pointless, there are three valid reasons for doing so. First, the discipline of identifying all the sources of



Box 6.6 Beware of Returns on Pension Assets

The expected return on plan assets component expense must be handled with care. Below are three warnings:

1. Returns on Pension Fund Assets Can Be a Significant Portion of Earnings

Pension expense is reduced by expected earnings on assets of the pension fund, and expected earnings on a fund's assets are of course based on the amount of the fund's assets. Pension plans invest in equities and during the 1990s bull market, the price of equities increasing the assets in these plans and the expected earnings on the plans. Such was the increase that for some firms, the expected earnings on fund assets. Reported as a reduction in pension expense, was a significant part of the firm's earnings.

Genuine Electric

Genuine Electric sponsors a number of pension plans for its employees. Its 2012 pension footnote reported a service cost of ₹884 million, but ₹4,327 million in expected returns on plan assets was also reported, along with ₹2,065 million in interest on the pension liability. The net pension expense (with all components) was actually a gain of ₹2,095 million. This pension gain was netted against other expenses in the income statement. The ₹4,327 million in expected returns on plan assets was 22.0 percent of earnings before tax.

CLT Corporation

CLT reported a pension service cost of ₹931 million for 2006. But it also reported ₹4,862 million in expected returns on plan assets, along with ₹3,474 million in interest on the pension liability. The expected returns on plan assets were 53.1 percent of operating income before tax. CLT's expected return on plan assets for 2007 – 2009 were 45.9 percent, 51.5 percent, and 57.2 percent of pretax income respectively.

Earnings on pension plan assets are earnings from the operation of running a pension fund, not earnings from products and services. In all cases, list the expected return on plan assets as a separate component of core income so profit margins can be identified without this component, as in Exhibit 6.1.

2. Returns on Pension Assets Can Perpetuate a Chain Letter

Consider the following scenario. In an overheated stock market, the assets of pension funds are inflated above their intrinsic values. Accordingly, the earnings of the firm's sponsoring the pension funds for their employees are inflated through the reduction of pension expense earnings of the pension funds. Analysts then justify a higher share price for this firm's based on the inflated earnings. So inflated share price feed on themselves. A chain letter is created.

As an extreme, consider the case of a company during the stock market bubble whose pension fund invested solely in the shares of the company (so employees could share in the success of the company). The earnings of the company would be exaggerated by the returns on the pension fund from the run – up of the firm's share price. Analysts look to earnings to assets the worth of firm's shares relative to their market price, but if the earnings reflect the market price of the shares, the analysis – if not done carefully – is circular. Good analysis penetrates the sources of firm's earnings and understands that share prices are based on firms' ability to generate earnings from their core business, not the appreciation in share prices.

3. Beware of Expected Rates of Return on Plan Assets

Expected earnings of plan assets are calculated as an expected rate of return multiplied by market value of the plan assets. The expected rate of return is an estimate that can be biased. Indeed, in the late 1990s, firms were using an expected rate of return of 10 percent and higher, considerably more than the 7 percent rate used in the early 1980s. This ambitious rate – perhaps influenced by the high bubble returns during the 1990s – led to higher pension gains in earnings when applied to high pension assets values.

The subsequent bursting of the bubble led to much lower returns – indeed, large negative returns – and firms revised their expected rates of return downward. The consequence was much lower pension gains in earnings in 2002, due in part from the drop in asset prices and in part from the lower expected rates of return. Indeed, many firms with defined benefit plans found that their pension obligations were underfunded and, in retrospect, their past earnings that incorporated the pension gains were overstated. An analyst with an understanding of pension accounting would have anticipated this scenario during the bubble.

Should firms lower their expected returns on plan assets in overheated stock markets – to anticipate the expected lower returns as prices drop in the future? If firms do not, the analyst should consider doing so.

Box 6.7 Gain and Losses from Sales of Shares

In the rising stock market of the 1990s, firms' holdings of equity securities appreciated. The sales of the shares sometimes provided a significant portion of profits.

Aksar

In its third quarter report for 2012, Aksar reported net income of ₹1,458 million, with no indication of unusual items. Its cash flow statement, however, reported ₹556 million in gains on sales of investments, along with a ₹161 million loss on retirements of plant, as add backs to net income to calculate cash from operations.

Quality Air Lines

Quality reported operating income (before tax) of ₹350 million for its September quarter in 2012. However notes to the report indicated that these earnings included pretax gains of ₹252 million from selling its interest in Pipeta Airlines.

CLT

CLT reported before – tax operating income of ₹4,085 million for its quarter ending June 2007. However, footnotes revealed that this income included a ₹3,430 million gain from the sale of CLT's Global Network to BT&T. This gain reduced selling, general, and administrative expenses in the income statements!

You see that the disclosure of these gains is often not transparent. The analyst must be careful to look for these gains – in the cash flow statement or in the footnotes – and separate them from core income from core operations. These gains or losses would be core income only if the firm's is a portfolio management company. And watch firms with big equity portfolios: Arian had ₹9 billion in equity investments in 2010 and can realize gains into income should operating profitability from other operations decline. As with gains from pension plan assets, gains from share appreciation can lead to mispricing and even create share price bubbles. Firms may sell shares when they feel that the shares are overvalued in the market. If an analyst mistakenly attributes profits that include these gains to persistent operating profits, he will overprice the firm. But he will overprice it more if the gains themselves are generated by mispricing. So the mispricing feeds on itself.

Beware of Cherry Picking

Firms holding available – for – sale equity investments recognize unrealized gains and losses as part of other comprehensive income in the equity statements as market prices of the equity shares change. They recognize gains and losses in the income statements when shares are sold. Refer again to previous Accounting Clinic. It is tempting – especially in a year when income is down – to sell shares whose prices have appreciated in order to increase income reported in the income statement, while keeping shares whose prices have declined unsold, with the unrealized losses reported in the equity statement. This practice is referred to as cherry picking. Beware of firms with large investment portfolios, like Aksar and Arian. Beware of the practice with insurance companies who hold large investment portfolios.

The lesson is clear: Investment portfolios must be evaluated on a comprehensive income basis so that gains, possibly cherry – picked, are netted against losses for a comprehensive assessment of portfolio performance. Appropriate reformulation of the income statement takes care of the problem: The Arian example in Exhibit 3.12 in study note 3 is a good example of how reformulation on a comprehensive basis, reveals investment portfolio performance.

Profitability is important; otherwise something might be left out. For example, hidden dirty – surplus expense must be identified for a complete evaluation of management's actions; cherry picking (in Box 6.7) is identified only if income is on a comprehensive basis. Second, the accounting relationships that govern the financial statement analysis work only if earnings are on a comprehensive basis. For example, the leveraging equations of study note 5 require earnings to be comprehensive; the short – cut calculations of free cash flow in study note 4 (Free cash flow OI – Δ NOA) only works if earnings are



on a comprehensive basis. Third, the integrity of the forecasting process relies on financial statements prepared (and reformulated) on a comprehensive income basis. Indeed an analysis and valuation spreadsheet, will not work otherwise.

Exhibits 6.2 and 6.3 cast Hypee's and Ricky's reformulated income statements in the mold of Exhibit 6.1. For both these firm's all the unusual items are identified with other operating income in the reformulated statements in Exhibits 3.10 and 3.11 in study note 3. So

Exhibit 6.2 Reformulated Income Statements for Hypee, Inc., with core Income Separated from Unusual Income, 2010 – 2012.

Name of the Company: Hypee, Inc.

Profit and Loss Statement for the year ended: 31.05.2012

(₹ in millions)

	Particulars	Note No.	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
I	REVENUE FROM OPERATION		12,253	10,697	9,893
II	OTHER INCOME				
III	TOTAL REVENUE(I+II)		12,253	10,697	9,893
IV	EXPENSES:				
	(a) Cost of material consumed				
	(b) Purchase of products for sale				
	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(1)	16	18	21
	(f) Depreciation and amortization expenses		12	4	3
	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses	(2)	10,766	9,542	8,841
	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		10,794	9,564	8,865
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		1,459	1,133	1,028
VI	EXCEPTIONAL ITEMS	(3)	(74)	335	69
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		1,533	798	959
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)				
X	Tax expenses:				
	(1) Current Tax	(4)	513	394	362
	(2) deferred tax				

XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION (IX-X)		1020	404	597
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		1020	404	597
	Balance brought forward from previous year				
	Profit available for appropriation				
	Appropriation:				
	Proposed dividend				
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward				
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:

(₹ in millions)

1. Finance Costs	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Interest expenses	40	43	48
Interest income	(15)	(14)	(14)
Tax effect	(9)	(11)	(13)
Total (Net interest expense)	16	18	21

2. Other Expenses	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Cost of sales	7,001	6,314	6,005
Administrative expenses	2,312	1,983	1,805
Advertising	1,378	1,167	1,028
Other expenses	75	78	1
Total	10,766	9,542	8,841

3. Exceptional Items (Unusual items net of tax)	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Currency translation gains	(28)	(127)	2
Loss on employee stock options	80	21	23
Derivative gains and losses from equity statements	(126)	175	96
Effect of accounting change (goodwill write-off)	—	266	(52)
Total	(74)	335	69



4. Current Tax	As at 31.05.2012	As at 31.05.2011	As at 31.05.2010
Tax:			
Taxes as reported	504	383	349
Tax on financial items ¹	9	11	13
Total	513	394	362

Note: ¹ Statutory tax rate was 37.1%, 37.5% and 37.2% in 2012, 2011 and 2010 respectively.

² Preference dividends are less than ₹0.5 million.

Core operating income corresponds to operating income from sales, and the other operating income is unusual. Thus the statements here are simply a relabeling of those in study note 3.

Hypee had a core RNOA (after – tax) of 21.6 percent in 2012: Core OI/average NOA 961/4441 = 21.64 percent. This compares with an overall RNOA of 23.3 percent. Ricky's core RNOA was 22.2 percent, compared with an overall RNOA of 24.2 percent. In 2011, there was a significant difference between Hypee's overall RNOA (9.6 percent) and its core RNOA (17.2 percent) due to unusual items of – 7.6 percent of net operating assets.

To assess the profitability of the component parts of the income statement effectively, income taxes must be allocated to the component income that attracts the taxes, as in Exhibit 6.1. Taxes must thus be allocated not only over operating and financing components,

Exhibit 6.3 Reformulated Income Statements for Ricky International Limited, with Core Income Separated from Unusual Income, 2010 – 2012 (₹ in millions)

Name of the Company: Ricky International Limited

Profit and Loss Statement for the year ended: 31.12.2012

(₹ in millions)

	Particulars	Note No.	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
I	REVENUE FROM OPERATION		3,785	3,485	3,128
II	OTHER INCOME				
III	TOTAL REVENUE(I+II)		3,785	3,485	3,128
IV	EXPENSES:				
	(a) Cost of material consumed				
	(b) Purchase of products for sale				
	(c) changes in inventories of finished goods, work-in-progress and products for sale				
	(d) Employees cost/ benefits expenses				
	(e) Finance cost	(1)	8	12	10
	(f) Depreciation and amortization expenses				
	(g) Product development expenses/ Engineering expenses				
	(h) Other expenses	(2)	3,496	3,234	2,918

	(i) Expenditure transfer to capital and other account				
	TOTAL EXPENSES		3,504	3,246	2,928
V	PROFIT BEFORE EXCEPTIONAL AND EXTRAORDINARY ITEMS AND TAX (III-IV)		281	239	200
VI	EXCEPTIONAL ITEMS	(3)	(12)	(18)	(2)
VII	PROFIT BEFORE EXTRAORDINARY ITEMS AND TAX (V-VI)		293	257	202
VIII	EXTRAORDINARY ITEMS				
IX	PROFIT BEFORE TAX FROM CONTINUING OPERATIONS (VII-VIII)				
X	Tax expenses:				
	(1) Current Tax	(4)	73	78	66
	(2) deferred tax				
XI	PROFIT AFTER TAX FOR THE YEAR FROM CONTINUING OPERATION (IX-X)		220	179	136
XII	Profit (loss) from discontinuing operations				
XIII	Tax expenses from discontinuing operations				
XIV	Profit(loss) from discontinuing operations (after tax)(XII-XIII)				
XV	PROFIT (LOSS) FOR THE PERIOD (XI+XIV)		220	179	136
	Balance brought forward from previous year				
	Profit available for appropriation				
	Appropriation:				
	Proposed dividend				
	Transfer to General Reserve				
	Distribution Tax				
	Total				
	Balance carried forward				
XVI	Earning per equity share:				
	(1) Basic				
	(2) Diluted				

Workings:

(₹ in millions)

1. Finance Costs	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Interest expenses	26	26	24
Interest income	(13)	(8)	(9)
Tax effect	(5)	(6)	(5)
Total (Net interest expense)	8	12	10



2. Other Expenses	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Cost of Sales	2,287	2,147	1,930
Administrative expenses	1,067	936	851
Advertising	137	150	131
Other expenses	5	1	6
Total	3,496	3,234	2,918

3. Exceptional Items (Unusual items net of tax)	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Currency translation gains	(38)	(49)	(37)
Loss on employee stock options	20	17	7
Derivative gains and losses from equity statements	(4)	14	23
Effect of accounting change (goodwill write-off)	—	—	5
Loss on retirement debt	10	—	—
Total	(12)	(18)	(2)

4. Current Tax	As at 31.12.2012	As at 31.12.2011	As at 31.12.2010
Tax:			
Taxes as reported	68	72	61
Tax on financial items ¹	5	6	5
Total	73	78	66

5. The minority interests for 2012, 2011 and 2010 are ₹ 5 million, ₹ 5 million and ₹ 3 million respectively.

Note: ¹ Marginal tax rate was 35.9%, 35.9% and 35.5% for 2012, 2011 and 2010 respectively.

but within the operating components also. In Hypee's and Ricky's statements, unusual items are all after – tax items, as reported, so there is no additional tax allocation. See Box 6.8 for the allocation when unusual items are subject to tax.

Level 2. Analyze Changes in core Profit Margins and Turnovers

Having identified core RNOA, break it down into its profit margin and turnover components:

$$\text{RNOA} = (\text{core sales PM} \times \text{ATO}) + \frac{\text{Core other OI}}{\text{NOA}} + \frac{\text{UI}}{\text{NOA}}$$

Box 6.8 Comprehensive Tax Allocation

If an income statement is reformulated to identify different sources of income, each type of income must be allocated the income taxes it attracts so the after – tax contribution of each source of income is identified. GAAP income statements are reformulated as follows. The firm has a 35 percent statutory tax rate.

GAAP Income Statement	(₹)	Reformulated Statements	(₹)	(₹)
Revenue	4,000	Core revenue		4,000
Operating expenses	(3,400)	Core operating expenses		3,400
Restructuring charge	(300)	Core operating income before tax		600
Interest expense	(100)	Taxes:		
Income before tax	200	Tax reported		
Income tax	45	Tax benefit of interest	45	
Net earnings	155	Tax on unusual items	35	
		Core operating income after tax	105	185
				415
		Unusual Items:		
		Restructuring charge	300	
		Tax deduction	105	195
		Operating income		220
		Interest expense	100	
		Tax on interest	(35)	65
		Net earnings		155

Net earnings are the same before and after the tax allocation, of course. The restructuring charge, like interest expense, draws a tax deduction, so unusual items after tax are ₹195. The tax savings from the restructuring charge, like that from interest is an adjustment to reported tax to calculate tax to calculate tax on operating income. Accordingly, the total tax on operating income is ₹185 that is the tax that would have been paid had the firm not had a deduction for the restructuring charge and interest. Note that the after – tax operating income is the same as that in Box 3.8 in study note 3 where there are no unusual items.

Where
$$\text{Core sales PM} = \frac{\text{Core OI from sales}}{\text{sales}}$$

This core sales PM uncovers a profit margin that is unaffected by unusual items, so it really “gets to core” of the firm’s ability to generate profits from sales.

With these distinctions, we are now ready to explain changes in RNOA. Look at Box 6.9, where Hypee’s and Ricky’s changes in operating profitability are analyzed. The formula at the top gives the calculation that explains the change in RNOA. The first component of the change in RNOA is the effect due to change in the core PM in Year 1. To isolate the profit margin effect from the ATO effect, this is assessed holding ATO constant at the Year 0 level. The second component is the effect due to changes in ATO given the Year 1 core sales PM. The third and fourth components are the effects due to changes in other core operating income and unusual items. These changes can be analyzed by business segment.

Level 3. Analyze Drivers of changes in PM, ATO, Other Income, and Unusual Items

The changes in core profitability are further explained by changes in the drivers of the core PM and ATO. The 2011 and 2012 drivers for Hypee and Ricky are compared in the analysis of the second – level breakdown in Table 5.4 in study note 5. Hypee’s increased core profitability is due primarily to an



Box 6.9 Analysis of Changes in Return on Net Operating Assets: Hypee and Ricky

Change in RNOA = Change in core sales profit margin at previous assets turnover level + Change due to change in assets turnover + Change due to change in other core income + Change due to change in unusual items

$$\Delta \text{RNOA}_{2012} = (\Delta \text{core sales PM}_{2012} \times \text{ATO}_{2011}) + (\Delta \text{ATO}_{2012} \times \text{Core sales PM}_{2012}) + \Delta \left(\frac{\text{Core other OI}}{\text{NOA}} \right) + \Delta \left(\frac{\text{UI}}{\text{NOA}} \right)$$

Hypee

Hypee's increase in RNOA of 13.69 percent, from 9.62 percent in 2011 to 23.31 percent in 2012, is explained as follows:

$$\Delta \text{RNOA}_{2012} = 13.69\%$$

$$= (0.75\% \times 2.43) + (0.33 \times 7.84\%) + 0 + \left(\frac{74}{4,441} + \frac{335}{4,395} \right)$$

(allow for rounding error). You see that core profit margins increased, by 0.75 percent, producing a 1.82 percent boost to RNOA. Turnover also increased, producing a 2.59 percent increase. Accordingly, core profitability increased by 4.40%. The remainder of the increase in the overall RNOA was due to items classified as unusual. In forecasting the future, we would base our forecast on the core RNOA of 21.64 percent rather than the RNOA of 23.31 percent.

Ricky

Ricky's 2012 drop in RNOA of 3.48% from 27.88 percent to 24.40 percent is explained as

$$\Delta \text{RNOA}_{2012} = -3.48\%$$

$$= (0.74\% \times 5.09) + (-1.19 \times 5.71\%) + 0 + \left(\frac{22}{972} - \frac{18}{685} \right)$$

Here the decline in RNOA is attributable to a decline in the profitability of the core business from 25.3 percent to 22.2 percent. The core profit margin increased core RNOA by 3.77 percent, but a drop in asset turnover had a negative effect of 6.80 percent. Unusual items had little effect on profitability.

increase in core gross margins; a decline in accounts receivable, inventory, and PPE turnovers; and an increase in accounts payable relative to sales. Having identified the source of the enhancement, the analyst asks: Is the increase on both core profit margins and assets turnovers sustainable? Will Hypee's gross margin revert to previous levels? Its turnovers? Ricky's increase in core profit margin is also due to increased gross margins, net of an increase in its administrative expense ratio. The large drop in assets turnover that damaged its 2012 profitability was due to increases in receivables and intangibles relative to sales. Is this transitory or permanent? Will receivables be brought under control? Will intangibles (patents and licenses) produce more sales in the future?

You can see that the financial analysis does not complete the analyst's investigation. Indeed, the analysis serves to raise questions for further investigation. It focuses the lens on the relevant aspects of the business that are pertinent to the value generation.

Operating Leverage

Changes in core sales PM are determined by how costs change as sales change. Some costs are **fixed costs**: They don't change as sales change. Other costs are **variable costs**: they change as sales change. Depreciation, amortization, and many administrative expenses are fixed costs, while most

labour and material costs of sales are variable costs. The difference between sales and variable costs is called the contribution margin because it is this amount that contributes to covering fixed costs and providing profits. Thus

$$\begin{aligned}\text{Sales PM} &= \frac{\text{Sales} - \text{Variable costs} - \text{Fixed costs}}{\text{Sales}} \\ &= \frac{\text{Contribution margin}}{\text{Sales}} - \frac{\text{Fixed costs}}{\text{Sales}}\end{aligned}$$

The first component here is called the contribution margin ratio. This is sometimes calculated

$$\text{Contribution margin ratio} = 1 - \frac{\text{variable costs}}{\text{sales}} = \frac{\text{Contribution margin}}{\text{sales}}$$

This ratio measures the change in income from a change in one rupee of sales. From a firm with variable costs that are 75 percent of sales, the contribution margin ratio is 25 percent: The firm adds 25 cents to income for each rupee increase in sales (and the fixed costs don't explain changes in profit margins).

The sensitivity of income to changes in sales is called the operating leverage (not to be confused with operating liability leverage). Operating leverage is sometimes measured by the ratio of fixed to variable expenses. But it is also measured by

$$\text{OLEV} = \frac{\text{Contribution margin}}{\text{Operating income}} = \frac{\text{Contribution margin ratio}}{\text{Profit margin}}$$

[Again, don't confuse OLEV (operating leverage) with OLLEV (operating liability leverage)] If you are dealing with core income, then this calculation should include only core items. If there are fixed costs, OLEV will be greater than 1. The measure is not an absolute for the firm but changes as sales change. However, at any particular level of sales, it is useful to indicate the effect of a change in sales on operating income. Applying it to core operations,

$$\% \text{ change in core OI (Operating income)} = \text{OLEV} \times \% \text{ change in core sales}$$

An analyst inside the firm will have a relatively easy task of distinguishing fixed and variable costs. But the reader of annual financial reports will find it difficult. The depreciation and amortization component of fixed costs must be reported and it can be found in the cash flow statement. But other fixed salaries, rent expense, administrative expenses – are aggregated with variable cost a in different line items on the income statement.

Analysis of Changes in Financing

Changes in RNOA partially explain changes in ROE. The explanation is completed by an examination of financing. The steps appear on the right – hand side of Figure 6.1.

Level 1: Calculate Changes in Financial Leverage and the Operating SPREAD

The difference between ROE and RNOA is explained by financial leverage (FLEV) and the operating spread (SPREAD). You'll remember from the last study note that $\text{FLEV} = \text{NFO}/\text{SE}$ and the operating spread is the difference between the RNOA and the net borrowing cost (NBC); $\text{SPREAD} = \text{RNOA} - \text{NBC}$. Box 6.10 carries out an analysis of the effects on ROE of changes in financial leverage and changes in the spread. Ricky is the example, but for the year 2004 when the firm had a very large share repurchase.



The analysis comes with a firm warning.

Box 6.10 The analysis of the effects of Financial Changes in ROE come with a warning

In 2004, Ricky had a considerable change in its financing. It borrowed approximately ₹ 600 million and applied the proceeds to repurchase its shares. The consecutive reformulated balance sheets below show the large increase in net financial obligations and a corresponding decrease in shareholders' equity. This produced a large increase in financial leverage, from 0.187 to 0.515.

Ricky International Limited Summary Reformulated Balance Sheets

(₹ in millions)

	2004	2003
Net operating assets	1135	1220
Net financial obligations	720	287
Shareholders' equity	415	933
ROE	18.9%	19.2%
RNOA	14.1%	16.9%
Net borrowing cost (NBC)	4.9%	4.8%
Financial leverage (FLEV)	0.515	0.187

Ricky's ROE dropped by only 0.3 percent in 2004, but this masks a considerably higher drop of 2.8 percent in operating profitability. The ROE was maintained with borrowing. Had Ricky maintained its 2003 leverage of 0.187, the ROE on a 14.1 percent RNOA would have been 15.8 percent:

$$\text{ROE} = \text{RNOA} + (\text{FLEV} \times \text{SPREAD})$$

$$\begin{aligned}\text{ROE}_{2004} &= 14.1 + [0.187 \times (14.1 - 4.9)] \\ &= 15.8\%\end{aligned}$$

Instead, Ricky reported a ROE of 18.9 percent.

For most firms, issuing debt does not create value: They buy and sell debt at its fair value. The value generation is in the operations. Yet financial leverage can lever the ROE above RNOA. Accordingly firms can create ROE by issuing debt. Beware of increases in ROE. Analyze the change in profitability to see if it is driven by core operations or by changes in leverage.

Firms often state that their objective is to increase return on equity. Maximizing ROE, is not entirely satisfactory. Maximizing RNOA is, and to the extent that increases in ROE come from operations, increasing ROE is a desirable goal, provided the cost of capital is covered. Tying management bonuses to ROE would be a mistake: Management could increase managerial compensation by issuing debt.

Growing residual earnings generates value, as noted. But residual earnings are driven by ROE, and ROE can be generated by borrowing (which does not create value). There seems to be a contradiction.

The Analysis of Changes in ROE from Financial Leverage

A change in ROE is analyzed as follows:

Change in ROE = Change in RNOA + Change due to change in SPREAD at previous level of financial leverage + Change due to change in financial leverage

$$\Delta \text{ROE}_{2012} = \Delta \text{RNOA}_{2012} + (\Delta \text{SPREAD}_{2012} \times \text{FLEV}_{2011}) + (\Delta \text{FLEV}_{2012} \times \text{SPREAD}_{2012})$$

For Ricky, the 2004 change in ROE is

$$\begin{aligned}\Delta \text{ROE}_{2004} &= -0.3\% \\ &= -2.8\% + (-2.9 \times 0.187) + (0.328 \times 9.2) \\ &= -2.8\% - 0.54\% + 3.02\%\end{aligned}$$

The ROE dropped less than the RNOA primarily because of a large change in leverage from the debt issue that debt issue that financed the share repurchase. The change in leverage increased ROE by 3.02 percent. The change in spread also contributed to the reduction in ROE (by 0.54 percent), but this was due mostly to the change in RNOA: The 2004 net borrowing cost was 4.9 percent relative to 4.8 percent for 2003.

Beware of Liquidations of Financial Assets

Just as borrowing increases ROE, so do sales of financial assets. Financial assets are negative debt and their liquidation increases leverage. But sales of T-bills at (fair) market value do not add value. Watch for firms that sell off their financial assets when RNOA is declining; they may be masking a decline in operating profitability. In the GAAP cash flow statement, they also look as if they are increasing free cash flow, because GAAP classifies sales of financial assets as reducing investment in operations. See the Decent Technologies example in study note 4.

The overall effect of a sale a financial assets depends, of course, on what the proceeds are used for. If they are invested in operating assets, they may well enhance profitability – but through operations, not financing activities. If they are used to retire debt, there is no effect on leverage. If they are used to pay dividends, there is an increase in leverage.

Level 2: Explain Change in Net Borrowing Cost

As the change in RNOA has been explained, the remaining change in spread is explained by the change in net borrowing cost. Like operating profitability, distinguish core financial expense and unusual financial expenses, as with Ricky in Exhibit 6.3:

Net borrowing cost = Core net borrowing cost + Unusual borrowing costs

$$NBC = \frac{\text{Core net financial expenses}}{NFO} + \frac{\text{Unusual financial expenses}}{NFO}$$

The first term is the core net borrowing cost. As before, unusual financial items are those that are not likely to be repeated in the future or are unpredictable. They include realized and unrealized gains and losses on financial items and unusual interest income or expenses. Core income and expense is the rate at which the firm borrows or lends. So change in core borrowing cost will reflect changes in these rates and, as the rates are after tax, this includes changes due to changes in tax rates. The analysis for a net financial asset position proceeds along the same lines.

Level 3: Explain Change in Financial Leverage

This step calculates the change in NFO/SE and attributes it to different types of financing (long-term debt, short-term debt, and preference share capital changes).

As financial leverage typically does not change much, the change in spread is usually the more important aspect of the leverage effect. Typically the change in borrowing costs is also small, so the change in RNOA is usually the main driver of the leverage effect. If $\Delta FLEV$ and ΔNBC are small, then a useful approximation is

$$\Delta ROE_1 = \Delta RNOA_1 \times [1 + \text{Average FLEV}_1]$$

If $\Delta FLEV$ and ΔNBC are not small, this will not work. If the change in leverage is not small, beware: Firms can create ROE by borrowing, without any change in the profitability of their operations. See Box 6.10.

6.4 THE ANALYSIS OF GROWTH IN SHAREHOLDERS' EQUITY

The analysis of the statement of equity in study note 2 indicated two drivers of the growth in equity investment: ROE and the equity net investment rate. But we can dig further, as Figure 6.2 depicts. The investment requirement is driven by the need to invest in net operating assets. But to the extent that debt is used to finance net operating assets, the shareholders' investment is reduced:

$$\Delta SE = \Delta NOA - \Delta NFO$$

Since $ATO = \text{Sales} / NOA$,

$$NOA = \text{Sales} \times \frac{1}{ATO}$$



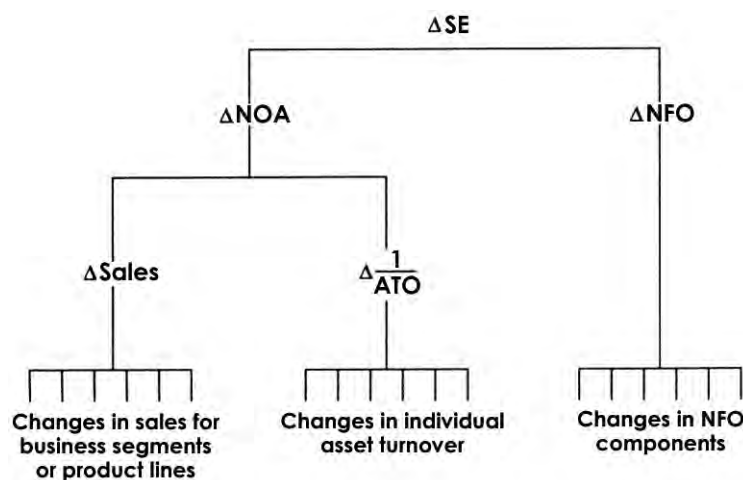
So

$$SE = \Delta \left(\text{Sales} \times \frac{1}{ATO} \right) - \Delta NFO$$

Sales require investment in net operating assets and the inverse of the asset turnover, $1/ATO$, is the amount of net operating assets in place to generate Re. 1 of sales. Hypee's 2012

Figure 6.2 The Analysis of Changes in Shareholders' Equity

Changes in shareholders' equity are driven by changes in investment in net operating assets (ΔNOA) and changes in the amount of net debt (ΔNFO) to finance the investment in NOA. Changes in NOA are driven by sales growth (ΔSales) and changes in the amount of NOA that support each rupee of sales [$\Delta (1/ATO)$].



ATO was 2.76, so $1/2.76$, or 36.2 per cents of net operating assets, were in place to generate Re.1 of sales. The change in SE can thus be explained by three components:

1. Growth in sales.
2. Change in net operating assets that support each rupee of sales.
3. Change in the amount of net debt that is used to finance to change in net operating assets rather than equity.

Sales growth is the primary driver. But sales growth requires more investment in net operating assets, which is financed by either net debt or equity.

Box 6.11 analyzes Hypee and Ricky's growth in equity. The calculation at the top incorporates the three components of the growth. Hypee's equity grew by 12.7 percent in 2012 and Ricky's by 17.7 percent.

Sales are the engine of growth; to create growth in order to create value, a manager grows sales. Sales require investment. And investment earn through ROE and the factors that drive ROE. Together, investment and ROE drive residual earnings and abnormal earnings growth. The manager recognizes that there is a tension to growing SE. Equity investment can easily be increased by issuing new shares or reducing dividends. But the new equity might not be used wisely. It could be invested in low RNOA or financial assets with low returns, reducing ROE, residual earnings, and value. That is why residual earning is the focus, not ROE or investment, but rather both used together. The manager aims to increase investment but also aims to have a low investment per rupee of sales – a high ATO – and a low investment per rupee of operating income – a high RNOA. The manager's aim is to maximize residual earnings and this involves two elements, increasing ROE (through the RNOA) and increasing investment. To do this, she grows sales ($1/ATO$) and maximizes the operating income per rupee of sales (PM).

Box 6.11 Analysis of Growth in Shareholders' Equity: Hypee and Ricky

Change in Equity = Change due to change in sales at previous level of asset turnover + Change due to change in asset turnover – Change in financial leverage

$$\Delta SE_{2012} = \left(\Delta Sales_{2012} \times \frac{1}{ATO_{2011}} \right) + \left(\Delta \frac{1}{ATO_{2012}} \times Sales_{2012} \right)$$

Hypee

Hypee's average shareholders' equity increased by ₹498 million in 2012. This growth is attributed to a growth in sales of ₹1556 million, an increase in asset turnover from 2.43 to 2.76 and a decrease in average net financial obligation of ₹452 million: (Reference: Box 6.2)

$$\begin{aligned} \Delta SE_{2012} &= (\text{₹1,556 million} \times 0.411) + (-0.0485 \times \text{₹12,253 million}) + \text{₹453 million} \\ &= \text{₹640 million} - \text{₹594 million} + \text{₹453 million} \\ &= \text{₹499 million} \end{aligned}$$

An increase in SE was needed to support sales growth and reduce net debt, but the increase in the asset turnover meant that less equity was required to support sales.

Ricky

Ricky's average equity increased by ₹170 million in 2012 (Reference: Box 6.2). As sales increased by ₹300 million and the asset turnover decreased from 5.09 to 3.90, the change in equity is

$$\begin{aligned} \Delta SE_{2012} &= (\text{₹300 million} \times 0.197) + (0.0601 \times \text{₹3,785 million}) - \text{₹116 million} \\ &= \text{₹59 million} + \text{₹227 million} - \text{₹116 million} \\ &= \text{₹170 million} \end{aligned}$$

Sales growth required more equity investment. But the decrease in the assets turnover required further equity investment and an increase in net borrowing. (As the change in net operating assets in the consolidated balance sheet is financed by minority equity as well as net debt and equity, the change in the minority interest is included with the change in net financial obligations here.)

6.5 GROWTH, SUSTAINABLE EARNINGS, AND THE EVALUATION OF P/B RATIOS AND P/E RATIOS

The analysis of current and past growth is a prelude to forecasting future growth in order to evaluate P/E and P/B ratios; We have two ratios on which we can base our pricing: the P/B ratio and the P/E ratio. You should understand how these ratios are related to each other. In this section we look at the relationship between P/B ratios trailing P/E ratios and draw some lessons from the comparison.

Remember that zero abnormal earnings growth (AEG) implies no growth in residual earnings (RE), and positive AEG means there is positive growth in residual earnings. To reinforce this idea, Box 6.12 gives the benchmark case of a firm, Dignity Corporation, with a normal forward P/E and a normal trailing P/E



ratio. The P/E valuation can be developed either by forecasting zero AEG or by forecasting no growth in residual earnings.

How price-to-Book ratios and Trailing P/E Ratios Articulate

The Dignity example is a case of normal P/E ratios but a non-normal P/B ratio. To focus on the question of how P/E and P/B ratios are related, ask the following question: Must a

Box 6.12 Dignity Corporation: Analyst's Forecast Implies Normal P/E Ratios

The table below gives an analyst's forecast of Dignity's earnings for 2010, 2011, and 2012 the forecasted residual earnings calculated from the forecasted earnings. The forecast was made at the end of 2009.

Dignity Corp					
Analyst Forecast, December 2009					
(Amounts in rupees per share)					
Required return of 10%					
	2008A	2009A	2010E	2011E	2012E
EPS (Earnings per share)		4.43	4.75	5.08	5.45
DPS (Dividend per share)		1.22	1.28	1.34	1.41
RE (Residual earnings)		2.15	2.17	2.15	2.15
Cum –dividend earning			4.87	5.21	5.58
Normal earnings			4.87	5.23	5.58
AEG (Abnormal earnings growth)			0.02	(0.02)	(0.00)

[Here A=Actual and E=Estimated]

Forward Earnings Valuation

The pro forma forecasts no growth in residual earnings from the forward year, 2010 onward. But no growth in residual earnings means abnormal earnings are zero, as shown (approximately) in the pro forma. With this exaction, the shares can be valued by capitalizing forward earnings, and the forward P/E must be 10, the normal forward P/E for a required return of 10 percent.

$$V_{2009}^E = \frac{4.75}{0.10}$$

= ₹ 47.50 or times forward earnings of ₹4.75.

Trailing Earnings Valuation

With no growth in residual earnings from the current year onward, and thus zero abnormal earnings growth, the shares can be valued by capitalization earnings, and the (cum dividend) trailing P/E must be 11, the normal P/E for a required return of 10 percent:

$$V_{2009}^E + d_{2009} = 11 \times ₹4.43 = ₹48.73$$

So, as the dividend is ₹1.22, the ex – dividend value is ₹47.51 (allowing for approximation error).

This is a case of a firm with both a normal trailing P/E and a normal forward P/E, but a non-normal P/B.

Firm with a high P/B ratio also has a high P/E ratio? Can a firm with a high P/B ratio have a low P/E ratio?

In order to appreciate the empirical relationship between the two ratios, table 6.1 assumes and splits Indian firms at their median (trailing) P/E and P/B each year from 1974 to 2012 and counts the number of times firms had a high P/B (above the median) and a high P/E (above the median), a low P/B (below the median) and a low P/E (below the median), and so on. You see that the relationship between P/B and P/E is positive: Firms with high P/B tend to have high P/E, and firms with low P/B tend to have low P/E also. Indeed two- thirds of cases fall on this diagonal. But one- third fall on the other diagonal: Firms can trade at a high P/B and a low P/E or a low P/B and a high P/E. What explains which of these cells a firm will fall into?

Table 6.1
Frequency of High and Low P/B and P/E ratios, 1974 – 2012

P/E Ratio	P/B Ratio	
	High	Low
High	23,146 34.0%	10,848 16.0%
Low	10,849 16.0%	23,147 34.1%

Table 6.2
Cell Analysis of the P/B and P/E Relationship,

P/E Ratio	P/B Ratio		
	High	Normal	Low
High	A	B	C
Normal	D	E	F
Low	G	H	I

Table 6.3
Cell Analysis of the P/B and P/E Relationship: Filling in the cells

P/E Ratio	P/B Ratio		
	High ($RE > 0$)	Normal ($RE = 0$)	Low ($RE < 0$)
High	A $\overline{RE} > RE_0$	B $\overline{RE} > RE_0$ $RE_0 < 0$	C $\overline{RE} > RE_0$ $RE_0 < 0$
Normal	D $\overline{RE} = RE_0$ $RE_0 > 0$	E $\overline{RE} = RE_0$ $RE_0 = 0$	F $\overline{RE} = RE_0$ $RE_0 < 0$
Low	G $\overline{RE} < RE_0$ $RE_0 > 0$	H $\overline{RE} < RE_0$ $RE_0 > 0$	I $\overline{RE} < RE_0$

[Here, $\overline{RE}$ = Expected future residual earnings RE_0 = Current residual earnings]

To answer this question, let's consider high, low, and normal P/Bs and P/Es in Table 6.2. Remember a normal P/B is equal to 1.0 and a normal trailing P/E is equal to $p_E / (p_E - 1)$. There are nine cells, labeled **A** to **I**, and we want to enter the conditions under which firms fall into a particular cell. As with tic-tac-toe, start with the central cell, **E**. We know that expected future residual earnings must be zero here because P/B is normal. We also know that expected future RE must be the same as current RE for the P/E to be normal. Expected AEG must be zero. If we indicate the stream of expected future RE by RE (for short) and current RE by RE_0 , it must be that $RE = RE_0 = 0$ for firms in this central cell. That is, for both P/B and P/E to be normal, a firm must have zero expected future RE and current RE that is also zero



(and thus current and future ROE equal the cost of capital). This condition is entered in cell **E** in the solution to the problem in Table 6.3.

Now look at the other cell for a normal P/B, cells **B** and **H**. Here forecasted future RE must be zero. But, for high P/E in cell **B** future RE must be forecasted as being higher than current RE (and forecasted AEG is positive). Thus RE_0 must be less than zero (and current ROE must be less than the cost of capital). Correspondingly, firms should trade at a normal P/B and a low P/E in cell **H** when current RE is greater than zero (and current ROE is greater than the cost of capital). In the other cells for a normal P/E (cells **D** and **F**), expected future RE must be at the same level as current RE but, as these are cases of non normal P/B, it must be that both current and future RE are greater than zero (cell **D**) or less than zero (cell **F**). Dignity falls into cell **D**.

The conditions for the four corner cells follow the same logic. To attribute both a high P/E and a high P/B to a firm (cell **A**), we must forecast future RE to be greater than zero and this RE must be greater than current RE. A firm can also have a high P/B and a low P/E. This is the cell **G** case where we expect residual earnings to be positive in the future but current residual earnings are even higher. And a firm can have a high P/E but a low P/B. This is the cell **C** case where we expect low (and negative) RE in the future but current RE is even lower. Finally cell **I** contains firms that have both forecasts of low and negative RE in the future but currently have a higher RE than the long – run level.

We can summarize all this in one statement: P/B is determined by the future RE a firm is expected to deliver but P/E is determined by the difference between current RE and the forecast of future RE, that is growth in RE from current levels.

Look at Box 6.13 for examples of firms that fall into the various cells. It looks as if the market is giving these firms the appropriate cell classification. But we could use the analysis to screen for firms that might be mispriced. Certain combinations of P/E, P/B, and current RE and forecasted RE are ruled out, so if these occur, mispricing is indicated. If a firm were reporting a high ROE and RE, and reliable analysts' forecasts indicated positive RE in the future, we would expect the shares to trade at a P/B above if analysts' forecasts that the current RE was particularly high and would be lower in the future, we would expect the P/E to be below normal and would classify the firm as a cell **G** firm. If the market were giving the firm a high P/B and a high P/E (as a cell **A** firm), it might be mispriced. (Of course, the market could be valuing earnings beyond the analysts' forecast horizon.)

You can summarize equity analysis and take positions based on the analysis in this way: Put a firm in the appropriate cell based on forecasts of RE and then compare your classification with that of the market. In the late 1990s, the market placed many firms in cell **A**. Some claimed that earnings at that time were exceptionally high and could not be sustained. That claim puts firms in cell **G**. Who was correct? History shows the latter applied to many firms.

Trailing Price – Earnings Ratios and Growth

A firm with a high trailing P/E is commonly referred to as a growth stock. But is this good thinking? We have seen that a high P/E implies high growth in earnings in the future. But the analysis we have just gone through gives us some reservation about calling every high P/E firm a growth stock. A firm's P/E can be high but it may fall into cell **C**. That firm (like Nayat Shoes & Boots in Box 6.13) is expected to have low RE in the future (ROE less than the cost of capital), and it has a high P/E only because current RE is even lower than that expected in the future. Nayat Shoes & Boots, in cell **C**, is hardly Hypee, in cell **A**. This is not a firm that is able to pump out a lot of profits on book value. It is expected to have growth in earnings, yes, but low profitability. In contrast, a firm in cell **G** (like AB airways) is predicted to produce relatively high RE in the future, but it happens that current RE is even higher, and this produces a low P/E.

Box 6.13 Cell Classification Examples

A.	High P/B – high P/E Hypee, Inc. The market gave Hypee a P/B of 4.1 and a P/E of 21 in 2013, both high relative to normal ratios. Current residual earnings were ₹642 million and analysts were forecasting earnings that indicated higher residual earning (and positive abnormal earnings growth) in the future. This is a cell A firm.
B.	Normal P/B- High P/E Burncorp. Burncorp, a financial services holding company, reported earnings for 2010 of ₹0.65 per share and a ROE of 5.4 percent. Analysts in 2011 forecasted earnings of ₹1.72 for 1999 and ₹2.00 for 2012, which translate into a ROE of 13.6 percent and 14.1 percent respectively. With a forecasted ROE at about the (presumed) cost of capital but increasing from the current level, this is a cell B firm. The market gave the firm a P/B of 1.10 and a P/E of 24.
C.	Low P/B – high P/E Nayat Shoes & Boots, Inc. Like Hypee, a footwear manufacturer, Nayat Shoes reported a ROE of 1.8 percent for 2010 with earnings of 0.21 per share. Analysts forecast a ROE of 6.2 percent for 2011 and 7.8 percent for 2012, on earnings of ₹0.72 and ₹ 0.95, respectively. The market gave the firm a P/B of 0.6 and a P/E of 33, appropriate for a firm with forecasted ROE less than the (presumed) cost of capital but with increasing ROE.
D.	High P/B – Normal P/E Dignity Corp. Dignity, with a positive but constant RE, was a cell D firm in 2009. Dignity was priced at 11 times earnings (cum – dividend), and at 1.8 times book value, as we saw in Box 6.1
E.	Normal P/B- Normal P/E Times Financial Crop. Times Financial Crop, a bank holding company, reported a ROE of 10.3 percent for fiscal 2011. Analysts forecasted that ROE would be 10.6 percent for 2012 and after roughly at the same level. If the equity cost of capital is 10 percent, this firm should have a normal P/B and a normal P/E. The shares traded at 11 times earnings and 1.0 times book value.
F.	Low P/B – Normal P/E Enmarg Café Inc. in 2011, analysts covering Enmarg Café, a theme restaurant ("a wild place to eat"), forecasted earnings of ₹0.62 per share for 2011 and ₹0.71 for 2012, or a ROE of 6.8 percent and 7.2 percent. The shares traded at a P/B of 0.6 reflecting the low anticipated ROE. The ROE for 2010 was 6.5 percent. With 2010 profitability similar to forecasted profitability, the stock should sell at a normal P/E ratio. And indeed it did. The P/E at the time of the forecasts was 11.
G.	High P/B – Low P/E AB Airways Group. AB airways reported a ROE of 81 percent in 1998. Analysts deemed 2010 to be a particularly good year and forecast ROE for 2011 and 2012 down to 29 percent and 33 percent. The shares traded at 12.6 times book value, consistent with high ROE in the future, but at a P/E of only 4.
H.	Normal P/B- Low P/E Duck Pool Holdings. Duck Pool Holdings, the holding company for Duck Pool Airlines, had a ROE of 15.0 percent in 2010. Analysts forecasted in 2011 that the ROE would decline to 11.7 percent by 2012. The market gave the share a P/B of 1.0 in 2011, in line with the forecasted ROE eqSALing the cost of capital. But the P/E was 7, consistent with the expected drop in the ROE.
I.	Low P/B – Low P/E SAL Corporation. Sky-fy Airline's holding company traded at a P/B of 0.7 in mid – 2011 and a P/E of 6. It reported a ROE of 29.2 percent for 2010, but its ROE was expected by analysts to drop to 10.6 percent (before a special gain) in 2011 and to 9.1 percent in 2012.

Which is the growth firm, the cell **C** firm, or the cell **G** firm? It's a matter of definition, of course, but we might reserve the term **growth firm** for a firm that is capable of delivering residual earnings growth and abnormal earnings growth in the future.

Trailing Price- Earnings Ratios Transitory Earnings

Because the trailing P/E is an indicator of the difference between current and future profitability, it is affected by current profitability. If a firm with strong ROE forecasts has an exceptionally good year, it will have a low P/E and fall cell **G**, like AB airways in 2010. A firm with poor prospects can fall into cell C



Table 6.4 Subsequent Earnings Growth for Different Levels of P/E, 1976 – 2012

High – P/E firms in the current year (Year 0) have higher cum – dividend earnings growth in subsequent years than low – P/E firms. However, the relationship between P/E and growth is negative in the current year.

Year after Current Year (Year 0)						
P/E Level	P/E	0	1	2	3	4
Cum – dividend EPS growth by P/E level						
High	49.8	- 35.8%	54.1%	16.6%	19.1%	17.2%
Medium	13.1	18.4%	14.8%	13.1%	14.8%	15.6%
Low	6.5	23.9%	2.2%	7.1%	11.5%	14.4%

with a high P/E because its current year's earnings are temporarily depressed, like Nayat Shoes. Earnings that are abnormally high or temporarily depressed are affected by transitory earnings or unusual earnings.

The effect of transitory earnings on the P/E has historically been referred to as the **Molodovsky effect**, after the analyst Nicholas Molodovsky, who highlighted the phenomenon in the 1950s. Table 6.4 shows the Molodovsky effect at work. The table shows the relationship between trailing P/E and earnings growth for three P/E groups from 1976 through 2012. The “high” – P/E group had an average P/E of 49.8, the “medium” group an average P/E of 13.1, and the “low” group an average P/E of 6.5. The table gives median year –to–year cum-dividend EPS growth rates for each P/E group, for the year when firms were assigned to the P/E group (Year 0) and for four subsequent years. Look at the medium P/E level. These firms had subsequent earnings in the four years following Year 0 at 13 percent to 15 percent per year. Now look at the high – and low – P/E levels. High – P/E firms had relatively high earnings growth in the years following Year 0, whereas low – P/E firms had relatively low earnings growth. Thus the data confirm that P/E indicates future growth in earnings.

Now look at the growth rates in Year 0, the current year. Whereas P/E is positively related to future earnings growth, it is negatively related to current earnings growth. High P/E firms are typically those earnings are down now but will rebound in the future. The low – P/E firms in the table have large increases in current earnings but these are not sustained subsequently. In short, the P/E is affected by temporary aspects of current earnings.

P/E Ratios and the Analysis of Sustainable Earnings

The analysis of sustainable earnings in this study note identifies the transitory aspects of current earnings and so helps to ascertain the Molodovsky effect on the trailing P/E ratio. If earnings are temporarily high (and cannot be sustained), one should pay less per rupee of earnings – the P/E should be low. If, on the other hand, earnings can be sustained – or can grow because they are temporarily depressed – one should pay a higher multiple. Sustainable earnings analysis focuses on the future – for it is future earnings that the investor is buying – and helps the investor discount earnings for that part which is not sustainable.

As investors buy future earnings, it makes sense that a P/E valuation should focus on the forward P/E and thus the pricing of next year's earnings and growth after that year. Forward earnings are considerably less affected by the transitory items that do not contribute to permanent growth. For evaluation of the forward P/E, sustainable earnings analysis very much comes into play for, to forecast forward earnings after observing current earnings, we wish to identify the core earnings that can be sustained in the forward year.

Until recently, analysts talked most often in terms of the trailing P/E. But talk has shifted to the forward P/E. In light of our discussion here, that makes sense.



Section B

Business Valuation



Study Note - 7

VALUATION BASICS



This Study Note includes

- 7.1 Basis for Valuation – Introduction
- 7.2 Principles and Techniques of Valuation
- 7.3 Role of Valuation

7.1 BASIS FOR VALUATION – Introduction

“Valuation is not an objective exercise, and any preconceptions and biases that an analyst brings to the process will find their way into value”. ***Damodaran (2002, p.9)***

Simply defined, a business valuation is an examination conducted towards rendering an estimate or opinion as to the fair market value of a business interest at a given point in time. Generally, when valuing a business, a notional transaction is assumed, that is, one which has not been subjected to the bargaining process. Like accounting, valuation is an art rather than an exact science, and a properly conducted valuation is nothing more than an expression of informed opinion, which is based on fact and judgment. By their very nature, valuations are not precise. Consequently, valuation estimates and opinions are generally stated as a range of values.

Business valuation is no precise science. There is no universal legal framework which dictates how the valuation should be performed. Therefore, it is no right way to estimate a company's value.

When is a valuation required? Examples of when a business valuation may be required include any of the following instances:

- shareholder disputes
- purchase/sale of a business interest
- non-arm's length transaction
- oppressed minority shareholder actions
- damage claims
- buy/sell agreements
- marital disputes
- estate planning
- deemed disposition at death
- litigation support

7.1.1 Value

In order to understand valuation, first we need to understand value. It is often the most complicated and misunderstood. Value is a subjective term as what is value to one person may not be the same for other. It is easy to understand the concept of value with the help of value of a property because all of us are well known to it. But it is not easy to value this well known asset.

A property might be more valuable to one person in comparison to another, because that person values certain features of the property higher than the other person. Alternatively the property might have a higher utility to one person than to another. There may be many forces, which influences the value of a property e.g., environmental and physical characteristics of the property, social standards, economic trends like GDP, per capita income, inflation etc. and political or government regulations.

The US Appraisal Foundation defines market value as, "The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus." However, the concepts of open market, fair sale, action with prudence & knowledge and non-happening of undue stimulus are all subjective and most often, unrealistic assumptions.

There may be substantial gap between subjective valuations and fluctuations of the free market. Thus, the value of a property does not always correspond to its price. As a result, despite rigorous efforts by time series econometricians the forces of supply and demand cannot be scientifically predicted.

In a nutshell, value is the "typical price a product fetches in an unregulated market". There are different types of values which are used in different ways of everyday business. These are original value, book value, depreciated value, sale value, purchase value, replacement value, market value, economic value, residual value, scrap value etc. What investors buy is the future benefits and not the past. The point to be carefully noted that there is nothing called the 'correct value' or the 'right value'. It all depends upon the type of value which is being measured, the purpose of valuation, the methods adopted and the assumptions made. The valuation which seems to be 'base' today, may be criticised and rejected tomorrow based on variations in the subjective conditions, that we have discussed.

7.1.1.1 Distinction between Price and Value

The price may be understood as 'the amount of money or other consideration asked for or given in exchange for something else'. The price is therefore, an outcome of a transaction whereas the value may not necessarily require the arrival of a transaction. The value exists even if some assets become unable to generate cash flows today but can generate in future on the happening of some events.

An oil reserve of Petro net L&G may not have any value when the oil price is ₹70 and the extraction cost of that oil is ₹110. However, when the price reaches to ₹130 and is expected to prevail around this figure, it may have significant value.

Another example reaffirms that price and value is not same. A lawyer is having some question regarding a professional assignment having remuneration of ₹2,50,000. He browses through some pages of a book at a bookshop and buys it for ₹40,000. He has an idea in his mind that the book is essential for earning professional remuneration of ₹2,50,000 and expected contribution from the book would be around ₹80,000. At this stage the value/worth of that book is ₹80,000. However, after reading the book he feels that the book is not useful for his assignment. If the same book cannot be returned to the shop, its disposal value would be negligible.

The difference between price and value can be explained with the help of behaviour of the investors. In theory, *every decision maker believes rationally*. A decision is called 'rational' when the objective of the decision maker is clear and he is well informed. Homogeneous expectations are characteristics of efficient markets. But it is clear from the researches in the area of behavioural finance that homogeneous expectations are characteristics of efficient markets. Market participants do work with asymmetric information and the expectations are different. As a result price and value do not necessarily have to be equal.

7.1.2 Valuation

Knowing what an asset is worth and what determines that value is a pre-requisite for intelligent decision making. Valuation is an essential prerequisite in choosing investments for a portfolio, in deciding on the



appropriate price to pay or receive in a takeover and in making investment, financing and dividend choices while running a business. The premise of valuation is that we can make reasonable estimates of value for most assets. The same fundamental principles determine the values of all types of assets, real as well as financial. Some assets are easier to value than others as the details of valuation vary from asset to asset and the uncertainty associated with value estimates is different for different assets. However, the core principles remain the same.

The value of any asset must equal the present value of its future cash flows, discounted at a rate that reflects its inherent risk. Since neither the future cash flows nor the appropriate discount rate can be known with certainty, valuation is always an estimation. Several valuation methods are used to value a business but not a single method can be vouched to predict the exact price at which an entity can be sold.

Valuing a business is a pivotal function while acquiring a company as the buyer will be willing to pay the price depending on the synergy value that will result when the companies are combined. The more the synergy value a particular acquisition can generate, the higher the maximum price an acquirer will be interested in paying.

Valuation is used for stock selection, concluding market expectation, evaluating corporate events, setting up an opinion, evaluating business strategies, as a communication among management, shareholders and analysts, appraisal etc.

7.1.3 Business Valuation

The art of creating value is not just a discipline for accountants and investors. Used properly, it can be a powerful, perhaps the most powerful, way that managers can run their companies in an increasingly competitive world. By integrating accounting and performance measures with strategic thinking and day-to-day operations, managers can learn to take decisions that enhance their businesses and add real value. As knowledge capital becomes increasingly important, traditional financial measures such as earnings and book value are accounting for less and less of a company's actual market price. Investors are paying great attention to non-financial factors in their efforts to assess the value of corporations.

This should be welcome news to managers, who are well aware of the value of "intangibles" such as R&D, patents, trademarks, copyrights, brand names, employee talent, distribution channels, new ideas and processes. A well-known example of a great value-creating idea is Wal-Mart's system that gives its suppliers direct access to its inventory. A customer buys an item at Wal-Mart and the barcode information goes directly to Procter & Gamble, who maintains the inventory.

Enhanced efficiency gives Wal-Mart the edge over its competitors. In the USA, the importance of "shareholder value" is almost universally accepted in business. The concept is here defined as being not only the "market value added" (MVA) – this is the difference between the stock market capitalization of a company and the capital that has been invested in it – but also growth in employment and high productivity. Although share prices fluctuate, over time they tend to reflect the underlying value of a company.

American CEOs and senior managers are expected to focus on creating shareholder value in their corporations. This is not true in case of Europe and Asia. In these regions, corporations are seen as having other obligations to their communities. Governments often define and regulate a company's duties towards its "stakeholders". Stakeholders include employees, customers, suppliers, the state, lenders, investors and the general public. Critics condemn the shareholder value approach as harmful to society as a whole. Rights and obligations of stakeholders are given greater weight. Supporters of the stakeholder system have argued that focusing on shareholder value may hurt the interests of other stakeholders, in general and employees of the company in particular.

However, there remains possibilities of counter argument that most successful companies in any given market would tend to enjoy better productivity, better Market Value Added (MVA) and employ more

people than their competitors. MVA is the difference between market value of its equity and debt and its economics book value of capital. In other words, successful companies are maximizing shareholder value even if they do not explicitly say so. In doing so they are also benefiting, not damaging, the other stakeholders' interests. Shareholder value implies a stock market where company shares are widely held by the public. Company information is less easily available in countries such as Germany and Japan, where shareholdings are concentrated in the hands of institutions. Share prices may not reflect values as closely as they do in more efficient stock markets.

There is less incentive for managers to strive to create shareholder value. Furthermore, the spectre of a hostile takeover does not loom as powerfully as it does in the USA. The USA has a huge market for mergers and acquisitions (M&A) that is partly driven by perceived weaknesses in the current management. Elsewhere, managers may not be as concerned that inefficiency may lead to a takeover.

7.1.3.1 Foundation of Business Valuation

A postulate of sound investing is that an investor does not pay more for an asset than it is worth. This statement may seem logical and obvious, but it is forgotten and rediscovered at some time in every generation and in every market. There are those who argue that value is in the eyes of the beholder. Any price can be justified if there are parties willing to pay that price. That is patently absurd. Perceptions may be all that matter when the asset is a painting or a sculpture. But one should not buy most assets simply for aesthetic or emotional reasons. People buy financial assets for the cash flows they expect to receive from them. Consequently, perceptions of value have to be backed up by reality, which implies that the price we pay for any asset should reflect the cash flows it is expected to generate. Valuation models attempt to relate value to the level of uncertainty and expected growth in these cash flows.

There are many aspects of valuation where we have difference for opinion including estimates of true value and how long it will take for prices to adjust to that true value. But there is one point on which there can be no disagreement. Asset prices cannot be justified by merely using the argument that there will be other investors around who will pay a higher price in the future.

7.1.3.2 Purpose of Business Valuation

'Quick' Software, a Pvt. Ltd. offers to buy a majority stake in 'Slow' Software which is a public limited company but closely held. Quick knows the industry well and wants to expand its portfolio of business and believes that it can apply its core competencies to improve the performance of 'Slow' if acquired.

The purpose of valuation is to determine the cash value of a majority shareholding of the equity shares of 'Slow'. The value derived will be used by the owners of the 'Slow' as a starting point of negotiation leading to the sale of the majority stake in 'Slow' to the 'Quick' through a private deal. Like the cases of Quick and Slow Software there exist several other purposes of valuation than M&A. Purposes of valuation can be classified under four categories as stated by Statement for Valuation Services issued by the AICPA, USA. They are given as below.

Purpose of Valuation	Examples
Valuation for transactions	Business purchase, business sale, M&A, reverse merger, recapitalization, restructuring, Leverage Buy Out, Management by Objective, Management Buy In, buy sell agreement, IPO, ESOPs, buy back of shares, project planning and others.
Valuation for court cases	Bankruptcy, contractual disputes, ownership disputes, dissenting and oppressive shareholder cases, divorce cases, intellectual property disputes and others.
Valuation for compliances	Fair value accounting, tax issues
Valuation for planning	Estate planning, personal financial planning, M&A planning, strategic planning

The list is inclusive and not exhaustive.



7.1.3.3 Different approaches to Business Valuation

Analysts use a wide spectrum of models, ranging from the simple to the sophisticated. These models often make very different assumptions about the fundamentals that determine value, but they do share some common characteristics and can be classified in broader terms. There are several advantages to such a classification makes it is easier to understand where individual models fit in to the big picture, why they provide different results and when they have fundamental errors in logic.

In general terms, **there are three approaches to valuation**. The first, **discounted cash flow valuation**, relates the value of an asset to the present value of expected future cash flows on that asset. **The second, relative valuation**, estimates the value of an asset by looking at the pricing of 'comparable' assets relative to a common variable like earnings, cash flows, book value or sales. The third, **contingent claim valuation** uses option pricing models to measure the value of assets that share option characteristics. While they can yield different estimates of value, one of the objectives of discussing valuation models is to explain the reasons for such differences, and to help in picking the right model to use for a specific task.

7.1.4 Valuation Bias

We start valuing a firm with certain assumptions and preconceived conditions. All too often, our views on a company are formed before we start inserting the numbers into the financial/econometric model models that we use and not surprisingly, our conclusions tend to reflect our biases. We will begin by considering the sources of bias in valuation and then move on to evaluate how bias manifests itself in most valuations. We close with a discussion of how best to minimize or at least deal with bias in valuations.

7.1.4.1 Sources of Valuation Bias

The bias in valuation starts with the companies we choose to value. These choices are almost never random, and how we make them can start laying the foundation for bias. It may be that we have read something in the press (good or bad) about the company or heard from an expert that it was under or overvalued. Thus, we already begin with a perception about the company that we are about to value. We add to the bias when we collect the information we need to value the firm. The annual report and other financial statements include not only the accounting numbers but also management discussions of performance, often putting the best possible spin on the numbers. With many larger companies, it is easy to access what other analysts following the stock think about these companies.

In many valuations, there are institutional factors that add to this already substantial bias. For instance, it is an acknowledged fact that equity research analysts are more likely to issue buy rather than sell recommendations, i.e., that they are more likely to find firms to be undervalued than overvalued. This can be traced partly to the difficulties analysts face in obtaining access and collecting information on firms that they have issued sell recommendations on, and partly to pressure that they face from portfolio managers, some of whom might have large positions in the stock, and from their own firm investment banking arms which have other profitable relationships with the firms in question.

The reward and punishment structure associated with finding companies to be under and overvalued is also a contributor to bias. An analyst whose compensation is dependent upon whether she finds a firm is under or overvalued will be biased in her conclusions. This should explain why acquisition valuations are so often biased upwards. The analysis of the deal, which is usually done by the acquiring firm's investment banker, who also happens to be responsible for carrying the deal to its successful conclusion, can come to one of two conclusions. One is to find that the deal is seriously over priced and recommends rejection, in which case the analyst receives the eternal gratitude of the stockholders of the acquiring firm but little else. The other is to find that the deal makes sense (no matter what the price) and to reap the ample financial windfall from getting the deal done.

7.1.4.2 Perceptions (bias) about companies are Manifested in Business Valuation

There are three ways in which our views on a company (and the biases we have) can manifest themselves in value. The first is in the inputs that we use in the valuation. When we value companies, we constantly make assumptions to move on. These assumptions can be optimistic or pessimistic. For a company with high operating margins now, we can either assume that competition will drive the margins down to industry averages very quickly (pessimistic) or that the company will be able to maintain its margins for an extended period (optimistic). The path we choose will reflect our prior biases. It should come as no surprise that at the end of a day the value that we arrive at, is reflective of the optimistic or pessimistic choices we made along the way.

The second is in what we will call post-valuation tinkering, where analysts revisit assumptions after a valuation in an attempt to get a value closer to what they had expected to obtain starting off. Thus, an analyst who values a company at ₹ 150 per share, when the market price is ₹ 250, may revise his growth rates upwards and his risk downwards to come up a higher value, if she believed that the company was undervalued to begin with. The third is to leave the value as is but attribute the difference between the value we estimate and the value we think is the right one to a qualitative factor such as synergy or strategic considerations. This is a common device in acquisition valuation where analysts are often called upon to justify the unjustifiable. In fact, the use of premiums and discounts, where we augment or reduce estimated value, provides a window on the bias in the process. The use of premiums – control and synergy are good examples – is commonplace in acquisition valuations, where the bias is towards pushing value upwards (to justify high acquisition prices). The use of discounts – illiquidity and minority discounts.

7.1.4.3 Process To Minimize Valuation Bias

Bias cannot be regulated or legislated out of existence. Analysts are human and bring their biases to the table. However, there are ways in which we can mitigate the effects of bias on valuation:

- (i) **Reduce institutional pressures:** A significant portion of bias can be attributed to institutional factors. Equity research analysts in the 1990s, for instance, in addition to dealing with all of the standard sources of bias had to grapple with the demand from their employers that they bring in investment banking business. Institutions that want honest sell-side equity research should protect their equity research analysts who issue sell recommendations on companies, not only from irate companies but also from their own sales people and portfolio managers.
- (ii) **De-link valuations from reward/punishment:** Any valuation process where the reward or punishment is conditioned on the outcome of the valuation will result in biased valuations. In other words, if we want acquisition valuations to be unbiased, we have to separate the deal analysis from the deal making to reduce bias.
- (iii) **No pre-commitments:** Decision makers should avoid taking strong public positions on the value of a firm before the valuation is complete. An acquiring firm that comes up with a price prior to the valuation of a target firm has put analysts in an untenable position, where they are called upon to justify this price. In far too many cases, the decision on whether a firm is under or overvalued precedes the actual valuation, leading to seriously biased analyses.
- (iv) **Self-Awareness:** The best antidote to bias is awareness. An analyst who is aware of the biases he or she brings to the valuation process can either actively try to confront these biases when making input choices or open the process up to more objective points of view about a company's future.
- (v) **Honest reporting:** In Bayesian statistics, analysts are required to reveal their priors (biases) before they present their results from an analysis. Thus, an environmentalist will have to reveal that he or she strongly believes that there is a hole in the ozone layer before presenting empirical evidence to that effect. The person reviewing the study can then factor that bias while looking at the conclusions. Valuations would be much more useful if analysts revealed their biases up front.

While we cannot eliminate bias in valuations, we can try to minimize its impact by designing valuation processes that are more protected from overt outside influences and by report our biases with our estimated values.



7.1.5 Uncertainties in Business Valuation

Starting early in life, we are taught that if we do things right, we will get the right answers. In other words, the precision of the answer is used as a measure of the quality of the process that yielded the answer. While this may be appropriate in mathematics or physics, it is a poor measure of quality in valuation. Barring a very small subset of assets, there will always be uncertainty associated with valuations, and even the best valuations come with a substantial margin for error. In this section, we examine the sources of uncertainty and the consequences for valuation.

The value of a business is not a static figure. It depends on change in purpose or circumstances. There are number of uncertainties involved in the valuation process which if not handled appropriately, would lead to an absurd value. We may design complex financial models with several inputs to handle uncertainties but that does not mean that the value derived is reasonable or the process is sound. What we need to understand is the impact of each input on the value. Giving attention to following factors is crucial:

- The macro economic factors.
- The business.
- Its growth potential in the industry in which it operates.
- How is the business positioned?
- Who are competitors?
- What is the quality and stability of the company's management?

The principles and methods of valuation are well settled and they are same across the class of transactions. What changes in the course of deriving value is the selection of approaches and methods. Seller would like to get as much as possible and buyer would like to pay as little as possible. Somewhere between these two the deal takes place. Could it be mentioned that value is the price at which the deal takes place? What if there is no buyer or there is no intention to sell. Could it be concluded that the object or business is worth nothing? The answer is 'No'. There is a 'bigger fool theory' which says any price can be justified if a buyer is ready to pay the price. It might be you who is the last buyer ready to pay the available price! The theory makes us understand that every price cannot be value and vice versa. We need to differentiate between value and price.

7.1.5.1 Sources of Uncertainties

Uncertainty is part and parcel of the valuation process, both at the point in time that we value a business and in how that value evolves over time as we get new information that impacts the valuation. That information can be specific to the firm being valued, more generally about the sector in which the firm operates or even be general market information (about interest rates and the economy).

When valuing an asset at any point in time, we make forecasts for the future. Since none of us possess crystal balls, we have to make our best estimates, given the information that we have at the time of the valuation. Our estimates of value can be wrong for a number of reasons, and we can categorize these reasons into three groups.

- **Estimation Uncertainty:** Even if our information sources are impeccable, we have to convert raw information into inputs and use these inputs in models. Any mistakes or mis-assessments that we make at either stage of this process will cause estimation error.
- **Firm-specific Uncertainty:** The path that we envision for a firm can prove to be hopelessly wrong. The firm may do much better or much worse than we expected it to perform, and the resulting earnings and cash flows will be very different from our estimates.
- **Macroeconomic Uncertainty:** Even if a firm evolves exactly the way we expected it to, the macroeconomic environment can change in unpredictable ways. Interest rates can go up or down and the economy can do much better or worse than expected. These macroeconomic changes will affect value.

The contribution of each type of uncertainty to the overall uncertainty associated with a valuation can vary across companies. When valuing a mature cyclical or commodity company, it may be macroeconomic uncertainty that is the biggest factor causing actual numbers to deviate from expectations. Valuing a young technology company can expose analysts to far more estimation and firm-specific uncertainty. Note that the only source of uncertainty that can be clearly laid at the feet of the analyst is estimation uncertainty. Even if we feel comfortable with our estimates of an asset's values at any point in time, that value itself will change over time, as a consequence of new information that comes out both about the firm and about the overall market. Given the constant flow of information into financial markets, a valuation done on a firm ages quickly, and has to be updated to reflect current information.

7.1.5.2 Various uncertainties during the Process of Business Valuation

The advantage of breaking uncertainty down into estimation uncertainty, firm-specific and macroeconomic uncertainty is that it gives us a window on what we can manage, what we can control and what we should just let pass through into the valuation.

Building better models and accessing superior information will reduce estimation uncertainty but will do little to reduce exposure to firm-specific or macro-economic risk. Even the best-constructed model will be susceptible to these uncertainties.

In general, analysts should try to focus on making their best estimates of firm-specific information – how long will the firm be able to maintain high growth? How fast will earnings grow during that period? What type of excess returns will the firm earn? – and steer away from bringing in their views on macro economic variables. To see why, assume that you believe that interest rates today are too low and that they will go up by about 1.5% over the next year. If you build in the expected rise in interest rates into your discounted cash flow valuations, they will all yield low values for the companies that you are analyzing. A person using these valuations will be faced with a conundrum because he will have no way of knowing how much of this over valuation is attributable to your macroeconomic views and how much to your views of the company.

In summary, analysts should concentrate on building the best models they can with as much information as they can legally access, trying to make their best estimates of firm-specific components and being as neutral as they can on macro economic variables. As new information comes in, they should update their valuations to reflect the new information. There is no place for false pride in this process. Valuations can change dramatically over time and they should if the information warrants such a change.

7.1.5.3 Valuer Response to Various Uncertainties during the Process of Business Valuation

Analysts who value companies confront uncertainty at every turn in a valuation and they respond to it in both healthy and unhealthy ways. Among the healthy responses are the following:

- **Better Valuation Models:** Building better valuation models that use more of the information that is available at the time of the valuation is one way of attacking the uncertainty problem. It should be noted, though, that even the best-constructed models may reduce estimation uncertainty but they cannot reduce or eliminate the very real uncertainties associated with the future.
- **Valuation Ranges:** A few analysts recognize that the value that they obtain for a business is an estimate and try to quantify a range on the estimate. Some use simulations and others derive expected, best-case and worst-case estimates of value. The output that they provide therefore yields both their estimates of value and their uncertainty about that value.
- **Probabilistic Statements:** Some analysts couch their valuations in probabilistic terms to reflect the uncertainty that they feel. Thus, an analyst who estimates a value of ₹ 30 for a stock which is trading at ₹ 25 will state that there is a 60 or 70% probability that the stock is undervalued rather than make the categorical statement that it is undervalued. Here again, the probabilities that accompany the statements provide insight into the uncertainty that the analyst perceives in the valuation.



In general, healthy responses to uncertainty are open about its existence and provide information on its magnitude to those using the valuation. These users can then decide how much caution they should exhibit while acting on the valuation.

Unfortunately, not all analysts deal with uncertainty in ways that lead to better decisions. The unhealthy responses to uncertainty include:

- **Passing the buck:** Because some analysts try to pass on the responsibility for the estimates by using other people's numbers in the valuation, which could have been done by them in a better way and as a matter of fact the result vary. For instance, analysts will often use the growth rate estimated by other analysts valuing a company, as their estimate of growth. If the valuation turns out to be right, they can claim credit for it, and if it turns out wrong, they can blame other analysts for leading them down the garden path.

Based on fundamentals, a significant number of analysts give up, especially on full-fledged valuation models, unable to confront uncertainty and deal with it. All too often, they fall back on more simplistic ways of valuing companies (multiples and comparables, for example) that do not require explicit assumptions about the future. A few decide that valuation itself is pointless and resort to reading charts and gauging market perception.

In closing, it is natural to feel uncomfortable when valuing equity in a company. We are after all trying to make our best judgments about an uncertain future. The discomfort will increase as we move from valuing stable companies to growth companies, from valuing mature companies to young companies and from valuing developed market companies to emerging market companies.

7.1.6 Stake holders of Valuation

For whom do we value? The fundamental role of valuation is to offer a base for negotiation between buyer and seller. It has a great repercussion that can affect the whole economy. However, an inclusive list of entities that are presumed to be affected by wrong or improper valuation will help us to understand the role of valuation.

- **Shareholders** — who provide capital to the business
- **The company itself** — they may become a takeover target or a turnaround will not be possible
- **Financial experts** — who help in financial decision making
- **The buyers of property and business**—who help in creating orderly market
- **Banks and others**—who provide loan by taking property as collateral
- **Mutual funds and hedge funds** — who heavily invest in listed and unlisted securities
- **Insurance companies** — who provide risk mitigating products and invest in securities
- **Governments** — who buy products and services and deposit money with banks, mutual funds and others
- **Whole economy** — a robust banking system is the necessary for the economy to move.

Global financial crisis (GFC) has reminded us the crucial significance of the issue of valuation. Fair value accounting has been blamed as one of the main reasons behind GFC.

With the increase in cross border flow of capital, the subject of valuation has become a global issue.

Following entities may require valuation to be carried out; (i) buyer or seller (ii) lender (iii) intermediary like agent, broker etc., (iv) regulatory authorities such as tax authorities, (v) revenue authorities and (vi) general public. Value can also be estimated, assessed or determined by professional valuer. Global /corporate investors have become highly demanding and are extremely focused on maximising corporate value. The list of investors includes high net worth individuals, pension and hedge funds and investment companies. They no longer remain passive investors but are keen followers of a company's

strategies and actions aimed at maximising and protecting the value of their investments. Valuation should be done of all assets and liabilities to know 'what we own and "what we owe". Assets must include both tangibles as well as intangibles. Liabilities include both apparent and contingent.

7.1.7 Key Areas of Valuation

Globalization enhanced IT capabilities, all pervasive role of the media and growing awareness of investors have rendered the situation more complex. Mergers, acquisitions, disinvestments and corporate takeovers have become the order of the day across the globe and are a regular feature today.

Mentioned below are certain key areas where valuation plays a key role.

- Valuation of equity share in the primary, secondary as well as derivative market
- Private placement of equity shares
- Corporate restructuring and turnaround
- Secured lending including project finance
- Securitization and other debt instruments
- Implementation of Basel-II recommendation
- Portfolio management-Mutual fund, hedge fund and professional investors
- Long term and medium term investment decisions, M& A, takeovers, divestiture, disinvestment, capital budgeting, private equity investment, venture capital investment, strategic investors, financial investors and others
- Dividend decision and buy back of shares
- Borrowing decisions
- Financial risk management decisions
- Court case related decisions
- Tax related valuation including transfer pricing
- Development projects valuation
- Intangibles
- Financial reporting valuation
- Equity research
- Forensic accounting and financial fraud investigation
- Dissolution of firm, partner buyout and admission
- Insurance product valuation
- Estate planning and financial planning
- Corporate planning
- Property valuation
- Value based performance measurement
- Credit rating
- Fairness and solvency opinion and
- Charitable donation.



Apart from the reasons stated above, there lie reasons like 'divorce' etc. which could often be treated as reasons for valuation. However, we will consider it beyond the scope of our study.

7.1.8 Valuer

There are different types of providers of valuation services. Like IFRS, there is no single consistent valuation standard applicable across the world. In USA, UK, Canada and other developed countries the valuation service providers there exist professional institute that provide necessary education training for valuation services and the profession is regulated to a large extent. In India, valuation profession is yet to be regulated, there is no specified qualification for performing valuation. As of today, the profession is fragmented. This probably could be reason, why there is lack of clarity, consistency, transparency and quality in valuation reports.

Several Cost & Management Accountant firms are providing valuation services. With the introduction of fair value accounting under IFRS, the field of valuation practice is bound to grow. Merchant bankers, venture capitalists and private equity investors perform valuation usually as a part of a transaction. Banks, financial institutions, also participates in valuations of their companies or segments of their companies or for their investment activities. Large brokerage houses have their own stock analysts' team who perform valuation on regular basis and use this information for advising clients. Services of valuation are really broad based and should not be confused with that of actuaries who render much specialised services.

7.2 PRINCIPLES AND TECHNIQUES OF VALUATION

7.2.1 Principles of Valuation

Like other areas of finance, valuation is also based on some basic foundations which we refer to as principles. We find six principles of valuation that provide basic ground work for different techniques of valuation we will refer to in the next part. Principles of valuation are,

- Principle of Substitution
- Principle of Alternative
- Principle of Time Value of Money
- Principle of Expectation
- Principle of Risk & Return
- Principle of Reasonableness and Reconciliation of value

7.2.1.1 Principle of Substitution

If business 'A' can be replicated at 'X' amount then business is worth 'X' amount. If a similar business 'B' is available at a price less than 'X' amount then business 'A' has worth less than 'X' amount. This principle ensures that understanding of market is important and forced comparison would lead to flawed valuation. This simply indicates that risk-averse investor will not pay more for a business if another desirable substitute exists either by creating new or by buying.

7.2.1.2 Principle of Alternatives

No single decision maker is confined to one transaction. Each party to the transaction has alternatives to fulfilling the transaction for a different price and with different party. Since no single transaction could be a perfect substitute to another transaction one may consider paying some premium if investment meets strategic interest.

When someone is buying business it should be kept in mind that the same should not be bought at any cost as if no alternative exists. In stock market and auction market in most of the cases bidders bid

simply because of the fact that others are bidding and that simply raises the price. This Case is simply explained as 'near miss' situation where one realizes that price is far greater than value.

7.2.1.3 Principle of Time Value of Money

This is the most basic area corporate finance as well as valuation. It suggests that value can be measured by calculating present value of future cash flows discounted at the appropriate discount rate. Investment opportunities may offer differing cash flows, growth prospects and risk profile. Principle of time value of money helps us to discriminate those opportunities and to select the best subject to given parameter.

7.2.1.4 Principle of Expectation

Cash flows are based on the expectations about the performance in future and not the past. In case of mature companies we may conservatively assume that growth from today or after some certain period would be constant. The difficult part is to determine the extent and direction of growth. These assumptions will have significant impact on the valuation.

7.2.1.5 Principle of Risk & Return

Harry Markowitz, the father of modern finance was first to quantify risk and used the same in portfolio decision making. Based on risk- return criteria he suggested ways to identify optimal portfolio.

Markowitz has made two important assumptions. First, an investor is risk averse. Second, an investor would prefer higher amount of wealth than the lower one. The reason is higher wealth leads to possibility of higher consumption. Given two possible portfolios with similar risk profile, the one with higher expected return will be preferred. These two assumptions are most integral part of valuation exercise.

7.2.1.6 Principle of Reasonableness & Reconciliation

In valuation exercise we need to deal with large number of uncertainties and we have to go for assumptions. This sixth principle suggests how far these assumptions are reasonable and it reconciles different values obtained under different approaches.

In valuation we should be careful about

- Inconsistency in judgement and assumptions
- Conceptual flaws
- Projection modelling and formula errors

A valuation without reasonable check and reconciliation exercise is not complete and would be difficult to defend. It is pertinent to note Revenue Ruling 59-60 of USA that offers seven factors that must be considered in any valuation exercise.

- The nature of the business and the history of the enterprise from its inception
- Economic outlook in general and condition of the outlook of the specific industry in particular
- The book value of the stock and financial condition of the business
- The earnings and dividend paying capacity of the company
- Whether the business is having any intangible assets
- Sales of the stock and the size of the block of stock to be valued
- The market price of corporations engaged in similar business having their stocks actively traded in a free and open market or an exchange or over the counter.



7.2.2 Misconceptions about Valuation

There are many areas in valuation where remains the scope for disagreement, including how to estimate true value and how long it will take prices to adjust to true value. But asset prices cannot be justified merely by using the argument that other investors are willing to pay higher price in future. Like all analytical disciplines, valuation has developed its own Myths.

Myth 1: A valuation is an objective search for true value.

All valuations are biased. However the questions are how much and in which direction. The direction in magnitude of the biasness in your valuation is directly proportional to who pays you and how much you are paid.

Myth 2: Since valuation models are quantitative, valuation is better.

However one's understanding of a valuation model is inversely proportional to the number of inputs required for the model. Moreover simpler valuation model do much better than complex ones.

It seems obvious that making a model more complete and complex should yield better valuation. But it is not necessarily so. As models become more complex the number of inputs needed to value a firm tends to increase. Problems are compounded when models become too complex to become "black boxes." When a valuation fails the blame gets attached to the model rather than the analyst. Valuer often complains "It was not my fault. The model did it."

Three points are common and important in all valuation works. The first one is the principal of parsimony, which essentially states that you do not use more inputs than what is actually needed. The second one is, there should be trade-off between additional benefit arising from more inputs and cost arising from input errors and using more number of inputs. The third one is models do not value companies but valuer does. This is a time of excessive information. Identifying the minimum relevant information is almost as important as the valuation models and techniques that a valuer uses to value a firm.

Myth 3: A well researched and well done valuation is timeless.

The value obtained in any valuation model is effected by firm-specific as well as market information. As a consequence, the value will change as new information is revealed. Given the constant flow of information into financial markets, a valuation done on a firm ages quickly and has to be updated to reflect correct information.

However, information about the state of the economy and the level of interest affects all valuation in an economy. When analysts change their valuation, they will undoubtedly be asked to justify them and in some cases the fact that valuation change over time is viewed as a problem. The best response may be the one that John Maynard Keynes gave when he was criticized for changing his position on a major economic issue: "When the facts change I change my mind and what do you do, sir?"

Myth 4: A good valuation provides a precise estimate of value.

However the truth remains that there is no concept of precise valuation. The payoff to valuation is greatest when valuation is least precise.

Myth 5: To make money on valuation, you have to assume that markets are inefficient.

If a market is efficient then market price is the best estimate of value. However, it has been empirically tested that no single market is efficient in the strong form sense. It is recognised that market make mistakes but finding those mistakes requires a combinations of skill and luck. This view of markets leads to the following conclusions: First, if something looks good to be true, a stock looks obviously undervalued or overvalued is properly not true. Second, when the value from an analysis is significantly different from the market price, start off with the presumption that the market is correct; then you have to convince yourself that this is not the case before you to conclude that something is over or undervalued. The higher standard may lead you to be more cautions in following through on valuation but given the difficulty of beating the market this is not an undesirable outcome.

Myth 6: The product of valuation (i.e., value) matters and not the valuation.

Valuation models focus exclusively on the outcome. That is the value of the company and whether it is over or undervalued. In most of the cases valuable points inside are missed out that can be obtained from the process of valuation and can answer some of the most fundamental questions, e.g.,

- What is the appropriate price to pay for high growth?
- What is a brand name worth?
- How important is to return and project?
- What is the effect of profit margin on value?

Myth 7: How much a business is worth depends on what the valuation is used for.

The value of a business is its fair market value, that is what a willing buyer will pay a willing seller when each is fully informed and under no pressure to transact.

7.2.3 Standard of Value

Standard of value is nothing but a definition of the type of value being sought. Important at the stage is to refer the definition of standard of value as per the International glossary of business valuation terms which is "The identification of the type of value being utilised in a specific engagement; e.g. for example, fair market value, fair value, investment value." This definition is inclusive but not exhaustive. Standard of value can be taken depending upon the purpose of the valuation. The standard of value depends upon time of engagement which gives the purpose of valuation. Five most common 'standard of value' which are used practice are;

- Fair market value
- Investment value
- Intrinsic value
- Fair value
- Market value

Choice of appropriate standard of value may be dictated by circumstances, objective, contract and operation of law or other factors. Pertinent questions to be answered before choosing an appropriate standard of value are;

- What is being valued?
- What is the purpose of valuation?
- Does the property or business changes hands?
- Who are the buyer and seller?

We will describe each of those five standards of values. But to begin with we introduce book value.

7.2.3.1 Book Value

Book value is an accounting concept and implies historical assets less outside liabilities. It is rarely used in valuation. The book value per share is simply the network of the company (which is equal to paid up equity capital plus reserves and surplus) divided by the number of outstanding equity shares. For example if the net worth of Zenith Limited is ₹ 37 million and the number of outstanding equity shares of Zenith is 2 million, the book value per share works out to ₹ 18.50 (₹ 37 million divided by 2 million).



How relevant and useful is the book value per share as a measure of investment value? The book value per share is firmly rooted in financial accounting and hence can be established relatively easily. Due to this, its proponents argue that it represents an 'objective', measure of value. A closer examination, however, quickly reveals that what is regarded as 'objective' is based on accounting conventions and policies which are characterised by a great deal of subjectivity and arbitrariness. An allied and a more powerful criticism against the book value measure is that the historical balance sheet figure on which it is based are often very diverged for current economic value. Balance sheet figures really reflect earning power and hence the book value per share cannot be regarded as a proxy for true investment value.

7.2.3.2 Liquidation Value

This method assesses the value of a business by gauging its value if were to cease operations and sell its individual assets. Under this approach, the business owner would receive no compensation for business "goodwill"—non tangible assets such as the company's name, location, customer base, or accumulated experience. This method is further divided into forced liquidations (as in bankruptcies) and orderly liquidations. Values are typically figured higher in the latter instances. Asset-based lenders and banks tend to favour this method, because they view the liquidation value of a company's tangible assets to be the only valuable collateral to the loan. But it is unpopular with most business owners because of the lack of consideration given to goodwill and other intangible assets.

The liquidation value per share is equal to:

$$\frac{X - Y}{Z}$$

X: Value realized from liquidating all the assets of the firm.

Y: Amount to be paid to all the creditors and preference share holders.

Z: Number of outstanding equity shares.

To illustrate let's assume that M Limited would realise ₹ 40 million from the liquidation of its assets and pay ₹20 million to its creditors and preference shareholders in full settlement of their claims. If the number of equity share of M Limited is 2 million, the liquidation per share works out to (₹ 40 million – ₹ 20 million) / 2 million = ₹ 10 per share.

When the liquidation value appears more realistic than the book value, there are two serious problems in applying it:-

- (I) It is very difficult to estimate what amount should be realised from the liquidation of various assets.
- (II) the liquidation value does not reflect earning capacity.

IGBT defines three types of liquidation value:

Liquidation value: The net amount that would be realized if the business is terminated and the assets are sold piecemeal. Liquidation can either be orderly or forced.

Force Liquidation value: Liquidation value at which the asset assets are sold as quickly as possible such as at an auction.

Orderly Liquidation value: Liquidation value at which the asset are sold over a reasonable period of time to maximize proceeds received.

7.2.3.3 Now we describe the five most common 'Standard of Value'

(1) Fair Market Value (FMV)

FMV is the most widely used standard of value in business valuation. The AICPA of USA, while issuing Statement on Standards for Valuation Services, has adopted the International Glossary of Business Valuation Terms (IGBVT). It defines FMV as

"The price expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts."

Following example makes FMV simple.

Mr. 'A' owns 20% of a business and the balance 80% is owned by the other people. Here Mr. A has what is called a minority interest in the business. The question is whether worth of Mr. A will be taken as proportionate value of the business under FMV standard of value. Let's assume business is worth ₹ 200 million.

The 20% interest in the business would be worth less than ₹40 million. In the open market willing and able buyers pay perhaps 15% of the total value for a 20% interest because they are subject to control of the 80% owners. That means there will be discount known as DLOC (discount for lack of control). If it is a case of closely held company then there would be further discount on account of what is called as DLOM (discount for lack of marketability). This discount is counted to cover the fact that it will be difficult to sell the minority shares of closely held companies.

If a business is marketable then FMV seems to be appropriate standard of value. If a closely held business cannot be compared with a listed company FMV may not be the appropriate standard. The issue is not whether it can be used or not. Rather the issue is whether it can be determined or not.

(2) Investment Value

IGBVT defines 'Investment value' as "the value to a particular investor based on individual investment requirements and expectations". Simply stated, it gives the value of an asset or business to a specific unique investor and therefore considers the investor's specific knowledge about the business, own capabilities, expectation of risks and return and other factors. Synergies are considered to a specific purchaser. For these reasons investment value may result in higher value than FMV. Some of the factors which may cause difference between FMV and investment value are:-

- Estimates of future cash flows or earnings;
- Perception of risk
- Tax advantages
- Synergy to other products
- Other strategic advantages

An example makes the concept of investment value clear.

Mr. A owns 20% of a business and the balance 80% is owned by the other people. Whether, worth of Mr. 'A' will be taken as proportionate value of the business, if intrinsic value is used as standard of value. Even it can be more than the proportionate value if this 20% acquisition meets some strategic interest of the investor. The question of DOLM need not necessarily come as the investor is looking for long term strategic investment. In case of small business, the investment value should be the definition of value as only an investor with specific knowledge of the business would be interested in buying the business. Under this one values the business in the hands of specific investor.



(3) Intrinsic Value or Fundamental Value

Intrinsic or fundamental value is used when an investor wants 'true' or 'real' value on the basis of an analysis of fundamentals without considering the prevailing price in the market. It is true economic worth of a share, business or property.

IGBT defines intrinsic value as "the value that an investor considers, on the basis of an evaluation or available facts to be the "true" or "real" value that will become the market value when other investors reach the same conclusion." Graham & Dodd has defined the intrinsic value as "the value which is justified by assets, earnings, dividends definite prospects and factor of management." There are four major components of intrinsic value of a going concern:

- Level of normal earning power and profitability in the employment of assets as distinguished from the reported earnings which may be and frequently are, distorted by transient influences.
- Dividends actually paid or the capacity to pay such dividends currently and in the future
- A realistic expectation about the trend line growth of earning power
- Stability and predictability of those quantitative and qualitative projections of the future economic value of the enterprise.

Intrinsic value and investment value may seem like similar concepts but they are different. The first represents an estimate of value based on the expected cash flow of the business and not of the investor. The second represents an estimate of value based on expected cash flow in the hands of a specific investor.

(4) Fair Value

The fair value as standard of value is understood differently in the two situations mentioned below:

- (i) In legal matters
- (ii) In financial reporting purpose

Financial Accounting Standard Board is the accounting standards setting body for US-GAAP (Generally Accepted Accounting Principle) reporting has issued SFAS (Statement of Financial Accounting Standard) no 157, fair value measurements. This is also known as mark to market standard. These establish a frame work for measurements of fair value and require discloser about measurement but it does not require fair value accounting for any position. Its guidance is relevant only when accounting standard require or permit position to be accounted for at fair value.

The standard provides the single authorities definition of fair value for the US-GAAP reporting. The definition of fair value reads as "The price that would be receive to be sell and asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". International Financial Reporting Standard (IFRS) which for the timing does not have a single authority definition of fair value. The guidance on measuring fair value is scattered through out IFRSs and they are also not consistent. A general definition fair value under IFRS reads as the amount for which an asset could be exchange or a liability settled between knowledgeable, willing parties in an arm's length transitions.

IFRS is working on a standard similar to SFAS 157 we are starting our discussion with the latter .A simple comparison of the two definitions highlight three important differences.

Exit Price Vs Entry Price :

SFAS 157 reflect an exit notion where an organisation can get out of the assets and the liability position through orderly transaction with market participants at the measurement date. Simply stated, this standard requires valuing assets on what they could fetch in the market or what is to be paid on transfer of liability that is the "exit price" (Sale price). This does not require the entity intention or its ability to sell assets or transfer liability at the measurement date. As far FASB price shall not be adjusted for transaction costs as they are not an attribute of the assets or liability. Further a fair value measurement under SFAS 157 assumes the highest and best use of the asset from the perspective of market participant

without considering how the company is going to use it. This also requires considering that the use of the asset physically possible, financially feasible and legally permissible. The word “Exchanged” under IFRS definition can have both situations “Exit price as well as entry price” (Purchase price).

Market participants in an orderly transaction

The focus in SFAS is on a market-based measurement. The standard refers to orderly transaction between market participants. In an orderly transaction market participants

- Are willing to transact.
- Are independent.
- Are knowledgeable having understanding about the asset or liability.
- Reliable to transact.

The orderly transaction is unforced and unhurried. If the market is not active and prices are not reflective on orderly transaction then an adjustment may be require to arrive at fair value. The unique feature is that the standard creates a hierarchy of inputs for fair value measurement from most to least reliable.

Level 1 input is based on unadjusted quoted market price in active market for similar assets.

Level 2 input is based on observed market data and level 3 is based on unobservable input which could be internal models or an estimate of the management.

Level 3 is the subject intense debate. Don't forget that fair value measurement requires significant judgement. The standard has sufficient discloser requirements to counter any manipulation. The investor can always assess the assumptions and accordingly the modify decision.

Difference between Fair Value and Fair Market Value

There is no authoritative clarification either under US-GAAP or IFRS about the difference between fair value and FMV except that these terms are consistent in accounting. This seems to be the reality. However, we can locate few differences which are given below :

- Fair value has a hierarchy of inputs for valuation but FMV does not have it.
- Fair value uses highest and best use of an asset from perspective of market participants. This may result in maximizing the value as against consensus value under FMV.
- DOLM adjustments may require in certain cases under fair value but adjustment for DOLC is doubtful.
- Fair value disregard blockage discount (a decline in the value resulting from the size of position). The opinion of FASB is clear that when a quoted price is available in the active market it should not be further reduced for blockage discount. Because the quoted price is without any regard to the intent of the firm to transact at that price. Without the blockage discount comparability will improve.

(5) Market value

Market value standard is generally used in realised valuation. Definition of the term ‘market value’ is taken from IVS1, propounded by IVS committee—the leading property valuation standard setting body.

“Market value is the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion.”

Highlights of the definition include;

- **Estimated amount:** The determination of highest and best use or most probable use is the first step in estimating market value. This considers physical possibilities, financial feasibility and highest possible value to the property.



- **Exchange:** Exchange means an estimated amount rather than a predetermined or actual sale price. It also assumes simultaneous exchange. It however, is not depended of actual price on the date of valuation. Intact it is an estimate of the price.
- **On the date:** Price is time specific and excludes past or future date market circumstances.
- **Willing buyer** is motivated but not compelled to buy.
- **Willing seller** is motivated to sell at whatever price is available in the current market but not over eager.
- **Proper marketing:** Property should be exposed to market in most appropriate manner to effects its disposal at the best price reasonably obtainable.
- **Acted knowledgeably and prudently:** Buyer and seller should reasonably be informed about the nature and characteristic of the property, its actual and potential use and the state of the market.
- **Without compulsion:** The transaction should not be forced or coerced.

Another definition of market value can be taken from uniform standard of professional appraisal practice (USPAP) (2008-2009) which is the property valuation standard setting body in USA. The USPAP defines market value as "a type of value stated as an opinion, that presume the transfer of a property (that is a write of ownership or a bundle of such rights) as of a certain date under specific conditions set forth in the definition of the term identified by the appraiser as applicable in an appraiser."

Forming an opinion of market value is the purpose of many real property appraisal assignments. Particularly when clients intended use includes more than one intended users. The conditions included in the market value definitions established market perspective for development of the opinion. Conditions may vary from one definition to other but generally fall into three categories.

- The relationship, knowledge and motivation of the parties(i.e., seller and buyer);
- The terms of sell(e.g., cash, cash equivalent or other terms)
- The condition of sale (i.e., expose in a comparative market for a reasonable time prior to sale.

The most important part in property valuation is to define the market value by quoting authority.

7.2.4 Premise of Value

Premise of value represents the general concept under which standard of value falls. IGBVT defines standard of value as:

"An assumption regarding the most likely set of transaction of circumstances that may be applicable to the subject valuation for example going concern, liquidation etc."

There are two premise of value, **going concern** and **liquidation**. Impact of premise can easily be observed in case of a loss making company or a company with a poor track record of profit. Going concern is generally taken as a premise of value. Liquidation is also considered to be another premise. If it offers are negative valuation then one may conclude that business has either no value or very little value.

IGBVT defines going concern as "an ongoing operating business enterprise." IGBVT further defines going concern value as "the value of a business enterprise that is expected to continue to operate into the future. The intangible elements of going concern value result from factors such as having a trained work force, an operational plan and the necessary licenses, system and procedures in place."

Going concern value should not be considered as standard of value. This should be referred as premise of value. In *Re Marriage of Sharp* (1983) 143 Cal, the court rejected standard of value described as going concern and ruled that the standard to be used in the valuation of a business was FMV. The going concern is an attribute of the standard of value like the liquidation.

7.2.4.1 General Premises of Value

Apart from going concern and liquidation there are four general premises of value.

- (1) **Value in exchange:** This premise contemplates value assuming exchange of business, business interest or property. Some sort of hypothetical transaction is assumed in the valuation. The FMV or market value and the fair value standard to a very limited exchange can be categorised under value in exchange premise.
- (2) **Value in use:** This premise contemplates value assuming that assets are engaged in produce in income.
- (3) **Value in place:** This premise contemplates value assuming that assets are ready for use but not engaged for producing income.
- (4) **Value to the specific holder:** This premise contemplates the value in the hands of a particular of specific buyer or holder of the assets. Marketability is not the criteria in this place. The investment value falls under the premise of value and in certain cases even fair value.

Following example distinguishes between values in exchange and value to the specific holder.

Ms. P is an actress in Bollywood and runs a film production company along with her spouse who is not a film star. P's film has always been a success because of her style of storytelling and she has established a big reputation in the film industry. The success of the company is largely depended on her reputation. Of late P has developed a close relationship with an actor of her company and wants divorce from her spouse.

If the valuation is to be performed for divorce under value in exchange premise then personal goodwill need to be separated as only assets of the enterprise could be sold to a hypothetical buyer. Reputation and skills (Personal goodwill) of P can't be distinguished from the individual. However, if we change premise of value to value to specific holder then this goodwill of P should also be considered.

The selection of premise of value mainly depends upon court cases decided in the past and or circumstances of the case for divorce.

7.2.5 Role of Valuation in Portfolio Management

The role that valuation plays in portfolio management is determined in large part by the investment philosophy of the investor. Valuation plays a minimal role in portfolio management for a passive investor, whereas it plays a larger role for an active investor. Even among active investors, the nature and the role of valuation is different for different types of active investment. Market timers use valuation much less than investors who pick stocks, and the focus is on market valuation rather than on firm-specific valuation. Among security selectors, valuation plays a central role in portfolio management for fundamental analysts, and a peripheral role for technical analysts.

The following sub-section describes, in broad terms, different investment philosophies and the roles played by valuation in each one.

- (1) **Fundamental Analysis:** The underlying theme in fundamental analysis is that the true value of the firm can be related to its financial characteristics — its growth prospects, risk profile and cash flows. Any deviation from this true value is a sign that a stock is under or overvalued.
- (2) **Activist Investors:** Activist investors take positions in firms that have a reputation for poor management and then use their equity holdings to push for change in the way the company is run. Their focus is not so much on what the company is worth today but what its value would be if it were managed well. Investors like Carl Icahn, Michael Price and Kirk Kerkorian have prided themselves on their capacity to not only pinpoint badly managed firms but to also create enough pressure to get management to change its ways. How can valuation skills help in this pursuit? To begin with, these investors have to ensure that there is additional value that can be generated by changing management. In other words, they have to separate how much of a firm's poor stock price performance has to do with bad management and how much of it is a function of external



factors; the former are fixable but the latter are not. They then have to consider the effects of changing management on value; this will require an understanding of how value will change as a firm changes its investment, financing and dividend policies. As a consequence, they have to not only know the businesses that the firm operates in but also have an understanding of the interplay between corporate finance decisions and value. Activist investors generally concentrate on a few businesses they understand well, and attempt to acquire undervalued firms. Often, they wield influence on the management of these firms and can change financial and investment policy.

- (3) **Chartists:** Chartists believe that prices are driven as much by investor psychology as by any underlying financial variables. The information available from trading measures — price movements, trading volume and short sales — gives an indication of investor psychology and future price movements. The assumptions here are that prices move in predictable patterns, that there are not enough marginal investors taking advantage of these patterns to eliminate them, and that the average investor in the market is driven more by emotion than by rational analysis. While valuation does not play much of a role in charting, there are ways in which an enterprising chartist can incorporate it into analysis. For instance, valuation can be used to determine support and resistance lines on price charts.
- (4) **Information Traders:** Prices move on information about the firm. Information traders attempt to trade in advance of new information or shortly after it is revealed to financial markets. The underlying assumption is that these traders can anticipate information announcements and gauge the market reaction to them better than the average investor in the market. For an information trader, the focus is on the relationship between information and changes in value, rather than on value, per se. Thus an information trader may buy an 'overvalued' firm if he believes that the next information announcement is going to cause the price to go up, because it contains better than expected news. If there is a relationship between how undervalued or overvalued a company is, and how its stock price reacts to new information, then valuation could play a role in investing for an information trader.
- (5) **Market Timers:** Market timers note, with some legitimacy, that the payoff to calling turns in markets is much greater than the returns from stock picking. They argue that it is easier to predict market movements than to select stocks and that these predictions can be based upon factors that are observable.
- (6) **Efficient Marketers:** Efficient marketers believe that the market price at any point in time represents the best estimate of the true value of the firm, and that any attempt to exploit perceived market efficiencies will cost more than it will make in excess profits. They assume that markets aggregate information quickly and accurately, that marginal investors promptly exploit any inefficiencies and that any inefficiencies in the market are caused by friction, such as transactions costs, and cannot be exploited. For efficient marketers, valuation is a useful exercise to determine why a stock sells for the price that it does. Since the underlying assumption is that the market price is the best estimate of the true value of the company, the objective becomes determining what assumptions about growth and risk are implied in this market price, rather than on finding under or overvalued firms.

7.3 ROLE OF VALUATION

7.3.1 Role of Valuation in Business Acquisition

Valuation should play a central part of acquisition analysis. The bidding firm or individual has to decide on a fair value for the target firm before making a bid, and the target firm has to determine a reasonable value for itself before deciding to accept or reject the offer.

There are special factors to consider in takeover valuation. First, there is synergy, the increase in value that many managers foresee as occurring after mergers because the combined firm is able to accomplish things that the individual firms could not. The effects of synergy on the combined value of

the two firms (target plus bidding firm) have to be considered before a decision is made on the bid. Second, the value of control, which measures the effects on value of changing management and restructuring the target firm, will have to be taken into account in deciding on a fair price. This is of particular concern in hostile takeovers.

As we noted earlier, there is a significant problem with bias in takeover valuations. Target firms may be over-optimistic in estimating value, especially when the takeover is hostile, and they are trying to convince their stockholders that the offer price is too low. Similarly, if the bidding firm has decided, for strategic reasons, to do an acquisition, there may be strong pressure on the analyst to come up with an estimate of value that backs up the acquisition.

7.3.2 Role of Valuation in Corporate Finance

There is a role for valuation at every stage of a firm's life cycle. For small private businesses thinking about expanding, valuation plays a key role when they approach venture capital and private equity investors for more capital. The share of a firm that a venture capitalist will demand in exchange for a capital infusion will depend upon the value estimates for the firm. As the companies get larger and decide to go public, valuations determine the prices at which they are offered to the market in the public offering. Once established, decisions on where to invest, how much to borrow and how much to return to the owners will be all decisions that are affected by valuation. If the objective in corporate finance is to maximize firm value, the relationship between financial decisions, corporate strategy and firm value has to be delineated.

7.3.3 Role of Valuation in Legal and Tax Purposes

Mundane though it may seem, most valuations, especially of private companies, are done for legal or tax reasons. A partnership has to be valued, whenever a new partner is taken on or an old one retires, and businesses that are jointly owned have to be valued when the owners decide to break up. Businesses have to be valued for estate tax purposes when the owner dies and for divorce proceedings when couples break up. While the principles of valuation may not be different when valuing a business for legal proceedings, the objective often becomes providing a valuation that the court will accept rather than the right valuation.

7.3.4 Efficient Market Hypothesis

The purpose of any stock market the world is to bring together those people who have funds to invest with those who need funds to undertake investments. Entities which seek to raise equity are asking investor for a permanent investment. Investors may not be incorrect to invest unless they are convinced that they would be able to realize their investments at a fair price at any time in the future.

For these to happen stock market must price shares efficiently. Efficient pricing means incorporating into the share price that could possibly effect. In an efficient market investors can buy and sell share at a fair price and entities can raise funds at a cost that reflects the risk of the investment they are seeking to undertake.

A considerable body of financial theory has been building a hypothesis that in an efficient market, prices fully and instantaneously reflect all available information. The efficient market hypothesis is there fore concerned with information and pricing efficiency.

Three levels or forms of efficiency have been defined. These are depended on the amount of information available to the participants in the market.

- (1) **Weak form:** Weak form efficiency implies that current share price reflect all the information which could be gleaned from a study of past share prices. If this holds, then no investor can earn above average return by developing training rules based on historical process or return information. This form of the hypothesis can be related to the activities of chartists, analysts whose belief in share prices can be charted and a pattern identified that can be used to predict future prices.
- (2) **Semi-strong form:** Semi-strong form efficiency implies that the current share price reflect all other published information. If they are sold, then no investors can be expected to earn above average



return from training rules based on any publicly available information. This form of the hypothesis can be related to fundamental analysis, in which estimates of future prices are based on the analysis all known information.

- (3) **Strong form**: Strong form efficiency implies that the current share prices incorporate all information, including unpublished information. This would include insider information and views held by the directors of the entity. If this holds then no investor can earn above average return using any information whether publicly available or not.

Common Valuation Errors (VE)

VE 1: When the valuation report does not expressly include valuation purpose.

VE 2: When the valuation report does not define the standard of value.

VE 3: When the valuation report does not consider the premise of value.

VE 4: When the valuation report treats going concern as the standard of value.

Common Sequential Steps in Business Valuation

Step 1: Determine the purpose of valuation.

Step 2: Define the standard of value.

Step 3: Select premise of value.

Step 4: Carry out historical analysis.

Step 5: Carry out environment scan.

Step 6: Select appropriate valuation approaches.

Step 7: Select appropriate methods.

Step 8: Calculate value.

Step 9: Carry out reconciliation and reasonableness check.

Step 10: Value conclusion.

7.3.5 Valuation Process

The valuation process comprises of five broad steps:

(a) Understanding the business

This includes evaluating industry prospects, competitive position of the company in the industrial environment, corporate strategies - its planning and execution, overall economic environment where the company operates, the technological edge etc.

(b) Forecasting Company Performance

This can be achieved by doing economic forecasting and studying company's financial information. Two approaches to economic forecasting are top-down forecasting and bottom-up forecasting. In top-down forecasting analysts use macroeconomic forecasts to develop industry forecasts and then make individual company and asset forecast consistent with the industry forecasts. In bottom-up forecasting analysts aggregate individual company forecasts with industry forecasts and finally aggregate it with macroeconomic forecasts. While evaluating financial information of a company, the analyst can consider both the qualitative and quantitative factors. This involves careful scrutiny and interpretation of financial statements, and other financial/accounting disclosures.

(c) Selecting the appropriate valuation model

While selecting a valuation model an analyst can use different perspectives. One of the widely used methods is determining the intrinsic value, which is fully dependent on the quality of information and the inherent assumptions. There are other value measures. We know that a company has one value if dissolved today and other if it continues operation.

One of the popular notions of value finding is the going concern assumption, which says that the company will maintain its business activities into the foreseeable future. Two broad types of going concern valuation models are absolute valuation models and relative valuation models.

An absolute valuation model is a model that specifies an asset's intrinsic value. This model specifies a value of a company at a particular point of time and is compared with the existing market prices for decision making. Present value or discounted cash flow approach is the most popular type of absolute model approach. Present value models based on dividends are called dividend discount models and those based on free cash flow concept, are called free cash flow to equity and free cash flow to firm models. When a company is valued on the basis of market value of the assets or resources it controls we call it asset based valuation approach.

The second main type of going concern valuation is relative valuation model. Here we specify an asset's value relative to that of another asset and the basic notion of relative valuation model is that similar assets should sell at similar prices. We usually denote this using price multiples. Popular relative price multiples are Price to Earnings (P/E), Price to Book Value (P/BV), Price to Sales etc. The approach of relative valuation as applied to equity valuation is often called method of comparables.

The prime decision on selecting the valuation model is based on the following three broad criteria:

- (1) The valuation model should be consistent with the characteristics of the company being valued
- (2) The valuation model should be appropriate given the availability and the quality of data
- (3) The valuation model should be consistent with the purpose of valuation, including the analysts own perspective

(d) Converting forecasts to valuation

Analysts play a vital role of collecting, organising, analysing, communicating and monitoring the corporate information which they have used in the valuation analysis. They help clients achieve their investment objective and contribute to efficient functioning of the capital markets.

(e) Communicating the information - preparation of research report.

Study Note - 8

VALUATION MODELS



This Study Note includes

- 8.1 Valuation Models – Introduction**
- 8.2 Discounted Cash Flow Valuation**
- 8.3 Relative Valuation**
- 8.4 Free Cash Flow Valuation**
- 8.5 Valuation of Firm – Other Valuation Basis**
- 8.6 Contingent Claim Valuation**

8.1 VALUATION MODELS – Introduction

Valuation of a company is associated with a lot of difficulties and insecurities. It is impossible to estimate the object value of a company only by counting, since the numbers are not the only factor to consider. To facilitate the business valuation process there are a number of helpful models. According to theory the business valuation procedure should consist of several phases to provide a reliable value. These phases are business analysis, accounting and financial analysis, forecasting and valuation itself (Soffer and Soffer, 2003, p.14). Forecasting is the most precarious part of the valuation process since it is based on assumption and discretion about a company's future economic performance. The insecurity connected with forecasting can be reduced to a certain extent by accurate analyzing of external and internal factors, which may affect the company's future development (Damodaran 2002, p.3). The value of the company varies depending on which valuation model that has been applied and how input variables have been estimated.

The valuation models commonly described may be classified as follows:

(I) Asset-based approach

The asset-based approach has many other common names such as the asset accumulation method, the net asset value method, the adjusted book value method and the asset build-up method. The purpose of the model is to study and revalue the company's assets and liabilities obtaining the substance value which also is the equity. The substance value is thus estimated as assets minus liabilities. To be useful, the substance value must be positive, if liabilities are bigger than assets there is no use of the method.

The basic idea is that the company's value could be determined by looking at the Balance Sheet. Unfortunately, the values on the balance sheet cannot be used because the book value seldom is the same as the real value, except for the case of liabilities that is often accounted in real value. The problem is when following the principles of accounting, assets often are depreciated over their life expectancy and when the asset-based approach is applied the real value for these assets must be determined. In this case, the real value is equivalent to the fair market value that is value of the asset on a free market.

Two methods are used here:

- (a) The Liquidation Value, which is the sum as estimated sale values of the assets owned by a company.
- (b) Replacement Cost: The current cost of replacing all the assets of a company.

This approach is commonly used by property and investment companies, to cross check for asset based trading companies such as hotels and property developers, underperforming trading companies with strong asset base (market value vs. existing use), and to work out break – up valuations.

(II) Income-based approach

The income approach is commonly called Discounted Cash Flow (DCF) (Soffer and Soffer p.130). It is accepted as an appropriate method by business appraisers. This approach constitutes estimation of the business value by calculating the present value of all the future benefit flows which the company are expected to generate.

According to the income-based approach to determine a business value the appraiser must always make an estimation of the elements below (Nilson et al.,2002, p.47):-

- Estimation of business life expectancy;
- Estimation of future income flows that a business will generate during its life expectancy
- Estimation of discount rate in order to calculate the present value of the estimated income flows.

There are several models of income approach depending on which type of income flows that will be discounted. The common benefit flows that are usually used in the income-based approach are dividends, free cash flows and residual income. The dividends and cash flow are two measures which refer to direct payment flows from a company from company's book value and based on accrual accounting. The differences among the models are in how the calculation is done and what factors about the company are highlighted in the process (Soffer and Soffer, 2003, p.134).

(III) Market-based approach

The market approach determines company value by comparing one or more aspects of the subject company to the similar aspects of other companies which have an established market value.

8.1.1 Different Valuation Models

Wide ranges of models are used in valuation ranging from the simple to the sophisticated. In general terms, there are three approaches to valuation.

- (1) **Discounted cash flow valuation:** It relates to the value of an asset to the present value of expected future cash flows on that asset.
- (2) **Relative valuation:** It estimates the value of an asset by looking at the pricing of 'comparable' assets relative to a common variable such as earnings, cash flows, book value or sales. The profit multiples used are (a) Earnings before interest, tax, depreciation and amortisation (EBITDA), (b) Earning before interest and tax (EBIT), (c) Profits before tax (PBT) and (d) Profit after tax (PAT).
- (3) **Contingent Claim valuation:** It uses option pricing models to measure the value of assets that have share option characteristics. Some of these assets are traded financial assets like warrants, and some of these options are not traded and are based on real assets. Projects, patents and oil reserves are examples. The latter are often called real options.

The outcomes from each of this approach may be different because these make different assumptions. In this module, we will discuss different valuation approaches and will also explore the reasons for differences in different models. We will also learn how to choose the right model to use for a specific task.

8.1.2 Factors that affect formation of Valuation

Internal Factors:

- (i) Rate of dividend declared



- (ii) Market / Current values of assets / liabilities
- (iii) Goodwill
- (iv) Market for the products
- (v) Industrial relations with employees
- (vi) Nature of plant / machinery
- (vii) Expansion policies of the company
- (viii) Reputation of Management

External Factors:

- (i) Competition
- (ii) Relations with Govt. Agencies
- (iii) Technological development
- (iv) Taxation parties
- (v) Import / Export policy
- (vi) Stability of economy
- (vii) Stability of government in power

8.1.3 Three Elements of Business Valuation

Business valuation refers to the process and set of procedures used to determine the economic value of an owner's interest in a business.

The three elements of Business Valuation are:

(1) Economic Conditions :

As we see in Portfolio Management Theory, wherein we adopt the Economy-Industry-Company (E-I-C) approach, in Business Valuation too, a study and understanding of the national, regional and local economic conditions existing at the time of valuation, as well as the conditions of the industry in which the subject business operates, is important. For instance, while valuing a company involved in sugar manufacture in India in January 2013 the present conditions and forecasts of Indian economy, industries and agriculture need to be understood before the prospects of Indian sugar industry and that of a particular company are evaluated.

(2) Normalization of Financial Statements :

This is the second element that needs to be understood for the following purposes:

- (a) **Comparability adjustments:** to facilitate comparison with other organizations operating within the same industry.
- (b) **Non-operating adjustments:** Non-operating assets need to be excluded.
- (c) **Non-recurring adjustments:** Items of expenditure or income which are of the non-recurring type are to be excluded to provide comparison between various periods.
- (d) **Discretionary adjustments:** Wherever discretionary expenditure had been booked by a company, they are scrutinised to be adjusted to arrive at a fair market value.

(3) Valuation Approach :

There are three common approaches to business valuation - Discounted Cash Flow Valuation, Relative Valuation, and Contingent Claim Valuation. Within each of these approaches; there are various techniques for determining the fair market value of a business. Valuation models fall broadly into four variance based respectively on assets, earning, dividend and discounted cash

flows, typically using a Capital Asset Pricing Model to calculate a discount rate. Each method has its advantages and disadvantages and are not appropriate in all circumstances. It is often not wise to depend on a single method. Calculating a range of value using different appropriate types of valuation can provide valuable benchmarks for the project or entity valuation being considered.

8.1.4 Distinction between Equity Value and Enterprise Value

Equity and Enterprise Value: There is an important distinction between equity value and enterprise value.

The equity value of a company is the value of the shareholders' claims in the company. The value of a share is arrived at by dividing the value of the company's equity as accounted in the balance sheet by the total number of shares outstanding. When a company is publicly traded, the value of the equity equals the market capitalization of the company.

The enterprise value of a company denotes the value of the entire company to all its claimholders.

Enterprise value = Equity value + market value of debt + minority interest + pension and other similar provisions + other claims.

8.1.5 Distinction between Fundamental Valuation and Relative Valuation

Fundamental valuations are calculated based on a company's fundamental economic parameters relevant to the company and its future, are also referred to as 'standalone valuations'.

On the other hand, Relative valuations or relative multiples apply a relation of a specific financial or operational characteristic from a similar company or the industry to the company being valued. They express the value of a company as a multiple of a specific statistic.

8.1.6 Fundamental basis for Valuations

The different basis that can be used in valuations are:

1. **Cash flows** : the cash flow to equity shareholders (dividends) or to both equity shareholders and debtors (free cash flow)
2. **Returns** : The difference between the company's capital and the cost of capital.
3. **Operational Variables** : Production capacity, subscriber base (as in telecom), etc.

8.2 DISCOUNTED CASH FLOW VALUATION

Discounted Cash flow (DCF) Valuation

DCF method is an easy method of valuation. To understand and evaluate the other two methods of valuation it is important to understand the DCF method first. In this section, we will consider the basis of this approach.

8.2.1 Basis for Discounted Cash flow Valuation

This approach has its foundation in the present value rule, where the value of any asset is the present value of expected future cash flows that the asset generates. To use discounted cash flow valuation, you need

- to estimate the life of the asset
- to estimate the cash flows during the life of the asset
- to estimate the discount rate to apply to these cash flows to get present value

$$\text{Value} = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t}$$



where,

n = Life of the asset

CF = Cash flow in period t

r = Discount rate reflecting the riskiness of the estimated cash flows

The cash flows will vary from asset to asset for example dividends for stocks, coupons (interest) and the face value for bonds and after-tax cash flows for a real project. The discount rate will be a function of the riskiness of the estimated cash flows. Discount rate will be high for riskier assets and low for safer assets. For example rate of discount on zero coupon bond is zero and for corporate bonds it is the interest rate that reflects the default risk.

In discounted cash flow valuation, the intrinsic value of an asset is calculated which is based on fundamentals. DCF technique perceives that markets are inefficient and make mistakes in assessing value. It also makes an assumption about how and when these inefficiencies will get corrected.

8.2.2 Discounted Cash Flow Models – Classification and underlying approaches

There are three distinct ways in which we can categorize discounted cash flow models. First, we differentiate between valuing a business as a going concern as opposed to a collection of assets. In the second, we draw a distinction between valuing the equity in a business and valuing the business itself. In the third, we lay out three different and equivalent ways of doing discounted cash flow valuation – the expected cash flow approach, a value based upon excess returns and adjusted present value.

(a) Going Concern versus Asset Valuation

The value of an asset in the discounted cash flow framework is the present value of the expected cash flows on that asset. Extending this proposition to valuing a business, it can be argued that the value of a business is the sum of the values of the individual assets owned by the business. While this may be technically right, there is a key difference between valuing a collection of assets and a business. A business or a company is an on-going entity with assets that it already owns and assets it expects to invest in the future.

A financial balance sheet provides a good framework to draw out the differences between valuing a business as a going concern and valuing it as a collection of assets. In a going concern valuation, we have to make our best judgments not only on existing investments but also on expected future investments and their profitability. While this may seem to be foolhardy, a large proportion of the market value of growth companies comes from their growth assets. In an asset-based valuation, we focus primarily on the assets in place and estimate the value of each asset separately. Adding the asset values together yields the value of the business. For companies with lucrative growth opportunities, asset-based valuations will yield lower values than going concern valuations.

(b) Equity Valuation versus Firm Valuation

There are two ways in which we can approach discounted cash flow valuation. The first is to value the entire business, with both assets-in-place and growth assets; this is often termed firm or enterprise valuation.

The cash flows before debt payments and after reinvestment needs are called free cash flows to the firm, and the discount rate that reflects the composite cost of financing from all sources of capital is called the cost of capital.

The second way is to just value the equity stake in the business, and this is called equity valuation.

The cash flows after debt payments and reinvestment needs are called free cash flows to equity, and the discount rate that reflects just the cost of equity financing is the cost of equity.

(c) Variations on DCF Models

The model that we have presented in this section, where expected cash flows are discounted back at a risk-adjusted discount rate, is the most commonly used discounted cash flow approach but there are two widely used variants. In the first, we separate the cash flows into excess return cash flows and normal return cash flows. Earning the risk-adjusted required return (cost of capital or equity) is considered a normal return cash flow but any cash flows above or below this number are categorized as excess returns. Excess returns can therefore be either positive or negative. With the *excess return valuation* framework, the value of a business can be written as the sum of two components :

Value of business = Capital invested in firm today + Present value of excess return cash flows from both existing and future projects

If we make the assumption that the accounting measure of capital invested (book value of capital) is a good measure of capital invested in assets today, this approach implies that firms that earn positive excess return cash flows will trade at market values higher than their book values and that the reverse will be true for firms that earn negative excess return cash flows.

In the second variation, called the adjusted present value (APV) approach, we separate the effects on value of debt financing from the value of the assets of a business. In general, using debt to fund a firm's operations creates tax benefits (because interest expenses are tax deductible) on the plus side and increases bankruptcy risk (and expected bankruptcy costs) on the minus side. In the APV approach, the value of a firm can be written as follows:

Value of business = Value of business with 100% equity financing + Present value of Expected Tax Benefits of Debt – Expected Bankruptcy Costs

In contrast to the conventional approach, where the effects of debt financing are captured in the discount rate, the APV approach attempts to estimate the expected dollar value of debt benefits and costs separately from the value of the operating assets.

While proponents of each approach like to claim that their approach is the best and most precise, we will argue that the three approaches yield the same estimates of value, if we make consistent assumptions.

8.2.3 Inputs to Discounted Cash Flow Models

There are three inputs that are required to value any asset in this model - the *expected cash flow*, the *timing* of the cash flow and the *discount rate* that is appropriate given the riskiness of these cash flows.

(a) Discount Rates

In valuation, we begin with the fundamental notion that the discount rate used on a cash flow should reflect its riskiness. In case of higher risk, cash flows to be discounted with higher discount rates. There are two ways of viewing risk. The first is purely in terms of the likelihood that an entity will default on a commitment to make a payment, such as interest or principal due, and this is called default risk. When looking at debt, the cost of debt is the rate that reflects this default risk.

The second way of viewing risk is in terms of the variation of actual returns around expected returns. The actual returns on a risky investment can be very different from expected returns. The greater the variation, the greater the risk. When looking at equity, we tend to use measures of risk based upon return variance. While the discussion of risk and return models elsewhere in this site will look at the different models that attempt to do this in far more detail, there are some basic points on which these models agree. The first is that risk in an investment has to be perceived through the eyes of the marginal investor in that investment, and this marginal investor is assumed to be well diversified across multiple investments. Therefore, the risk in an investment that should determine discount rates is the non-diversifiable or *market risk* of that investment. The second is that the expected return on any investment



can be obtained starting with the expected return on a riskless investment, and adding to it a premium to reflect the amount of market risk in that investment. This expected return yields the cost of equity.

The *cost of capital* can be obtained by taking an average of the cost of equity, estimated as above, and the after-tax cost of borrowing, based upon default risk, and weighting by the proportions used by each. We will argue that the weights used, when valuing an on-going business, should be based upon the market values of debt and equity. While there are some analysts who use book value weights. Doing so they violate a basic principle of valuation. The principle directs that, one should be indifferent between buying and selling an asset.

(b) Expected Cash Flows

In the strictest sense, the only cash flow an equity investor gets out of a publicly traded firm is the dividend; models that use the dividends as cash flows are called *dividend discount models*. A broader definition of cash flows to equity would be the cash flows left over after the cash flow claims of non-equity investors in the firm have been met (interest and principal payments to debt holders and preferred dividends) and after enough of these cash flows has been reinvested into the firm to sustain the projected growth in cash flows. This is the free cash flow to equity (FCFE), and models that use these cash flows are called *FCFE discount models*.

The cashflow to the firm is the cumulated cash flow to all claimholders in the firm. One way to obtain this cashflow is to add the free cash flows to equity to the cash flows to lenders (debt) and preferred stockholders. A far simpler way of obtaining the same number is to estimate the cash flows prior to debt and preferred dividend payments, by subtracting from the after-tax operating income the net investment needs to sustain growth. This cash flow is called the free cash flow to the firm (FCFF) and the models that use these cash flows are called *FCFF models*.

(c) Expected Growth

While estimating the expected growth in cash flows in the future, analysts confront with uncertainty most directly. There are three generic ways of estimating growth. One is to look at a company's past and use the historical growth rate posted by that company. The peril is that past growth may provide little indication of future growth. The second is to obtain estimates of growth from more informed sources. For some analysts, this translates into using the estimates provided by a company's management whereas for others it takes the form of using consensus estimates of growth made by others who follow the firm. The bias associated with both these sources should raise questions about the resulting valuations.

8.2.4 Advantages and Disadvantages of Discounted Cash flow Valuation

Advantages: To true believers, discounted cash flow valuation is the only way to approach valuation, but the benefits may be more nuanced than they are willing to admit. On the plus side, discounted cash flow valuation, done right, requires analysts to understand the businesses that they are valuing and ask searching questions about the sustainability of cash flows and risk. Discounted cash flow valuation is tailor made for those who buy into the Warren Buffett adage that what we are buying are not stocks but the underlying businesses. In addition, discounted cash flow valuations is inherently contrarian in the sense that it forces analysts to look for the fundamentals that drive value rather than what market perceptions are. Consequently, if stock prices rise (fall) disproportionately relative to the underlying earnings and cash flows, discounted cash flows models are likely to find stocks to be over valued (under valued).

Discounted cash flow valuation is based upon expected future cash flows and discount rates. Given these informational requirements, this approach is easiest to use for assets (firms)

- whose cash flows are currently positive and can be estimated with some reliability for future periods,
- and where a proxy for risk that can be used to obtain discount rates is available.

Limitations of DCF Valuation

This technique requires lot of information. The inputs and information are difficult to estimate and also can be valuer. This technique cannot differentiate between over and undervalued stocks. It is difficult to apply this technique in the following scenarios:

- **Negative earnings firms:** For such firms, estimating future cash flows is difficult to do, since there is a strong probability of insolvency and failure. DCF does not work well since under this technique the firm is valued as a going concern which provides positive cash flows to its investors.
- **Cyclical Firms:** For such firms earnings follow cyclical trends. Discounting smoothes the cash flows. It is very difficult to predict the timing and duration of the economic situation. The effect of cyclical situation on these firms is neither avoidable nor separable. Therefore, there are economic biases in valuations of these firms.
- **Firms with ununder utilized assets:** DCF valuation reflects the value of all assets that produce cash flows. If a firm has assets that are un/under utilized that do not produce any cash flows, the values of these assets will not be reflected in the value obtained from discounting expected future cash flows. But, the values of these assets can always be obtained externally, and added on to the value obtained from discounted cash flow valuation.
- **Firms with patents or product options:** Firms often have unutilized patents or license that do not produce any current cash flows and are not expected to produce cash flows in the near future, but, nevertheless, these are valuable. If values of such patents are ignored then value obtained from discounting expected cash flows to the firm will understate the true value of the firm.
- **Firms in the process of restructuring:** Firms in the process of restructuring often sell, acquire other assets, and change their capital structure and sometimes dividend policy. Some of them also change their status from private to public. Each of these changes makes estimating of future cash flows more difficult and affects the riskiness of the firm. Using historical data for such firms can give a misleading picture of the firm's value. In case of acquisitions if there is synergy then its value is to be estimated. This will require assumptions about the synergy and its effect on cash flows.
- **Private Firms:** The measurement of risk to be use in estimating discount rates is the problem since securities in private firms are not traded, this is not possible. One solution is to look at the riskiness of comparable firms, which are publicly traded. The other is to relate the measure of risk to accounting variables, which are available for the private firm.

Applicability:

Since DCF valuation, done right, is based upon an asset's fundamentals, it is less exposed to market moods and perceptions. DCF valuation takes into account the underlying characteristics of the firm, and understands the business of firm. It clearly identifies the assumptions made by buyer while paying a given price for an asset. It works best for investors who either have a long time horizon or have are potential acquirer of the whole firm. In long term period there is correction in market for price to revert to "true" value and when he is a potential acquirer he is capable of providing the catalyst needed to move price to value.

8.2.5 Steps in DCF Equity Valuation:

(1) Estimate the Free cash flow to equity:

(a) Forecast earnings for the future.

(b) Adjust earnings (net income) to get free cash flow to equity:

Free Cash Flow to Equity = Net Income - (Capital Expenditure – Depreciation) – Working capital Accruals+ (New debt issued - Debt Repayment)



Following table shows how to calculate free cashflows:

Working capital				
Year	0	1	2	
Revenue				
Costs				
Depreciation of equipment				Non-cash item
Profit/Loss from asset sales				Non-cash item
Taxable income				
Tax				
Net operating profit after tax (NOPAT)				Adjustment for
Depreciation				non-cash item
Profit/Loss from asset sales				
Operating cash flow				Capital items
Change in working capital				
Capital Expenditure				
Salvage of assets				
Free cash flow				

(2) Calculate the PV of equity cash flows by using cost of equity (K_e) as discounting rate. Cost of equity can be calculated using CAPM approach.

(3) CAPM Approach: $K_e = R_f + b(K_M - R_f)$

K_e = Required rate of return

R_f = Risk free rate

b = Beta coefficient

K_M = Expected return for common stocks in the market

$(K_M - R_f)$ = Equity risk premium (ERP)

8.2.6 H model as modification to the exciting mode

This model is based on the assumptions that:

(i) Equity growth rate starts at a high initial rate (g_a) declines linearly over extra-ordinary growth period (which is assumed to last 2 H periods) to a stable growth rate (g_n).

(ii) Dividend payout ratio is constant over time and is not affected by the shifting growth rates.

$$P_0 = \underbrace{DPS_0 (1 + g_n)}_{\text{Stable growth}} + \underbrace{DPS \times H (g_a - g_n)}_{\text{Extra ordinary growth}}$$

Where P_0 = Value of firm now per share

DPS_t = Dividend per share in year t

r = Required return to equity investor

g_a = Growth rate initially

g_n = Growth rate at the end of 2H years applied for ever after that.

Limitations:

- (i) Growth rate is assumed to follow a structure laid out in the model deviations from the structure can cause problem.
- (ii) Assumption of payout ratio remaining constant is consistent.

8.2.7 Three Stage Discount Model

This model assumes an initial period of stable high growth, second period of declining growth and a third period of stable low growth that lasts forever.

$$P_0 = \underbrace{\sum_{t=1}^{t=n_1} \frac{EPS_t (1+g_a)^t \times II_a}{(1+r)^t}}_{\text{High growth}} + \underbrace{\sum_{t=n_1+1}^{t=n_2} \frac{DPS_t}{(1+r)^t}}_{\text{Transition}} + \underbrace{\frac{EPS_{n_2} (1+g_n) \times II_n}{(r-g_n)(1+r)^{n_2}}}_{\text{Stable growth}}$$

EPS_t : Earnings per share in year t

DPS_t : Dividends per share in year t

g_a : Growth rate in high-growth phase (lasts n_1 years)

g_n : Growth rate in stable growth phase

II_a : Payout ratio in high growth phase

II_n : Payout ratio in stable growth phase.

8.3 RELATIVE VALUATION

8.3.1 Key Components of Relative Valuation

In relative valuation, the value of an asset is derived from the pricing of 'comparable' assets, standardized using a common variable. Included in this description are two key components of relative valuation. The first is the notion of comparable or similar assets. From a valuation standpoint, this would imply assets with similar cash flows, risk and growth potential. In practice, it is usually taken to mean other companies that are in the same business as the company being valued. The other is a standardized price. After all, the price per share of a company is in some sense arbitrary since it is a function of the number of shares outstanding; a two for one stock split would halve the price. Dividing the price or market value by some measure that is related to that value will yield a standardized price. When valuing stocks, this essentially translates into using multiples where we divide the market value by earnings, book value or revenues to arrive at an estimate of standardized value. We can then compare these numbers across companies.

The simplest and most direct applications of relative valuations are with real assets where it is easy to find similar assets or even identical ones.

Harking back to our earlier discussion of discounted cash flow valuation, we argued that discounted cash flow valuation was a search (albeit unfulfilled) for intrinsic value. In relative valuation, we have given up on estimating intrinsic value and essentially put our trust in markets getting it right, at least on average.



8.3.2 Variations of Relative Valuation

In relative valuation, the value of an asset is based upon how similar assets are priced. In practice, there are three variations of relative valuation, with the differences primarily in how we define comparable firms and control for differences across firms:

- (a) **Direct comparison** : In this approach, analysts try to find one or two companies that look almost exactly like the company they are trying to value and estimate the value based upon how these similar companies are priced. The key part in this analysis is identifying these similar companies and getting their market values.
- (b) **Peer Group Average** : In the second, analysts compare how their company is priced (using a multiple) with how the peer group is priced (using the average for that multiple). Thus, a stock is considered cheap if it trades at 12 times earnings and the average price earnings ratio for the sector is 15. Implicit in this approach is the assumption that while companies may vary widely across a sector, the average for the sector is representative for a typical company.
- (c) **Peer group average adjusted for differences** : Recognizing that there can be wide differences between the company being valued and other companies in the comparable firm group, analysts sometimes try to control for differences between companies. In many cases, the control is subjective: a company with higher expected growth than the industry will trade at a higher multiple of earnings than the industry average but how much higher is left unspecified. In a few cases, analysts explicitly try to control for differences between companies by either adjusting the multiple being used or by using statistical techniques. As an example of the former, consider PEG ratios. These ratios are computed by dividing PE ratios by expected growth rates, thus controlling (at least in theory) for differences in growth and allowing analysts to compare companies with different growth rates.

8.3.3. Advantages and Limitations of Relative Valuation

The allure of multiples is that they are simple and easy to relate to. They can be used to obtain estimates of value quickly for firms and assets, and are particularly useful when there are a large number of comparable firms being traded on financial markets, and the market is, on average, pricing these firms correctly. In fact, relative valuation is tailor made for analysts and portfolio managers who not only have to find undervalued equities in any market, no matter how overvalued, but also get judged on a relative basis. An analyst who picks stocks based upon their PE ratios, relative to the sectors they operate in, will always find undervalued stocks in any market; if entire sectors are over valued and his stocks decline, he will still look good on a relative basis since his stocks will decline less than comparable stocks (assuming the relative valuation is right).

By the same token, they are also easy to misuse and manipulate, especially when comparable firms are used. Given that no two firms are exactly similar in terms of risk and growth, the definition of 'comparable' firms is a subjective one. Consequently, a biased analyst can choose a group of comparable firms to confirm his or her biases about a firm's value. While this potential for bias exists with discounted cash flow valuation as well, the analyst in DCF valuation is forced to be much more explicit about the assumptions which determine the final value. With multiples, these assumptions are often left unstated.

The other problem with using multiples based upon comparable firms is that it builds in errors (over valuation or under valuation) that the market might be making in valuing these firms. If, for instance, we find a company to be undervalued because it trades at 15 times earnings and comparable companies trade at 25 times earnings, we may still lose on the investment if the entire sector is overvalued. In relative valuation, all that we can claim is that a stock looks cheap or expensive relative to the group we compared it to, rather than make an absolute judgment about value. Ultimately, relative valuation judgments depend upon how well we have picked the comparable companies and how good a job the market has done in pricing them.

8.3.4 Steps in Relative Valuation:

- (1) **Search and select the comparable companies:** The first part of the process is the selection of a group of comparable companies, that is, companies whose business operations are as similar as possible to those of the subject company. This requires a thorough understanding of the subject: how does it create value? What drives its financial performance? Who are its customers and suppliers? With whom and how does it compete? What risks does it face? And so forth. Comparability is established by matching key business attributes of the subject with those of another group of firms. The similar step in the used car analogy is to match attributes such as make, model, year, engine size, mileage, options, and so on. List of salient characteristics could be prepared and then companies can be inspected one by one. A systematic selection procedure should be designed prior to the inspection to guard against biases.
- (2) **Selection of Multiples:** The next step is to select certain multiples to be calculated based on market participants' views of the relevant metrics. The most commonly used multiples of enterprise value are value/revenue, value/EBIT, and value/EBITDA. Different multiples are used for enterprise value or equity value. For instance, the market-multiple approach is sometimes used to estimate a subject company's equity value rather than its enterprise value. In such instances the multiples computed from comparable companies are derived from stock prices or market capitalization rather than enterprise values. Sometimes some industry specific multiples also can be used that relate value to, say, sales per square foot or to subscriber base or patents, and so on if data is available. Following table shows different types of multiples that can be used.
- (3) **Selection of comparables and size of sample:** Next step is to form of sample of comparables. The question is How big should be the size of a sample? As with most statistical exercises, the easy answer is that more is better as the estimates are more reliable in larger samples. Unfortunately, in a desire to create a large sample we may have to reduce the degree of comparability. A pragmatic response to this difficulty is to examine more than one set of comparables, ranging from a small set of closely matched companies to larger sets of loosely matched companies, and see what the effect is on indicated value. Selection of samples should not based on the multiples themselves or financial measures that directly affect the multiples. That is, we should not look at a set of comparables and decide to exclude companies with low EBIT multiples. This generates bias.
- (4) **Computation of Multiples:** Computing multiples requires a calculation of enterprise value on the one hand and one or more operating metrics (e.g EBIT, EBITDA etc.) on the other. Enterprise value is generally computed as the market value of sum of the market values of debt and equity securities outstanding, including hybrid securities (sometimes referred to as "MVIC"). In practice, we sometimes assume that the market value of debt equals its book value (this may not always be an acceptable approximation) therefore we may have to actually price the options or the conversion features of the securities to obtain reliable estimates of MVIC. For obtaining operating metrics it will often be necessary to adjust or normalize financial or other data to preserve and enhance comparability within the sample.

For example, the choice of LIFO (last in, first out) versus FIFO (first in, first out) accounting for inventory affects a company's cost of goods sold, which in turns affects EBIT . The extent they affect sales, operating profit, or cash flow, should be eliminated before multiples are computed. Nonrecurring items might include results from discontinued operations, extraordinary gains or losses, should also be adjusted.

Multiples themselves may be computed based on historic data or forecasts. Commonly last twelve months data is considered in case of historic method. Multiples can also be computed based on forecasts of operating metrics that may be generated using the analyst's best judgment or expert opinions in trade publications or equity analyst reports.

After computation, it is be multiples have to be applied to the subject. The multiples will differ in the comparable companies within the sample. Therefore, simple means and medians of multiples



can be used. Another alternative is to aggregate the MVICs and operating metrics for a sample of comparable companies and then compute a multiple based on the aggregates. This is in effect a value-weighted average of the sample. Whether this is appropriate depends on circumstances, but it is at least questionable in different sample size. Sometimes the minimum and maximum are used in conjunction with a mean or median to establish a range around a central point estimate.

- (5) **Apply and conclude:** The concluded multiple is applied to the subject company by computing the product of the multiple and the indicated operating metric. The subject company's operating metric may have to be normalized for LIFO vs. FIFO; nonrecurring items etc to ensure consistency with the sample of firms that generated the multiple. Further adjustments may be required after the multiple is applied.
- (a) **Adjustment for excess cash:** If the subject has non operating assets such as excess cash, the amount of excess cash must be added to the value obtained from the multiple to arrive at enterprise value.
- (b) **Adjustment for operating control:** The control premium should be included in the bidder's assessment of the subject enterprise value. However, if the multiples are derived from observed stock prices for comparable companies, they probably lack any control premium since the shares being traded represent minority interests rather than controlling interests; On the other hand, if the multiples are derived from a sample of M&A transactions, and if those deals were for controlling interests, then a premium is already built into the concluded multiples. In general, whether an adjustment for control is indicated depends on what type of purpose of analysis and type of sample. How the adjustment should be made depends on the availability of reliable data on the incremental value of control.
- (c) **Adjustment for illiquidity:** In general, an asset that is readily saleable is worth more than an otherwise identical asset that is not saleable. In case of valuation of a minority interest in a private company, or restricted shares of stock that may not be sold during a stipulated period, the concluded values derived from standard market multiples will need to be further adjusted (discounted) for illiquidity, also known as "lack of marketability." The Comparables are traded the subject is not. The estimation of the size of discount is subjective depending on the source, degree, and duration of the illiquidity.

Examples of Adjustments to Comparables Data

- Inventory accounting (LIFO vs. FIFO)
- Extraordinary items (e.g., litigation settlements)
- Non-recurring items (e.g., discontinued operations, asset sales)
- Owner's compensation
- Capitalization of intangibles (from prior acquisitions)
- Non-operating assets (e.g., excess cash, idle land)
- Construction in progress

8.3.5 Variation on Relative Valuation

In relative valuation, the value of an asset is based upon how similar assets are priced. In practice, there are three variations on relative valuation, with the differences primarily in how we define comparable firms and control for differences across firms:

- (a) **Direct comparison:** In this approach, analysts try to find one or two companies that look almost exactly like the company they are trying to value and estimate the value based upon how these similar companies are priced. The key part in this analysis is identifying these similar companies and getting their market values.

- (b) *Peer Group Average*: In the second, analysts compare how their company is priced (using a multiple) with how the peer group is priced (using the average for that multiple). Thus, a stock is considered cheap if it trade at 12 times earnings and the average price earnings ratio for the sector is 15. Implicit in this approach is the assumption that while companies may vary widely across a sector, the average for the sector is representative for a typical company.
- (c) *Peer group average adjusted for differences*: Recognizing that there can be wide differences between the company being valued and other companies in the comparable firm group, analysts sometimes try to control for differences between companies. In many cases, the control is subjective: a company with higher expected growth than the industry will trade at a higher multiple of earnings than the industry average but how much higher is left unspecified. In a few cases, analysts explicitly try to control for differences between companies by either adjusting the multiple being used or by using statistical techniques. As an example of the former, consider PEG ratios. These ratios are computed by dividing PE ratios by expected growth rates, thus controlling (at least in theory) for differences in growth and allowing analysts to compare companies with different growth rates.

8.3.6 Valuation Multiples

A valuation multiple is the ratio of firm value or equity value to some aspect of the firm's economic activity, such as cash flow, sales, or EBITDA. The table below lists the most common multiples used to value firms, together with the terminology that is used to describe the multiple.

Multiples Used in Finance

Quantity	X	Multiple	Terminology = Value
Cash Flow	X	Firm Value / Cash Flow of Firm	"Cash flow multiple" = Value of Firm
EBITDA	X	Firm Value / EBITDA of Firm	"EBITDA multiple" = Value of Firm
Sales	X	Firm Value / Sales Value of Firm	"Sales multiple" = Value of Firm
Customers	X	Firm Value / Customers	"Customer multiple" = Value of Firm
Earnings	X	Price per Share / Earnings	"Price-earnings ratio" = Share Price

The technique for applying a valuation multiple is identical to that of applying a price-per-square-foot multiple to value real estate, or a price per pound to a purchase of fish. If you are studying a firm with a cash flow of ₹5 Crores and you believe it should be valued at a cash flow multiple of 10, you will determine that the firm is worth ₹ 50 Crores.

8.3.6.1 Sources of Multiples:

Multiples can be derived either by using fundamentals or by comparables. In discounted cash flow valuation, the value of a firm is determined by its expected cash flows. Other things remaining equal, higher cash flows, lower risk and higher growth should yield higher value. Thus, multiples can be derived from CF techniques and by comparing across firms or time, and make explicit or implicit assumptions about how firms are similar or vary on fundamentals. This approach requires the same information. Its primary advantage is to show the relationship between multiples and firm characteristics. For instance, what will happen to price-earnings ratios as growth rates decrease? What is the relationship between price-book value ratios and return on equity?

Under comparable method, a firm is valued as how similar firms are priced by the market, or in some cases, with how the firm was valued in prior periods. Thus, comparison can be cross sectional or long term time series. While doing cross sectional comparisons, finding exactly similar firms is difficult some adjustments need to be made to control for differences across firms on growth, risk and cash flow measures. Controlling can be either done by using industry averages or by using multivariate models which allows for controlling of variables. In time series comparisons assumptions have to be made that fundamentals of the firm have not changed. Comparing multiples across time can also be complicated by changes in the interest rates over time and the behavior of the overall market. For instance, as



interest rates fall below historical norms and the overall market increases, you would expect most companies to trade at much higher multiples of earnings and book value than they have historically.

8.3.6.2 Description of Multiples:

(1) Earnings Multiples: This is the most common method of valuing multiples.

(i) Price Earnings Ratio (P/E): The price-earnings multiple (PE) is the most widely of all multiples. It is very simple to calculate. It is widely used in pricing of initial public offerings and making judgments on relative value. The price earnings ratio is the ratio of the market price per share to the earnings per share :

$$PE = \text{Market Price per share} / \text{Earnings per share}$$

To get to the heart of price earnings multiples, an equity DCF model can be used. Restated in terms of the PE ratio, we find that the PE ratio for a stable growth firm can be written in terms of three variables: (a) The expected growth rate in earnings per share (b) The riskiness of the equity, which determines the cost of equity and (c) The efficiency with which the firm generates growth, which is measured by how much the firm can pay out or afford to pay out after reinvested to create the growth.

(ii) Price to Earnings with no expected growth:

$$P_0 = \frac{E_1}{k}$$

$$\frac{P_0}{E_1} = \frac{1}{k}$$

Where:

E_1 – expected earnings for next year

E_1 is equal to D_1 under no growth

k – Required rate of return

Illustration 1.

$$E_0 = ₹ 2.50 \quad g = 0 \quad k = 12.5\%$$

$$P_0 = D/k = ₹ 2.50/0.125 = ₹ 20.00$$

$$P/E = 1/k = 1/0.125 = 8$$

(iii) P/E Ratio with Constant Growth:

$$P_0 = \frac{D_1}{k - g} = \frac{E_1(1 - b)}{k - (b \times ROE)}$$

$$\frac{P_0}{E_1} = \frac{1 - b}{k - (b \times ROE)}$$

Where:

b = retention ratio

ROE = Return on Equity

b = 60%, ROE = 15%, $(1 - b) = 40\%$

$$E_1 = ₹ 2.50 [1 + (0.6)(0.15)] = ₹ 2.73$$

$$D_1 = ₹ 2.73(1-0.6) = ₹ 1.09$$

$$K = 12.5\% \quad g = 9\%$$

$$P_0 = 1.09 / (0.125 - 0.09) = ₹ 31.14$$

$$PE = 31.14 / 2.73 = 11.4 \text{ or } PE = (1 - 0.60) / (0.125 - 0.09) = 11.4$$

The PE ratio is an increasing function of the payout ratio and the growth rate, and a decreasing function of the riskiness of the firm. Other things held equal, higher growth firms will have higher PE ratios than lower growth firms. Higher risk firms will have lower PE ratios than lower risk firms. Firms with lower reinvestment needs will have higher PE ratios than firms with higher reinvestment rates.

(iv) PE for a High Growth Firm: The price-earnings ratio for a high growth firm can also be related to fundamentals. In the special case of the two-stage dividend discount model, this relationship can be made explicit fairly simply. When a firm is expected to be in high growth for the next n years and stable growth thereafter, the dividend discount model can be written as follows :

$$P_0 = \frac{EPS_0 \times \text{Payout ratio} \times (1+g) \times \left(1 - \frac{(1+g)^n}{(1+r)^n}\right)}{r - g} + \frac{EPS_0 \times \text{Payout ratio} \times (1+g) \times (1+g_n)}{(r - g_n)(1+r)^n}$$

Where

EPS = Earnings per share in year 0 (Current year)

g = Growth rate

Payout = Payout ratio

The value of a stock in a two-stage dividend discount model is the sum of two present values:

- The present value of dividends during the high growth phase - this is the first term in the equation
 - ♦ above. It is the present value of a growing annuity. (There is- no constraint on the growth rate. In fact, this equation will yield the present value of a growing annuity even if $g > r$... the denominator will become negative but so will the numerator)
- The present value of the terminal price... this is the second term in the equation. The PE ratio for
 - ♦ a high growth firm is a function of the same three variables that determine the PE ratio for a
 - ♦ stable growth firm, though you have to estimate the parameters twice, once for the high growth phase and once for the stable growth phase.

Illustration 2.

Assume that you have been asked to estimate the PE ratio for a firm which has the following characteristics:

	High Growth Phase	Stable Growth Phase
Expected Growth Rate	25%	8%
Payout- Ratio	20%	50%
Beta	1.00	1.00
Number of years	5 yrs	forever

Riskfree rate = T. Bond Rate = 6%

Required rate of return = 6% + 1(5.5%) = 11.5%

$$P/E = \frac{0.2 \times (1.25) \times \left(1 - \frac{(1.25)^5}{(1.115)^5}\right)}{(0.115 - 0.25)} + \frac{0.5 \times (1.25)^5 \times (1.08)}{(0.115 - 0.08)(1.115)^5} = 28.75$$



For a firm with these characteristics, 28.75 times earnings is a fair price to pay. In fact, if you valued this firm using a dividend discount model, you would get the identical value per share.

Illustration 3.

Estimating a Fundamental PE ratio for Infosys:

The following is an estimation of the appropriate PE ratio for Infosys in July 2000. The assumptions are summarized below:

	High Growth Period	Stable Growth
Length	5 years	forever after year 5
Cost of Equity	10.85%	10.00%
Expected Growth Rate	13.63%	66.67%
Payout Ratio	36.00%	66.67%

The current payout ratio of 36% is used for the entire high growth period. After year 5, the payout ratio is estimated based upon the expected growth rate of 5% and a return on equity of 15% (based upon industry averages):

Stable period payout ratio = $1 - \text{Growth rate} / \text{Return on equity} = 1 - 5\% / 15\% = 66.67\%$.

The price-earnings ratio can be estimated based upon these inputs:

$$P/E = \frac{0.36 \times (1.1363) \times \left(1 - \frac{(1.1363)^5}{(1.1085)^5}\right)}{(0.1085 - 0.1363)} + \frac{0.67 \times (1.1363)^5 \times (1.05)}{(0.10 - 0.05)(1.1085)^5} = 17.79$$

Based upon its fundamentals, you would expect Infosys to be trading at 17.79 times earnings.

8.3.6.3 Applicability of Multiples – meaning, limitations

The allure of multiples is that they are simple and easy to relate to. They can be used to obtain estimates of value quickly for firms and assets, and are particularly useful when there are a large number of comparable firms being traded on financial markets, and the market is, on average, pricing these firms correctly. In fact, relative valuation is tailor made for analysts and portfolio managers who not only have to find under valued equities in any market, no matter how overvalued, but also get judged on a relative basis. An analyst who picks stocks based upon their PE ratios, relative to the sectors they operate in, will always find under valued stocks in any market; if entire sectors are over valued and his stocks decline, he will still look good on a relative basis since his stocks will decline less than comparable stocks (assuming the relative valuation is right).

By the same token, they are also easy to misuse and manipulate, especially when comparable firms are used. Given that no two firms are exactly similar in terms of risk and growth, the definition of 'comparable' firms is a subjective one. Consequently, a biased analyst can choose a group of comparable firms to confirm his or her biases about a firm's value. While this potential for bias exists with discounted cashflow valuation as well, the analyst in DCF valuation is forced to be much more explicit about the assumptions which determine the final value. With multiples, these assumptions are often left unstated.

The other problem with using multiples based upon comparable firms is that it builds in errors (over valuation or under valuation) that the market might be making in valuing these firms. If, for instance, we find a company to be under valued because it trades at 15 times earnings and comparable companies trade at 25 times earnings, we may still lose on the investment if the entire sector is over valued. In relative valuation, all that we can claim is that a stock looks cheap or expensive relative to the group we compared it to, rather than make an absolute judgment about value. Ultimately, relative valuation judgments depend upon how well we have picked the comparable companies and how how good a job the market has done in pricing them.

8.4 FREE CASH FLOW VALUATION

8.4.1 Estimation of Free Cash

Estimation of cash flows is an important step of a valuation process and the nature of cash flows that would be used in the calculation would depend on the perspective of the investor doing the analysis. Free cash flow concept focuses on the cash generated from operations in excess of that needed for reinvestment. Analysts frequently value firms based on the present value of expected future free cash flow. If a firm is not expected to generate free cash flow in the future, it is unlikely to be valuable.

Free cash flow valuation defines the value of the firm to be the present value of its expected future cash flows discounted at the company's cost of capital. Free cash flow available to the firm (FCFF) represents cash flow available to both debt and equity holders. Free cash flow to equity (FCFE) is what remains after debt holders have received their contractually obligated payments namely interest.

A company generates revenue by selling its products and services, while incurring expenses—salaries, cost of goods sold (CGS), selling and general administrative expenses (SGA), research and development (R&D). To produce revenue a firm not only incurs operating expenses, but it also must invest money in real estate, buildings and equipment, and in working capital to support its business activities. Also, the company must pay income taxes on its earnings. The amount of cash that's left over after the payment of these investments and taxes is known as Free Cash Flow to the Firm (FCFF).

This cash flow represents the return to all providers of capital, whether debt or equity. It can be used to pay off debt, repurchase shares, pay dividends or be retained for future growth opportunities. It is the hard cash that is available to pay the company's various claim holders, especially the shareholders.

$FCFF = NOP - Taxes - Net Investment - Net Change in Working Capital$

Or

$FCFF = NI + Non\ Cash\ Charges + Interest\ (1-T) - Net\ Investment - Net\ Change\ in\ Working\ Capital$

A positive value would indicate that the firm has cash left after expenses. A negative value, on the other hand, would indicate that the firm has not generated enough revenue to cover its costs and investment activities.

FCFF can be calculated from the statement of cash flows as follows:

$FCFF = \text{Cash Flow from operations} + \text{After-tax interest expense} - \text{Capital expenditures}$

8.4.2 Free Cash Flows to Equity (FCFE) Model

Free Cash Flow to Equity (FCFE) is a measure of how much cash can be paid to the equity shareholders of the company after all expenses, reinvestment and debt repayment. Free cash flow to equity (FCFE) represents the cash flow a company generates after necessary expenses and expenditures and after satisfying the claims of debt holders. It can be calculated from Free Cash Flow to the Firm (FCFF) as follows:

$FCFE = FCFF - \text{After-tax interest expense} + \text{Net borrowing}$

If the company borrows more in a year than it repays it will have additional funds that could be distributed to shareholders, which is why net borrowing is added to FCFF in order to determine FCFE.

Once the free cash flows are estimated from the right perspective, the value of the firm is the sum of the present values of the free cash flows for a "planning period" plus the present value of the cash flows beyond the planning horizon (i.e., the terminal value), i.e.,



VOF (Value of Firms)

$$= \sum_{t=1}^T \frac{FCF_t}{(1+k)^t} + \frac{FCF_{t+1}}{k-g} \times \frac{1}{(1+k)^T}$$

If free cash flow is positive then the company has done a good job of managing its cash. If free cash flow is negative then the company may have to look for other sources of funding such as issuing additional shares or debt financing. If a company has a negative free cash flow and has to issue more equity shares, this will dilute the profits per share. If the company chooses to seek debt financing, there will be additional interest expense as a result and the net income of the company will suffer. Free cash flow is one indicator of the ability of a company to return profits to shareholders through debt reduction, increasing dividends, or stock buybacks. All of these scenarios result in an increased shareholder yield and a better return on your investment.

To find the value of a firm, debt holders and/or contributors of debt and equity capital, would discount FCFF by weighted average cost of capital (WACC). Similarly, the equity shareholders would discount FCFE by cost of equity.

There are two major approaches to determine cost of equity. An equilibrium model - either CAPM or Arbitrage Pricing Theory (APT) and the Government security (bond) yield plus risk premium method.

The FCFE is the residual cash flows left after meeting interest and principal payments and providing for capital expenditures to both – maintain existing assets and create new assets for future growth.

FCFE = Net Income + Depreciation – Capital spending – Δ Working capital – Principal repayments + New Debt Issues.

In a special case where capital expenditures and working capital are expected to be financed at the target debt equity ratio d and principal repayments are made from new debt issues.

FCFE = Net Income + $(1 - d)$ (Capital Exp. – Depreciation) + $(1 - d)$ Δ Working capital.

Dividends different from FCFE

The FCFE is a measure of what a firm can afford to payout as dividends.

- (a) Desire for stability
- (b) Future investment needs
- (c) Tax factors
- (d) Signalling prerogatives: Increase in dividends is viewed as positive signals and decreases as negative signal.

8.4.2.1 FCFE Models:

(I) The stable-growth FCFE Model:

The value of equity, under the stable-growth model, is a function of expected FCFE in the next period, the stable growth rate, and the required rate of return.

$$P_0 = \frac{FCFE_1}{r - g_n}$$

$$P_0 = \text{Value of stock today}$$

$$FCFE = \text{Expected FCFE next year}$$

r = Cost of equity of the firm

g_n = Growth rate in FCFE for the firm forever.

Illustration 4.

Earnings per share : ₹ 3.15

Capital Exp. per share : ₹ 3.15

Depreciation per share : ₹ 2.78

Change in working capital per share : ₹ 0.50

Debt financing ratio : 25%

Earnings, Capital expenditure, Depreciation, Working capital are all expected to grow at 6% per year.

The beta for stock is 0.90. Treasury bond rate is 7.5%.

Calculate value of stock.

Solution:

Estimating value

Long term bond rate 7.5%

Cost of equity = $7.5\% + (0.90 \times 5.50\%) = 12.45\%$

Expected growth rate 6%

$$\begin{aligned} \text{Base year FCFE} &= \text{Earning per share} - (\text{Capital Exp.} - \text{Dep.}) \\ &\quad (1 - D/E \text{ Ratio}) - \text{Change in working capital} \\ &= 3.15 - (3.15 - 2.78) (1 - 0.25) - 0.50 (1 - 0.25) \\ &= 2.49 \end{aligned}$$

$$\text{Value per share} = 2.49 \times 1.06 (0.1245 - 0.06) = ₹ 41.$$

Illustration 5.

Assume that the following details are given for a company:

Sales - ₹ 1,00,000; Costs - ₹75,000; Depreciation - ₹20,000; Tax - 35%; Change in Net Working Capital - ₹1,000; Change in Capital Spending - ₹ 10,000

The Free Cash Flow to Firm (FCFF) for the given data can be calculated as follows:

Sales - Costs - Depreciation	₹5,000
Less: Tax	₹1,750
PAT	₹3,250
Add: Depreciation	₹20,000
Less: Change in Net Working Capital	₹1,000
Less: Change in Capital Spending	₹10,000
Free Cash Flow to Firm (FCFF)	₹12,250



Illustration 6.

If in the above example if interest of ₹1,000 is given and the company resorts to net borrowing of ₹5,000 in the year, we can find FCFE as follows:

We first find Free Cash Flow to Firm (FCFF) for the given data:

Sales - Costs - Depreciation	₹4,000
Less: Tax	₹1,400
PAT	₹2,600
Add: Depreciation	₹20,000
Less: Change in Net Working Capital	₹ 1,000
Less: Change in Capital Spending	₹10,000
Free Cash Flow to Firm (FCFF)	₹11,600
Less: After tax Interest Expense i.e. $I \times (1-T)$	₹650
Add: Net Borrowing	₹5,000
Free Cash Flow to Equity (FCFE)	₹15,950

(II) FCFE model – two stage and three stage FCFE model

(a) Two stage FCFE model :

The value of any stock is the present value of the FCFE per year for the extra ordinary growth period plus the present value of the terminal price at the end of the period.

Value = PV of FCFE + PV of Terminal price

$$= \sum_{t=1}^{t=n} \frac{FCFE_t}{(1+r)^t} + \frac{P_n}{(1+r)^n}$$

Where $FCFE_t$ = FCFE in year t

P_n = Price at the end of extra ordinary growth period

r = Required rate of return to equity investors in high growth period.

The terminal price is generally calculated using the infinite growth rate model:

$P_n = \frac{FCFE_{n+1}}{r_n - g_n}$

g_n = Growth rate after the terminal year forever

r_n = Required rate of return to equity investors in stable-growth period.

(b) Three stage FCFE model - E model

E-model is designed to value firms that are expected to go through three stages of growth: an initial phase of high growth rates, a transition period where growth rate declines and a steady state where growth is stable.

$$P_0 = \sum_{t=1}^{t=n_1} \frac{FCFE_t}{(1+r)^t} + \sum_{t=n_1+1}^{t=2} \frac{FCFE_t}{(1+r)^t} + \frac{P_{n_2}}{(1+r)^2}$$

Where P_0 = Value of stock today

$FCFE_t$ = FCFE in year t

r = Cost of equity

$$P_{n_2} = \text{Terminal price at the end of transition period} \\ = \text{FCFE}_{n_2+1} / (r - g_n)$$

n_1 = End of the initial high growth period

n_2 = End of transition period

8.4.2.2 Situations when FCFE models and dividend discount valuation models provide similar as well as dissimilar results

FCFE model is alternative to dividend discounting model. But at times both provide similar results:

When result obtained from FCFE and Dividend discount model may be same:

- (i) Where dividends are equal to FCFE.
- (ii) Where FCFE is greater than dividends but excess cash (FCFE- dividends) is invested in projects with NPV = 0 (Investments are fairly priced)

When results from FCFE and Dividend discounting models are different:

- (i) When FCFE is greater than dividends and excess cash earns below market interest rates or is invested in negative NPV – value projects, the value from FCFE will be greater than the value from discount model.
- (ii) When dividends are greater than FCFE, the firm will have to issue either new stock or new debt to pay their dividends- with attendant costs.
- (iii) Paying too much of dividend can lead to capital rationing constraints when good projects are rejected, resulting in loss of wealth.

Conclusion:

The dividend model uses a strict definition of cash flows to equity, i.e. expected dividends on stock, while FCFE model uses an expensive definition of cash flows to equity as the residual cash flows after meeting all financial obligations and investment needs.

When the firms have dividends that are different from FCFE, the values from two models will be different.

In valuing firms for takeover or where there is reasonable chance of changing corporate control, the value from the FCFE provides the better value.

The Discounted Cash Flow Analysis

Discounted cash flow valuation is based upon the notion that the value of an asset is the present value of the expected cash flows on that asset, discounted at a rate that reflects the riskiness of those cash flows. The nature of the cash flows will depend upon the asset: the dividends for an equity share, coupons and redemption value for bonds and the post tax cash flows for a project. The approach is based on time value concept where the value of any asset is the present value of its expected future cash flows. An acquirer would need to follow the steps given below and first find the intrinsic value of share. As we illustrate the method let us find the intrinsic value of popular auto ancillary company Bharat Forge Ltd.

Step I

Estimate free cash flows for the explicit forecast period

The free cash flows represent the cash flow available to all the suppliers of the capital to the firm. These include equity holders, the preference investors and the providers of debt to the firm.

Free Cash Flow = Gross Cash Flow of the firm - Tax - Investments - Change in NWC + Depreciation + Non-Cash Charges

Note that financing is not incorporated in the cash flows. Suitable adjustments for the specific financing have to be made in the discount rate.

For Bharat Forge we calculate the free cash flows as follows:

TABLE 1	Bharat Forge—DCF model, March fiscal year-ends, 2011-2020E (₹ million)									
	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Revenues	15,446	18,608	23,260	27,912	33,495	38,519	44,297	48,726	52,381	55,000
Cost	(10,776)	(12,967)	(16,338)	(19,606)	(23,723)	(27,518)	(31,646)	(35,127)	(37,586)	(39,465)
SG & Admin.	(526)	(657)	(756)	(880)	(924)	(980)	(1,029)	(1,080)	(1,145)	(1,145)
EBITDA	4,144	4,984	6,167	7,426	8,848	10,021	11,622	12,519	13,650	14,389
Depreciation	(546)	(539)	(621)	(725)	(850)	(995)	(1,161)	(1,344)	(1,540)	(1,746)
EBIT	3,598	4,446	5,546	6,702	7,997	9,026	10,461	11,175	12,110	12,643
Tax	(1,115)	(1,214)	(1,941)	(2,346)	(2,799)	(2,708)	(3,138)	(3,353)	(3,633)	(3,793)
Chg. In NWC*	(44)	98	123	147	177	203	234	257	276	290
Investment	(1,550)	(1,050)	(1,628)	(2,093)	(2,512)	(2,889)	(3,322)	(3,654)	(3,929)	(4,125)
FCF	1,434	2,819	2,720	3,135	3,713	4,627	5,395	5,769	6,365	6,762
PV of CF [@]	1,434	2,522	2,177	2,244	2,378	2,651	2,766	2,646	2,611	2,482

* NWC -> Net Working Capital

@ - PV is found out using the discount rate calculated in the next step.

The explicit forecast period is 10 years, i.e. 2011-2020.

Step II

Estimate a suitable Discount Rate for the Acquisition

The second step involves computation of the cost of capital to the firm. The cost of capital is the rate to be used for discounting the free cash flows to their present values. The cost of capital is to be computed as the weighted average of the costs of all sources of capital, which are based on the market value of each of the components of the capital.

$$K_o = K_e (S/V) + K_p (P/V) + K_d (1-T)(B/V),$$

Where V is the total market value of firm, S, P and B indicate the market values of Equity, Preference Capital and Debt respectively. K_o , K_e , K_p and K_d respectively are the weighted average cost of capital, cost of equity capital, cost of preference capital and cost of debt and t is the tax rate applicable to the firm. If the acquirer who is valuing the firm intends to change the capital structure of the target company, then suitable adjustments for the discount rate must be made.

For our Bharat Forge example, we have the information that K_e as 12.5%, K_d as 8% and T – tax rate as 33.6%. Moreover we know that D/E is 1/9 i.e. $W_d = 1/10 = 0.10$ and $W_e = 9/10 = 0.90$.

Therefore WACC = $0.9 \times 0.125 + 0.1 \times 0.08 \times (1 - 0.336) = 11.8\%$ approx. This would be the discount rate that would be used to find PV of free cash flows.

Step III

Calculate the Present Value of Cash Flows for the explicit forecast period

One of the premises of this approach is that the firm is a going concern. The implication of this assumption is that the cash flows in perpetuity need be discounted to value the firm. This is however, impossible in practice. Hence, the cash flows are explicitly computed for a finite period of time (known as explicit forecast period) and the continuing value of the firm at the end of such period is computed (known as Terminal Value). The forecast period is set in such a way that the company reaches a stable phase / steady state at the end of forecast period and the growth rate remains constant in perpetuity.

For the Bharat Forge, we have 10 year forecasts, and therefore we find the total PV summing the 10 individual year's PV (See Table 1) to get ₹ 23910 mln.

Step IV

Estimate the Terminal Value

The terminal value is the present value of the cash flows occurring after the forecast period.

$TV = \frac{[CF_t (1+g)]}{k-g}$ where CF_t is the Cash flow in the last year, g is the constant growth rate and k is the discount rate.

For the Bharat Forge example we have, FCF applicable for the terminal year as ₹6.762 mln. Substituting in the above formula we get,

$$[PV \text{ of TV as } \frac{[6726 \times (1.02)]}{0.118 - 0.02} \times \frac{1}{(1 + 0.118)^{10}} = ₹25879 \text{ min. [We have assumed } g = 2\%]$$

Step V

Determination of the Value of the firm

Add PV of the free cash flows (as arrived at in Step III) and the Terminal Value (as arrived at in Step IV). For Bharat Forge we get ₹49789 mln.

Step VI

Subtract the Value of the debt

Subtract the Value of the debt and other obligations assumed by the acquirer to arrive at the value of equity.

The debt of Bharat Forge is given as ₹3236 mln. This value need to be subtracted to find the value of equity. Therefore we have, Value of Equity = ₹(49789-3236) = ₹46553 mln. We also have the information that number of O/s shares = 37.7 mln. **Therefore intrinsic value of 1 equity share of Bharat Forge = 46553/37.7 = ₹1235 approx.**

It should be noted that the final price paid by the acquirer might be much higher than the estimate arrived at by the DCF method. The target company's value can be thought of as

Value of Buyer = Value of Seller + Value added by the Buyer + Change in the value to a buyer if the target firm is acquired by the competitor.

8.5 VALUATION OF FIRM – OTHER VALUATION BASIS

8.5.1 Enterprise Valuation:

Valuation of the enterprise, which includes all equity, preference shareholders and debt holders. The value of the firm is obtained by discounting expected cash flows to the firm, i.e., the residual cash flows after meeting all operating expenses, reinvestment needs and taxes, but prior to any payments to either debt or equity holders, at the weighted average cost of capital, which is the cost of the different components of financing used by the firm, weighted by their market value proportions.

$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{CF \text{ to Equity} - 1}{(1 + WACC)^t}$$

Where,

CF to Firm = Expected Cash flows to Firm in period t

And WACC = Weighted average cost of capital



8.5.2 Valuation of firm in pieces (Adjusted Present value):

Valuation is done in pieces beginning with its operations and adding the effects on value of debt and other non-equity claims. The value of the firm can also be obtained by valuing each claim on the firm separately. In this approach, first equity is valued assuming that it was financed only with equity. Then the value taken away by debt is considered by considering the present value of the tax benefits that flow from debt and the expected bankruptcy costs.

Value of firm = Value of all-equity financed firm + PV of tax benefits + Expected Bankruptcy Costs

Piece or Adjusted PV approach allows different cash flows to the firm to be discounted at different rates, given their riskiness. Following example shows the equivalence of equity and firm valuation.

Illustration 7.

Effects of mismatching cash flows and discount rates

Year	Cash flow to Equity	Interest (1 – t)	Cash flow to Firm
1	50	40	90
2	60	40	100
3	68	40	108
4	76.2	40	116.2
5	83.49	40	123.49
Terminal Value	1603.008		2363.008

Assuming the cost of equity is 13.625% and the firm can borrow long term at 10%. (The tax rate for the firm is 50%.) The current market value of equity is 1,073 and the value of debt outstanding is 800.

The cost of equity is given as an input and is 13.625%, and the after-tax cost of debt is 5%.

Cost of Debt = Pre-tax rate (1 – tax rate) = 10% (1 – 0.5) = 5%

Given the market values of equity and debt, the cost of capital can be estimated.

WACC = Cost of Equity (Equity / (Debt + Equity)) + Cost of Debt (Debt / (Debt + Equity))

= 13.625% (1073/1873) + 5% (800/1873) = 9.94%

Method 1: Discount CF to Equity at Cost of Equity to get value of equity

We discount cash flows to equity at the cost of equity:

PV of Equity = $50/1.13625 + 60/1.13625^2 + 68/1.13625^3 + 76.2/1.13625^4 + (83.49+1603)/1.13625^5 = 1073$

Method 2: Discount CF to Firm at Cost of Capital to get value of firm

PV of Firm = $90/1.0994 + 100/1.0994^2 + 108/1.0994^3 + 116.2/1.0994^4 + (123.49+2363)/1.0994^5 = 1873$

PV of Equity = PV of Firm - Market Value of Debt = 1873 - 800 = 1073

The value of equity is 1073 under both approaches.

Note:

- (1) The common mistake that is made is that the cash flows to equity are discounted at cost of capital (WACC) which gives very high value of equity and when cash flows to firm are discounted at cost of equity the firm is understated. In our example the value of equity increases by 175 over its true value (1073). When the cash flows to the firm are erroneously discounted at the cost of equity, the value of the firm is understated by 260.
- (2) Cash flows for equity are after interest and cash flows for the firm are before If the cash flows that are discounted are before interest expenses and principal payments, they are usually cash flows to the firm.

8.5.3 Cash Value Added (CVA)

Cash value added (CVA) is the excess of cash generated over and above the requirement of cash. It is a cash flow based measure of value that includes only the cash items.

Cash Value Added is given by:

$$\text{Cash value added (CVA)} = \text{operating cash flow (OCF)} - \text{operating cash flow demand (OFCD)}$$

The operating cash flow is computed for the essential strategic investment and excludes non-strategic investment. Operating cash flow is computed by adding earnings before interest, taxes, depreciation and amortization (EBITDA) and the increase in working capital, and subtracting it from non-strategic investment.

$$\text{Operating cash flow (OCF)} = \text{EBITDA} + \text{Increase in Working Capital} - \text{Non-strategic Investment}$$

It is clear that investment in working capital is regarded as essential and strategic.

From OCF is subtracted the operating cash flow demand (OFCD) representing the opportunity cost of capital demanded by the investors for the strategic investment. It measures the requirement of investors not in percentage terms but in actual cash flow terms. The difference of OCF and OFCD is the cash value added.

Not being a market-based determinant it can be computed at strategic business unit level. The emphasis is on cash and not on accounting earnings such as EBIT or net profit of the strategic unit being evaluated.

8.5.4 Cash Flow Return on Investment (CFROI)

Developed by Holt Value Associates, cash flow return on investment (CFROI) is a cash flow based corporate performance measure. Boston Consulting Group (BCG) uses it as performance measure and defines it as ratio of sustainable cash flow in a year to the cash invested on the assets of the firm.

$$\text{Cash Flow Return on Investment (CFROI)} = \frac{\text{Sustainable Cash Flow}}{\text{Cash Invested}}$$

Sustainable cash flow is the cash flow adjusted for economic depreciation. Economic depreciation is the annual amount of charge (or sinking fund) on the cash flows of the firm that is required for replacing the asset after its useful life is over and with discount factor of WACC of the firm. For Example, if an asset available with the firm is valued at ₹ 5,00,000 but after 10 years of its useful life the replacement can be done only at ₹ 7,00,000 the economic depreciation would be based on replacement cost of ₹ 7 lakh instead of ₹ 5 lakh. And if the WACC is 12 % the amount each year must be based on such that the present value at 12 % for 10 years equals ₹ 7,00,000.

8.5.5 Relative Value of Growth

The firm's management often faces the dilemma as to how to provide increased value to the shareholders. Two common strategies available to them are—increase the revenue by increased marketing and sale promotion effort, and to increase the productivity by undertaking cost cutting exercises wherever possible. Undoubtedly, both are desirable and increase value to the shareholders. Given the constraint of time with the top management it is hard to imagine if management can be focus on both the strategies of value addition simultaneously and with equal vigor.

Relative value of growth (RVG) is one parameter that helps resolve this dilemma.

Nathaniel Mass (2005) defined RVG as:

$$\text{Relative Value of Growth (RVG)} = \frac{\text{Value of 1\% Growth (VG)}}{\text{Value of 1\% improvement in Margin (VM)}}$$



Where,

Value of 1% Growth (VG) = Value of the Firm with 1% Extra Revenue – Current Value of the Firm

$$= \frac{\text{Current Cash Flow}}{\text{WACC} - (g + 1\%)} - \text{Current Value of the Firm}$$

Value of improvement in Margin by 1% (VM)

$$= \frac{\text{Post-Tax Increase in Cash Flow}}{\text{WACC} - g}$$

$$= \frac{\text{Current Cash Flow} \times 1\% \times (1-T)}{\text{WACC} - g}$$

Relative value of growth compares what is achievable by an increase in revenue as compared to increase in profitability. The higher the value of RVG the more desirable it is. It compares the contribution of increase in revenue to that of strategy of cost cutting. With an RVG greater than one, the increase in the value would be higher if the firm focuses on increased revenue than if the focus is on cost cutting to improve margins. It is a measure of how increased revenue, which implies increased market share, impact shareholders' value creation. Growth in revenue outweighs cost cutting measures. If RVG is less than one, cost cutting is more effective in value creation than the increase in revenue. Such a situation would signify the maturity of the market where only way to improve value is cost cutting.

Understanding the RVG would help strike a good balance between marketing and production activities. It is useful for making investment decisions, establishing long term focus and formulation of corporate strategy. The limitation of RVG includes its inability to value intangibles besides being a relative measure ignoring the increase in value in absolute terms.

8.5.6 Economic Margin

Economic margin, as a measure of corporate performance, was developed by Daniel J Obrycki and Rafael Resendes (1996). It focuses on economic profit. The approach makes adjustments for differences in capital structure, age and life of the assets, mix of the assets, and investment needed to generate earnings.

Economic margin framework is not only a performance metric but also encompasses valuation based on four main value drives – profitability, competition, growth, and cost of capital.

It is measured as follows:

$$\text{Economic Margin} = \frac{\text{Operating Cash Flow} - \text{Capital Charge}}{\text{Invested Capital}}$$

Where,

$$\text{Operating Cash Flow} = \text{Net Income} + \text{Depreciation \& Amortization} + \text{After-tax Interest} + \text{R\&D Expenses} \pm \text{Non-recurring Expenses/Income}$$

$$\text{Invested capital} = \text{Total Assets} + \text{Accumulated Depreciation} + \text{Gross Plant Inflation adjustment} + \text{Capitalized R\&D} - \text{Non-debt Current Liabilities}$$

The basic difference and premise of economic margin based valuation is that it emphasizes that firms with high excess returns are expected to attract greater competition leading to a shorter competitive advantage period, thus discarding the perpetual cash flow computed to arrive at the terminal value. It states that competition would compete away excess returns.

It is used for finding competition-adjusted performance. The numerator of economic margin like EVA (discussed later) based on economic profit. Unlike EVA, economic margin adds depreciation to the

EBIT. Like CFROI the economic margin based on gross assets and helps avoid growth disincentive and not on net assets. However, unlike CFROI the cash flows are unlevered.

8.5.7 Economic Value Added (EVA) – an aid to Valuation

It is a performance metric that calculates the creation of shareholder value. It distinguishes itself from traditional financial performance metrics such as net profit and EPS: EVA is the calculation of what profits remain after the cost of company's capital—both debt and equity—are deducted from operating profit.

The value of a firm is the sum of the capital invested and the present value of the economic value added. The present value of the economic value added by an asset over its life is the net present value of that asset. The value of a firm can be written as the sum of three components, the capital invested in assets in place, the present value of the economic value added by these assets, and the expected present value of the economic value that will be added by future investments. It can be calculated as:

$$\text{Firm Value} = \text{Capital Invested Assets in Place} + \frac{\text{EVA}_t, \text{Assets in Place}}{(1 + \text{WACC})^t} + \frac{\text{EVA}_t, \text{Future Projects}}{t = 1(1 + \text{WACC})^t}$$

Where :

Economic Value Added for all years = (Return on Capital Invested – WACC) (Capital Invested)

Terminal EVA = EVA / (WACC – Net sales growth rate).

WACC = Cost of capital means the “fair rate of return to invested capital”, which goes to all claimholders. It is computed by multiplying Capital invested with WACC.

Return on Capital = Operating Income (1 – tax rate) / Capital Invested

NOPAT = Net Operating Profit After Tax

NOPLAT = Net Operating Profit Less Adjusted Taxes.

It means total operating profit for a firm with adjustments made for taxes. It is used in variant of the FCF and used in mergers of acquisitions.

NOPLAT is very similar to NOPAT, except its (net income + after tax interest expenses + Deferred taxes)

Capital Invested for all years = Total equity + Interest bearing liabilities + Convertibles - Total interest bearing financial assets.

Capital Invested for terminal year = (NOPLAT – Gross capital expenditure – Change in working capital + Increase in non-interest bearing liabilities – Total depreciation) / (Net sales growth × NOPLAT).

Illustration 8.

Consider a firm that has assets in place in which it has capital invested of ₹ 100 crores. Assume the following further facts about the firm:

1. The after-tax operating income on assets in place is ₹ 15 crores. This return on capital of 15% is expected to be sustained in the future, and the company has a cost of capital of 10%.
2. At the beginning of each of the next 5 years, the firm is expected to make investments of ₹ 10 crores each. These investments are also expected to earn 15% as a return on capital, and the cost of capital is expected to remain 10%.
3. After year 5, the company will continue to make investments and earnings will grow 5% a year, but the new investments will have a return on capital of only 10%, which is also the cost of capital.
4. All assets and investments are expected to have infinite lives. Thus, the assets in place and the investments made in the first five years will make 15% a year in perpetuity, with no growth.



This firm can be valued using an economic value added approach as follows:

Capital Invested in Assets in Place ₹ 100 crores

+ EVA from Assets in Place = $(0.15 - 0.10) (100) 70.10$ ₹ 50

+ PV of EVA from New Investments in Year 1 = $[(0.15 - 0.10)(10) / 0.10]$ ₹ 5 crore

+ PV of EVA from New Investments in Year 2 = $[(0.15 - 0.10)(10) / 0.10] / 1.1$ ₹ 4.55 crore

+ PV of EVA from New Investments in Year 3 = $[(0.15 - .10)(10) / 0.10] / 1.12$ ₹ 4.13 crore

+ PV of EVA from New Investments in Year 4 = $[(0.15 - 0.10)(10) / 0.10] / 1.13$ ₹ 3.76 crore

+ PV of EVA from New Investments in Year 5 = $[(0.15 - 0.10)(10) / 0.10] / 1.14$ ₹ 3.42 crore

$$\text{Firm Value} = \text{Capital Invested Assets in Place} + \frac{\text{EVA t, Assets in Place}}{(1 + \text{WACC})^t} + \frac{\text{EVA t, Future Projects}}{t = 1(1 + \text{WACC})^t}$$

Thus, ₹ 170.85 crores = ₹ 100 crores + ₹ 50 corres + ₹ 20.85 crores

Limitations of EVA Method of Firm Valuation

- (1) Needs calculation of invested capital for every year which depends on valuation issues.
- (2) Economic profits as excess returns are fairly subjective, depending on the valuation of invested capital.
- (3) Economic profit framework may provide date inducing illusionary accuracy of the quantified business plan.

8.5.8 Income/ Earnings Capitalization Approach:

There are two main income approaches of valuation. The first, the discounted future income method, involves forecasting a company's "income" streams (e.g., earnings or cash flow) on a year-by-year basis, and then converting these results into their present worth today based on the investor's required annual rate of return for taking the associated risk. The second, the capitalization of earnings method, looks at the actual past results of the company as an indicator of its expected future results. There are a variety of potential "income streams" that might be used to determine value in the discounted future income method and capitalization method such as a company's net profit (after- tax), pre-tax profit, cash flow, dividends and so forth. It then converts these earnings into an estimate of value using a capitalization rate.

- (1) **Discounted future income method:** Value of a business is the present value of all of its anticipated future income streams. This method looks to the future by making annual forecasts of a company's earnings and cash flows and then uses present value techniques to convert these estimates into a value of the business today. In this method higher discount rate is used for higher uncertainty. It is assumed that growth rate will be constant after a period of 5-7 years since it is difficult to reliably predict beyond five or seven years in a forecast. The term "income" is used generically. It is calculated as :

$$\sum_{t=1}^n \frac{\text{Income}}{(1 + \text{WACC})^t}$$

- (2) **Earnings Capitalization Method:** The capitalization method simply says that value is a function of the elements of a company's income, the risk associated with that income (reflected in the discount rate), and the income's expected rate of future annual growth.

$$\text{Firm Value} = \frac{\text{Income Stream for the Coming Year}}{(D - g)}$$

Where, D is the discount rate which is WACC and g is the growth rate.

8.6 CONTINGENT CLAIM VALUATION

In valuation, the value of a firm is the present value of the expected cash flows from the assets of the firm. The net present value of a project does not capture the values of the options to delay, expand or abandon a project. When comparing across investments, the traditional approach of picking the investment with the highest return or net present value may short-change investments that offer a firm more flexibility in operations and investing. A financing model that focuses on minimizing the current cost of capital does not consider the value of financial flexibility that comes from having excess debt capacity. In a similar vein, firms that hold back on returning cash to their stockholders and accumulate large cash balances might also be guided by the desire for financing flexibility. The value of equity, obtained from a discounted cash flow valuation model, does not measure the option to control, and if necessary, liquidate the firm that equity investors possess, and it ignores other options that might be owned by the firm, including patents, licenses and rights to natural reserves. In light of these options that seem to be everywhere, these options should be considered when analyzing corporate decisions. We should try to quantitatively estimate the value of these options, and build them into the decision process.

The value of an asset may not be greater than the present value of expected cash flows if the cash flows are contingent on the occurrence or non-occurrence of an event. As a simple example, consider an undeveloped oil reserve belonging to Exxon. It can be valued based upon expectations of oil prices in the future, but this estimate would miss the non-exclusive facts that the oil company will develop this reserve if oil prices go up and will not if oil prices decline or the oil company will develop this reserve if development costs go down because of technological improvement and will not if development costs remain high. Such undeveloped reserves are real options and should be valued as such, rather than with traditional discounted cash flow models.

Contingent Claim Valuations (CCV) is a revolutionary development in valuation techniques, to recognise the value of assets whose cash flows are contingent on a future event occurring. Typical examples would be the development of a pharmaceutical drug, an unknown oil field, or the development of a new product, innovation or service, with huge risk and uncertainty.

Earnings Valuations have some difficulty dealing with these firms having unused assets, or where the value of the assets cannot be easily linked to future cash flows.

CCV techniques sometimes use option valuation theory to value the underlying options present in many of these assets. Discounted cash flows techniques tend to understate the value of these assets, or punish them with higher discounting rates (higher WACC).

Real Options Valuations tend to value these underlying options as a set of managerial rights to wait, grow, expand, use flexible operating processes or even abandon a project or the use of the asset even after the investment has been made. This technique removes a huge dysfunction that currently exists, between project investment decision making, and managerial flexibility.

8.6.1 Valuation of intangibles and Brands which employ methodologies to value intangible assets that are identifiable, separable and capable of systematic valuation. Brand valuations are an example. There are three main approaches to value intangibles namely:

- (1) Cost
- (2) Market Value
- (3) Economic Value

8.6.2 Key benefits of carrying out an earnings based valuation and/or contingent valuations are:

- (1) They allow firms that are going concerns to value their ability to generate free cash flows in the near and far term;



- (2) They make an estimate of the WACC and the ability of these future free cash flows to create wealth;
- (3) They estimate the terminal value of the company and therefore capture the effect of the company's intangible assets like branding, intellectual capital etc;
- (4) They permit the owners an intelligent and economically way of transiting from the business; and/or
- (5) Provide for effective succession planning.

8.6.3 Valuation of Warrants

A warrant is an option issued by a company to buy a stated number of shares of stock at a specified price. Warrants are generally distributed with debt, or preferred stock, to induce investors to buy those securities at lower cost. A detachable warrant is one that can be detached and traded separately from the underlying security. Most warrants are detachable.

A convertible security is a debenture or preferred stock that can be converted into common stock at the owner's discretion. A warrant, on the other hand, is similar to a long-term right, in that it is merely an option to purchase common stock at a stated price. When a convertible is exercised, it is exchanged directly for common stock; however, with a warrant, both money and the warrant are exchanged for the common stock.

The minimum price of a warrant is equal to zero until the price of the stock rises above the warrant's exercise price. After that, the warrant's minimum price takes on positive values. The degree to which the warrant price rises with increases in the common stock price depends upon the exercise ratio. In addition, investors are willing to pay a premium for warrants because only a small loss is possible, in that the warrant price is less than that of the common stock and has large return possibilities.

Several factors affect the size of the warrant premium including:

- (1) The stock price/exercise price-ratio. As the ratio of the stock price to the exercise price climbs, the warrant premium falls, because the leverage ability of the warrant declines.
- (2) The time left to the warrant expiration date. As the expiration date approaches the size of the warrant premium shrinks.
- (3) Investors' expectations concerning the capital gains potential of the stock. If investors feel favorably about the stock, the warrant premium is larger.
- (4) The degree of price volatility on the underlying common stock. The more volatile the common stock, the higher the warrant premium.

Illustration 9.

Shyam Ltd. has announced issue of warrants on 1:1 basis for its equity share holders. The current price of the stock ₹10 and warrants are convertible at an exercise price of ₹11.71 per share. Warrants are detachable and are trading at ₹3. What is the minimum price of the warrant? What is the warrant premium? Now had the current price been ₹16.375, what is the minimum price and warrant premium? (Consider warrants are tradable at ₹9.75)

$$\text{Minimum price} = \left(\text{Market price of common stock} - \text{Exercise price} \right) \times \left(\text{Exercise ratio} \right) = (\text{₹}10.00 - 11.71) \times 1.0 = \text{₹}1.71$$

Thus, the minimum price on this warrant is considered to be zero, because things simply do not sell for negative prices.

$$\text{Warrant premium} = \text{Market price of warrant} - \text{Minimum price of warrant} = \text{₹}3 - 0 = \text{₹}3$$

$$\begin{aligned} \text{Minimum price} &= (\text{Market price of common stock} - \text{Exercise price}) \times (\text{Exercise ratio}) \\ &= (\text{₹}16.375 - 11.71) \times 1.0 \\ &= \text{₹}4.665 \end{aligned}$$

$$\text{Warrant premium} = \text{Market price of warrant} - \text{Minimum price of warrant} = \text{₹}9.75 - 4.665 = \text{₹}5.085$$

8.6.4 Valuation of Preference Shares

Preferred stock is an element of shareholder equity that has characteristics of both equity and debt. A preferred share carries additional rights above and beyond those conferred by common stock. Preferred shareholders may have an advantage over common stock shareholders in dissolution, bankruptcy or liquidation, for instance. Preferred shares also generally have a dividend requirement, which makes them appear similar to debt. The dividend structure usually has rights attached to it, such as whether the dividends are cumulative or whether the shares participate in enterprise earnings. The dividend rate may or may not be fixed or tied to some type of index that controls the movement of the rate, either up or down.

Since preference shares generally pay a constant dividend over its life time the value of a share of preferred stock is derived from the following formula:

Value of preferred share = Dividend / Required rate of return

The process of determining the value of preferred stock is not entirely different from common stock, except the risk is assessed based on the individual characteristics of the preferred shares and their impact on the income or cash flow.

Characteristics of Preferred Stock

When comparing characteristics of preferred shares to characteristics of similar securities look at the following:

An important characteristic of preferred shares is its dividend. Based on whether the dividends accrue if they are not paid on time, decides whether they cumulative or non-cumulative preference shares. If the preference shares provide the right to participate in earnings or value over and above the stated rate decided whether the preferred shares are participating vs. non-participating. Another characteristic is a preferred share would generally entail a distribution upon liquidation before the equity shareholders. If the preferred shares have a fixed term, and if they can be bought back by the company at a specified price, time or interval, decides whether they are Redeemable or Irredeemable ones. At times preferred shares come with voting rights. At some other times facility of put options are granted where, the preferred holder make the company repurchase the shares for a fixed price (usually par value). Also there are preference shares that are converted for common stock, or into some other stock or debt instrument, which are known by convertible preference shares or non-convertible shares. Remember, each specific characteristic affects value based on the advantage or disadvantage associated with it. The table below highlights them:

Characteristic	Increases value	Decreases value
Convertible vs. non-convertible	Convertible	Non-convertible
Cumulative or non-cumulative	Cumulative	Non-cumulative
Participating vs. non-participating	Participating	Non-participating
Put option	Yes	No
Redeemable vs. nonredeemable	Call price high	Call price low
Voting vs. nonvoting	Voting	Nonvoting

Of all types are preference shares, it is the convertible preference share which are quite popular with equity investors. These are preferred issues that the holders can exchange for a predetermined number of the company's common stock. This exchange can occur at any time the investor chooses regardless of the current market price of the common stock. It is a one way deal so one cannot convert the common stock back to preferred stock.



Following formulae on convertible preference shares are used to find the conversion value, conversion premium etc. These are similar to the ones we learnt in the chapter of Bond Markets.

$$\text{Conversion Ratio} = \frac{\text{Par value of convertible security}}{\text{conversion price}}$$

$$\text{Conversion value} = (\text{Conversion ratio}) \times (\text{Market value per share of the common stock})$$

$$\text{Straight value of preferred stock} = \text{Dividend} / \text{Expected Return}$$

$$\text{Conversion premium (in absolute terms)} = \left(\text{Market price of the convertible preferred stock} \right) - \left(\text{Higher of the security value and conversion value} \right)$$

Illustration 10.

Amit Ltd. is issuing 5% ₹25 par preference shares that would be convertible after three years to equity shares at ₹27. If the current market price of equity shares is ₹13.25, what is the conversion value and conversion premium? The convertibles are trading at ₹17.75 in the market? Assume expected return as 8%.

$$\text{Conversion ratio} = \frac{\text{Par value of conversion security}}{\text{conversion price}} = 25/27 = 0.9259$$

$$\begin{aligned} \text{Conversion value} &= (\text{Conversion ratio}) \times (\text{Market value per share of the common stock}) \\ &= (0.9259) \times (\text{₹}13.25) = \text{₹}12.27 \end{aligned}$$

$$\text{Now let us find the value as straight preferred stock} = 1.25/8 = \text{₹}15.63$$

$$\begin{aligned} \text{Conversion premium (in absolute terms)} &= \left(\text{Market price of the convertible preferred stock} \right) - \left(\text{Higher of the security value and conversion value} \right) \\ &= \text{₹}17.75 - \text{₹}15.63 = \text{₹}2.12. \end{aligned}$$

Illustration 11.

ABC Ltd Company currently sells for ₹ 32.50 per share. In an attempt to determine if ABC Ltd is fairly priced, an analyst has assembled the following information.

- The before-tax required rates of return on ABC Ltd debt, preferred stock, and common stock are 7.0 percent, 6.8 percent, and 11.0 percent, respectively.
- The company's target capital structure is 30 percent debt, 20 percent preferred stock, and 50 percent common stock.
- The market value of the company's debt is ₹145 million and its preferred stock is valued at ₹65 million.
- ABC Ltd's FCFF for the year just ended is ₹28 million. FCFF is expected to grow at a constant rate of 4 percent for the foreseeable future.
- The tax rate is 35 percent.
- ABC Ltd has 8 million outstanding common shares.

What is ABC Ltd's estimated value per share? Is ABC Ltd's stock under priced?

Solution:

The weighted-average cost of capital for ABC Ltd Company is

$$WACC = 0.30(7.0\%) (1 - 0.35) + 0.20(6.8\%) + 0.50(11.0\%) = 8.225\%$$

The firm value is

$$\text{Firm value} = FCFF_0(1 + g) / (WACC - g)$$

$$\text{Firm value} = 28(1.04) / (0.08225 - 0.04) = 29.12/0.04225 = ₹689.23 \text{ million}$$

The value of equity is the firm value minus the value of debt minus the value of preferred stock: Equity = 689.23 - 145 - 65 = ₹479.23 million. Dividing this by the number of shares gives the estimated value per share of ₹479.23 million/8 million shares = ₹59.90. The estimated value for the stock is greater than the market price of ₹32.50, so the stock appears to be undervalued.

Illustration 12.

Sandip Corporation is considering going public but is unsure of a fair offering price for the company. Before hiring an investment banker to assist in making the public offering, managers at Sandip have decided to make their own estimate of the firm's common stock value. The firm's CFO has gathered data for performing the valuation using the free cash flow valuation model. The firm's weighted average cost of capital is 12 percent, and it has ₹ 14,00,000 of debt at market value and ₹5,00,000 of preferred stock at its assumed market value. The estimated free cash flows over the next five years, 2009 through 2013, are given below. Beyond 2013 to infinity, the firm expects its free cash flow to grow by 4 percent annually.

Year	Free Cash Flow
2009	₹ 2,50,000
2010	₹ 2,90,000
2011	₹ 3,20,000
2012	₹ 3,60,000
2013	₹ 4,00,000

- Estimate the value of Sandip Corporation's entire company by using the free cash flow approach.
- Using (a), along with the data provided above, to find Sandip Corporation's equity share value.
- If the firm plans to issue 2,00,000 shares of equity, what is its estimated value per shares ?

Solution:

- The total value of the firm equals

$$\frac{2,50,000}{1.12} + \frac{2,90,000}{1.12^2} + \frac{3,20,000}{1.12^3} + \frac{3,60,000}{1.12^4} + \frac{1}{1.12^4} \times \frac{4,00,000}{0.12 - 0.04} = 40,88,547$$

- Of this amount, ₹ 1.4 million is debt and ₹0.5 million is preferred stock, so the equity value is ₹21,88,547.
- With 2,00,000 shares, the price per share would be ₹ 10.94.



Illustration 13.

From the given financial statement of ABC Ltd find the following free cash flows viz. Free Cash Flow to Firm (FCFF) and Free Cash Flow to Equity (FCFE).

Balance Sheet of ABC Ltd	(₹ in Millions)	
	31.3.2012	31.3.2013
Asset		
Current Assets		
Cash	210	248
Account Receivable	474	513
Inventory	520	564
Total Current Assets	1204	1325
Gross Fixed Assets	2501	2850
Accumulated Depreciation	(604)	(784)
Net Fixed Assets	1897	2066
Total Assets	3101	3391
Equity & Liabilities		
Current Liabilities		
Accounts Payable	295	317
Notes Payable	300	310
Accrued Taxes and expenses	76	99
Total Current Liabilities	671	726
Long Term Debt	1010	1050
Share Capital	50	50
Additional paid in Capital	300	300
Retained Earnings	1070	1265
Total Shareholders' Equity	1420	1615
Total Liabilities	3101	3391

Statement of Income — ABC Ltd (₹ Million) — 31.3.2013	
Total revenues	2215
Operating Costs and Expenses	1430
EBITDA	785
Depreciation	180
EBIT	605
Interest Expense	130
PBT	475
Tax (@40%)	190
Net Income	285
Dividends	90
Transfer to Retained Earnings	195

Statement of Cash Flows — ABC Ltd (₹ Million) — 31.3.2013	
Operating Activities	
Net Income	285
Adjustments	
Depreciation	180
Change in Working Capital	
Account Receivable	(39)
Inventories	(44)
Accounts Payable	22
Accrued taxes & expenses	23
Cash provided by Operating Activities	427
Investing Activities	
Purchases of fixed assets	349
Cash used for Investing Activities	349
Financing Activities	
Notes Payable	(10)
Long Term Debt	(40)
Dividends	90
Cash used for Financing Activities	40
Cash and Equivalents Increase	38
Cash - beginning of the year	210
Cash - end of the year	248
Additional disclosures	
Interest Paid	130
Income taxes Paid	190

Solution.

Free cash flow to the firm is given by the formula:

$$\text{FCFF} = \text{NI} + \text{Non Cash Charges} + \text{Interest (1-T)} - \text{Net Investment} - \text{Net Change in Working Capital}$$

$$\text{FCFF} = 285 + 180 + 130(1 - 0.40) - 349 - (39 + 44 - 22 - 23)$$

$$\text{*Net Investment in 2013} = \text{Change in Gross Fixed Assets} = 2850 - 2501 = 349$$

$$\text{FCFF} = 285 + 180 + 78 - 349 - 38 = ₹156 \text{ million}$$

Free cash flow to equity is given by:

$$\text{FCFE} = \text{FCFF} - \text{Interest (1-T)} + \text{Net borrowing}$$

And we know that:

$$\text{FCFF} = \text{NI} + \text{Non Cash Charges} + \text{Interest (1-T)} - \text{Net Investment} - \text{Net Change in Working Capital}$$



Therefore:

$FCFE = NI + \text{Non Cash Charges} - \text{Net Investment} - \text{Net Change in Working Capital} + \text{Net Borrowing}$

$FCFE = 285 + 180 - 349 - (39 + 44 - 22 - 23) + (10 + 40)$

$FCFE = 285 + 180 - 349 - 38 + 50 = ₹ 128 \text{ million}$

Or directly from FCFF as follows:

$FCFE = FCFF - \text{Interest} (1 - \text{Tax rate}) + \text{Net borrowing}$

$FCFE = 156 - 130(1 - 0.40) + (10 + 40)$

$FCFE = 156 - 78 + 50 = ₹128 \text{ million}$

Illustration 14.

ABC Ltd has FCFF of ₹170 Crores and FCFE of ₹130 Crores. ABC Ltd's WACC is 13% and its cost of equity is 15%. FCFF is expected to grow forever at 7% and FCFE is expected to grow forever at 7.5%. ABC Ltd has debt outstanding at ₹1500 Crores. Find the value of ABC Ltd using FCFF approach and FCFE approach.

Solution.

FCFF Approach: (discount rate = WACC)

The firm value is the present value of FCFF discounted at the weighted-average cost of capital (WACC):

$= FCFF_t / (k-g) = 170 \times 1.07 / (0.13 - 0.07) = ₹3031.67 \text{ Crores}$

The market value of equity is the value of the firm minus the value of debt:

Equity = 3031.67 - 1500 = ₹1531.67 Crores

FCFE Approach: (discount rate = Cost of Equity)

Using the FCFE valuation approach, the present value of FCFE, discounted at Cost of equity

$= FCFE_t / (k-g) = 130 \times 1.075 / (0.15 - 0.075) = ₹ 1863.33 \text{ Crores}$

Illustration 15.

Given below is the Balance Sheet of Khan Ltd. as on 31.3.2012:

Liabilities	₹ (in Lakh)	Assets	₹ (in Lakh)
Share capital (share of ₹10)	100	Land and Building	40
Reserves and Surplus	40	Plant and Machinery	80
Creditors	30	Investments	10
		Stock	20
		Debtors	15
		Cash at bank	5
	170		170

You are required to work out the value of the Company's, shares on the basis of Net Assets method and Profit-earning capacity (capitalization) method and arrive at the fair price of the shares, by considering the following information:

- (1) Profit for the current year ₹ 64 lakhs includes ₹ 4 lakhs extraordinary income and ₹ 1 lakh income from investments of surplus funds; such surplus funds are unlikely to recur.
- (2) In subsequent years, additional advertisement expenses of ₹ 5 lakhs are expected to be incurred each year.
- (3) Market value of Land and Building & Plant and Machinery has been ascertained at ₹ 96 lakhs and ₹ 100 lakhs respectively. This will entail additional depreciation of ₹ 6 lakhs each year.
- (4) Effective Income-tax rate is 30%.
- (5) The capitalization rate applicable to similar business is 16%.

Solution.**Net Assets Method:**

Assets	₹ (in Lakh)
Land and Building	96
Plant and Machinery	100
Investments	10
Stocks	20
Debtors	15
Cash at Bank	5
Total Assets	246
Less: Creditors	30
Net Assets	216

Value per Share

Number of shares = 100 lakhs / 10 = 10 lakhs

Value per share = Net Assets / No. of shares = ₹216 lakhs / 10 lakhs = ₹21.60

Profit Earning Capacity Method:

	₹ (in lakhs)
Profit before tax	64
Less: Extraordinary income	4
Less: Investment income not likely to recur	1
Less: Additional expenses for forthcoming years - Advertisement	5
Less: Depreciation	6
Expected Earnings Before Taxes	48
Less: Income taxes @30%	14.4
Future Maintainable Profits	33.6

$$\text{Value of Business} = \frac{\text{Future Maintainable Profit}}{\text{Capitalization Factor}} = \frac{33.6}{0.16} = ₹210 \text{ lakhs}$$

Subtracting external liabilities we get Net Value of Business. Value of share would be Net Value of Business divided by number of shares = (₹210 lakhs - ₹30 lakhs) / 10 lakhs = ₹ 18.00



Fair Price of share	₹
Value as per Net Assets Method	21.6
Value as per Profit earning capacity (Capitalization) method	18.0

Fair Price = Average of the two = ₹19.80 per Share

Illustration 16.

A company manufacturing, needle roller bearings, is financed by debt and equity to the extent of 3:7, with total debts of ₹10.82 million. The company's debt is valued at 8%. The beta of the company's equity is known to be 1.5. The company generates a free cash flow ₹2 million with the known growth projection of 5% to perpetuity. If it is known that the market risk premium is 6% and the risk free rate is 5%, what is the value of each equity share for the 1 million shareholders of the company? Assume that the company is in the 40% tax bracket.

Solution:

It is given that:

$$FCF_1 = 2.00(1.05) = ₹2.1 \text{ million}; g = 5\%;$$

$$\beta = 1.5; r_{RF} = 5\%; RP_M = 6\%;$$

$$W_d = 30\%; T = 40\%; r_d = 8\%$$

$$K_e = r_{RF} + RP_M(\beta) = 5\% + 6\%(1.5) = 14\%,$$

$$WACC = W_d K_d (1-T) + W_e K_e$$

$$= 0.30(8\%)(0.60) + 0.70(14\%)$$

$$= 11.24\%$$

$$\begin{aligned} \text{Value of firm} &= \frac{FCFE(1+g)}{WACC - g} \\ &= \frac{2.1}{0.1124 - 0.05} = ₹33.65 \text{ million} \end{aligned}$$

$$\text{Value of Equity Shares} = V_{\text{Firm}} - V_{\text{debt}} = 33.65 - 10.82 = ₹22.83 \text{ million}$$

$$\text{Price} = 22.83 \text{ million} / 1 \text{ million shares} = ₹22.83 / \text{share}$$

Illustration 17.

If in the above problem, the following different situations are observed:

Free Cash Flows given for: Year 1: ₹2.5 million; Year 2: ₹2.9 million, Year 3: ₹3.4 million;

Year 4 onwards: Growth of 5%

Tax shields are available each year on interest of ₹1.50 million for years 1 to 3. With all other information remaining the same, find the value per equity share?

Solution:

$$FCF_1 = ₹2.5 \text{ million}, FCF_2 = ₹2.9 \text{ million and } FCF_3 = ₹3.4 \text{ million};$$

$$g = 5\%;$$

$$\beta = 1.5; r_{RF} = 5\%; RP_M = 6\%;$$

$$W_d = 30\%; T = 40\%; K_d = 8\%$$

WACC was calculated as 10.82%.

The terminal value after year 3 can be calculated as:

$$= FCF_3(1+g)/(WACC-g)$$

$$= 3.4(1.05)/(0.1124-0.05)$$

$$= ₹57.21 \text{ million}$$

Tax shields in years 1 through 3 are:

$$TS1 = TS2 = TS3 = \text{Interest} \times T$$

$$= 1,500,000 \times 0.40 = 600,000$$

Free Cash Flows for years 1 to 3 and terminal value for year 4-end: (FCF = FCF₁ + TS1 and so on)

Year 1	Year 2	Year 3	Year 4-end
3.1 million	3.5 million	4.0 million	61.34 million

Since the interest tax shields have been taken into account, the cash flows would have to be discounted with WACC where we do not apply tax for debt parties,

$$\text{i.e. } K = W_d K_d + W_e K_e = 0.30(8\%) + 0.70(14\%) = 12.20\%$$

The present value of the FCFs, the tax shields, and the terminal value gives us the value of the firm:

$$V_{\text{Firm}} = \frac{3.1}{1.122} + \frac{3.5}{(1.122)^2} + \frac{4.0}{(1.122)^3} + \frac{61.34}{(1.122)^3} = ₹ 51.80 \text{ million}$$

$$\text{Equity value} = V_{\text{Firm}} - V_{\text{Debt}}$$

$$= 51.80 \text{ million} - 10.82 \text{ million}$$

$$= 40.98 \text{ million}$$

or ₹40.98 per share since there are 1 million shares outstanding.

Illustration 18.

The free cash flow of S Ltd is projected to grow at a compound annual average rate of 35% for the next 5 years. Growth is then expected to slow down to a normal 5% annual growth rate. The current year's cash flow of S Ltd is ₹ 4 lakh. S Ltd's cost of capital during the high growth period is 18% and 12% beyond the fifth year, as growth stabilizes. Calculate the value of the S Ltd.

Solution:

Present Value of Cash Flows during the Forecast Period

$$PV_{1-t} = \{[FCFE_0 \times (1 + g)^t] / (1 + WACC)^t\}$$

$$PV_{1-5} = [(4 \times 1.35)/1.18] + [(4 \times (1.35)^2)/(1.18)^2] + [(4 \times (1.35)^3)/(1.18)^3] + [(4 \times (1.35)^4)/(1.18)^4] + [(4 \times (1.35)^5)/(1.18)^5]$$

$$= 5.4 / 1.18 + 7.29/(1.18)^2 + 9.84/(1.18)^3 + 13.29/(1.18)^4 + 17.93/(1.18)^5$$

$$= 4.58 + 5.24 + 5.99 + 6.85 + 7.84$$

$$= ₹ 30.50 \text{ lakh}$$



Calculation of Terminal Value

$$\begin{aligned} \text{Where } P_n &= \text{FCFE}_n \times (1 + g) / (k_e - g) \\ &= (17.93 \times 1.05) / 0.12 - 0.05 \\ &= 18.83 / 0.07 \\ &= ₹ 269 \text{ lakh} \end{aligned}$$

PV of Terminal Price 269 / $(1.18)^5 = 117.58$

$$\begin{aligned} P_{0'} \text{ FCFE} &= PV_{1-5} + PV_T \\ &= 30.50 + 117.58 = ₹ 148.08 \text{ lakh.} \end{aligned}$$

Illustration 19.

A task has been assigned to a research analyst in a mutual fund to find out at what price the fund should subscribe to an IPO issue (through Book Building) of a transformer company X Ltd. The following details of the company from 31.3.13 Annual Report are available:

Particulars	31.03.13
Revenues	248.79
Operating expenses	214.41
EBIDTA	34.38
Other Income	3.84
Interest expense	1.01
Preliminary Expenses W/O	0.00
Depreciation	1.92
Profit before taxes	35.30
Income taxes	12.27
Tax at the rate of	35%
Net profit	3.84

To calculate future cash flows, the following projections for the financial year ended 31.3.2014 till 31.3.2018 is available:

Amount in lakhs	FY14	FY15	FY16	FY17	FY18
Revenue growth	55%	50%	28%	20%	14%
Operating exp/ Income	87%	87%	87%	88%	88%
Other Income	2.50	2.20	2.50	2.50	2.50
Interest expense	2.00	3.00	3.00	3.00	3.00
Preliminary Expenses W/O	0.00	0.00	0.00	0.00	0.00
Depreciation	2.60	3.50	4.10	3.90	3.70
Capital spending	2.00	5.00	5.00	2.00	2.00
Working capital	2.00	5.00	5.00	2.00	2.00

It is given that revenues would grow at 0% after the explicit forecast period. X Ltd. total assets of ₹ 219.98 lakhs are financed with equity of ₹ 208.66 lakhs and balance debts sourced at 8% p.a. Assume risk free rate of 7.5%, risk premium of 7.5% and beta of stock as 1.07. The firm falls in the 35% tax bracket. The company including the shares floated in this issue would have issued a total of 1.02 lakhs shares. Find out the intrinsic value of share using Discounted Cash Flow Analysis. If the price band announced by X Ltd. stands at ₹ 345 - ₹ 365, should this fund subscribe to this book built issue and at which end of the price band?

Solution:

Calculation of Cost of Equity = $R_f + \beta(R_m - R_f) = 7.5 + 1.07 \times 7.5 = 15.53\%$

Cost of Debt = 8%

WACC = $(208.66/219.98) \times 0.1553 + (11.32/219.98) \times 0.08 \times (1-0.35) = 15\%$

Discount rate = 15%

Calculation of Future Free Cash Flows for the Explicit Period of 5 Years:

Particulars	31.03.14E	31.03.15E	31.03.16E	31.03.17E	31.03.18E
Revenues	385.63	578.44	740.41	888.49	1012.88
Operating expenses	335.50	503.25	644.15	781.87	891.33
EBIDTA	50.13	75.20	96.25	106.62	121.55
Other Income	2.50	2.20	2.50	2.50	2.50
Interest expense	2.00	3.00	3.00	3.00	3.00
Preliminary Expenses W/O	0.00	0.00	0.00	0.00	0.00
Depreciation	2.60	3.50	4.10	3.90	3.70
Profit before taxes	48.03	70.90	91.65	102.22	117.35
Income taxes	16.81	24.81	32.08	35.78	41.07
Net Profit	31.22	46.08	59.57	66.45	76.27
Add Depreciation	2.60	3.50	4.10	3.90	3.70
Less capital spending	2.00	5.00	5.00	2.00	2.00
Less working capital	2.00	5.00	5.00	2.00	2.00
Free cash flow to the firm	29.82	39.58	53.67	66.34	75.97



Calculation of Value of Firm: [Amount in lakhs]

Year	Cash flows	Disc. Factor @ 15%	PV of cash flows
2013-14	29.82	0.870	25.93
2014-15	39.58	0.756	29.93
2015-16	53.67	0.658	35.29
2016-17	66.34	0.572	37.93
2017-18	75.97	0.497	37.77
Terminal Value* (g=0%)	506.50	0.496	251.44
Value of Firm			418.30
Value of Debt			11.32
Equity Value			406.98
Equity shares outstanding			1.02
Share price in ₹			399.00

$$* \frac{75.97(1+0\%)}{(15\% - 0\%)}$$

Since the intrinsic value of share is ₹ 399 approximately and the price band is from ₹ 345 to ₹ 365, there is a scope for appreciation. Hence the fund can subscribe to these shares at the upper band of ₹ 365.

Illustration 20.

An unlisted company RS Ltd., manufacturing electrical equipments is currently in the expansion mode and is expected to be a good investment keeping in mind the expected sales and profits over the next 5 years. The projection statement of free cash flows is given below for the period 2009-2013. The shares are likely to be listed after an initial public offer (IPO) shortly.

(₹ Crores)

Particulars (₹ Crores)	31.03.09	31.03.10	31.03.11	31.03.12	31.03.13
Income	99.58	121.48	151.91	189.76	231.40
Expenditure	87.63	106.29	132.16	164.15	199.01
Operating profit (PBDIT)	11.95	15.18	19.75	25.62	32.40
-Depreciation	3.23	9.29	9.63	9.63	9.31
-Interest	0.85	0.67	0.39	0.12	0.00
PBT	7.87	5.23	9.73	15.87	23.08
-Provisions for taxation	2.60	1.72	3.21	5.24	7.62
Net profit	5.28	3.50	6.52	10.64	15.47

(₹ Crores)

Particulars	31.03.09	31.03.10	31.03.11	31.03.12	31.03.13
Add: Depreciation	3.23	9.29	9.63	9.63	9.31
Less: capital spending	14.57	30.30	1.70	0.00	0.00
Less: working capital	17.09	22.59	12.59	12.00	12.00
Free cash flow to the firm	-23.16	-40.10	1.85	20.26	24.78

This is a company with similar risk characteristics that of RS Ltd. which is listed and whose average beta is 0.85. The risk free rate and the market risk premium are 7% and the company is funded with 93% equity and 7% debt, whose cost is 9.25%. A 5% growth is projected beyond 5 years till perpetuity. The firm falls in the 33% tax bracket. The total of 1.06 Crores shares would be outstanding. Find out the intrinsic value of share using Discounted Cash Flow Analysis.

Solution:

Calculation of Cost of Equity = $R_f + \beta(R_m - R_f) = 7 + 0.85 \times 7 = 12.95\%$

Cost of Debt = 9.25%

WACC = $0.93 \times 0.1295 + 0.07 \times 0.0925 \times (1-0.33) = 12.48\%$

Discount rate = 12.48%

Calculation of Value of Firm :

[₹ in Crores]

Year	Cash flows	Disc. Factor @ 12.48%	PV of Cash flows
2008-09	-23.16	0.889	-20.59
2009-10	-40.10	0.790	-31.69
2010-11	1.85	0.703	1.30
2011-12	20.26	0.625	12.66
2012-13	24.78	0.555	13.76
Terminal Value* (g = 5%)	347.84	0.555	193.18
Total PV			168.61
No. of shares outstanding in Crs			1.06
Fair Value of Share in ₹			159.07

* $\frac{24.78(1+5\%)}{(12.48\% - 5\%)}$

The intrinsic value of share is ₹159 approximately.



Valuation of Business

Illustration 21.

P Ltd is considering buying the business of Q Ltd the final accounts of which for the last 3 years were as follows:

Profit and Loss Accounts for the 3 years ended 31st Dec. (Figures in ₹)

Particulars	2011	2012	2013
Sales	2,00,000	1,90,000	2,24,000
Material Consumed	1,00,000	95,000	1,12,000
Business Expenses	80,000	80,000	82,000
Depreciation	12,000	13,000	14,000
Net Profit	8,000	2,000	16,000

Balance Sheet as at 31st Dec. (Figures in ₹)

Particulars	2010	2011	2012	2013
Fixed Assets (at Cost)	1,00,000	1,20,000	1,40,000	1,80,000
Less: Depreciation	70,000	82,000	95,000	1,09,000
	30,000	38,000	45,000	71,000
Stock in Trade	16,000	17,000	18,500	21,000
Sundry Debtors	21,000	24,000	26,000	28,000
Cash in hand and Bank	32,000	11,000	28,000	13,200
Prepaid Expenses	1,000	500	2,000	1,000
Total Assets	1,00,000	90,500	1,19,500	1,34,200
Equity Capital	50,000	50,000	70,000	70,000
Share premium	-	-	5,000	5,000
General Reserve	16,000	24,000	26,000	42,000
Debentures	20,000	-	-	-
Sundry Creditors	11,000	13,000	14,000	14,000
Accrued Expenses	3,000	3,500	4,500	3,200
Total Liabilities	1,00,000	90,500	1,19,500	1,34,200

P Ltd wishes the offer to be based upon trading cash flows rather than book profits. By Trading Cash Flow is meant Cash received from Debtors less Cash Paid to Creditors and for Business Expenses (excluding Depreciation), together with an allowance for average annual expenditure on Fixed Assets of ₹15,000 per year.

The actual expenditure on Fixed Assets is to be ignored, as is any cash received or paid out on the issue or redemption of Shares or Debentures.

P Ltd wishes the Trading Cash Flow to be calculated for each of the years 2011, 2012 and 2013 and for these to be combined using weights of 25% for 2011, 35% for 2012 and 40% for 2013 to give an Average Annual Trading Cash Flow.

P Ltd considers that the Average Annual Cash Flow should show a return of 10% on its investment.

You are required to calculate:

- Trading Cash Flow for each of the years 2011, 2012 & 2013,
- Weighted Average Annual Trading Cash Flow, and
- Price which P Ltd should offer for the business.

Solution:

Particulars	2011	2012	2013
Net Profit as per Profit & Loss A/c	8,000	2,000	16,000
Add: Depreciation	12,000	13,000	14,000
Operating Cash Flows before Working Capital Changes	20,000	15,000	30,000
Adjustment for Working Capital Changes			
(a) Change in Stock	(1,000)	(1,500)	(2,500)
(b) Change in Debtors	(3,000)	(2,000)	(2,000)
(c) Prepaid Expenses	500	(1,500)	1,000
(d) Sundry Creditors	2,000	1,000	-
(e) Accrued Expenses	500	1,000	(1,300)
Cash Generated from Operations	19,000	12,000	25,200
Less: Allowance for Expenditure on Fixed Assets	(15,000)	(15,000)	(15,000)
Trading Cash Flow	4,000	(3,000)	10,200
Weights	25%	35%	40%
Weighted Trading Cash Flow	1,000	(1,050)	4,080
Weighted Average Cash Flow	4,030		
Capitalization Rate	10%		
Value of Business	40,300		

Illustration 22.

Shah Ltd had earned a PAT of ₹48 Lakhs for the year just ended. It wants you to ascertain the value of its business, based on the following information.

- Tax Rate for the year just ended was 36%. Future Tax rate is estimated at 34%.
- The Company's Equity Shares are quoted at ₹120 at the Balance Sheet date. The Company had an Equity Capital of ₹100 Lakhs, divided into Shares of ₹50 each.
- Profits for the year have been calculated after considering the following in the P & L Account:-
 - Subsidy ₹2 Lakhs received from Government towards fulfillment of certain social obligations. The Government has withdrawn this subsidy and hence, this amount will not be received in future.
 - Interest ₹8 Lakhs on Term Loan. The final instalment of this Term Loan was fully settled in the last year.
 - Managerial Remuneration ₹15 Lakhs. The Shareholders have approved an increase of ₹6 Lakhs in the overall Managerial Remuneration, from the next year onwards.
 - Loss on sale of Fixed Assets and Investments amounting to ₹8 Lakhs. (Ignore Tax Effect thereon)



Solution:

1. Computation of Future Maintainable Profits

Particulars	₹Lakhs
Profit after Tax for the year just ended	48,00,000
Add: Tax Expense (Tax is 36%, So PAT = 64%, Hence , Tax = 48,00,000 X 36/64)	27,00,000
Profit before Tax for the year just ended	75,00,000
Add/ (Less): Adjustments in respect of Non-Recurring items	
Subsidy Income not received in future	(2,00,000)
Interest on Term Loan not payable in future, hence saved	8,00,000
Additional Managerial Remuneration	(6,00,000)
Loss on Sale of Fixed Assets and Investments (non-recurring)	8,00,000
Future Maintainable Profits before Tax	83,00,000
Less: Tax Expense at 34%	28,22,000
Future Maintainable Profits after Tax Equity Earnings	54,78,000

2. Computation of Capitalization Rate and Value of Business

Particulars	
(a) Profit after Tax for the year just ended	₹48 Lakhs
(b) Number of Equity Shares (₹100 Lakhs ÷ ₹50 per Share)	2 Lakhs
(c) Earnings Per Share (EPS) = PAT ÷ Number of Equity Shares	₹24
(d) Market Price per Share on Balance Sheet Date	₹120
(e) Price Earnings Ratio = MPS ÷ EPS	5
(f) Capitalization Rate = 1 ÷ PE Ratio	20%
(g) Value of Business = Future Maintainable Profits ÷ Capitalization Rate = ₹54.78 Lakhs ÷ 20%	₹273.90 Lakhs

Illustration 23.

Shiva Ltd. gives the following information-

- Profits After Tax for the period = ₹100 Lakhs; Expected Compound Growth Rate = 8% p.a
- Cash Flows After Taxes for the period = ₹125 Lakhs; Expected Compound Growth Rate = 7% p.a.
- Current Market Price per Equity Share = ₹900; Equity Share Capital = ₹1,00,00,000 into Shares of ₹100 each.

Compute the value of Shiva Ltd by projecting its PAT /CFAT for a eight year period. Use 10% Discount Rate for your calculations. Also calculate the value of the business by capitalizing the current PAT/ CFAT.

Solution:**1. Discounted Value of Future PAT and CFAT (₹ Lakhs)**

Year	PVIF at 10%	PAT	Discounted PAT	CFAT	Discounted CFAT
1	0.9091	$100.00 + 8\% = 108.00$	98.18	$125.00 + 7\% = 133.75$	121.59
2	0.8264	$108.00 + 8\% = 116.64$	96.39	$133.75 + 7\% = 143.11$	118.27
3	0.7513	$116.64 + 8\% = 125.97$	94.64	$143.11 + 7\% = 153.13$	115.04
4	0.6830	$125.97 + 8\% = 136.05$	92.92	$153.13 + 7\% = 163.85$	111.91
5	0.6209	$136.05 + 8\% = 146.93$	91.23	$163.85 + 7\% = 175.32$	108.86
6	0.5645	$146.93 + 8\% = 158.69$	89.58	$175.32 + 7\% = 187.59$	105.90
7	0.5132	$158.69 + 8\% = 171.38$	87.95	$187.59 + 7\% = 200.72$	103.01
8	0.4665	$171.38 + 8\% = 185.09$	86.34	$200.72 + 7\% = 214.78$	100.09
Total	Value of Business		737.23		884.77

2. Capitalization of current PAT /CFAT (₹ Lakhs)

Particulars	PAT	CFAT
(a) PAT/CFAT for the period	₹100.00 Lakhs	₹125.00 Lakhs
(b) Earnings per Share = PAT ÷ Number of Equity Shares	₹100 per share	₹100 per share
(c) Market Price per share	₹900 per share	₹900 per share
(d) P/E Ratio = MPS ÷ EPS	9	9
(e) Capitalization Rate = $1 \div \text{PE Ratio}$	11.11%	11.11%
(f) Value of Business = PAT or CFAT ÷ Capitalization Rate	₹900.09 Lakhs	₹1,125.11 Lakhs

3. Summary of Value of Business under different methods

Particulars	₹ Lakhs
(a) Discounted Value of future PAT of 8 years	₹737.23 Lakhs
(b) Discounted Value of future CFAT of 8 years	₹884.77 Lakhs
(c) Capitalization of current PAT at 8.33%	₹900.09 Lakhs
(d) Capitalization of current CFAT at 8.33%	₹1,125.11 Lakhs
(e) Simple Average of all of the above = $(a+b+c+d) \div 4$	₹911.80 Lakhs

Illustration 24.

Kolkata Ltd and Mumbai Ltd have agreed that Kolkata Ltd will take over the business of Mumbai Ltd with effect from 31st December 2008. It is agreed that:

- 10,00,000 shareholders of Mumbai Ltd will receive Shares of Kolkata Ltd. The Swap ratio is determined on the basis of 26 week average market prices of Shares of both the Companies. Average Prices have been worked out at ₹50 and ₹25 for the shares of Kolkata Ltd and Mumbai Ltd respectively.
- In addition to (1) above, the shareholders of Mumbai Ltd will be paid in cash based on the projected synergy that will arise on the absorption of the business of Mumbai Ltd by Kolkata Ltd. 50% of the projected benefits will be paid to the share holders of Mumbai Ltd.



The following projections have been agreed upon by the management of both the Companies.

Year	2009	2010	2011	2012	2013
Benefit (in ₹ Lakhs)	50	75	90	100	105

The benefit is estimated to grow at the rate of 2% from 2013 onwards. It has been further agreed that a discount rate of 20% should be used to calculate the cash that the holders of each share of Mumbai Ltd will receive.

- Calculate the cash that holder of each share of Mumbai Ltd will receive.
- Calculate the total purchase consideration.

(Discounting Rate 20% : 1 year-0.833, 2 year – 0.694, 3 year – 0.579, 4 year – 0.482, 5 year -0.402, 6 year -0.335)

Solution:

1. Present Value of Synergy Benefits

Year	Computation	PV= ₹Lakhs
2009	50 x 0.833	41.65
2010	75 X 0.694	52.05
2011	90 X 0.579	52.11
2012	100 X 0.482	48.20
2013	105 X 0.402	42.21
2014 onwards (Terminal value Note)	(105 X 102% ÷ 18%) X 0.402	239.19
Total		475.41

50% on the Synergy Benefits = 475.41 X 50% = ₹237.705 Lakhs

Cash for every share held in Mumbai Ltd = 237.705 ÷ 10 = ₹23.77

Note: Cash Flow for ever- increasing cash flow at constant growth rate i.e. Perpetual Cash Flows is as under –

Present value = Cash Flow at the end of the previous period × $\frac{(100\% + \text{Growth}\%)}{(\text{Cost of Capital} - \text{Perpetual Growth Rate})}$

2. Total Purchase Consideration for the business

(a) Equity hare (25/50 X 10,00,000 X ₹50)	₹250.00 Lakhs
(b) Cash = 50% of Synergy Benefits	₹237.70 Lakhs
Total	₹487.70 Lakhs

Illustration 25.

The Balance Sheets of R Ltd. for the years ended on 31.3.2009, 31.3.2010 and 31.3.2011 are as follows:

Liabilities	31.3.2009 ₹	31.3.2010 ₹	31.3.2011 ₹
3,20,000 Equity Shares of ₹ 10 each fully paid	32,00,000	32,00,000	32,00,000
General Reserve	24,00,000	28,00,000	32,00,000
Profit and Loss Account	2,80,000	3,20,000	4,80,000
Creditors	12,00,000	16,00,000	20,00,000
	70,80,000	79,20,000	88,80,000

Assets	31.3.2009 ₹	31.3.2010 ₹	31.3.2011 ₹
Goodwill	20,00,000	16,00,000	12,00,000
Building and Machinery			
(Less: Depreciation)	28,00,000	32,00,000	32,00,000
Stock	20,00,000	24,00,000	28,00,000
Debtors	40,000	3,20,000	8,80,000
Bank Balance	2,40,000	4,00,000	8,00,000
	70,80,000	79,20,000	88,80,000
Actual valuation wore as under:			
	31.3.2009 ₹	31.3.2010 ₹	31.3.2011 ₹
Building and Machinery	36,00,000	40,00,000	44,00,000
Stock	24,00,000	28,00,000	32,00,000
Net Profit (including opening balance) after writing off depreciation and goodwill, tax provision and transfer to General Reserve	8,40,000	12,40,000	16,40,000

Capital employed in the business at market values at the beginning of 2009-2010 was ₹ 73,20,000, which included the cost of goodwill. The normal annual return on Average Capital employed in the line of business engaged by R Ltd. is 12½ %.

The balance in the General Reserve account on 1st April, 2009 was ₹ 20 lakhs.

The goodwill shown on 31.3.2009 was purchased on 1.4.2009 for ₹ 20,00,000 on which date the balance in the Profit and Loss Account was ₹ 2,40,000. Find out the average capital employed each year.

Goodwill is to be valued at 5 years purchase of super profits (Simple average method). Also find out the total value of the business as on 31.3.2011.

Solution:

Note:

1. Since goodwill has been paid for, it is taken as part of capital employed. Capital employed at the end of each year is shown.
2. Assumed that the building and machinery figure as revalued is after considering depreciation.

	31.3.2009 ₹	31.3.2010 ₹	31.3.2011 ₹
Goodwill	20,00,000	16,00,000	12,00,000
Building and Machinery (revalued)	36,00,000	40,00,000	44,00,000
Stock (revalued)	24,00,000	28,00,000	32,00,000
Debtors	40,000	3,20,000	8,80,000
Bank Balance	2,40,000	4,00,000	8,00,000
Total Assets	82,80,000	91,20,000	1,04,80,000
Less: Creditors	12,00,000	16,00,000	20,00,000
Closing Capital	70,80,000	75,20,000	84,80,000
Opening Capital	73,20,000	70,80,000	75,20,000
	1,44,00,000	1,46,00,000	1,60,00,000
Average Capital	72,00,000	73,00,000	80,00,000



Maintainable profit has to be found out after making adjustments as given below:

	31.3.2009 ₹	31.3.2010 ₹	31.3.2011 ₹
Net Profit as given	8,40,000	12,40,000	16,40,000
Less: Opening Balance	2,40,000	2,80,000	3,20,000
	6,00,000	9,60,000	13,20,000
Add: Under valuation of closing stock	4,00,000	4,00,000	4,00,000
	10,00,000	13,60,000	17,20,000
Less: Adjustment for valuation in opening stock	–	4,00,000	4,00,000
	10,00,000	9,60,000	13,20,000
Add: Goodwill written-off	–	4,00,000	4,00,000
	10,00,000	13,60,000	17,20,000
Add: Transfer to Reserves	4,00,000	4,00,000	4,00,000
	14,00,000	17,60,000	21,20,000
Less: 12 ¹ / ₂ % Normal Return	9,00,000	9,12,500	10,00,000
Super Profit	5,00,000	8,47,500	11,20,000

Average super profits = (₹5,00,000 + Rs 8,47,500 + ₹ 11,20,000) / 3

= 24,67,500/3 = ₹ 8,22,500

Goodwill = 5 years purchase = ₹ 8,22,500 x 5 = ₹ 41,12,500.

Total Net Assets (31/3/2011) ₹ 84,40,000

Less: Goodwill ₹ 12,00,000

₹ 72,80,000

Add: Goodwill ₹ 41,12,500

Value of Business ₹ 1,13,92,500

Illustration 26.

Find out the average capital employed of ND Ltd. from its Balance sheet as at 31st March, 2011:

Liabilities	(₹ in lakhs)	Assets	(₹ in lakhs)
Share Capital:		Fixes Assets :	
Equity shares of ₹ 10 each	50.00	Land and Buildings	25.00
9% Pref. shares fully paid up	10.00	Plant and Machinery	80.25
Reserve and Surplus:		Furniture and Fixture	5.50
General reserve	12.00	Vehicles	5.00
Profit and Loss	20.00	Investments	10.00
Secured loans:		Current Assets :	
16% debentures	5.00	Stock	6.75
16% Term loan	18.00	Sundry Debtors	4.90
Cash credit	13.30	Cash and Bank	10.40
Current Liabilities and Provisions:		Preliminary expenses	0.50
Sundry creditors	2.70		

Liabilities	(₹ in lakhs)	Assets	(₹ in lakhs)
Provision for taxation	6.40		
Proposed dividend on:			
Equity shares	10.00		
Preference shares	0.90		
	148.30		148.30

Non-trade investments were 20% of the total investments.

Balances as on 1.4.2010 to the following accounts were:

Profit and Loss account ₹8.70 lakhs, General reserve ₹6.50 lakhs.

Solution:

Computation of Average Capital employed

(₹ in Lakhs)

Total Assets as per Balance Sheet		148.30
Less: Preliminary Expenses		0.50
Non-trade investments (20% of ₹ 10 lakhs)		2.00
		145.80
Less: Outside Liabilities:		
16% Debentures	5.00	
16% Term Loan	18.00	
Cash Credit	13.30	
Sundry Creditors	2.70	
Provision for Taxation	6.40	45.40
		100.40
Capital Employed as on 31.03.2011		
Less: ½ of profit earned:		
Increase in reserve balance	5.50	
Increase in Profit & Loss A/c	11.30	
Proposed Dividend	10.90	
	27.70	
27.70 x ½		13.85
Average capital employed		86.55

Illustration 27.

Idea Ltd was incorporate on 1st April 2013 for the purpose of acquiring P Ltd, Q Ltd and R Ltd. The summarized Balance Sheets of the Companies as at 31st March 2013 are given below (₹ 000's)-

Liabilities	P Ltd	Q Ltd	R Ltd	Assets	P Ltd	Q Ltd	R Ltd
Equity Shares (₹10)	20,00,000	25,00,000	12,50,000	Fixed Assets - Goodwill	-	3,00,000	-
Reserves & Surplus	7,50,000	5,50,000	3,00,000	Land & Buildings	5,00,000	4,00,000	3,00,000
10% Term Loan	3,50,000	2,00,000	2,00,000	Plant & Equipment	20,00,000	16,00,000	12,00,000
Current Liabilities	7,00,000	4,50,000	4,75,000	Other Fixed Assets	3,00,000	8,00,000	2,25,000
				Current Assets - Stocks	4,00,000	2,50,000	2,00,000
				Debtors	5,00,000	3,00,000	2,50,000
				Cash & Bank	1,00,000	50,000	50,000
Total	38,00,000	37,00,000	22,25,000	Total	38,00,000	37,00,000	22,25,000



Other relevant particulars –

1. Average Annual Profits before interest: P Ltd - ₹4, 50,000; Q Ltd - ₹6, 00,000; and R Ltd - ₹2, 50,000

2. Tangible Fixed Assets have been valued by professionals at 31st March 2013 as-

Particulars	P Ltd	Q Ltd	R Ltd
Land & Buildings	₹8,00,000	₹9,00,000	₹5,00,000
Plant & Equipments	₹16,00,000	₹14,00,000	₹12,00,000
Other Fixed Assets	₹1,75,000	₹9,00,000	₹3,25,000

3. The Directors of Idea Ltd in their negotiations agreed to the following-

- (a) The recorded value of Goodwill is to be ignored;
- (b) Professional valuations are to be accepted in respect of Fixed Assets.
- (c) Current Assets are to be accepted at their reported amounts.
- (d) Valuation Adjustments are to be made by individual Companies before completion of acquisition.
- (e) Idea Ltd will issue 12% debentures at par in amount equal to the Net Assets of each acquired Company.
- (f) Idea Ltd will issue Equity Shares of ₹10 each at par for the capitalized value of the Average Profits of each acquired company in excess of Net Assets (The capitalization rate is 10%)
- Calculate amounts of Debentures and Equity Shares to be issued by Idea Ltd to Shareholders of P Ltd, Q Ltd, and R Ltd.
- Calculate the effect of the scheme on Q Ltd' profitability, if Idea Ltd earns a Net Profit of ₹25,00,000 before interest for the year ended 31st March 2013.

Solution:

1. Computation of Average Adjusted Profits

Particulars	P Ltd	Q Ltd	R Ltd
Average PBIT	₹4,50,000	₹6,00,000	₹2,50,000
Less: Term Loan Interest (10% on Loan Amount)	₹35,000	₹20,000	₹20,000
Profit After Tax (ignoring taxation)	₹4,15,000	₹5,80,000	₹2,30,000

2. Computation of Net Assets (₹)

Particulars	P Ltd	Q Ltd	R Ltd
Land & Building	8,00,000	9,00,000	5,00,000
Plant & Equipments	16,00,000	14,00,000	12,00,000
Other Fixed Assets	1,75,000	9,00,000	3,25,000
Stock	4,00,000	2,50,000	2,00,000
Debtors	5,00,000	3,00,000	2,50,000
Cash	1,00,000	50,000	50,000
Total Assets	35,75,000	38,00,000	25,25,000
Less: Outside Liabilities:			
Term Loans	(3,50,000)	(2,00,000)	(2,00,000)
Current Liabilities	(7,00,000)	(4,50,000)	(4,75,000)
Net Assets	25,25,000	31,50,000	18,50,000

3. Computation of Consideration Payable by Idea Ltd

Particulars	P Ltd	Q Ltd	R Ltd	Total
Consideration in 12% Debentures				
= Net Assets (Consideration in Debentures) (A)	25,25,000	31,50,000	18,50,000	75,25,000
Consideration in Shares				
= Capitalized Value Less Net Assets				
Average Profit as per WN 1 above	4,15,000	5,80,000	2,30,000	
Capitalized value at 10%	41,50,000	58,00,000	23,00,000	
Less: Net Assets as per WN 2 above	25,25,000	31,50,000	18,50,000	
Consideration in Shares (B)	16,25,000	26,50,000	4,50,000	47,25,000
Total Consideration (A+B)	41,50,000	58,00,000	23,00,000	1,22,50,000

4. Effect of the scheme in Q Ltd

(a) Profit Receivable by Shareholders of Q Ltd:

Particulars	₹
Profit Before Interest and Tax of Idea Ltd (given)	25,00,000
Less: Interest Expense	
Interest on Term Loans [10% X (₹3,50,000 + ₹2,00,000 + ₹2,00,000)]	(75,000)
Interest on Debentures [12% X ₹75,25,000]	(9,03,000)
Profit After Tax of Idea Ltd	15,22,000
Profit accruing to shareholders of Q Ltd [₹15,22,000 X 26,50,000 ÷ 47,25,000]	8,53,608

(b) Additional Income received by Q Ltd:

Particulars	₹
From Equity Share Capital [from (a) above]	8,53,608
From 12% Debentures [₹31,50,000 X 12%]	3,78,000
Total Income received from Idea Ltd	12,31,608
Less: Profit After Tax of Q Ltd before takeover	5,80,000
Increase in the earnings of Q Ltd on takeover by Idea Ltd	6,51,608

Illustration 28.

X Ltd and Y Ltd , two private Companies, decide to amalgamate their business into a new Holding Company Z Ltd ., which was incorporated on 1st Nov 2012 with an Authorized Capital of ₹40,00,000 in Equity Share of ₹10 each. The new Company plans to commence operation on 1st Jan 2013.

From the information given below, and assuming that all transactions are completed by 30th June 2013, you are required to –

- Show the computation of the number of shares to be issued to the former shareholders of X Ltd & Y Ltd .
- Calculate the Cash Flow available to Z Ltd , based on the information available to you.

Information

1. Z Ltd will acquire the whole of Equity Share Capital of X Ltd and Y Ltd by issuing its own shares fully paid.



2. The number of shares to be issued is to be calculated by multiplying the future annual maintainable profits available to the Equity Shareholders in each of the two Companies by the agreed Price Earning Ratios.
3. The following information is relevant.

Particulars	X Ltd	Y Ltd
Equity Shares of ₹10 each fully paid	10,00,000	4,00,000
8% Cumulative Preference Shares	-	1,00,000
10% Debentures	2,00,000	-
Future annual maintainable pre-tax profits (before interest/ dividends)	2,30,000	1,12,000
Price Earning Ratio	10 times	8 times

4. Shares in the Holding Company are to be issued to the shareholders in Subsidiary Companies at a premium of 20% and thereafter these shares will be marketed on the Stock Exchange.
5. It is expected that the Group Profits of the new Company in 2013 will be at least ₹4,50,000 but that will be required as additional Working Capital to facilitate expansion. Accordingly, it is planned to make a further issue of 37,500 Equity shares to the public for Cash at a premium of 30% on 1st May 2013. The new shares will not rank for interest / dividend to be paid on 30th June 2013.
6. Out of the proceeds of the Public Issue, Z Ltd will advance ₹2,50,000 to X Ltd and ₹2,00,000 to Y Ltd on 1st May 2013 for Working Capital. These advances will carry interest @ 15% p.a to be paid monthly.
7. Preliminary Expenses are estimated at ₹8,000 and Administrative Expenses for the half-year ended 30th June 2013 at ₹16,000 but this expenditure will be covered by temporary overdraft facility. It is estimated that Bank Overdraft cost will be ₹1,600 in the first six months.
8. A provision for ₹7,500 should be made for Directors Fee for the half year.
9. On 30th June 2013, it is planned to pay interim dividend as: Per share X Ltd – 5% , Y Ltd - 4.40%, Z Ltd - 4%
10. Income tax 50%. (Say)

Solution:

1. Computation of number of Shares to be issued

Particulars	X Ltd	Y Ltd
Future Maintainable EBIT	2,30,000	1,12,000
Less: Debenture Interest	(20,000)	-
Profit Before Tax	2,10,000	1,12,000
Less: Income Tax at 50%	(1,05,000)	(56,000)
Profit After Tax	1,05,000	56,000
Less: Preference Dividend	-	(8,000)
Profit to Equity Shareholders	1,05,000	48,000
PE Ratio	10	8
Capitalized Earnings (Profit to Equity Shareholders ÷ PE ratio)	10,50,000	3,84,000
Number of Shares to be exchanged in Z Ltd at ₹12 per share (including premium of ₹ 2 each)	87,500	32,000

2. Computation of Total Purchase Consideration

Particulars	₹
Issued Share Capital [87,500 + 32,000 = 1,19,500 Shares of ₹10]	11,95,000
Securities Premium 1,19,500 X ₹2 per Share	2,39,000
Total Purchase Consideration	14,34,000

3. Cash Flow Analysis

Receipts	₹	Payments	₹
To Proceeds of Public Issue		By Payments:	
37,500 shares at ₹10 each	3,75,000	Preliminary Expenses	8,000
Share Premium at 30%	1,12,500	Administration Expenses	16,000
To Interest received on Advances:		Advance to X Ltd	2,50,000
From X Ltd (2,50,000 x 15% x 2/12)	6,250	Advance to Y Ltd	2,00,000
From Y Ltd (2,00,000 x 15% x 2/12)	5,000	Bank Interest	1,600
To Dividends Received:		By Dividends Payable:	
From X Ltd (10,00,000 x 5%)	50,000	₹11,95,000 X 4%	47,800
From Y Ltd (4,00,000 x 4.40%)	17,600	By Balance c/d (balancing figure)	42,950
Total	5,66,350	Total	5,66,350

Illustration 29.

Tridev Ltd is in the business of making sports equipment. The Company operates from Thailand. To globalize its operations Tridev has identified Try Toys Ltd, an Indian Company, as a potential takeover candidate. After due diligence of Try Toys Ltd, the following information is available :-

(a) Cash Flow Forecasts (₹ in Crores)

Year	10	9	8	7	6	5	4	3	2	1
Try Toys Ltd	24	21	15	16	15	12	10	8	6	3
Tridev Ltd	108	70	55	60	52	44	32	30	20	16

(b) The Net Worth of Try Toys Ltd (in Lakh ₹) after considering certain adjustments suggested by the due diligence team reads as under —

Tangible	750	
Inventories	145	
Receivables	75	970
Less: Creditors	165	
Bank Loans	250	(415)
Represented by Equity Shares of ₹1000 each		555



Talks for the takeover have crystallized on the following –

1. Tridev Ltd will not be able to use Machinery worth ₹75 Lakhs which will be disposed off by them subsequent to take over. The expected realization will be ₹50 Lakhs.
2. The inventories and receivables are agreed for takeover at values of ₹100 and ₹50 Lakhs respectively, which is the price they will realize on disposal.
3. The liabilities of Try Toys Ltd will be discharged in full on take over along with an employee settlement of ₹90 Lakhs for the employees who are not interested in continuing under the new management.
4. Tridev Ltd will invest a sum of ₹150 Lakhs for upgrading the Plant of Try Toys Ltd on takeover. A further sum of ₹50 Lakhs will also be incurred in the second year to revamp the machine shop floor of Try Toys Ltd.
5. The anticipated cash flow (in ₹Crore) post takeover are as follows-

Year	1	2	3	4	5	6	7	8	9	10
Cash Flows	18	24	36	44	60	80	96	100	140	200

You are required to advise the management the maximum price which they can pay per share of Try Toys Ltd., if a discount factor of 15% is considered appropriate.

Solution:

1. Computation of Operational Synergy expected to arise out of merger (₹ Lakhs):

Year	1	2	3	4	5	6	7	8	9	10
Cash Flow after merger	1,800	2,400	3,600	4,400	6,000	8,000	9,600	10,000	14,000	20,000
Cash Flow without merger	1,600	2,000	3,000	3,200	4,400	5,200	6,000	5,500	7,000	10,800
Synergy Effect	200	400	600	1,200	1,600	2,800	3,600	4,500	7,000	9,200

2. Valuation of Try Toys Ltd (₹ Lakhs) :

Year	Discount Factor	Without considering merger		Considering Merger	
		Cash Flows	Discounted Cash Flow	Cash Flows	Discounted Cash Flow
1	0.870	300	261.00	200	174.00
2	0.756	600	453.60	400	302.40
3	0.657	800	525.60	600	394.20
4	0.572	1,000	572.00	1,200	686.40
5	0.497	1,200	596.40	1,600	795.20
6	0.432	1,500	648.00	2,800	1,209.60
7	0.376	1,600	601.60	3,600	1,353.60
8	0.327	1,500	490.50	4,500	1,471.50
9	0.284	2,100	596.40	7,000	1,988.00
10	0.247	2,400	592.80	9,200	2,272.40
			5338.00		10,647.00

3. Computation of Maximum Value to be quoted

Particulars	₹ Lakhs	
Value as per discounted Cash Flow from Operations		10,647
Add: Cash to be collected immediately by disposal of assets:		
Sundry Fixed Assets	50	
Inventories and receivables	150	200
Less: Sundry Creditors	165	
Retrenchment Compensation	90	
Bank loan	250	
Investment to be made on takeover	150	
Present value of investment at the end of year 2 (₹50 lakhs x 0.756)	38	693
Maximum Amount to be quoted		10,154
Difference in Valuation had there been no merger = (10,647–5,338) = ₹5,309 Lakhs		

Illustration 30.

The Directors of a Public Limited Company are considering the acquisition of the entire Share Capital of an existing Company Subhash Ltd engaged in a line of business suited to them. The Directors feel that acquisition of Subhash Ltd will not create any further risk to their business interest. The following is the Balance Sheet of Subhash Ltd as at 31.3.2013 –

Liabilities	₹	Assets	₹
Share Capital : 4,000 Equity Shares of ₹100 each fully paid	4,00,000	Fixed Assets	6,00,000
General Reserve	3,00,000	Current Assets Stock & WIP	2,00,000
Bank Overdraft	2,40,000	Sundry Debtors	3,40,000
Sundry Creditors	3,00,000	Cash at Bank	1,00,000
Total	12,40,000	Total	12,40,000

Subhash Ltd's financial records for the past five years were as under — (₹)

Particulars	2012-13	2011-12	2010-11	2009-10	2008-09
Profits	80,000	74,000	70,000	60,000	62,000
Adj: Extra Ordinary Item	3,500	4,000	(6,000)	(8,000)	1,000
Profit after Extra – Ordinary Items	83,500	78,000	64,000	52,000	61,000
Less: Dividends	48,000	40,000	40,000	32,000	32,000
Net balance	35,500	38,000	24,000	20,000	29,000

The following additional information is available:

1. There were no change in the Issued Share Capital of Subhash Ltd during this period.
2. The estimated values of Subhash Ltd's assets on 31.3.2013 are – (₹)



Particulars	Replacement Cost	Realizable Value
Fixed Assets	8,00,000	5,40,000
Stock and WIP	3,00,000	3,20,000

1. It is anticipated that 1% of the may prove difficult to be realized.
2. The cost of capital of Chandra Ltd is 10%.
3. The current Return on Investment of Public Limited Co. is 10% Quoted Companies with business activities and activities as Subhash Ltd have a PE ratio approximating to 8, although these companies tend to be larger than Subhash.

Required: Estimate the value of the total Equity Capital of Subhash Ltd as on 31.3.2013 using each of the following bases – (a) Balance Sheet Value (b) Replacement Cost; (c) Realizable Value; (d) Gordon's Dividend Growth Model and (e) PE Ratio Model.

Solution:

Valuation of Equity Capital of Subhash Ltd under various methods

1. Balance Sheet Value =	Capital ₹4,00,000 + Reserves ₹3,00,000	= ₹7,00,000
2. Replacement Value =	Capital + Reserves + Appreciation in Fixed Assets and Stock = 4,00,000 + 3,00,000 + (8,00,000 – 6,00,000)+(3,00,000 -2,00,000)	= ₹10,00,000

3. Realizable value = Capital + Reserves + Change in Fixed Assets, Stock and Debtors

Particulars	₹
Capital	4,00,000
Reserve	3,00,000
Appreciation in Stock (3,20,000 – 2,00,000)	1,20,000
Less: Reduction in Fixed Assets (6,00,000 – 5,40,000)	(60,000)
Less: Reduction Debtors (3,40,000 X 1%)	(3,400)
Total Value	7,56,600

It is assumed that the estimated Bad Debts are not relevant to Balance Sheet Value and Replacement Value.

4. Gordon's Dividend Growth Model is given by the rule: $P = [Ex (1-b)] \div [(k-br)]$, where

P = Price Per Share; E = Earnings Per Share; b= retention Ratio; k = Cost of Capital ; br= g= Growth rate and r= Rate of Return on Investment. The calculation is made as under –

Step 1: Average Profit Retained and Profit earned:

Profit Retained : 35,500 + 38,000 +24,000 +20,000 +29,00 = ₹1,46,500

Profit Earned : 83,500 + 78,000 +64,000 +52,000 + 61,000 = ₹3,38,500

Step 2: Calculation of $b = ₹1,46,500 \div 3,38,500 = 0.433$ (approx)

Step 3: Calculation of r = year ended 31.3.2013

Where, Avg. Investment = (Capital + Reserve – ½ of Profit Retained)

$$\text{Or, } r = \frac{\text{Average Investment}}{\text{Capital} + \text{Reserve} - 1/2 \text{ of Profit Retained}} \times 100$$

$$\begin{aligned}\therefore r &= \frac{80,000}{4,00,000 + 3,00,000 - 1/2 \times 35,500} \times 100 \\ &= \frac{80,000}{6,82,250} \times 100 = 11.73\%\end{aligned}$$

Step 4: Calculation of $b \times r = g$ = Return $\times$ Retention Ratio

$$= 11.73\% \times 0.433$$

$$= 5.08\%$$

Step 5: Avg Profit = ₹(3,38,500 ÷ 5) = ₹67,700

$$\begin{aligned}\text{Step 6: Market Value} &= \frac{E(1-b)}{K_e - b_r} = \frac{67,700(1-0.433)}{0.10 - 0.0508} \\ &= \frac{38,385.90}{0.0492} = ₹7,80,201.22\end{aligned}$$

Step 7: P/E Ratio Model: Comparable companies have P/E Ratio of 8, but Subhash Ltd is much smaller.

If P/E Ratio is taken at 6, the valuation will be $80,000 \times 6 = ₹4,80,000$

If P/E Ratio is taken at 8, maximum possible value will be $(₹80,000 \times 8) = ₹6,40,000$

Study Note - 9

MERGERS AND ACQUISITIONS: VALUATION



This Study Note includes

- 9.1 Business Strategy**
- 9.2 Basics of Merger & Acquisition**
- 9.3 Theories of Merger & Acquisition**
- 9.4 Strengths and Weaknesses of various methods of Business Valuation**
- 9.5 Concepts of Value in context of Mergers & Acquisitions**
- 9.6 Approaches to Valuation in case of M & A**
- 9.7 Selection of appropriate cost of capital for valuation**
- 9.8 Forms of Consideration and terms of acquisitions**
- 9.9 Implications of regulations for business combinations**
- 9.10 Take over**
- 9.11 Post merger integration process**
- 9.12 Types of exist strategies and their implications**
- 9.13 Shareholder Value Analysis**
- 9.14 Exchange Ratio-Bases used for Computation**

9.1 BUSINESS STRATEGY

A business strategy typically is a document that clearly articulates the direction that a business will pursue and the steps it will take to achieve its goals. In a standard business plan, the business strategy results from goals established to support the stated mission of the business. A typical business strategy is developed in three steps: analysis, integration and implementation.

9.1.1 Strategies for entering to a new business

An organization can enter into a new or unrelated business in any of the following three forms:

- (a) Acquisition
- (b) Internal start-up
- (c) Joint Ventures or strategic partnerships

9.1.2 Corporate Restructuring

Restructuring of business is an integral part of the new economic paradigm. As controls and restrictions give way to competition and free trade, restructuring and reorganization become essential. Restructuring usually involves major organizational change such as shift in corporate strategies to meet increased competition or changed market conditions.

This activity can take place internally in the form of new investments in plant and machinery, research and development at product and process levels. It can also take place externally through mergers and acquisitions (M&A) by which a firm may acquire another firm or by which joint venture with other firms.

This restructuring process has been mergers, acquisitions, takeovers, collaborations, consolidation, diversification etc. Domestic firms have taken steps to consolidate their position to face increasing competitive pressures and MNC's have taken this opportunity to enter Indian corporate sector.

The Different forms of Corporate Restructuring

The different forms of corporate restructuring are summarized as follows:

Corporate Reinstruction

A. Expansion	B. Contraction	C. Corporate Control
• Amalgamation	• Demerger	• Going Private
• Absorption	• Spin off	• Equity Buyback
• Tender offer	• Equity carve out	• Equity Buyback
• Asset acquisition	• Split off	• Leveraged Buyouts
• Joint Venture	• Split up	
	• Divestitures	
	• Asset sale	

A. Expansion:

- **Amalgamation:** This involves fusion of one or more companies where the companies lose their individual identity and a new company comes into existence to take over the business of companies being liquidated. The merger of Brooke Bond India Ltd. and Lipton India Ltd. resulted in formation of a new company Brooke Bond Lipton India Ltd.
- **Absorption:** This involves fusion of a small company with a large company where the smaller company ceases to exist after the merger. The merger of Tata Oil Mills Ltd. (TOMCO) with Hindustan Lever Ltd. (HLL) is an example of absorption.
- **Tender offer:** This involves making a public offer for acquiring the shares of a target company with a view to acquire management control in that company. Takeover by Tata Tea of Consolidated Coffee Ltd. (CCL) is an example of tender offer where more than 50% of shareholders of CCL sold their holding to Tata Tea at the offered price which was more than the investment price.
- **Asset acquisition:** This involves buying assets of another company. The assets may be tangible assets like manufacturing units or intangible like brands. Hindustan Lever Limited buying brands of Lakme is an example of asset acquisition.
- **Joint venture:** This involves two companies coming whose ownership is changed. DCM group and DAEWOO MOTORS entered into a joint venture to form DAEWOO Ltd. for manufacturing automobiles in India.

B. Contraction:

There are generally the following types of DEMERGER:

- **Spinoff:** This type of demerger involves division of company into wholly owned subsidiary of parent company by distribution of all its shares of subsidiary company on Pro-rata basis. By this way, both the companies i.e. holding as well as subsidiary company exist and carry on business. For example, Kotak, Mahindra Finance Ltd. formed a subsidiary called Kotak Mahindra Capital Corporation, by spinning off its investment banking division.
- **Split ups:** This type of demerger involves the division of parent company into two or more separate companies where parent company ceases to exist after the demerger.
- **Equity carve out:** This is similar to spin offs, except that same part of shareholding of this subsidiary company is offered to public through a public issue and the parent company continues to enjoy control over the subsidiary company by holding controlling interest in it.



- **Divestitures:** These are sale of segment of a company for cash or for securities to an outside party. Divestitures, involve some kind of contraction.
- **Asset sale:** This involves sale of tangible or intangible assets of a company to generate cash. A partial sell off, also called slump sale, involves the sale of a business unit or plant of one firm to another. It is the mirror image of a purchase of a business unit or plant. From the seller's perspective, it is a form of contraction and from the buyer's point of view it is a form of expansion. For example, When Coromandal Fertilizers Limited sold its cement division to India Cement limited, the size of Coromandal Fertilizers contracted whereas the size of India Cements Limited expanded.

C. Corporate controls:

- **Going private:** This involves converting a listed company into a private company by buying back all the outstanding shares from the markets. Several companies like Castrol India and Phillips India have done this in recent years. A well known example from the U.S. is that of Levi Strauss & Company.
- **Equity buyback:** This involves the company buying its own shares back from the market. This results in reduction in the equity capital of the company. This strengthens the promoter's position by increasing his stake in the equity of the company.
- **Anti takeover defences:** With a high value of hostile takeover activity in recent years, takeover defences both premature and reactive have been restored to by the companies.
- **Leveraged Buyouts:** This involves raising of capital from the market or institutions by the management to acquire a company on the strength of its assets.

9.2 BASICS OF MERGER & ACQUISITION

9.2.1 Merger

Merger refers to a situation when two or more existing firms combine together and form a new entity. Either a new company may be incorporated for this purpose or one existing company (generally a bigger one) survives and another existing company (which is smaller) is merged into it. Laws in India use the term **amalgamation** for merger.

- Merger through absorption
- Merger through consolidation

Absorption

Absorption is a combination of two or more companies into an existing company. All companies except one lose their identity in a merger through absorption. An example of this type of merger is the absorption of Tata Fertilizers Ltd. (TFL), TCL an acquiring company (a buyer), survived after merger while TFL, an acquired company (a seller), ceased to exist. TFL transferred its assets, liabilities and shares to TCL.

Consolidation

A consolidation is a combination of two or more companies into a new company. In this type of merger, all companies are legally dissolved and a new entity is created. In a consolidation, the acquired company transfers its assets, liabilities and shares to the acquiring company for cash or exchange of shares. An example of consolidation is the merger of Hindustan Computers Ltd., Hindustan Instruments Ltd., and Indian Reprographics Ltd., to an entirely new company called HCL Ltd.

9.2.1.1 Types of Mergers

We have identified 5 different types of mergers, e.g.

- (a) **Horizontal merger:** The two companies which have merged are in the same industry, normally the market share of the new consolidated company would be larger and it is possible that it may move closer to being a monopoly or a near monopoly.
- (b) **Vertical merger :** It means the merger of two companies which are in different field altogether, the coming together of two concerns may give rise to a situation similar to a monopoly.
- (c) **Reverse merger :** Where, in order to avail benefit to carry forward of losses which are available according to tax law only to the company which had incurred them, the profit making company is merged with companies having accumulated losses.
- (d) **Conglomerate merger :** Such mergers involved firms engaged in unrelated type of business operations. In other words, the business activities of acquirer and the target are not related to each other horizontally (i.e. producing the same or competitive products) nor vertically (having relationship of buyer and supplier).
- (e) **Co generic merger :** In these mergers, the acquirer and the target companies are related through basic technologies, production processes or market. The acquired company represents an extension of product line, market participants or technologies of the acquirer.

9.2.2 Amalgamation

Amalgamation is an arrangement or reconstruction. It is a legal process by which two or more companies are to be absorbed or blended with another. As a result, the amalgamating company loses its existence and its shareholders become shareholders of new company or the amalgamated company. In case of amalgamation a new company may come into existence or an old company may survive while amalgamating company may lose its existence. There may be amalgamation by transfer of one or more undertaking to a new company or transfer of one or more undertaking to an existing company. Amalgamation signifies the transfers of all or some part of assets and liabilities of one or more than one existing company or two or more companies to a new company.

9.2.2.1 Types of Amalgamation

The Accounting Standard, AS-14, issued by the Institute of Chartered Accountants of India has defined the term amalgamation by classifying (i) Amalgamation in the nature of merger, and (ii) Amalgamation in the nature of purchase.

- (a) **Amalgamation in the nature of merger:** As per AS-14, an amalgamation is called in the nature of merger if it satisfies all the following condition:
 - All the assets and liabilities of the transferor company should become, after amalgamation; the assets and liabilities of the other company.
 - Shareholders holding not less than 90% of the face value of the equity shares of the transferor company (other than the equity shares already held therein, immediately before the amalgamation, by the transferee company or its subsidiaries or their nominees) become equity shareholders of the transferee company by virtue of the amalgamation.
 - The consideration for the amalgamation receivable by those equity shareholders of the transferor company who agree to become equity shareholders of the transferee company is discharged by the transferee company wholly by the issue of equity share in the transferee company, except that cash may be paid in respect of any fractional shares.
 - The business of the transferor company is intended to be carried on, after the amalgamation, by the transferee company.
 - No adjustment is intended to be made in the book values of the assets and liabilities of the



transferor company when they are incorporated in the financial statements of the transferee company except to ensure uniformity of accounting policies.

Amalgamation in the nature of merger is an organic unification of two or more entities or undertaking or fusion of one with another. It is defined as an amalgamation which satisfies the above conditions. As per Income Tax Act 1961, merger is defined as amalgamation under Sec. 2(1B) with the following three conditions to be satisfied.

- I. All the properties of amalgamating company(s) should vest with the amalgamated company after amalgamation.
- II. All the liabilities of the amalgamating company(s) should vest with the amalgamated company after amalgamation.
- III. Shareholders holding not less than 75% in value or voting power in amalgamating company(s) should become shareholders of amalgamated companies after amalgamation. Amalgamation does not mean acquisition of a company by purchasing its property and resulting in its winding up. According to Income tax Act, exchange of shares with 90% of shareholders of amalgamating company is required

(b) Amalgamation in the nature of purchase: Amalgamation in the nature of purchase is where one company's assets and liabilities are taken over by another and lump sum is paid by the latter to the former. It is defined as the one which does not satisfy any one or more of the conditions satisfied above.

9.2.3 Acquisition

Acquisition refers to the acquiring of ownership right in the property and asset without any combination of companies. Thus in acquisition two or more companies may remain independent, separate legal entity, but there may be change in control of companies. Acquisition results when one company purchase the controlling interest in the share capital of another existing company in any of the following ways :

- (a) By controlling interest in the other company. By entering into an agreement with a person or persons holding shares of other company.
- (b) By subscribing new shares being issued by the other company.
- (c) By purchasing shares of the other company at a stock exchange, and
- (d) By making an offer to buy the shares of other company, to the existing shareholders of that company.

9.2.4 Demerger

It has been defined as a split or division. As the name suggests, it denotes a situation opposite to that of merger. Demerger or spin-off, as called in US involves splitting up of conglomerate (multi-division) of company into separate companies.

This occurs in cases where dissimilar business are carried on within the same company, thus becoming unwieldy and cyclical almost resulting in a loss situation. Corporate restructuring in such situation in the form of demerger becomes inevitable. Merger of SG Chemical and Dyes Ltd. with Ambalal Sarabhai Enterprises Ltd. (ASE) has made ASE big conglomerate which had become unwieldy and cyclic, so demerger of ASE was done.

A part from core competencies being main reason for demerging companies according to their nature of business, in some cases, restructuring in the form of demerger was undertaken for splitting up the family owned large business empires into smaller companies.

The historical demerger of DCM group where it split into four companies (DCM Ltd., DCM Shriram Industries Ltd., Shriram Industrial Enterprise Ltd. and DCM Shriram Consolidated Ltd.) is one example of

family units splitting through demergers. Such demergers are accordingly, more in the nature of family settlements and are affected through the courts order.

Thus, demerger also occur due to reasons almost the same as mergers i.e. the desire to perform better and strengthen efficiency, business interest and longevity and to curb losses, wastage and competition. Undertakings demerge to delineate businesses and fix responsibility, liability and management so as to ensure improved results from each of the demerged unit.

Demerged Company, according to Section (19AA) of Income Tax Act, 1961 means the company whose undertaking is transferred, pursuant to a demerger to a resulting company.

Resulting company, according to Section 2(47A) of Income Tax Act, 1961 means one or more company, (including a wholly owned subsidiary thereof) to which the undertaking of the demerged company is transferred in a demerger, and the resulting company in consideration of such transfer of undertaking issues shares to the shareholders of the demerged company and include any authority or body or local authority or public sector company or a company established, constituted or formed as a result of demerger.

9.2.5 Reverse Merger

Normally, a small company merges with large company or a sick company with healthy company. However in some cases, reverse merger is done. When a healthy company merges with a sick or a small company is called reverse merger. This may be for various reasons. Some reasons for reverse merger are :

- (a) The transferee company is a sick company and has carry forward losses and Transferor Company is profit making company. If Transferor Company merges with the sick transferee company, it gets advantage of setting off carry forward losses without any conditions. If sick company merges with healthy company, many restrictions are applicable for allowing set off.
- (b) The transferee company may be listed company. In such case, if Transferor Company merges with the listed company, it gets advantages of listed company, without following strict norms of listing of stock exchanges.

In such cases, it is provided that on date of merger, name of Transferee Company will be changed to that of Transferor Company. Thus, outside people even may not know that the transferor company with which they are dealing after merger is not the same as earlier one. One such approved in Shiva Texyarn Ltd.

9.2.6 Forces that drive M&A Activities

The major forces which drive M&A activities since the early 1990's have been identified as the following:

- (i) Rapid pace of technological change;
- (ii) Low costs of communication and transportation;
- (iii) Globalization and global markets;
- (iv) Nature of competition in terms of forms, sources and intensity;
- (v) Emergence of new types of industries;
- (vi) Regulation in some industries and sectors;
- (vii) Liberalization in some industries and sectors;
- (viii) Growing inequalities in incomes and wealth.

Merger activity generally comes in waves, and is most common when shares are overvalued. The late 1990's saw fevered activity. Then the pace slowed in most industries, particularly after September 11, 2001. It picked up again in mid-2003 as companies that weathered the global recession sought



bargains among their battered brethren. By the start of 2006, a mergers and acquisitions boom was in full swing, provoking a nationalist backlash in some European countries. The future of the merger wave now depends on how deep the downturn in private equity proves to be.

9.2.7 Possible causes of different types of Merger

An extensive appraisal of each merger scheme is done to patterns the causes of mergers. These hypothesized causes (motives) as defined in the mergers schemes and explanatory statement framed by the companies at the time of mergers can be conveniently categorized based on the type of merger. The possible causes of different type of merger schemes are as follows:

- (i) **Horizontal merger:** These involve mergers of two business companies operating and competing in the same kind of activity. They seek to consolidate operations of both companies. These are generally undertaken to :
 - (a) Achieve optimum size
 - (b) Improve profitability
 - (c) Carve out greater market share
 - (d) Reduce its administrative and overhead costs.
- (ii) **Vertical merger:** These are mergers between firms in different stages of industrial production in which a buyer and seller relationship exists. Vertical mergers are an integration undertaken either forward to come close to customers or backward to come close to raw materials suppliers. These mergers are generally endeavoured to :
 - (a) Increased profitability
 - (b) Economic cost (by eliminating avoidable sales tax and excise duty payments)
 - (c) Increased market power
 - (d) Increased size
- (iii) **Conglomerate merger:** These are mergers between two or more companies having unrelated business. These transactions are not aimed at explicitly sharing resources, technologies, synergies or product. They do not have an impact on the acquisition of monopoly power and hence are favoured throughout the world. They are undertaken for diversification of business in other products, trade and for advantages in bringing separate enterprise under single control namely :
 - (a) Synergy arising in the form of economies of scale.
 - (b) Cost reduction as a result of integrated operation.
 - (c) Risk reduction by avoiding sales and profit instability.
 - (d) Achieve optimum size and carve out optimum share in the market.
- (iv) **Reverse mergers:** Reverse mergers involve mergers of profit making companies with companies having accumulated losses in order to:
 - (a) Claim tax savings on account of accumulated losses that increase profits.
 - (b) Set up merged asset base and shift to accelerate depreciation.
- (v) **Group company mergers:** These mergers are aimed at restructuring the diverse units of group companies to create a viable unit. Such mergers are initiated with a view to affect consolidation in order to:
 - (a) Cut costs and achieve focus.
 - (b) Eliminate intra-group competition
 - (c) Correct leverage imbalances and improve borrowing capacity.

9.2.8 Diversification

A commonly stated motive for mergers is to achieve risk reduction through diversification. The extent, to which risk is reduced, depends upon the correlation between the earnings of the merging entities. While negative correlation brings greater reduction in risk, positive correlation brings lesser reduction in risk. If investors can diversify on their own by buying stocks of companies which propose to merge, they do not derive any benefits from the proposed merger. Any investor who wants to reduce risk by diversifying between two companies, say, ABC Company and PQR Company, may simply buy the stocks of these two companies and merge them into a portfolio. The merger of these companies is not necessary for him to enjoy the benefits of diversification. As a matter of fact, his 'home-made diversification give him far greater flexibility. He can contribute the stocks of ABC Company and PQR Company in any proportion he likes as he is not confronted with a 'fixed' proportion that result from the merger.

Thus, Diversification into new areas and new products can also be a motive for a firm to merge another with it. A firm operating in North India, if merges with another firm operating primarily in South India, can definitely cover broader economic areas. Individually these firms could serve only a limited area. Moreover, products diversification resulting from merger can also help the new firm fighting the cyclical/seasonal fluctuations. For example, firm A has a product line with a particular cyclical variations and firm B deals in product line with counter cyclical variations. Individually, the earnings of the two firms may fluctuate in line with the cyclical variations. However, if they merge, the cyclically prone earnings of firm A would be set off by the counter cyclically prone earnings of firm B. Smoothing out the earnings of a firm over the different phases of a cycle tends to reduce the risk associated with the firm.

Through the diversification effects, merger can produce benefits to all firms by reducing the variability of firm's earnings. If firm A's income generally rises when B's income generally falls, and *vice-a versa*, the fluctuation of one will tend to set off the fluctuations of the other, thus producing a relatively level pattern of combined earnings. Indeed, there will be some diversification effect as long as the two firm's earnings are not perfectly correlated (both rising and falling together). This reduction in overall risk is particularly likely if the merged firms are in different lines of business.

A firm wants to diversify to achieve :

- Sales and growth stability
- Favourable growth developments
- Favourable competition shifts
- Technological changes

(a) External and Internal Growth: A company may expand and/or diversify its markets internally or externally. If the company cannot grow internally due to lack of physical and managerial resources, it can grow externally by combining its operations with other companies through mergers and acquisitions. Mergers and acquisitions may help to accelerate the pace of a company's growth in a convenient and inexpensive manner.

For example, RPG Group had a turnover of only ₹ 80 crores in 1979. This has increased to about ₹5600 crores in 1996. This phenomenal growth was due to the acquisitions of a several companies by the RPG Group. Some of the companies acquired are Asian Cables, Ceat, Calcutta Electricity Supply etc.

(b) Market Share: A merger can increase the market share of the merged firm. The increased concentration or market share improves the profitability of the firm due to economies of scale.

The acquisition of Universal Luggage by Blow Plast is an example of limiting competition to increase market power. Before the merger, the two companies were competing fiercely with each other leading to a severe price war and increased marketing costs. As a result of the merger, Blow Plast has obtained a strong hold on the market and now operates under near monopoly situation. Yet



another example is the acquisition of Tomco by Hindustan Lever. Hindustan Lever at the time of merger was expected to control one-third of three million ton soaps and detergents markets and thus, substantially reduce the threat of competition.

- (c) **Purchase of assets at bargain price:** Mergers may be explained by the opportunity to acquire assets, particularly land, mined rights, plant and equipment at lower cost than would be incurred if they were purchased or constructed at current market prices. If market prices of many stocks have been considerably below the replacement cost of the assets they represent, expanding firm considering constructing plants developing mines, or buying equipment.
- (d) **Increased external financial capability:** Many mergers, particularly those of relatively small firms into large ones, occur when the acquired firm simply cannot finance its operations. This situation is typical in a small growing firm with expanding financial requirements. The firm has exhausted its bank credit and has virtually no access to long term debt or equity markets. Sometimes the small firms have encountered operating difficulty and the bank has served notice that its loans will not be renewed. In this type of situation, a large firm with sufficient cash and credit to finance the requirements of the smaller one probably can obtain a good situation by making a merger proposal to the small firm. The only alternative the small firm may have is to try to interest two or more larger firms in proposing merger to introduce competition into their bidding for the acquisition.
- (e) **Increased managerial skills:** Occasionally, a firm will have good potential that it finds itself unable to develop fully because of deficiencies in certain areas of management or an absence of needed product or production technology. If the firm cannot hire the management or develop the technology it needs, it might combine with a compatible firm that has the needed managerial personnel or technical expertise. Any merger, regardless of the specific motive for it, should contribute to the maximization of owner's wealth.
- (f) **Reduction in tax liability:** Under Income Tax Act, there is a provision for set-off and carry forward of losses against its future earnings for calculating its tax liability. A loss making or sick company may not be in a position to earn sufficient profits in future to take advantage of the carry forward provision. If it combines with a profitable company, the combined company can utilize the carry forward loss and save taxes with the approval of government. In India, a profitable company is allowed to merge with a sick company to set-off against its profits the accumulated loss and unutilized depreciation of that company. A number of companies in India have merged to take advantage of this provision.

The following is the list of some companies along with the amount of tax benefits enjoyed:

- Orrisa Synthesis merged with Straw product Ltd. (₹ 16 crores)
 - Ahmadabad Cotton Mills merged with Arvind Mills (₹ 3.34 crores)
 - Sidhpur Mills merged with Reliance Industries Ltd. (₹ 3.34 crores)
 - Alwyn Missan merged with Mahinder and Mahindra Ltd. (₹ 2.47 crores)
 - Hyderabad Alwyn merged with Voltas Ltd. (₹ 1600 crores)
- (g) **Economies of Scale:** Economies of scale arise when increase in the volume of production leads to a reduction in the cost of production per unit. Merger may help to expand volume of production without a corresponding increase in fixed costs. Thus, fixed costs are distributed over a large volume of production causing the unit cost of production to decline. Economies of scale may also arise from other indivisibilities such as production facilities, management functions and management resources and systems. This happens because a given function, facility or resource is utilized for a large scale of operation. For example, a given mix of plant and machinery can produce scale economies when its capacity utilization is increased. Economies will be maximized when it is optimally utilized. Similarly, economies in the use of the marketing function can be achieved by covering wider markets and customers using a given sales force and promotion

and advertising efforts. Economies of scale may also be obtained from the optimum utilization of management resource and systems of planning, budgeting, reporting and control. A company establishes management systems by employing enough qualified professionals irrespective of its size. A combined firm with a large size can make the optimum use of the management resource and systems resulting in economies of scale.

(h) Vertical Integration: Vertical integration is a combination of companies business with the business of a supplier or customer generally motivated by a pure desire :

- (a) To secure a source of supply for key materials or sources
- (b) To secure a distribution outlet or a major customer for the company's products.
- (c) To improve profitability by expanding into high margin activities of suppliers and customers.

Thus, vertical merger may take place to integrate forward or backward. Forward integration is where company merges to come close to its customers. A holiday tour operator might acquire chain of travel agents and use them to promote his own holiday rather than those of rival tour operators. So forward or downstream vertical integration involves takeover of customer business.

Tata Tea's acquisition of consolidated coffee which produces coffee beans and Asian Coffee, which possesses coffee beans, was also backward integration which helped reduce exchange inefficiencies by eliminating market transactions. The recent merger of Samtel Electron services (SED) with Samtel Color Ltd. (SCL) entailed backward integration of SED which manufactures electronic components required to make picture tubes with SCL, a leading maker of color picture tube.

9.2.9 Mergers & Acquisitions have gained importance in recent time

Merger - It's the most talked about term today creating lot of excitement and speculative activity in the markets. But before Mergers & Acquisitions (M&A) activity speeds up, it has to actually pass through a long chain of procedures (both legal and financial), which at times delays the deal.

With the liberalization of the Indian economy in 1991, restrictions on Mergers and Acquisitions have been lowered. The numbers of Mergers and Acquisitions have increased many times in the last decade compared to the slack period of 1970-80s when legal hurdles trimmed the M&A growth. To put things in perspective, from 15 mergers in 1998, the number crossed to over 280 in FY01. With a downturn in the capital markets, valuations have come down to historic lows. It's high time that the consolidation game speeds up. In simple terms, a merger means blending of two or more existing undertakings into one, consequent to which each undertaking would lose their separate identity. The most common reasons for mergers are, operating synergies, market expansion, diversification, growth, consolidation of production capacities and tax savings. However, these are just some of the illustrations and not the exhaustive benefits.

However, before the idea of Merger and Acquisition crystallizes, the firm needs to understand its own capabilities and industry position. It also needs to know the same about the other firms it seeks to tie up with, to get a real benefit from a merger.

Globalization has increased the competitive pressure in the markets. In a highly challenging environment a strong reason for merger and acquisition is a desire to survive. Thus apart from growth, the survival factor has of late, spurred the merger and acquisition activity worldwide.

The present study gives some insight as to why the companies are going for merger and acquisition and what are the legal, tax and financial aspects governing them. The study also deals with other aspects such as types of merger, motives, reasons, and successful consolidation in merger, recent trend in merger and acquisition activity. Lastly few case studies involving the merger and acquisition has been taken.



Mergers, acquisitions and restructuring have become a major force in the financial and economic environment all over the world. Essentially an American phenomenon till the middle of 1970s, they have become a dominant global business theme at present. On Indian scene too corporate are seriously making at mergers, acquisitions which has become order of the day.

Mergers and acquisitions (M&A) and corporate restructuring are a big part of the corporate finance world. Every day, Wall Street investment bankers arrange M&A transactions, which bring separate companies together to form larger ones. When they're not creating big companies from smaller ones, corporate finance deals do the reverse and break up companies through spin-offs, carve-outs or tracking stocks.

Not surprisingly, these actions often make the news. Deals can be worth hundreds of millions, or even billions, of dollars. They can dictate the fortunes of the companies involved for years to come. For a CEO, leading an M&A can represent the highlight of a whole career. And it is no wonder we hear about so many of these transactions; they happen all the time. Next time you flip open the newspaper's business section, odds are good that at least one headline will announce some kind of M&A transaction.

Sure, M&A deals grab headlines, but what does this all mean to investors, it discusses the forces that drive companies to buy or merge with others, or to split-off or sell parts of their own businesses. Once you know the different ways in which these deals are executed, you'll have a better idea of whether you should cheer or weep when a company you own buys another company - or is bought by one. You will also be aware of the tax consequences for companies and for investors.

9.2.10 Factors that favour external growth and diversification through Mergers and Acquisitions

- (i) Some goals and objectives may be achieved more speedily through an external acquisition.
- (ii) The cost of building an organization internally may exceed cost of an acquisition.
- (iii) There may be fewer risks, lower costs, or shorter time requirements involved in achieving an economically feasible market share by the external route.
- (iv) The firm may not be utilizing their assets or arrangement as effectively as they could be utilized by the acquiring firm.
- (v) The firm may be able to use securities in obtaining other companies, where as it might not be able to finance the acquisition of equivalent assets and capabilities internally.
- (vi) There may be tax advantages.
- (vii) There may be opportunities to complement capabilities of other firms.

Merits and demerits of Merger and Acquisitions

	Gains		Pains
(i)	Financial Returns/Profitability	(i)	Expenses / Drain on Profitability
(ii)	Aligned Org Structure.	(ii)	Time and resource required to manager / transition.
(iii)	New approaches to conducting work.	(iii)	Reduced work productivity and quality.
(iv)	Motivated and capable talent.	(iv)	Unintended consequences for employee's attitudes and behaviour.
(v)	Desired culture.	(v)	Culture clash.
(vi)	Cost Savings.	(vi)	Customer concerns.

9.2.11 Process of Searching Target Company for Merger & Acquisition

Search for acquisition of Target Company based on objectives of the acquirer company.

(i) Services of Intermediaries

(a) Consultants	(a) Finding a Target company
(b) Merchant bankers	(b) Negotiation
(c) Financial Institutions	(c) Compliance of legal formalities
	(d) Completion of Financial arrangement
	(e) Closing the deals.

(ii) Primary investigation about Target Company.

(a) Industry Analysis :	Competition Growth Rate / Future projections Barriers to entry / Exit Mergers and acquisitions in industry and results
(b) Financial Analysis :	Balance sheet and Profit and loss for past years Budgets and forecasts Financial ratios - Return on Assets - Return on Net worth - GP / NP - D/ E Ratio - Expense Ratio Replacement cost data Valuation of Assets / Liabilities
(c) Management Analysis :	Assessment of Senior Management Business Experience Union Contract / Strike History Labour Relations / Agreements Personnel Schemes Profile of permanent employees
(d) Marketing Analysis :	Data on Past Sales Customer profile Major sales agreements Trends Distribution channels Product Profile Development / Disclosure



- (e) Manufacturing :
- Location
 - Technology
 - Manufacturing process
 - Quality
 - R & D

(iii) Other Information

- Inventory valuation, obsolescence, over valuation.
- Litigation
- Doubtful debts
- Unrealized / Unrealizable Assets / Investments
- Tax status / Assessments / Outstanding dues

(iv) Economic Analysis

- Business Cycles
- Public Interest
- Government Prices / Incentives
- Condition of securities market

(v) Comparison of Alternative Target companies and Arrival of decision as regards target company.

(vi) Strategy for takeover - method to be employed.

- Friendly takeover through negotiations
- Hostile

(vii) Valuation of Assets and arriving at Purchase consideration.

(viii) Mode of Payment

- Cash
- Share Exchange Ratio

(ix) Legal formalities

- Takeover code
- Company law
- Income tax / SICA / IDR / MRTTP

(x) Post Merger Integration.

9.2.12 Merger can revive a sick company

An important motive for merger is to turn around a financially sick company through the process of merger. Amalgamation taking place under the aegis of Board for Industrial and Financial Reconstruction (BIFR) fall under this category.

BIFR found revival of ailing companies through the means of their with healthy company as the most successful route for revival of their financial wealth. Firstly, the purpose is to revive a group of sick companies by merging it with groups of healthy company by obtaining concessions from financial institution and government agencies and obtaining benefits of tax concessions u/s 72A of Income Tax Act, 1961. Secondly, it also helps to preserve group reputation. Some of the group companies which

have amalgamated through the BIFR include Mahindra Missan Allwyn with Mahindra and Mahindra, Hyderabad, Allwyn with Voltas etc.

9.3 THEORIES OF MERGER AND ACQUISITION

9.3.1 Major theories of Mergers & Acquisitions

The following theories of mergers and acquisitions are discussed below:

- (i) **Synergy or Efficiency:** In this theory, the total value from the combination is greater than the sum of the values of the component companies operating independently.
- (ii) **Hubris:** The result of the winner's curse, causing bidders to overpay. It is possible that value is unchanged.
- (iii) **Agency:** The total value here is decreased as a result of mistakes or managers who put their own preferences above the well-being of the company.

While the target company always gains, the acquirer gains when synergy accrues from combined operations, and loses under the other two theories. The total value becomes positive under synergy, becomes zero under the second, and becomes negative under the third.

9.3.2 Reasons for Mergers and Acquisitions

Mergers and acquisitions are strategic decisions leading to the maximization of a company's growth by enhancing its production and marketing operations. They have become popular in the recent times because of the enhanced competition, breaking of trade barriers, free flow of capital across countries and globalization of business as a number of economies are being deregulated and integrated with other economies. A number of motives are attributed for the occurrence of mergers and acquisitions.

- i) **Synergies through Consolidation:** Synergy implies a situation where the combined firm is more valuable than the sum of the individual combining firms. It is defined as 'two plus two equal to five' ($2+2=5$) phenomenon. Synergy refers to benefits other than those related to economies of scale. Operating economies are one form of synergy benefits. But apart from operating economies, synergy may also arise from enhanced managerial capabilities, creativity, innovativeness, R&D and market coverage capacity due to the complementary nature of resources and skills and a widened horizon of opportunities.

An undervalued firm will be a target for acquisition by other firms. However, the fundamental motive for the acquiring firm to takeover a target firm may be the desire to increase the wealth of the shareholders of the acquiring firm. This is possible only if the value of the new firm is expected to be more than the sum of individual value of the target firm and the acquiring firm. For example, if A Ltd. and B Ltd. decide to merge into AB Ltd. then the merger is beneficial if

$$V(AB) > V(A) + V(B)$$

Where

- $V(AB)$ = Value of the merged entity
- $V(A)$ = Independent value of company A
- $V(B)$ = Independent value of company B

Igor Ansoff (1998) classified four different types of synergies. These are:

- (a) **Operating synergy:** The key to the existence of synergy is that the target firm controls a specialized resource that becomes more valuable when combined with the bidding firm's resources. The sources of synergy of specialized resources will vary depending upon the merger. In case of horizontal merger, the synergy comes from some form of economies of scale which reduce the cost



or from increase market power which increases profit margins and sales. There are several ways in which the merger may generate operating economies. The firm might be able to reduce the cost of production by eliminating some fixed costs. The research and development expenditures will also be substantially reduced in the new set up by eliminating similar research efforts and repetition of work already done by the target firm. The management expenses may also come down substantially as a result of corporate reconstruction.

The selling, marketing and advertisement department can be streamlined. The marketing economies may be produced through savings in advertising (by reducing the need to attract each other's customers), and also from the advantage of offering a more complete product line (if the merged firms produce different but complementary goods), since a wider product line may provide larger sales per unit of sales efforts and per sales person. When a firm having strength in one functional area acquires another firm with strength in a different functional area, synergy may be gained by exploiting the strength in these areas. A firm with a good distribution network may acquire a firm with a promising product line, and thereby can gain by combining these two strength. The argument is that both firms will be better off after the merger. A major saving may arise from the consolidation of departments involved with financial activities e.g., accounting, credit monitoring, billing, purchasing etc.

Thus, when two firms combine their resources and efforts, they will be able to produce better results than they were producing as separate entities because of saving various types of operating costs. These resultant economies are known as synergistic operating economies.

In a *vertical merger*, a firm may either combine with its supplier of input (backward integration) and/or with its customers (forward integration). Such merger facilitates better coordination and administration of the different stages of business stages of business operations-purchasing, manufacturing and marketing –eliminates the need for bargaining (with suppliers and/or customers), and minimizes uncertainty of supply of inputs and demand for product and saves costs of communication.

An example of a merger resulting in operating economies is the merger of Sundaram Clayton Ltd. (SCL) with TVS-Suzuki Ltd. (TSL). By this merger, TSL became the second largest producer of two –wheelers after Bajaj. The main objective motivation for the takeover was TSL's need to tide over its different market situation through increased volume of production. It needed a large manufacturing base to reduce its production costs. Large amount of funds would have been required for creating additional production capacity. SCL also needed to upgrade its technology and increase its production. SCL's and TCL's plants were closely located which added to their advantages. The combined company has also been enabled to share the common R&D facilities.

(b) Financial synergy: Financial synergy refers to increase in the value of the firm that accrues to the combined firm from financial factors. There are many ways in which a merger can result into financial synergy and benefit. A merger may help in:

- Eliminating financial constraint
- Deployment surplus cash
- Enhancing debt capacity
- Lowering the financial costs
- Better credit worthiness

Financial Constraint: A company may be constrained to grow through internal development due to shortage of funds. The company can grow externally by acquiring another company by the exchange of shares and thus, release the financing constraint.

Deployment of Surplus Cash: A different situation may be faced by a cash rich company. It may not have enough internal opportunities to invest its surplus cash. It may either distribute its surplus

cash to its shareholders or use it to acquire some other company. The shareholders may not really benefit much if surplus cash is returned to them since they would have to pay tax at ordinary income tax rate. Their wealth may increase through an increase in the market value of their shares if surplus cash is used to acquire another company. If they sell their shares, they would pay tax at a lower, capital gains tax rate. The company would also be enabled to keep surplus funds and grow through acquisition.

Debt Capacity: A merger of two companies, with fluctuating, but negatively correlated, cash flows, can bring stability of cash flows of the combined company. The stability of cash flows reduces the risk of insolvency and enhances the capacity of the new entity to service a larger amount of debt. The increased borrowing allows a higher interest tax shield which adds to the shareholders wealth.

Financing Cost: The enhanced debt capacity of the merged firm reduces its cost of capital. Since the probability of insolvency is reduced due to financial stability and increased protection to lenders, the merged firm should be able to borrow at a lower rate of interest. This advantage may, however, be taken off partially or completely by increase in the shareholders risk on account of providing better protection to lenders.

Another aspect of the financing costs is issue costs. A merged firm is able to realize economies of scale in flotation and transaction costs related to an issue of capital. Issue costs are saved when the merged firm makes a larger security issue.

Better credit worthiness: This helps the company to purchase the goods on credit, obtain bank loan and raise capital in the market easily.

RP Goenka's Ceat Tyres sold off its type cord division to Shriram Fibers Ltd. in 1996 and also transferred its fiber glass division to FGL Ltd., another group company to achieve financial synergies.

(c) Managerial synergy:

One of the potential gains of merger is an increase in managerial effectiveness. This may occur if the existing management team, which is performing poorly, is replaced by a more effective management team. Often a firm, plagued with managerial inadequacies, can gain immensely from the superior management that is likely to emerge as a sequel to the merger. Another allied benefit of a merger may be in the form of greater congruence between the interests of the managers and the shareholders.

A common argument for creating a favorable environment for mergers is that it imposes a certain discipline on the management. If lackluster performance renders a firm more vulnerable to potential acquisition, existing managers will strive continually to improve their performance.

(d) Sales synergy:

These synergies occur when merged organization can benefit from common distribution channels, sales administration, advertising, sales promotion and warehousing.

The Industrial Credit and Investment Corporation of India Ltd. (ICICI) acquired Tobacco Company, ITC Classic and Anagram Finance to obtain quick access to a well dispersed distribution network.

9.4 STRENGTHS AND WEAKNESSES OF VARIOUS METHODS OF BUSINESS VALUATION

There are many different methods for valuing a business, with some better suited to a specific type of business than others. A key task of the valuation specialist is to select the most appropriate method for valuing a particular business. The method chosen should provide a reasonable estimate of value, be suitable for the intended purpose and be able to face legal challenges by the IRS or other opposing parties.



As a part of the process, a valuation specialist will often employ several different methods and average the results to arrive at a “ballpark” estimate. Because each method has strengths and weaknesses, business owners and their advisors should be familiar with the most commonly used valuation techniques.

9.4.1 Net Asset Value

The value is based on a sale at fair market value (FMV) of the firm's assets on a going-concern basis.

- **Strengths**

- (i) Data required to perform the valuation are usually easily available. Allows for adjustments (up and down) in estimating FMV.
- (ii) Suitable for firms with heavy tangible investments (e.g. equipment, land).
- (iii) Helpful when the firm's future is in question or where the firm has a brief or volatile earnings record.

- **Weaknesses**

- (i) Can understate the value of intangible assets such as copyrights or goodwill.
- (ii) Does not take into account future changes (up or down) in sales or income.
- (iii) Balance sheet may not accurately reflect all assets.

9.4.2 Discounted Future Earnings

The value of the firm is equivalent to the capital required to produce income equal to a projected future income stream from continuing operations of the firm. The rate of return used is adjusted to take into account the level of risk assumed by a buyer in purchasing the business as a going concern.

- **Strengths**

- (i) The value of the firm is based on projected future results, rather than assets. Can be used with either net earnings or net cash flow.
- (ii) Useful when future results are expected to be different (up or down) from recent history.

- **Weaknesses**

- (i) May understate the value of balance sheet assets.
- (ii) Discounts the valuation based on the level of risk. A business perceived as riskier typically receives a lower valuation than a more stable business.
- (iii) Projections are not guarantees; unforeseen future events can cause income or earnings projections to be completely invalid.

9.4.3 Excess Earnings (Treasury Method)

The value of the firm is determined by adding the estimated market value of its tangible assets to the capitalized value of projected income resulting from goodwill.

- **Strengths**

- (i) Takes into account both tangible and intangible assets.
- (ii) Includes projected future values of income resulting from goodwill.
- (iii) Is based on IRS Rev. Rul. 68-609, 1968 CB 327.

- **Weaknesses**

- (i) Relies on estimate of period for which goodwill is expected to last, which is often difficult to assess. Projections based on this value can be unreliable.

- (ii) May understate future revenues or value of intangible assets.
- (iii) Though based on IRS rulings, the IRS cautions that the method can be relied on “only if there is no better basis therefore available.”

9.4.4 Capitalization of Earnings

Value is equivalent to the capital (invested at a reasonable rate of return) required to generate an income equal to an average of the firm's recent, historical results.

- **Strengths**

- (i) A simplified approach that arrives at an easily determined value.
- (ii) Does not rely on projections, but on an average of results from the recent past. Most useful for businesses with stable, predictable cash flows and earnings.

- **Weaknesses**

- (i) May understate value for firms using aggressive strategies to reduce taxable income.
- (ii) May overlook value of tangible or intangible assets.
- (iii) Reliance on past earnings may ignore potential future growth.

Recognition of interest of various stakeholders

The merger between Manulife Financial and John Hancock Financial Services has many benefits for its stakeholders.

This combination turns two exceptionally strong companies into an integrated leader whose scale and capital base will enable even greater growth and shareholder value.

These two companies also complement each other in ways that maximize their respective strengths as well as unlock new opportunities for earnings growth that would not exist but for this combination.

The anticipated benefits to the new entity and shareholders include revenue, distribution and expense drivers:

- Access to deeper and more diversified distribution capabilities;
- A more diverse and competitive product line, and the ability to make each company's best products available to all distributors;
- Several strong, high-quality brands to market, including John Hancock, which is the primary brand in the United States; and Manulife, which is the primary brand in Canada, Asia and Japan;
- Increased capacity to grow profitable lines of business;
- Stronger and leading market positions in all core business lines;
- A consolidation of operations in the United States, Canada and Asia that is expected to result in an estimated cumulative cost savings of approximately Cdn\$350 million (pre-tax) or US\$255 million phased in over three years.

The combined company has a more diversified and balanced earnings base, 54 percent of which came from life insurance business. In addition, the transaction is expected to be accretive to Manulife's standalone net income by two percent or Cdn\$0.08 (US\$0.06) per share, excluding one-time charges, for nine months of 2004, with accretion rising to eight per cent or Cdn\$0.32 (US\$0.23) a share in 2005.

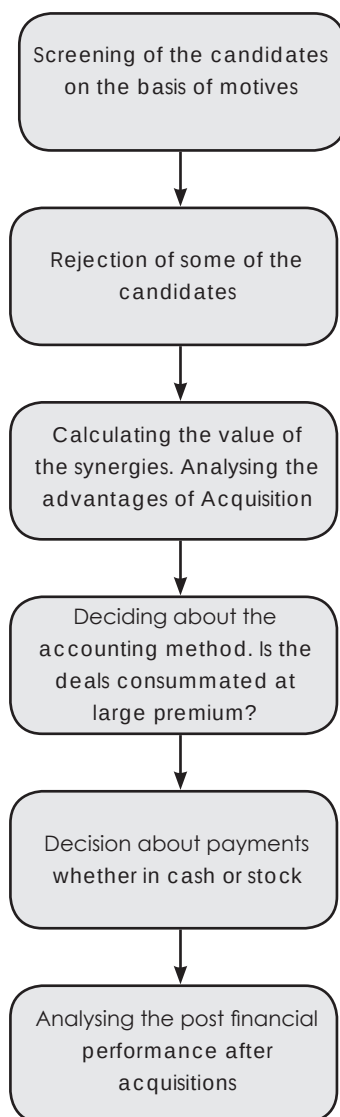
¹ Note: This is based on 2002-reported net income and is a combination of US GAAP and CGAAP figures.

9.5 CONCEPTS OF VALUE IN THE CONTEXT OF MERGERS AND ACQUISITION

1. **Intrinsic Value:** This is based on the net present value of expected future cash flows completely independent of any acquisition.
2. **Market Value:** Commonly known as 'current market capitalization', it is the same as share price. It reflects the market's valuation of a company.
3. **Purchase Price:** It is the price that a bidder anticipates having to pay to be accepted by the target company's shareholders.
4. **Synergy Value:** It is the net present value of expected future cash flows that will result from the combined operations and additional benefits expected to accrue.
5. **Value Gap:** The difference between the intrinsic value and the purchase price.

9.5.1 Steps Involved in An Acquisition Valuation

Procedures for Analysing Valuation of the Firm



An acquisition valuation programme can be segregated into five distinct steps like:

Step 1: Establish a motive for the acquisition.

Step 2: Choose a target.

Step 3: Value the target with the acquisition motive built in.

Step 4: Choose the accounting method for the merger/acquisition - purchase or pooling.

Step 5: Decide on the mode of payment - cash or stock.

'The acquiring firm must correctly value the firm to be acquired and the acquired firm must get the returns for the goodwill they have created over the years in the market.'

9.5.2 Estimating Merger Gains and Costs:

Mergers increase value when the value of the combined entity is greater than the sum of the premerger values of the independent entities. There should be an economic gain from the merger for it to make sense.

$$NPV_c = PV_{b_t} - (PV_b + PV_t)$$

Where,

NPV_c = the net present value increase or gain

PV_{b_t} = Present Value of the combined entity

PV_b = Present Value of the bidder alone

PV_t = Present Value of the target alone

Cost = Cash paid – PV_t

Decision Rule:

The net present value to the bidder of a merger with a target company is measured by the difference between the gain and the cost. The bidder should go ahead with the merger only if its net present value, represented as given below, is positive.

$$NPV = \text{Gain} - \text{Cost}$$

$$= [PV_{b_t} - (b + PV_t)] - (\text{Cash paid} - PV_t)$$

9.6 APPROACHES TO VALUATION IN CASE OF M&A

• Comparable Companies or Transactions Approach

The following are two examples of the many comparative metrics on which acquiring companies may base their offers:

- **Price-Earning Ratio (P/E Ratio)** - With the use of this ratio, an acquiring company makes an offer that is a multiple of the earnings of the target company. Looking at the P/E for all the stocks within the same industry group will give the acquiring company good guidance for what the target's P/E multiple should be.
- **Enterprise - Value-to-Sales Ratio (EV/Sales)** - With this ratio, the acquiring company makes an offer as a multiple of the revenues, again, while being aware of the price-to-sales of other companies in the industry.



- **Discounted Cash Flow Analysis**

A key valuation tool in M&A, discounted cash flow analysis determines a company's current value according to its estimated future cash flows. Forecasted free cash flows (net income + depreciation/amortization - capital expenditures - change in working capital) are discounted to a present value using the company's weighted average costs of capital (WACC). Admittedly, DCF is tricky to get right, but few tools can rival this valuation method.

- **Cost of Capital**

In a few cases, acquisitions are based on the cost of replacing the target company. For simplicity's sake, suppose the value of a company is simply the sum of all its equipment and staffing costs. The acquiring company can literally order the target to sell at that price, or it will create a competitor for the same cost. Naturally, it takes a long time to assemble good management, acquire property and get the right equipment. This method of establishing a price certainly wouldn't make much sense in a service industry where the key assets - people and ideas - are hard to value and develop.

9.7 SELECTION OF APPROPRIATE COST OF CAPITAL FOR VALUATION

9.7.1 Capital Asset Pricing Model:

The most widely used method in calculating the cost of equity is the capital asset pricing model (CAPM). In CAPM, the required return on equity is a risk-free return plus a risk component.

Cost of equity = Risk-free rate + market price of risk x beta

Illustration 1.

The risk-free rate = 5.5%

The market price of risk = 7%

The company's beta = 1.2

Cost of equity = 5.5% + 7% (1.2) = 13.9%

9.7.2 The Dividend Growth Model:

Cost of equity = Expected Dividend yield + expected growth rate.

9.7.3 Bond Yield Plus Equity Risk Adjustment:

Cost of equity = Bond yield + spread over bond yields.

9.7.4 Cost of Debt:

Cost of debt should be on after-tax basis, as interest is tax deductible. Therefore, the cost of debt is given by:

The after-tax cost of debt = $k_d (1-T)$ Where T = Tax rate.

9.7.5 Weighted Average Cost of Capital:

The financial proportions of debt and equity are used as guide.

Illustration 2.

Cost of debt 8%

Tax rate = 40%

Capital structure: Debt: 40% and Equity: 60%

Weighted average cost of capital = $13.9\%(0.60) + 8\%(1-0.40)(0.40) = 10.26\%$

9.8 FORMS OF CONSIDERATION AND TERMS OF ACQUISITION

The provisions of Accounting Standard (AS-14) on Accounting for Amalgamations need to be referred to in this context.

9.8.1 Methods of Payment:

The two main methods of financing an acquisition are cash and share exchange.

(1) Cash: This method is generally considered suitable for relatively small acquisitions. It has two advantages: (i) the buyer retains total control as the shareholders in the selling company are completely bought out, and (ii) the value of the bid is known and the process is simple.

Illustration 3.

	Company A	Company B
Market price per share	₹ 75	₹15
No. of shares	100,000	60,000
Market Value of the company	₹ 75,00,000	₹ 900,000

Assume Company A intends to pay ₹12,00,000/- cash for Company B.

If the share price does not anticipate a merger:

The share price in the market is expected to accurately reflect the true value of the company.

The cost to the bidder Company A = Payment - The market value of Company B

= ₹ 12 lakhs – ₹ 9 lakhs

= ₹ 3 lakhs.

Company A is paying ₹3 lakhs for the identified benefits of the merger.

If the share price includes a speculation element of ₹2 per share:

The cost to Company A = ₹ 3,00,000 + (60,000 × ₹2)

= ₹ 3,00,000 + ₹ 1,20,000

= ₹ 4,20,000/-

Worth of Company B = (₹15 – ₹ 2) × 60,000

= ₹ 13 × 60,000

= ₹ 7,80,000/-

This can also be expressed as: ₹12,00,000 – ₹4,20,000 = ₹7,80,000

(2) Share Exchange

The method of payment in large transactions is predominantly stock for stock. The advantage of this method is that the acquirer does not part with cash and does not increase the financial risk by raising new debt. The disadvantage is that the acquirer's shareholders will have to share future prosperity with



those of the acquired company.

Illustration 4.

Suppose Company A wished to offer shares in Company A to the shareholders of Company B instead of cash:

Amount to be paid to shareholders of Company B = ₹12,00,000

Market price of shares of Company A = ₹75

No. of shares to be offered = ₹12,00,000 / ₹ 75
= 16,000

Now, shareholders of Company B will own part of Company A, and will benefit from any future gains of the merged enterprise.

Their share in the merged enterprise = 16,000 / (1,00,000 + 16,000)
= 13.8%

Further, now suppose that the benefits of the merger has been identified by Company A to have a present value of ₹4,00,000

The value of the merged entity = ₹ 75,00,000 + (₹9,00,000 + ₹4,00,000)
= ₹ 88,00,000

True cost of merger to the shareholders of Company A:

	Company A	Company B
Proportion of ownership in merged enterprise	86.2%	13.8%
Market Value: Total = ₹88,00,000	75,85,600	12,14,400
No. of shares currently in issue	100,000	60,000
Market price per share	₹75.86	₹20.24

The above gives the value of shares in the company before the merger is completed, based on estimates of what the company will be worth after the merger.

The valuation of each company also recognizes the split of the expected benefits which will accrue to the combined entity once the merger has taken place.

The true cost can be calculated as given below:

60,000 shares in Company B @ ₹ 20.24	₹12,14,400
Less: Current market value	₹ 9,00,000
Benefits being paid to shareholders of Company B	₹ 3,14,400

9.8.2 Participants in the Merger and Acquisition Process

There are many professionals who play an essential role in the successful completion of a deal.

- (a) **Investment Bankers:** Investment bankers are always at the forefront of the acquisition process. They offer strategic and tactical advice, screen potential buyers and sellers, make initial contact with a seller and buyer and provide negotiation support, valuation and deal structuring.
- (b) **Lawyers:** The legal framework surrounding a typical transaction has become so complicated that no one individual can have sufficient expertise to address all the issues. So, legal teams consist of more than a dozen lawyers each of whom represents a specialised aspect of the law.

- (c) **Accountants:** Accountants perform the role of auditors by reviewing the target's financial statements and operations through a series of interviews with senior and middle level managers.
- (d) **Valuation Experts:** They build models that incorporate various assumptions such as costs or revenues growth rate.
- (e) **Institutional Investors:** Institutional investors can announce how they intend to vote on a matter and advertise their position in order to seek support and have more influence.
- (f) **Arbitrageurs:** Arbitrageurs provide market liquidity during transactions. With the number of merger arbitrageurs increasing, they are becoming more proactive in trying to anticipate takeover situations. Their objective is to identify the target before the potential acquirer is required by law to announce its intentions.

9.8.3 SEBI Regulation in Relation to Mergers & Acquisitions

1. Clauses 40A and 40B of the listing Agreement the company has entered into with stock exchange.
2. SEBI's (Substantial Acquisition of shares and Takeover's) Regulations, 1997.

1. Takeover and Listing agreement exemption Clauses 40A and 40B of Listing Agreement.

Clause 40A deals with substantial acquisition of shares and requires the offeror and the offeree to inform the stock exchange when such acquisition results in an increase in the shareholding of the acquirer to more than 10%.

Clause 40B deals with takeover efforts. A takeover offer refers to change in management where there is no change in management, Clause 40B of listing agreement will not apply. However, sub clause 13 of amendment of Clause 40B also provides an exemption to the scheme approved by BIFR. There is no provision under clause 40B for exemption of non BIFR companies.

2. SEBI (Substantial Acquisition of shares and takeover) Regulations Act, 1997

On the basis of recommendations of the Committee, the SEBI announced on February 20, 1997, the revised take over code as Securities and Exchange Board of India (Substantial Acquisitions of shares and Takeovers) Regulations, 1997. The objective of these regulations has been to provide an orderly framework within which substantial acquisitions and takeovers can take place. The salient features of this new takeover code (Regulations, 1997) may be enumerated as follows:

- (i) Any person, who holds more than 5% shares or voting rights in any company, shall within two months of notification of these Regulation disclose his aggregate shareholding in that company, to the company which in turn, shall disclose to all the stock exchanges on which the shares of the company are listed, the aggregate number of shares held by each such person.
- (ii) Any acquirer, who acquires shares or voting rights which (taken together with shares or voting rights, if any, held by him) would entitle him to more than 5% shares or voting rights in a company- (a) in pursuance of a public issue, or (b) by one or more transactions, or (c) in any other manner not covered by (a) and (b) above, shall disclose the aggregate of his shareholding or voting rights in that company, to the company within four working days of the acquisition of shares or voting rights, as the case may be.
- (iii) Every person, who holds more than 10% shares or voting rights in any company, shall, within 21 days from the end of the financial year, make yearly disclosures to the company, in respect of his holdings as on 31st March each year.
- (iv) No acquirer shall agree to acquire, or acquire shares or voting rights which (taken together with shares or voting rights, if any, held by him or by persons acting in concert with him), entitle such acquirer to exercise 10% or more of the voting rights in a company, unless such acquirer makes a public announcement to acquire shares of such company in accordance with the Regulations.



- (v) No acquirer holding, not less than 10% but not more than 25% of the shares or voting rights in a company, shall acquire, additional shares or voting rights entitling him to exercise more than 2% of the voting rights, in any period of 12 months, unless such acquirer makes a public announcement to acquire shares in accordance with the Regulations.
- (vi) The minimum offer price shall be the highest of- (a) the negotiated price under the agreement; (b) average price paid by the acquirer for acquisitions including by way of allotment in a public or rights issue, if any, during the twelve-month period prior to the date of public announcement; (c) the price paid by the acquirer under a preferential allotment made to him, at any time during the twelve month period up to the date of closure of the offer; (d) the average of the weekly high and low of the closing prices of the shares of the target company during the 26 weeks preceding the date of public announcement.
- (vii) The public offer shall be made to the shareholders of the target company to acquire from them an aggregate minimum of 20% of the voting capital of the company provided that acquisition of shares from each of the shareholders shall not be less than the minimum marketable lot or the entire holding if it is less than the marketable lot.
- (viii) Within 14 days of the public announcement of the offer, the acquirer must send a copy of the draft letter to the target company at its registered office address, for being placed before the Board of Directors and to all the stock exchanges where the shares of the company are listed.
- (ix) Any person other than the acquirer who had made the first public announcement, who is desirous of making any offer, shall, within 21 days of the public announcement of the first offer, make a public announcement of his offer for acquisition of some or all of the shares of the same target company. Such offer shall be deemed to be a competitive bid. No public announcement for an offer or competitive bid shall be made during the offer period except during 21 days period from the public announcement of the first offer.
- (x) Upon the public announcement of a competitive bid or bids, the acquirer(s) who had made the public announcement (s) of the earlier offer(s), shall have the option to make an announcement revising the offer or withdrawing the offer with the approval of the SEBI.
- (xi) Irrespective of whether or not there is competitive bid, the acquirer who has made the public announcement of offer, may make upward revisions in his offer in respect of the price and the number of shares to be acquired, at any time up to 3 working days prior to the date of the closure of the offer.
- (xii) No public offer, once made, shall be withdrawn except under the circumstances mentioned in this regulation, namely-(a) the withdrawal is consequent upon any competitive bid; (b) the offer did not receive the minimum level of acceptances, to which it was subject to; (c) the statutory approvals(s) required have been refused; (d) the sole acquirer, being a natural person has died, and (e) such circumstances as in the opinion of SEBI merits withdrawal.
- (xiii) The acquirer shall deposit in an Escrow Account a sum equivalent to at least 25% of the total consideration payable under the offer up to ₹100 crores and 10% of the consideration thereafter. Where the acquirer specifies a minimum level of acceptance and does not want to acquire a minimum 20%, the 50% of the consideration payable is to be deposited in Escrow Account.
- (xiv) In case, there is any upward revision of offer, consequent upon a competitive bid or otherwise, the value of the Escrow Account shall be increased to equal to at least 25% of the consideration payable upon such revision.
- (xv) In case of a substantial acquisition of shares in financially weak company not being a sick industrial company, the scheme prepared by a financial institutions may provide for acquisition

of shares in the financially weak company in any of the following manner (a) outright purchase of shares, or (b) exchange of shares, or (c) a combination of both; provided that the scheme as far as possible may ensure that after the proposed acquisition, the erstwhile promoters do not own any shares in case such acquisition is made by the new promoters pursuant to such scheme.

- (xvi) The person acquiring shares from the promoters of the persons in-charge of the management of the affairs of the financially weak company or the financial institutions shall make a public announcement of his intention for acquisition of shares from the shareholders of the company. Such public announcement shall contain relevant details about the offer including the information about the identity and background of the person acquiring shares, number and percentages of shares proposed to be acquired, offer price, the specified date, the date of opening of the offer and the period for which the offer shall be kept open.
- (xvii) No person shall make a competitive bid for acquisition of shares of the financially weak company once the lead institution has evaluated the bid and accepted the bid of the acquirer who has made the public announcement of offer acquisition of shares from the shareholders other than the promoters.

An amendment to the Regulations, 1997 on substantial acquisition of shares and takeovers has been notified on 28, 1998. SEBI had decided to increase the creeping acquisition limited to 5% from the 25% and the threshold limit to 21.5% from 10%. The rationale for SEBI's decision to increase the creeping limit and the threshold limit is difficult to understand. The decision to increase the creeping to 5% and threshold limit to 15% appears to be working against the basic spirit of the takeover code. The increase in creeping acquisition will bring in quiet acquisition without the trigger of making a minimum offer of 20%. In fact the 20% offer was to facilitate the market movements and competitive process and also to keep the management on their toes. The decision to increase the creeping acquisition from 2% to 5% disregards the objective of protection of small shareholders. The decision to increase the threshold limit from 10% to 15% is also difficult to be justified.

9.8.4 Provision of the Indian Companies Act 1956 in relation to Mergers & Acquisitions

Various Laws governing merger in India are as follows:

(1) Indian Companies Act, 1956

This has provisions specifically dealing with the amalgamation of a company or certain other entities with similar status. The most common form of merger involves an elaborate but time-bound procedure under sections 391 to 396 of the Act.

Powers in respect of these matters were with High Court (usually called Company Court). These powers are being transferred to National Company Law Tribunal (NCLT) by Companies (Second Amendment) Act, 2002.

The Compromise, Arrangement and Amalgamation/reconstruction require approval of NCLT while the sale of shares to Transferee Company does not require approval of NCLT.

Sec. 390 This section provides that "The expression 'arrangement' includes a reorganization of the share capital of the company by the consolidation of shares of different classes, or by the division of shares into shares of different classes, or by both these methods".

Sec. 390(a) As per this section, for the purpose of sections 391 to 393, 'Company' means any company liable to be wound up under the Act.

Sec. 390(b) As per this section, Arrangement can include reorganization of share capital of company by consolidation of shares of different classes or by division of shares of different classes.

Sec. 390(c) As per this section, unsecured creditors who have filed suits or obtained decrees shall be



deemed to be of the same class as other unsecured creditors. Thus, their separate meeting is not necessary.

Sec. 391 This section deals with the meeting of creditors/members and NCLT's sanction to Scheme.

If majority in number representing at least three-fourths in value of creditors or members of that class present and voting agree to compromise or arrangement, the NCLT may sanction the scheme. NCLT will make order of sanctioning the scheme only if it is satisfied that company or any other person who has made application has disclosed all material facts relating to the company, e.g. latest financial position, auditor's report on accounts of the company, pendency of investigation of company etc. NCLT should also be satisfied that the meeting was fairly represented by members/creditors.

Sec. 391(1) As per this sub-section, the company or any creditor or member of a company can make application to NCLT. If the company is already under liquidation, application will be made by liquidator. On such application, NCLT may order that a meeting of creditors or members or a class of them be called and held as per directions of NCLT.

Sec. 391 (2) As per this sub-section, if NCLT sanction, it will be binding on all creditors or members of that class and also on the company, its liquidator and contributories.

Sec. 391(3) As per this sub-section, Copy of NCLT order will have to be filled with Registrar of Companies.

Sec. 391(4) As per this sub-section, A copy of every order of NCLT will be annexed to every copy of memorandum and articles of the company issued after receiving certified copy of the NCLT order.

Sec. 391(5) In case of default in compliance with provisions of section 391(4), company as well as every officer who is in default is punishable with fine upto ₹100 for every copy in respect of which default is made.

Sec. 391(6) After an application for compromise or arrangement has been made under the section, NCLT can stay commencement of any suit or proceedings against the company till application for sanction of scheme is finally disposed of.

Sec. 391(7) As per this sub-section, Appeal against NCLT order can be made to National Company Law Appellate Tribunal (NCLAT) where appeals against original order the NCLT lies.

Sec. 392 This section contains the powers of NCLT to enforce compromise and arrangement.

Sec. 392 (1) As per this section, where NCLT sanctions a compromise or arrangement, it will have powers to supervise the carrying out of the scheme. It can give suitable directions or make modifications in the scheme of compromise or arrangement for its proper working.

Sec. 392 (2) As per this section, if NCLT finds that the scheme cannot work, it can order winding up.

Sec. 393 This section contains the rules regarding notice and conduct of meeting.

Sec. 393 (1) Where a meeting of creditors or any class of creditors, or of numbers or any class of members, is called under section 391:-

- (a) With every notice calling the meeting which is sent to a creditor or member, there shall be sent also a statement setting forth the terms of the compromise or arrangement and explaining its effect, and in particular stating any material interests of the directors, managing directors, or manager of the company, whether in their capacity as such or as members or creditors of the company or otherwise and the effect on those interests of the compromise or arrangement if, and in so far as, it is different from the effect on the like interests of other person, and
- (b) In every notice calling the meeting which is given by advertisement, there shall be included either such a statement as aforesaid or a notification of the place at which creditors or members entitled to attend the meeting may obtain copies of such a statement as aforesaid.

Sec. 393 (2) As per this sub-section, if the scheme affects rights of debenture holders, statement should give details of interests of trustees of any deed for securing the issue of debentures as it is required to give as respects the companies directors.

Sec. 393 (3) As per this sub-section, the copy of scheme of compromise or arrangement should be furnished to creditor/member free of cost.

Sec. 393 (4) Where default is made in complying with any of the requirements of this section, the company and every officer of the company who is in default, shall be punishable with fine which may extend to ₹ 50,000 and for the purpose of this sub-section any liquidator of the company and any trustee of a deed for securing the issue of debentures of the company shall be deemed to be an officer of the company.

Provided that a person shall not be punishable under this sub-section, if he shows that the default was due to the refusal of any other person, being a director, managing director, manager or trustee for debenture holders, to supply the necessary particulars as to his material interests.

Sec. 393 (5) As per this section, any director, managing director, manager or trustee of debenture holders shall give notice to the company of matters relating to himself which the company has to disclose in the statement, if he unable to do so, he is punishable with fine upto ₹ 5,000.

Sec. 394 This section contains the powers while sanctioning scheme of reconstruction or amalgamation.

Sec. 394(1) NCLT can sanction amalgamation of a company which is being wound up with other company, only if Registrar of Companies (ROC) has made a report that affairs of the company have not been conducted in a manner prejudicial to the interests of its members or to public interest.

Sec. 394 (2) As per this sub-section, if NCLT issues such an order, NCLT can direct that the property will be vest in the transferee company and that the transfer of property will be freed from any charge.

Sec. 394 (3) As per this sub-section, Copy of NCLT order shall be filed with Registrar within 30 days. In case of default, company as well as every officer who is in default is punishable with fine upto ₹ 500.

Sec. 394A As per this section, if any application is made to NCLT for sanction of arrangement, compromise, reconstruction or amalgamation, notice of such application must be made to Central Government. NCLT shall take into consideration any representation made by Central Government before passing any order.

Sec. 395 This section provides that reconstruction or amalgamation without following NCLT procedure is possible by takeover by sale of shares. Selling shareholders get either compensation or shares of the acquiring company. This procedure is rarely followed, as sanction of shareholders of at least 90% of value of shares is required, and not only of those attending the meeting. This procedure can be followed only when creditors are not involved in reconstruction and their interests are not affected.

Sec. 395(1) As per this sub-section, the transferee company has to be give notice in prescribed manner to dissenting shareholder that it desires to acquire his shares. The transferee company is entitled and bound to acquire those shares on the same terms on which shares of approving share holders are to be transferred to the transferee company. The dissenting shareholder can make application within one month of the notice to NCLT. The NCLT can order compulsory acquisition or other order may be issued.

Sec. 395(2) As per this sub-section, if the transferee company or its nominee holds 90% or more shares in the transferor company, it is entitled to and is also under obligation to acquire remaining shares. The transferee company should give notice within one month to dissenting shareholders. Their shares must be acquired within three months of such notice.

Sec. 395 (3) As per this section, if shareholders do not submit the transfer deeds, the transferee company will pay the amount payable to transferor company along with the transfer deed duly signed. The transferor company will then record name of the transferee company as holder of shares, even if transfer deed is not signed by dissenting shareholders.



Sec. 395 (4) As per this section, The sum received by transferor company shall be kept in a separate account in trust for the dissenting shareholders.

Sec. 395 (4A) When the transferee company makes offer to shareholders of transferor company, the circular of offer shall be accomplished by prescribed information in form 35A. Offer should contain statement by Transferee Company for registration before it is sent to shareholders of Transferor Company.

Sec. 396 This section contains the power to Central Government to order amalgamation.

Sec. 396 (1) As per this sub-section, if central government is satisfied that two or more companies should amalgamate in public interest, it can order their amalgamation, by issuing notification in Official Gazette. Government can provide the constitution of the single company, with such property, powers, rights, interest, authorities and privileges and such liabilities, duties and obligations as may be specified in the order.

Sec. 396 (2) The order may provide for continuation by or against the transferee company of any legal proceedings pending by or against Transferor Company. The order can also contain consequential, incidental and supplemental provisions necessary to give effect to amalgamation.

Sec. 396 (3) As per this sub-section, every member, creditor and debenture holder of all the companies will have same interest or rights after amalgamation, to the extent possible. If the rights and interests are reduced after amalgamation, he will get compensation assessed by prescribed authority. The compensation so assessed shall be paid to the member or creditor by the company resulting from amalgamation.

Sec. 396A This section deals with the preservation of books and papers of amalgamated company. Books and papers of the company which has amalgamated or whose shares are acquired by another company shall be preserved. These will not be disposed of without prior permission of Central Government. Before granting such permission, Government may appoint a person to examine the books and papers to ascertain whether they contain any evidence of commission of an offence in connection with formation or management of affairs of the company, or its amalgamation or acquisition of its shares.

9.9 IMPLICATION OF REGULATIONS FOR BUSINESS COMBINATIONS

9.9.1 The Competition Act, 2002

The preamble to the Competition Act states that it has been enacted

“To provide, keeping in view of the economic development of the country, for the establishment of a Commission to prevent practices having adverse effect on competition, to promote and sustain competition in markets, to protect the interests of consumers and to ensure freedom of trade carried on by other participants in markets, in India, and for matters connected therewith or incidental thereto”

Compared to this its predecessor, if it can be called so, the Monopolies and Restrictive Trade Practices Act, 1969 stated in its preamble

“An Act to provide that the operation of the economic system does not result in the concentration of economic power to the common detriment, for the control of monopolistic and restrictive trade practices and for matter connected therewith or incidental there to.”

The US and EU laws require prior approval for mergers above certain thresholds, they also impose a timeliness requirement on the relevant authority, with delays being subject to limitation. There is no pre-notification requirement in the existing U.K. law.

We have seen one of the legitimate means by which a company can grow is by amalgamation or merging with other companies. This process is generally a part of the natural process of industrial evolution and restructuring as new entity and growth. If a merger of company has a potential for

reducing competition it is a matter of public concern.

Keeping these in mind the Competition Act contains provisions relating to:

- (1) Prohibition of agreements which impair competition;
- (2) Prohibition of abuse of dominant position; and
- (3) Regulation of combination.

Readers would be aware that the earlier on preventing concentration of economic power was contained in the MRTP Act. In 2002, the country enacted the Competition Act, 2002. In his Essays on Competition law and policy by Vinod Dhall, Member and Acting chairman of the Competition Commission of India observed that “The MRTP Act and the Competition Act are as different as chalk and cheese. The former, over time, emerged as an arm of the ‘command and control regime’, while the Competition Act is an essential ingredient of a market based economy, seeking proactively to promote and preserve competition and its benefits in markets. The Competition Commission is also unlike a sector regulator. For the commission, the market is the best regulator, rewarding the efficient and punishing the inefficient enterprises. The Commission’s role is like a referee’s, allowing rivals to compete vigorously and stepping in only when a foul is committed, the fouls being only the prohibited acts in the Act.”

“Merger regulation is part of competition law in all important jurisdictions in the world. The rationale for merger review is that some mergers could have anti- competitive fall out. This is mainly confined to horizontal mergers i.e. mergers in the same product line, as against vertical or conglomerate mergers.”

The anti – competitive effect of mergers arises from increased risk of collusion amongst reduced number of players or from creation of excessive market power or even monopoly. One, these effects can eliminate or dilute the benefits of effective competition i.e. increased consumer welfare, higher levels of efficiency and greater innovation. Secondly, it is easier to deal with a merger than to post facto control market power or collusions. Thirdly a de-merger can be socially and economically very costly. Fourthly, without merger review, collusive enterprises could escape punishment by simply resorting to the merger route thereby defeating the purpose of the law. Fifthly, mergers change the industry structure and are more long lasting than collusion.”

We are mainly concerned with the regulation of combination as it relates to amalgamation and mergers of companies, though such combination might involve agreements which impair competition and/ or might leads to abuse of dominant position.

I. Meaning of Combination

For this purpose the meaning of combination is to be found in section 5 of the Competition act. The relevant provisions of section 5 of the Competition Act read as follows:

The acquisition of one or more enterprises by one or more persons or merger or amalgamation of enterprises shall be a combination of such enterprises and persons or enterprises, if—

(a) any acquisition where—

(i) the parties to the acquisition, being the acquirer and the enterprise, whose control, shares, voting rights or assets have been acquired or are being acquired jointly have,—

(A) either, in India, the assets of the value of more than rupees one thousand crores or turnover more than rupees three thousand crores; or

(B) [in India or outside India, in aggregate, the assets of the value of more than five hundred million US dollars, including at least rupees five hundred crores in India, or turnover more than fifteen hundred million US dollars, including at least rupees fifteen hundred crores in India; or]

(ii) the group, to which the enterprise whose control, shares, assets or voting rights have been acquired or are being acquired, would belong after the acquisition, jointly have or would jointly have,—



(A) either in India, the assets of the value of more than rupees four thousand crores or turnover more than rupees twelve thousand crores; or

(B) [in India or outside India, in aggregate, the assets of the value of more than two billion US dollars, including at least rupees five hundred crores in India, or turnover more than six billion US dollars, including at least rupees fifteen hundred crores in India; or]

(b) acquiring of control by a person over an enterprise when such person has already direct or indirect control over another enterprise engaged in production, distribution or trading of a similar or identical or substitutable goods or provision of a similar or identical or substitutable service, if—

(i) the enterprise over which control has been acquired along with the enterprise over which the acquirer already has direct or indirect control jointly have,—

(A) either in India, the assets of the value of more than rupees one thousand crores or turnover more than rupees three thousand crores; or

(B) [in India or outside India, in aggregate, the assets of the value of more than five hundred million US dollars, including at least rupees five hundred crores in India, or turnover more than fifteen hundred million US dollars, including at least rupees fifteen hundred crores in India; or]

(ii) the group, to which enterprise whose control has been acquired, or is being acquired, would belong after the acquisition, jointly have or would jointly have,—

(A) either in India, the assets of the value of more than rupees four thousand crores or turnover more than rupees twelve thousand crores; or

(B) [in India or outside India, in aggregate, the assets of the value of more than two billion US dollars, including at least rupees five hundred crores in India, or turnover more than six billion US dollars, including at least rupees fifteen hundred crores in India; or]

(c) any merger or amalgamation in which—

(i) the enterprise remaining after merger or the enterprise created as a result of the amalgamation, as the case may be, have,—

(A) either in India, the assets of the value of more than rupees one thousand crores or turnover more than rupees three thousand crores; or

(B) [in India or outside India, in aggregate, the assets of the value of more than five hundred million US dollars, including at least rupees five hundred crores in India, or turnover more than fifteen hundred million US dollars, including at least rupees fifteen hundred crores in India; or]

(ii) the group, to which the enterprise remaining after the merger or the enterprise created as a result of the amalgamation, would belong after the merger or the amalgamation, as the case may be, have or would have,—

(A) either in India, the assets of the value of more than rupees four-thousand crores or turnover more than rupees twelve thousand crores; or

(B) [in India or outside India, in aggregate, the assets of the value of more than two billion US dollars, including at least rupees five hundred crores in India, or turnover more than six billion US dollars, including at least rupees fifteen hundred crores in India;]

Explanation.— For the purposes of this section,—

(a) “control” includes controlling the affairs or management by—

(i) one or more enterprises, either jointly or singly, over another enterprise or group;

(ii) one or more groups, either jointly or singly, over another group or enterprise;

(b) “group” means two or more enterprises which, directly or indirectly, are in a position to —

- (i) exercise twenty-six per cent. or more of the voting rights in the other enterprise; or
 - (ii) appoint more than fifty per cent. of the members of the board of directors in the other enterprise; or
 - (iii) control the management or affairs of the other enterprise;
- (c) the value of assets shall be determined by taking the book value of the assets as shown, in the audited books of account of the enterprise, in the financial year immediately preceding the financial year in which the date of proposed merger falls, as reduced by any depreciation, and the value of assets shall include the brand value, value of goodwill, or value of copyright, patent, permitted use, collective mark, registered proprietor, registered trade mark, registered user, homonymous geographical indication, geographical indications, design or layout-design or similar other commercial rights, if any, referred to in sub-section (5) of Section 3

II. Regulation of combinations (Sec 6, The Competition Act, 2002)

- (1) No person or enterprise shall enter into a combination which causes or is likely to cause an appreciable adverse effect on competition within the relevant market in India and such a combination shall be void.
- (2) Subject to the provisions contained in sub- section (1), any person or enterprise, who or which proposes to enter into a combination, shall' at his or its option, give notice to the commission, in the form as may be specified, and the fee which may be determined, by regulations, disclosing the details of the proposed combination, within thirty² days of –
 - (a) Approval of the proposal relating to merger or amalgamation referred to in clause (c) of section 5, by the board of directors of the enterprises concerned with such merger or amalgamation, as the case may be;
 - (b) Execution of any agreement or other documents for acquisition referred to in clause (a) of section 5 or acquiring of control referred to in clause (h) of that section.
- (2A) No combination shall come into effect until two hundred and ten days have passed from the day on which the notice has been given to the Commission under sub- section (2) or the Commission has passed orders under section 31, whichever is earlier.
- (3) The commission shall, after receipt of notice under sub- section (2), deal with such notice in accordance with the provisions contained in sections 29, 30 and 31.
- (4) The provisions of this section shall not apply to share subscription or financing facility or any acquisition, by a public financial institution, foreign institutional investor, bank or venture capital fund, pursuant to any covenant of a loan agreement or investment agreement.
- (5) The public financial institution, foreign institutional investor, bank or venture capital fund, referred to in sub- section (4) shall, within seven days from the date of the acquisition, file, in the form as may be specified by regulations, with the commission the details of the acquisition including the details of control, the circumstances for exercise of such control and the consequences of default arising out of such loan agreement or investment agreement, as the case may be.

Explanation. – For the purposes of this section, the expression –

- (a) “foreign institutional investor” has the same meaning as assigned to it in clause (a) of the Explanation to section 115AD of the Income – tax Act, 1961 (43 of 1961);
- (b) “venture capital fund” has the same meaning as assigned to it in clause (b) of the Explanation to clause (23 FB) of section 10 of the Income – tax act, 1961 (43 of 1961);

Explanation to section 115AD of IT Act reads as follows:

- (a) The expression “Foreign Institutional Investor” means such investor as the Central Government may, by notification in the official Gazette, specify in this behalf;



Government by their Notification Nos. 155(E), 112 (E) and 282 (E) dated the 7th February, 1994, 21 February, 1995 and 31 March, 1995 have published the names of such institutions. [refer (1994) 208 ITR (Stat) 5, (1995) 214 ITR (stat.)1, and (1995) 214 ITR (Stat.) 9 respectively] an extract is appended to this book.

Explanation to clause (23FB) of section 10 of IT act reads as follows:

- (a) “venture capital fund” means such fund, operating under a trust deed registered under the provisions of the provisions of the Registration Act, 1908 (16 of 1908), established to raise monies by the trustees for investments mainly by of way of acquiring equity shares of a venture capital undertaking in accordance with the prescribed guidelines;

III. Meaning of ‘enterprise’ (Sec 2 (h), of the Competition Act, 2002)

“enterprise” means a person or a department of the Government, who or which is, or has been engaged in any activity, relating to the production storage, supply, distribution, acquisition or control of articles or goods, or the provision of services, of any kind or in investment, or in the business of acquiring, holding, underwriting or dealing with shares, debentures or other securities of any other body corporate, either directly or through one or more of its units or divisions or subsidiaries, whether such unit or division or subsidiary is located at the same place where the enterprise is located or at a different place or at different places, but does not include any activity of the Government relatable to the sovereign functions of the Government including all activities carried on by the departments of the central Government dealing with atomic energy, currency, defense and space.

Explanation. – For the purposes of this clause,-

- (a) “activity” includes profession or occupation;
(b) “article” includes a new article and “service” includes a new service;
(c) “unit or “division”, in relation to an enterprise, includes –
(i) A plant or factory established for the production, storage, supply, distribution, acquisition or control of any article or goods;
(ii) Any branch or office established for the provision of any service;

Consequent to the above, if an amalgamation proposal comes within the purview of the prohibited combination viz. amalgamation resulting in a book asset value of the transferee company to be over ₹1,000 crores or the turnover of the transferee company after the amalgamation is likely to exceed ₹3,000 crores in case of the group to the transferee company belongs would have an asset value of ₹12,000 crores, the transferee company concerned must at its option send the proposal to the competition Commission.

The Commission, if it is prima facie of the opinion that the combination has, or is likely to have, an appreciable adverse effect on competition, it shall, within seven working days from the date of receipt of the response of the parties to the combination, direct the parties to the said combination to publish details of the combination within ten working days of such direction, in such manner, as it thinks appropriate, for bringing the combination to the knowledge or information of the public and persons affected or likely to be affected by such combination. [Section 29(2)]

If the commission does not, on the expiry of a period of ninety working days from the date of publicant referred to in sub-section (2) of section 29, pass an order or issue direction in accordance with the provisions of sub – section (1) or sub – section (2) or sub – section (7) the combination shall be deemed to have been approved by the Commission. [section 31 (11)]

It is also provided that the competition Commission could suggest modification of the scheme so as to enable competition and if the transferee company complies with such modification then it would give its approval.

Any combination violative of the Competition Act, cannot be given effect to. If any person does not abide by the directions of the Commission, penalties will be levied under the said Act. Hence care should be taken while considering amalgamation.

The competition (Amendment) Act, 2007 made a few significant modifications. In the context of mergers and amalgamation, it has inserted the need to have certain amount of turnover in India in addition to the amount of turnover outside India as a prerequisite for applicant of the Competition Act. The more significant change is the insertion of sub-section (2A) to section 6 providing that all combinations will need prior approval of the Competition to be effective in so far as India is concerned. The commission is required to pass its order within two hundred and ten days. If no such order is passed by then or if order is passed before that period the concerned approving the combination such combination will become effective, if not the concerned parties need to revisit the combination. By doing so international merger will need to comply with this requirement of the Competition Act.

A. Chart showing the threshold for joint assets/ turnover under Competition Act, 2002

		ASSETS		TURNOVER	
IN INDIA	NO GROUP	₹1 000 crores		₹3 000 crores	
	GROUP	₹4 000 crores		₹12 000 crores	
		ASSETS		TURNOVER	
IN INDIA	OUTSIDE INDIA	TOTAL	IN INDIA	TOTAL	IN INDIA
	NO GROUP	\$500 MILLION	₹500 Cr	\$1,500 ml	₹1,500 Cr
	GROUP	\$2,000 ml	₹500 Cr	\$6,000 ml	₹1,500 Cr

1 Crore = 10 million; US \$ 1 = ₹47 (Approx) in September, 2008

Case Study on Competition Act:

(1) The Microsoft Case:

How is competition policy applied to the industries in an international arena can be demonstrated with the Microsoft Case. In June 1990, the Federal Trade Commission (USA) launched a probe into possible collusion between **Microsoft and IBM**. In October 1997, the Department of Justice (DoJ) filed a complaint claiming Microsoft had violated the consent decree by demanding PC makers bundle its Internet Explorer web browser with their PCs in order to obtain a license for Microsoft's Windows 95 operating system. The District Court ordered Microsoft to stop forcing PC manufacturers to ship Internet Explorer with Windows 95. The DoJ charged four specific antitrust violations (i) unlawful exclusive-dealing arrangements, (ii) unlawfully tying MSIE to Windows 95 and 98, (iii) unlawful maintenance of a monopoly in the PC operating system market, and (iv) attempted monopolisation of the internet browser market.

The District Court found Microsoft guilty of three antitrust violations. Specifically, it found that: system market ;(ii) Microsoft illegally attempted to monopolise the internet browser market; and (iii) Microsoft unlawfully tied its browser to the operating system.

(2) Dominant Position: The Intel Case:

The **US Federal Trade Commission (FTC)** issued a complaint against **Intel** (the computer hardware company) in June, 1998, alleging that Intel sought to maintain its dominance by, among other things, denying advance technical information and product samples of microprocessors to **Intel's Original Equipments Manufacturers (OEMs)** customers, who develop, manufacture, and sell computer system products such as servers, workstations, and desktop and portable personal computer. It was also alleged that Intel was threatening to withhold product from those **OEMs** as a means of coercing those customers into licensing their patented innovations to Intel.

Case Study on Regulation of Combination:

(1) Control of Merger: The General Electric (GE) Case:

In July 2001 the European Commission has blocked the \$45bn deal between US firms **General Electric (GE) and Honeywell**. Although US competition authorities had given their approval to the deal, the commission was worried that the integration of Honeywell's avionics and GE's strength in jet engines



could lead to dominance of the market.

(2) The Nintendo Case

In October 2002, **Nintendo**, the Japanese video games manufacturer, was found guilty of “ripping off” its customers in continental Europe for most of the 1990s and fined £94m by the European commission. Edinburgh-based retail distributor John Menzies - the sole UK distributor of Nintendo products - was also punished for its role in the scam.

The EU commission said that the fine was the fourth largest ever and reflected the seriousness of the offence. “The fine... reflects its size in the market concerned [it is the second largest maker of video games in the world], the fact that it was the driving force behind the illicit behaviour and also because it continued with the infringement even after it knew the investigation was going on,” the Brussels statement said.

One example, which became a “classic” case study in international accounting convergence was Daimler-Benz. Due to strategic, but also financial reasons, Daimler-Benz became the first German company to be listed in the NYSE in 1993. However, this dual listing would also result in a dazzling dual financial reporting. In the first year reporting according to the US GAAP, by means of reconciliation, Daimler-Benz revealed a translated net loss of 1,839 million Deutsch Marks (DM), while concurrently it reported a profit of 615 millions DM under German GAAP (L. H. Radebaugh et al., 1995). This situation would continue to be repeated, as Daimler-Benz profits under German GAAP were systematically reduced following reconciliation with the US GAAP (Roberts et al., 1998). However, in 1995, when Daimler-Benz reported a net loss for investors in Frankfurt a curious reversal would occur, as barely the same figure would be reported for investors in New York - but a net profit instead. The differences of reconciliations from German and the UK GAAP to the USA GAAP were large in some occasions, including steep variations from year to year, puzzling accounting professionals and users of financial statements (Alexander & Nobes, 2001). In 1995, Daimler-Benz ceased the reconciliation of financial statements as it ultimately decided to adopt the USA GAAP (Christopher Nobes & Parker, 2002). As situations like the one of Daimler were multiplying among multinationals, the overall reliability and usefulness of financial reporting was being increasingly jeopardised, and companies were therefore urged to enhance international accounting convergence.

9.9.2 Provision of the Income Tax Act, in relation to Mergers & Acquisitions

Income Tax Act, 1961 is vital among all tax laws which affect the merger of firms from the point view of tax savings/liabilities. However, the benefits under this act are available only if the following conditions mentioned in Section 2 (1B) of the Act are fulfilled:

- (a) All the amalgamating companies should be companies within the meaning of the section 2 (17) of the Income Tax Act, 1961.
- (b) All the properties of the amalgamating company (i.e., the target firm) should be transferred to the amalgamated company (i.e., the acquiring firm).
- (c) All the liabilities of the amalgamating company should become the liabilities of the amalgamated company, and
- (d) The shareholders of not less than 90% of the share of the amalgamating company should become the shareholders of amalgamated company.

In case of mergers and amalgamations, a number of issues may arise with respect to tax implications. Some of the relevant provisions may be summarized as follows:

Depreciation: The amalgamated company continues to claim depreciation on the basis of written down value of fixed assets transferred to it by the amalgamating company. The depreciation charge may be based on the consideration paid and without any re-valuation. However, unabsorbed depreciation, if any, cannot be assigned to the amalgamated company and hence no tax benefit is available in this respect.

Capital Expenditures: If the amalgamating company transfers to the amalgamated company any asset representing capital expenditure on scientific research, then it is deductible in the hands of the amalgamated company under section 35 of Income Tax Act, 1961.

Exemption from Capital Gains Tax: The transfer of assets by amalgamating company to the amalgamated company, under the scheme of amalgamation is exempted for capital gains tax subject to conditions namely (i) that the amalgamated company should be an Indian Company, and (ii) that the shares are issued in consideration of the shares, to any shareholder, in the amalgamated company. The exchange of old share in the amalgamated company by the new shares in the amalgamating company is not considered as sale by the shareholders and hence no profit or loss on such exchange is taxable in the hands of the shareholders of the amalgamated company.

Carry Forward Losses of Sick Companies: Section 72A(1) of the Income Tax Act, 1961 deals with the mergers of the sick companies with healthy companies and to take advantage of the carry forward losses of the amalgamating company. But the benefits under this section with respect to unabsorbed depreciation and carry forward losses are available only if the followings conditions are fulfilled:

- I. The amalgamating company is an Indian company.
- II. The amalgamating company should not be financially viable.
- III. The amalgamation should be in public interest.
- IV. The amalgamation should facilitate the revival of the business of the amalgamating company.
- V. The scheme of amalgamation is approved by a specified authority, and
- VI. The amalgamated company should continue to carry on the business of the amalgamating company without any modification.

Amalgamation Expenses: In case an expenditure is incurred towards professional charges of Solicitors for the services rendered in connection with the scheme of amalgamation, then such expenses are deductible in the hands of the amalgamated firm.

9.10 TAKEOVER

Acquisition can be undertaken through merger or takeover route. Takeover is a general term used to define acquisitions only and both terms are used interchangeably. A Takeover may be defined as series of transacting whereby a person, individual, group of individuals or a company acquires control over the assets of a company, either directly by becoming owner of those assets or indirectly by obtaining control of management of the company.

Takeover is acquisition, by one company of controlling interest of the other, usually by buying all or majority of shares. Takeover may be of different types depending upon the purpose of acquiring a company.

- (a) A takeover may be straight takeover which is accomplished by the management of the taking over company by acquiring shares of another company with the intention of operating taken over as an independent legal entity.
- (b) The second type of takeover is where ownership of company is captured to merge both companies into one and operate as single legal entity.
- (c) A third type of takeover is takeover of a sick company for its revival. This is accomplished by an order of Board for Industrial and financial Reconstruction (BIFR) under the provision of Sick Industrial Companies Act, 1985. In India, Board for Industrial and Financial Reconstruction (BIFR) has also been active for arranging mergers of financially sick companies with other companies under the package of rehabilitation. These merger schemes are framed in consultation with the lead bank, the target firm and the acquiring firm. These mergers are motivated and the lead bank takes the



initiated and decides terms and conditions of merger. The recent takeover of Modi Cements Ltd. By Gujarat Ambuja Cement Ltd. was an arranged takeover after the financial reconstruction Modi Cement Ltd.

- (d) The fourth kind is the bail-out takeover, which is substantial acquisition of shares in a financial weak company not being a sick industrial company in pursuance to a scheme of rehabilitation approved by public financial institution which is responsible for ensuring compliance with provision of substantial acquisition of shares and takeover Regulations, 1997 issued by SEBI which regulate the bailout takeover.

9.10.1 Takeover Bid

This is a technique for affecting either a takeover or an amalgamation. It may be defined as an offer to acquire shares of a company, whose shares are not closely held, addressed to the general body of shareholders with a view to obtaining at least sufficient shares to give the offer or, voting control of the company. Takeover Bid is thus adopted by company for taking over the control and management affairs of listed company by acquiring its controlling interest.

While a takeover bid is used for affecting a takeover, it is frequently against the wishes of the management of Offeree Company. It may take the form of an offer to purchase shares for cash or for share for share exchange or a combination of these two firms. Where a takeover bid is used for effecting merger or amalgamation it is generally by consent of management of both companies. It always takes place in the form of share for share exchange offer, so that accepting shareholders of Offeree Company become shareholders of Offeror Company.

Types of Takeover Bid

There are three types of takeover bid;

- (a) Negotiated bid
- (b) Tender offer
- (c) Hostile takeover bid

(a) Negotiated bid: It is also called friendly merger. In this case, the management /owners of both the firms sit together and negotiate for the takeover. The acquiring firm negotiates directly with the management of the target company. So the two firms reach an agreement, the proposal for merger may be placed before the shareholders of the two companies. However, if the parties do not reach at an agreement, the merger proposal stands terminated and dropped out. The merger of ITC Classic Ltd. with ICICI Ltd.; and merger of Tata Oil Mills Ltd. With Hindustan Lever Ltd. were negotiated mergers. However, if the management of the target firm is not agreeable to the merger proposal, then the acquiring firm may go for other procedures i.e. tender offer or hostile takeover.

(b) Tender offer: A tender offer is a bid to acquire controlling interest in a target company by the acquiring firm by purchasing shares of the target firm at a fixed price. The acquiring firm approaches the shareholders of the target firm directly firm to sell their shareholding to the acquiring firm at a fixed price. This offered price is generally, kept at a level higher than the current market price in order to induce the shareholders to disinvest their holding in favour of the acquiring firm. The acquiring firm may also stipulate in the tender offer as to how many shares it is willing to buy or may purchase all the shares that are offered for sale.

In case of tender offer, the acquiring firm does not need the prior approval of the management of the target firm. The offer is kept open for a specific period within which the shares must be tendered for sale by the shareholders of the target firm. Consolidated Coffee Ltd. was takeover by Tata Tea Ltd. by making a tender offer to the shareholders of the former at a price which was higher than the prevailing market price. In India, in recent times, particularly after the announcement of new takeover code by SEBI, several companies have made tender offers to acquire the target firm. A

popular case is the tender offer made by Sterlite Ltd. and then counter offer by Alean to acquire the control of Indian Aluminium Ltd.

- (c) Hostile Takeover Bid:** The acquiring firm, without the knowledge and consent of the management of the target firm, may unilaterally pursue the efforts to gain a controlling interest in the target firm, by purchasing shares of the later firm at the stock exchanges. Such case of merger/acquisition is popularity known as 'raid'. The Caparo group of the U.K. made a hostile takeover bid to takeover DCM Ltd. and Escorts Ltd. Similarly, some other NRI's have also made hostile bid to takeover some other Indian companies. The new takeover code, as announced by SEBI deals with the hostile bids.

9.10.2 Distinguish between Mergers, Acquisitions & Takeover

The term 'mergers', 'acquisition', and 'takeovers' are often used interchangeably. However there are differences. While merger means unification of two entities into one, acquisition involves one entity buying out another and absorbing the same. In India, in legal sense merger is known as 'Amalgamation'. In an amalgamation, two or more companies are fused into one by merger or by one taking over the other. Amalgamation is a blending of two or more existing undertakings into one undertaking, the shareholders of each blending company become substantially the shareholders of the company which is to carry on the blended undertaking.

While takeovers i.e., acquisitions are regulated by SEBI, M & A deals fall under the Companies Act, 1956.

Distinguish between Takeover and Merger

The distinction between a takeover and merger is that in a takeover the direct or indirect control over the assets of the acquired company passes to the acquirer in a merger the shareholding in the combined enterprises will be spread between the shareholders of the two companies.

However in both cases of takeover and merger the interests of the shareholders of the company are as follows:

- (a) Company should takeover or merge with another company only if in doing so, it improves its profit earning potential measured by earning per share and
- (b) The company should agree to be taken if, and only if, shareholders are likely to be better off with the consideration offered, whether cash or securities of the company than by retaining their shares in the original company.

9.10.3 Failure of M & A

Around the world thousands of mergers and acquisition are taking place every day. Unfortunately only a few becomes successful. Following are the reasons why mergers and acquisition fail.

- (a) Lack of fit:** There may be a good fit of product or services but a serious lack of fit in terms of management styles or corporate structure.
- (b) Lack of industrial or commercial fit:** In case of horizontal or vertical take over where the acquired entity turns out not to have the product range or industrial position in tune with acquirer's anticipation. Where a customer supplier is acquired the acquirer knows a lot about the acquired entity. Even then there might be some unexpected problem for the acquirer which might be avoided through long term careful planning. That should be severed from experience gained from a direct relationship with the acquired entity.
- (c) Lack of goal congruence:** The problem arises not only to the acquired entity but also to the acquirer. Dispute may arise particularly from the treatment of acquired entity which might take away the benefits of an otherwise excellent acquisition.
- (d) Cheap purchases:** Management of an acquiring company should be aware of so called "cheap purchases". Amount of resources in terms of cash and management time could also damage



acquirer's core business.

- (e) **Paying too much:** Payment of high premium for an acquisition does not necessarily lead to a failure. It fails only if it fails to create long term share holder value creation.
- (f) **Failure to integrate effectively:** An acquirer needs to have a workable and clear plan of the extent to which (i) the acquired company is to be integrated and (ii) the amount of autonomy to be granted. The plan must address (i) differences in management styles, (ii) incompatibilities in data information system and (iii) continued opposition to the acquisition by some of the acquired to entity staff. Failure to plan leads to drift and demotivation not only within the acquired company but also within the acquirer itself.
- (g) **Inability to manage change:** In order to avoid failure it is imperative for the acquirer to plan effectively before an acquisition takes place. But the ultimate need is to accept change. Many acquisitions fail because the acquirer is unable or unwilling reasonably to adjust its own activity to ensure a smooth takeover. This might happen in a typical situation where the acquired company has a better date information acquirer.

9.10.3.1 Defence mechanisms to prevent mergers and acquisitions

Defence mechanisms are the tools used by a company to prevent its takeover. In order to ward off takeover bid, the companies may adopt:

- I. Preventive Measures
- II. Defence strategies in the wake of takeover bid.

These defensive measures are elaborated below:

1. Advance / Preventive Measures:

- (a) Joint holding / Agreements between major shareholders
- (b) Interlocking / Cross holding of shares.
- (c) Issue of block of shares to friends and Associates.
- (d) Defensive merger with own group company.
- (e) Non-voting shares / Preference shares
- (f) Convertible debentures
- (g) Maintaining part of capital uncalled for making emergency requirements.
- (h) Long term service agreements

2. Defence in the wake of takeover bid:

(a) Commercial Strategies

- (i) Dissemination of favourable information to keep shareholders abreast of latest developments.
 - Market coverage
 - Product demand
 - Industries outlook and resultant profit.
- (ii) Step up dividend and update share price
- (iii) Revaluation of Assets
- (iv) Capital structure Re-organization
- (v) Unsuitability of offer to be highlighted while communicating with shareholders.

(b) Tactical, defence strategies

- (i) Friendly purchase of shares
- (ii) Emotional attachment loyalty / participation
- (iii) Recourse to legal action
- (iv) Operation white Knight: White Knight enters the fray when the target company is raided by hostile suitor. White Knight offers bid to target company – higher than the offer of the predator that may not remain interested in the bid.
- (v) Disposing of Golden jewels : Precious assets of the company are called cream jewels which attract the raider. Hence as a defence strategy, company sells these assets at its own initiative leaving rest of the company intact. Raider may not remain interested thereafter.
- (vi) Pac-Man Strategy : In this strategy, the target company attempts to take over the raider. This happens when Target Company is higher than the predator.
- (vii) Compensation Packages: Golden parachutes or First class passenger strategy termination package for senior executives is used as protection for Directors.
- (viii) Shark Repellants: Companies change and amend their bye laws to make it less attractive for corporate raider.
- (ix) Ancillary Poison Pills: Issue of convertible debentures - which when converted dilutes holding percentage of raider and makes it less attractive.

9.11 POST-MERGER INTEGRATION PROCESS

9.11.1 Post-merger Integration Process

The following are the steps in Post-merger integration process:-

(1) Pre-acquisition Phase

This period, sometimes quite drawn out due to legal or contextual reasons, is a difficult period for the teams involved. How do we manage to communicate when there's no information to communicate about? How do we prepare the first interactions? How do we manage the stress levels in this period of uncertainty? How do we anticipate the “cultural shocks” that we might have to face after the acquisition?

In this phase,

- **Preparing the Managers:** help develop specific skills to drive the integration process and anticipate possible culture shocks
- **Strengthening the Human Resource Team:** reinforce their role in ensuring that managers and leaders have the necessary tools and information to manage their teams
- **Preparing the Communication Team:** provide advice on developing and implementing an effective communications process adapted to a changing situation in which accurate information is difficult to obtain, and yet in which the need for accurate information is very strong

(2) Designing and launching the Integration Plan

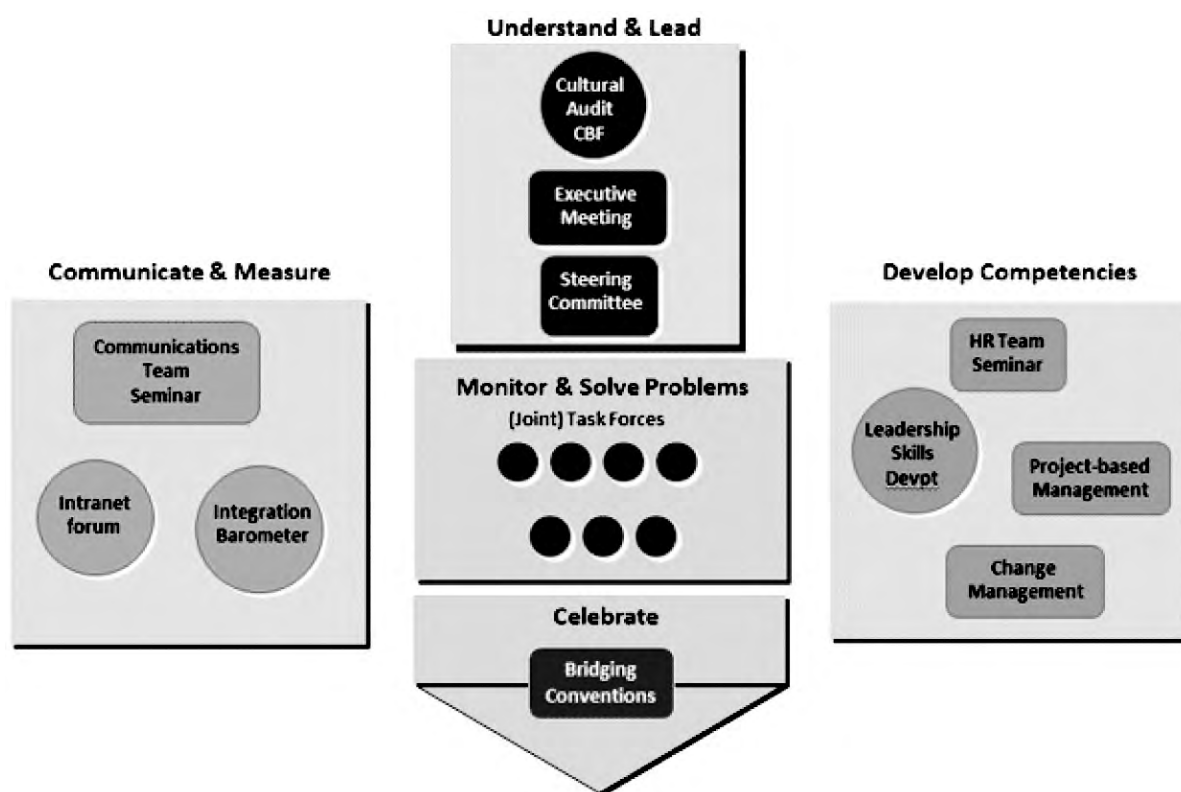
Once the closing is completed, it's time to drive and lead the integration process. Questions at this moment include: How do we design and manage this common project? What processes do we put in place to lead the integration? How do we who will take which role? How do we develop new processes? How do we “sell” the project internally in order to mobilize energy and enthusiasm? What specific roles do we define for communication and HR in this process?

- **Steering committee**
- **Cultural diagnostic**
- **Integration seminars with leadership teams**
- **Focus on business issues and support multifunctional task-forces and task-force leaders**
- **Focus on people issues and strengthen the new leadership body**

Intranet Forum: create an Internet Web site on the integration program that allows people to get to know one another, facilitates information-sharing and provides a forum for FAQ's and on-going updates on successes and quick wins.

Integration barometer: to monitor progress on the integration process and the degree to which real behavioral changes are taking place.

Integration Roadmap



9.11.2 Art and Science of Post-Merger Integration

An outstanding feature of the recent post-crisis global economy has been a sharp increase in mergers and acquisitions. According to the Bloomberg 2011 M&A Outlook, in the year to November 2010 there were more than 21,000 such transactions globally, representing a 12% increase on the previous year, with total value in excess of US\$1.9 trillion. Over the last decade in particular, many larger businesses have adopted acquisitions strategies as a core aspect of their business approach: back in 2004 it was reported that some companies were conducting 25 or more deals every year, or seeking to achieve 50% or more of their business growth in this way (Chanmugam, Anslinger & Park, 2004)

The potential business benefits to a merger or acquisition include the expansion of product lines or markets, a means of gaining a competitive edge in the market, or the ability to secure access to

scarce resources or expertise. However, this is also a high-risk business strategy, as evidenced by the extremely merger and acquisition failure rate which is reportedly between 40% and 60% of all deals. In the case of cross-border mergers, failure rates of up to 70% have been reported (Manas, 2011). In some cases, the prospective partners fail to agree on terms and conditions for the merger, and abandon the plans before too much effort is invested; too frequently though, the real problems only arise after the formal merger takes place, and incompatibilities or conflicts between the two formerly separate organizations come to the surface. These problems can often be avoidable, if more attention is paid to the post-merger integration process.

This article discusses an art and science approach to post-merger integration, which is recommended for ensuring a smooth transition to a single organisation. The proposed strategy is grounded in a growing body of research evidence that it is the people-related or cultural aspects of change that most often lead to failed mergers. Addressing these factors along with the logistical aspects of the merger can help to ensure that the business value and positive outcomes that were expected of the merger are realised in practice.

Merger Success and Failure - Lessons from the Business Literature

There is growing evidence that, when problems arise in the post-merger integration process, the main contributing factors are often the cultural or people-related aspects of change. These are the types of factors often neglected in the pre-merger negotiations and due diligence processes which tend to focus primarily on the financial dimensions of a merger. In practice, the challenges of integrating distinct organizational cultures and forming a new corporate identity can be immense, particularly when employees have not welcomed the changes or feel that their own jobs have been adversely affected. Evidence of this is provided from employer surveys that have investigated the first-hand merger experiences of executives from around the globe. One international survey found that *cultural integration* had been the biggest challenge to a successful merger in the experiences of 150 corporate executives (Fletcher, 2006); an earlier study had reported that for more than half (57%) of 132 senior executives surveyed, *incompatible cultures* had been the principal cause of a failed merger or acquisition they had been involved with (Towers Perrin, 2003).

Even high-profile mergers among major companies often fail due to cultural incompatibilities. For example, one of the most well-known failed mergers was that which took place between Daimler-Benz and Chrysler in 1998, and was eventually terminated following heavy financial losses in the Chrysler side of the business (Badrtalei & Bates, 2007; Fletcher, 2006). According to analyses of this failed merger, the German Daimler-Benz and the American Chrysler companies had irreconcilable differences in organisational culture which shaped not only their management styles but their product lines and attitudes to business risk, and made effective integration ultimately unachievable for these companies. Other high-profile initiatives which have allegedly failed due to cultural differences include the Hitachi and Mitsubishi Heavy Industries merger attempt, which failed to materialise despite protracted and time-consuming negotiations (Reuters.com, August 5, 2011), and the failed merger between Scandinavian telecom companies Telia and Telenor in 1999 (Fang, Fridh & Schultzberg, 2004).

As well as cultural differences, other people-related problems often represent a threat to organizational transformations such as mergers, particularly if employees are resistant to the changes or concerned about their likely impact on their jobs. International employer surveys have provided evidence that the main contributing factors to failed organizational transformations include the difficulties of “changing mindsets and attitudes” (IBM, 2008), and securing the buy-in of local managers (Economist Intelligence Unit, 2009).

On the positive side, there are examples of successful mergers between organizations that either have similar cultural backgrounds and histories, or have worked hard to ensure a successful integration by addressing cultural and people-related factors. Into the first category falls the example of equipment supplier Wacker Neuson, formed in 2008 from the integration of Wacker Construction Equipment AG and Neuson Kramer AG. Commenting on the success of this merger, one source notes that the two organizations were both “traditional, family-owned businesses managed with a high degree of flexibility

and a strong sense of cost awareness” (ForConstructionPros.Com, January 12, 2011). Examples in the second category demonstrate that cultural differences do not necessarily preclude a successful merger as long as proactive measures are taken to identify and manage any differences of approach or practice that might cause difficulties. When Danish pharmaceutical company Nycomed acquired Altana Pharma in 2006, for example, an external consultant was reportedly appointed to guide the work of an internal integration team consisting of representatives of both companies, in collaboration with a communications team and senior management (Goetz & Watkins, 2008).

Whilst it is very important to consider and address the people-related aspects of change, equally crucial is the need to ensure that the organizational transition is conducted in a systematic manner, following clearly defined change management procedures. The evidence from employer surveys is that organizational change projects are considerably more likely to succeed if this approach is adhered to (e.g. IBM, 2008). Moreover, a systematic approach to change enables the senior management of the new organisational entity to properly review previous operating processes and structures, build on the former strengths of the respective organizations and ensure that any problem areas are identified are addressed so that they do not threaten the success of the merger or the new organization. Taking all this on board results in the need for an “art and science”-based approach to post-merger integration. The remainder of the article discusses this approach in the context of the various stages of a post-merger integration.

The Art and Science Approach to Integration

In order to ensure a successful post-merger integration, like any other kind of organizational transformation, it is crucial to achieve a good balance between the art and the science of change (Figure 1). The science involves the ability to successfully apply change management tools, techniques and methods to integrate the various functions of two formerly separate entities. These might include, for example, strategic planning and goal-setting; business process re-engineering; risk management, and financial planning. The art of change, on the other hand, consists of the various types of skills and expertise needed to understand and influence human behaviour and interactions in order to ensure a smooth transition. It also comprises the more intuitive aspects of business and organizational governance. Included in the art category, therefore, are leadership, communications, people acumen, business acumen and emotional intelligence, among other “soft” skills and attributes.

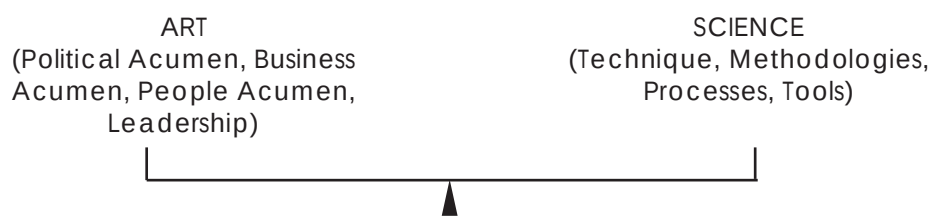


Fig 1: The Art and Science of Transformation Scale

It can also be useful to think about the distinction between art and science in terms of right brain” and “left brain” thinking respectively, “as illustrated in Figure 2. An analytical, methodical approach is important to ensure that all practical aspects of the transition are addressed, but a more intuitive, holistic perspective is also crucial to understand the nuances of the respective organisational cultures and any potential conflicts arising from these, and to pick up on underlying or emerging concerns among employees or managers, so that these can be resolved before they threaten the success of the merger.

Left Brain - the “science”		Right Brain - the “art”
Logical Sequential Rational Analytical Objective Looks at parts		Random Intuitive Holistic Synthesizing Subjective Looks at wholes

Fig 2: Left- and Right-Brain Thinking**9.11.3 The Stages of Post-Merger Integration**

In order to understand how to understand how the art and science approach can help bring about a successful post-merger integration, it is helpful to distinguish the stages of a post-merger integration, and to identify some of the essential components of each stage. The following sections conceptualizes the process as five distinct and equally important phases of work, including a pre-merger phase, identifies some key aspects of each and provides examples of ways in which the art and science approach can help ensure that these result in a well-integrated, cohesive organization focused on the achievement of its business goals.

Pre-Merger: The Transaction

Although not strictly speaking part of the post-merger integration, it is important when identifying a potential merger partner or acquisition target to consider all potential risks to a successful integration and determine what would need to happen to mitigate or remove these. Whereas the due diligence process might be regarded as the “scientific” process for investigating the financial and business-related prospects for and risks to the merger, it’s also necessary to develop an astute awareness and understanding of the respective corporate cultures and to identify any potential cultural conflicts. This is particularly pertinent in the case of cross-border mergers, in which national business cultures as well as specific organisational cultures may be quite different between the two companies; even within the same country, however, conflicts can arise between distinctive, well-ingrained corporate cultures.

There are many tangible aspects of corporate culture that provide clues as to its nature and likely influence on the merger. For example, the business culture may be reflected in the reporting structure of an organization: a very hierarchical structure often reflects an underlying culture based on managerial authority and control whereas a flatter organisation with fluid project-based team working is more likely to reflect a participative culture in which individual empowerment is highly valued. A merger between two organisations with these contrasting cultures may have a high risk of failure without a great deal of effort to overcome their differences.

The sound application of art and science at the transaction stage can be instrumental in determining whether or not the merger has a high chance of success, and the likely costs and benefits of proceeding given any identified risks, whether these are financial, business or people-related.

Stage 1: Development of Transition Strategy

Once the formal merger has taken place, it will be necessary for the senior Executive Team to develop and articulate a shared vision for the new entity as well as a transition strategy to drive and underpin the post-merger integration. Again, both “science” and “art” skills are crucial at this stage; a balanced application of art and science will enable the organisation to develop a transition strategy that not only makes good business sense but will inspire and motivate employees. Above all, effective



leadership is needed in order to develop a sound transition strategy (Towers Perrin, 2003; Zuckerman, 2011): this includes the ability to develop a clear vision and communicate this in a way that engages staff and secures their commitment to achieving it. Effective leadership will also be crucial in order to reconcile any conflicting perspectives and views at executive level and to achieve a consensus and commitment to the shared vision before disseminating this to other members of the organisation.

The science aspects of developing a transition strategy involve refining the businesses analyses which underpinned the original case for the merger, in order to determine the business focus and strategy for the new entity. Ideally, this should incorporate the application of tools and techniques such as SWOT and PEST analysis, stakeholder analysis, supply chain analysis, and market forecasting, and should focus on the development of a business strategy that builds on the market strengths of each of the merger partners and on the business value of the merger – or as Zuckerman (2011) puts it “what can we accomplish together that we could not accomplish independently?” This part of developing the transition strategy is not all science however; a good dose of art skills and attributes such as business acumen and intuition can be effective in helping to identify a wide range of potential business risks and ensuring that a strategy that works well on paper is likely to be achievable and effective in the real world. This includes the ability to formulate a strategy that is likely to capture the hearts and minds of employees, promoting a sense of identify with the newly formed entity and its business vision. In this context it is important to be in tune with the respective organizational cultures and the existing loyalties as well as the concerns of staff. Rarely will it be effective to impose a new strategy and business focus which is based almost exclusively on that of the acquiring company; instead, the development of a new corporate identity or brand with a focus and strategy that clearly build on the strengths of both former organisations, is most likely to mobilise staff and engage them in building the new entity.

Having developed a business strategy, it then becomes necessary to translate this into specific “SMART” objectives and goals and determine the Key Performance Indicators and methods that will be used to monitor and measure progress against these. The agreed strategy and goals should also be used to determine the optimal structure for the newly merged organisation. It might be decided, for example, that a flexible project-based structure is most appropriate, or that the organisation will be best served by distinct functional areas with clear roles and responsibilities for business goals. In any case, it will generally be important to effectively integrate specific functions across the two former organizations in order to avoid duplication and inefficiencies, even if an existing structure or structures are largely retained.

At this stage, there is also a need to determine the infrastructure and technology environment needed to support delivery of the new business strategy and vision; the importance of an appropriate level of IT integration as a requisite of a successful merger has been highlighted in the business literature (e.g. Chang et al, 2002; Aberg & Sias, 2004; PricewaterhouseCoopers, 2007). One approach to IT integration is to migrate systems and data from the acquired organization onto the IT system of the acquirer; a more costly and time-consuming but ultimately more effective approach involves the replacement of previous systems with a new Enterprise Information System specifically tailored to the information needs of the new entity.

Stage 2: Transition Planning

As this stage, the transition strategy is converted into specific projects and responsibilities as necessary to implement the integration, and integration targets are set which will drive the work. Depending on the extent and scale of the integration effort required, this phase of work may involve a number of separate integration projects focused on different functional areas, with an overarching program management or change management function to oversee these efforts and ensure that they are effectively coordinated and aligned.

In appointing members of the teams responsible for individual projects or the overall change management strategy, it will be crucial to ensure that an appropriate mix of art and science skills and abilities are represented. This will help to ensure best practice tools and methods are applied systematically to the integration, and that their effectiveness is enhanced through the effective use

of art-related skills such as leadership, teamwork, communications, adaptability and a strong focus on results.

Finally, an important aspect of transition planning involves the development of principles and plans for communicating information about the merger to all stakeholders, including managers, staff, key customers and the media or general public. Again, this is an area requiring a good mix of art and science skills; there is a need for systematic identification of stakeholders with which communications are needed; identification and understanding of their perspectives and concerns; the development of specific communication plans and processes, and the determination of appropriate messages, styles, formats and frequencies of communication for each group. In general, there is a need to achieve a good balance between openness and transparency on the one hand, and the need to restrict information on sensitive issues to those who need to know, in order to avoid unnecessary risk to the merger. It is also crucial to establish effective feedback procedures and mechanisms for employers, customers and other stakeholders, so that issues and concerns can be identified and addressed. These might include, for example, focus groups, surveys, open door access to senior management or electronic forums and discussion groups. Being aware of and attuned to stakeholder concerns and considering their suggestions is just as important as dealing with the logistical aspects of the post-merger integration and is not only important in risk identification and management but can be an important source of ideas to help maximize the success of the merger.

Stage 3: Design and Implementation

The purpose of the Design and Implementation is to begin to transform the organization into a unified and focused structure operating in alignment and in pursuit of the agreed business vision. The specific activities involved in this stage address each functional process and will include the development and implementation of specific redesign objectives by project teams, working in close collaboration and with oversight and coordination by the program or change management function. This will have the specific responsibility of ensuring that the implementation continues on time and on budget, monitoring progress against agreed performance measurement criteria and making adjustments as necessary to ensure the success of the integration.

An important aspect of this stage will be management of the cultural alignment and transformation needed to support the new entity. The newly defined organizational structure will be a key enabler of the new business culture, along with other factors such as the content and style of organisational communications, and the management and leadership styles. It may be helpful or necessary to implement training in specific management methods and styles in order to ensure that these are consistently and effectively adopted across the organisation. Similarly, communications should ideally be in an appropriate “house style”, tailored to specific audiences such as staff and customers, which is aligned with and promotes the preferred corporate culture for the newly merged organisation. Effective cultural change can also be promoted by ensuring that managers and staff from both of the former organisations are included in all important meetings and events and by investigating the underlying reasons for any prevailing “we-they” attitudes, so that these can be suitably addressed.

One of the potential reasons for we-they attitudes is inconsistencies in pay and grading structures, or in job responsibilities, across the organisation. There is an important role in this context for the organisation’s human resource managers to modify or redesign pay and grading structures and job roles, and to ensure that the skills and expertise of all staff are utilised to best effect and rewarded accordingly. The HR function will also need to ensure, in collaboration with line managers, that any training and development needs are identified and addressed to support the achievement of business goals and the strategic vision.

Stage 4: Transition Management

Finally, the transition management stage of the post-merger integration involves a prolonged stage



of work, often lasting eighteen months or more, in which the ongoing integration of the two formerly separate organisations is monitored and managed against agreed performance indicators and milestones. Effective organisational change seldom happens overnight or without encountering hurdles along the way, and a common mistake is to assume that, once the formal merger or acquisition has taken place and a post-merger integration plan developed, the rest will be plain sailing.

It will therefore be prudent to retain a change management project or program team for up to two years (sometimes longer) after the formal merger, with responsibility for ongoing monitoring of integration activities and the performance of the organisation against business goals and objectives. Whilst the quantitative monitoring of progress against goals and milestones requires a rigorous, scientific approach, also essential is the ability to evaluate progress in relation to the people-related or cultural aspects of progress, which involves being attuned to the attitudes of staff and their levels of engagement in and commitment to the new organisation and its goals. Any apparent problems or conflicts in this area will need to be appropriately addressed, for example by team-building events, line-management interventions or reallocation of staff to areas of the organisation to which they might be a better fit.

Conclusion

The integration of two formerly separate organisations represents a major challenge which is often unanticipated and seldom achieved without a significant investment of time, effort and resources. The application of an art- and science-based approach to post-merger integration, as discussed in this article, will help to ensure that the merger proceeds as smoothly and efficiently as possible, and that the intended business objectives and added value of the merger can be fully realized.

Merger and Acquisition in Banking Industry: A Case Study of ICICI Bank Ltd.

Abstract:

To keep the head high in globalized economy one has to follow the path of growth, which contains various challenges and issues; one has to overpower these challenges and issues to become a success story. We consider a case of ICICI Bank Ltd., the largest private sector bank in India, which has acquired nine financial firms to make the steps of the ladder of success. Therefore, the aim of this article is to study the growth of ICICI Bank Ltd. through mergers, acquisitions, and amalgamation. This article is divided into four parts. The first part includes introduction and conceptual framework of mergers and acquisition. The second part discusses the historical background of ICICI Bank Ltd. and followed by review of literature. The third part discusses all the mergers, acquisitions, and amalgamations in detail. Finally, the article concludes that a firm must devise a strategy in three phases i.e. Pre-merger phase, acquisition phase and post-merger phase. The article will be helpful for policy makers, strategy makers, HR people, bankers, researchers, and scholars.

Key Words: Mergers, Acquisitions, Amalgamation, Banks' Strategy, and Human Resources.

Introduction:

The pressures on the employees of banks around the world have been manifold across financial system deregulation, entry of new players and products with advanced technology, globalisation of financial markets, changing demographics of customer behaviour, consumer pressure for wider choice and cheaper service, shareholder wealth demands, shrinking margins.

In this scenario, Mergers and acquisitions (M&As) are most widely used strategy by firms to strengthen and maintain their position in the market place. M&As are considered as a relatively fast and efficient way to expand into new markets and incorporate new technologies. Still, we can find many evidences that their success is by no means assured. On the contrary, a majority of M&As fall short of their stated aims and objectives. Some failure can be explained and justified by financial and market factors. On the contrary a considerable number can be traced, which has neglected those factors, which are related to human resources issues and activities.

There are numerous studies, which confirm the need for firms to systematically address a variety of human resource issues, activities, and challenges in their merger and acquisition activities. In the present article, a thought was provoked by a press release (May 20, 2010) that the Bank of Rajasthan's employees launched an agitation to protest against the then proposed merger with ICICI Bank Ltd. It is a very serious matter as far as employees and the bank is concerned. It is quite natural phenomena that a dissatisfied employee cannot bring efficiency and effectiveness in rendering services.

Mergers and Acquisitions: Conceptual Framework

Consolidation of business entities is a world-wide phenomenon. One of the tools for consolidation is mergers and acquisitions. The quest for growth is a major driving force behind mergers and acquisitions. The mergers and acquisitions in financial sector of India appear to be driven by the objective of leveraging the synergies arising out of the consequences of M&A process. However, such structural changes in the financial system can have some public policy implications. It is evident from various mergers and amalgamations done by the ICICI Bank Ltd. after its inception in 1994. Still, it is quite clear by their action that it is a path of growth for them. With this statement in mind, we would like to present the conceptual framework for mergers and acquisitions in India's context.

Procedures for merger, acquisition, and amalgamation of banking companies are clearly defined in section 44(A) of the Banking Regulation Act 1949. According to the Act, a banking company will have to place a draft before its shareholders and the draft will have to be approved by a resolution passed by a majority in number, representing two-thirds in value of the shareholders of each of the said companies, present either in person or by proxy at a meeting called for the purpose.

Notice of every such meeting as is referred to in sub-section (1) shall be given to every shareholder of each of the banking companies concerned in accordance with the relevant articles of association indicating the time, place and object of the meeting, and shall also be published at least once a week for three consecutive weeks in not less than two newspapers which circulate in the locality or localities where the registered offices of the banking companies concerned are situated, one of such newspapers being in a language commonly understood in the locality or localities.

If there is any shareholder, who has voted against the scheme of amalgamation at the meeting or has given notice in writing at or prior to the meeting of the company concerned or to the presiding officer of the meeting that he dissents from the scheme of amalgamation, shall be entitled, in the event of the scheme being sanctioned by the Reserve Bank, to claim from the banking company concerned, in respect of the shares held by him in that company, their value as determined by the Reserve Bank when sanctioning the scheme and such determination by the Reserve Bank as to the value of the shares (to be paid to the dissenting shareholder shall be final for all purposes). If the scheme is sanctioned by the Reserve Bank, by an order in writing, it becomes binding not only on the banking companies concerned, but also on all their shareholders to abide by the law.

There is provision in the Banking Regulation Act 1949, section 45, that Reserve Bank of India has power to apply to Central Government for suspension of business by a banking company and to prepare scheme of reconstitution for amalgamation. Reserve Bank ensures that there is good reason to do so and may apply to the Central Government for an order of moratorium in respect of a banking company. The Central Government, after considering the application made by the Reserve Bank under sub-section (1), may make an order of moratorium staying the commencement or continuance of all actions and proceedings against the company for a fixed period of time on such terms and conditions as it thinks fit and proper and may from time to time extend the period so however that the total period of moratorium shall not exceed six months. During the period of moratorium, if the Reserve Bank is satisfied that it is (a) in the public interest; or (b) in the interests of the depositors; or (c) in order to secure the proper management of the banking company; or (d) in the interests of the banking system of the country as a whole. Apart from this, it is necessary so to do, the Reserve Bank may prepare a scheme (i) for the reconstruction of the banking company, or (ii) for the amalgamation of the banking



company with any other banking institution (in this section referred to as “the transferee bank”).

Apart from this, there are some more guidelines for amalgamation. According to Accounting Standard (AS) 14, ‘Accounting for Amalgamations’, amalgamations fall into two broad categories. The first category includes those amalgamations, where there is a genuine pooling not only of the assets and of liabilities of the amalgamating companies but also of the shareholders’ interests and of the businesses of these companies. These kinds of amalgamations are in the nature of ‘merger’ and the accounting treatment of such amalgamations should ensure that the resultant figures of assets, liabilities, capital and reserves more or less represent the sum of the relevant figures of the amalgamating companies. In the second category, those amalgamations which are in effect a mode by which one company acquires another company and, as a consequence, the shareholders of the company which is acquired normally do not continue to have a proportionate share in the equity of the combined company, or the business of the company which is acquired is not intended to be continued. Such amalgamations are amalgamations in the nature of ‘purchase’.

Historical Background of ICICI Bank:

The history of Industrial Credit & Investment Corporation of India (ICICI) shows that it was formed in 1955 by the initiative of the World Bank, the Government of India and representatives of Indian industry. The principal objective of ICICI was to create a development financial institution for providing medium-term and long-term project financing to Indian businesses. In the 1990s, ICICI transformed its business from a development financial institution offering only project finance to a diversified financial services group offering a wide variety of products and services, both directly and through a number of subsidiaries and affiliates like ICICI Bank. In 1999, ICICI became the first Indian company and the first bank or financial institution from non-Japan Asia to be listed on the NYSE.

Due to the changing business environment and after the adoption of liberalization, ICICI considered various corporate restructuring alternatives in the context of the emerging competitive scenario in the Indian banking industry, and the move towards universal banking. The managements of ICICI and ICICI Bank formed the view that the merger of ICICI with ICICI Bank would be the optimal strategic alternative for both the entities, and would create the optimal legal structure for the ICICI group’s universal banking strategy. Further, the merger would enhance value for ICICI shareholders through the merged entity by low-cost deposits, greater opportunities for earning fee-based income and the ability to participate in the payments system and provide transaction-banking services.

Consequently, ICICI Bank was promoted in 1994 by ICICI Limited, an Indian financial institution, and was its wholly-owned subsidiary. In October 2001, the Board of Directors of ICICI and ICICI Bank approved the merger of ICICI and two of its wholly-owned retail finance subsidiaries, ICICI Personal Financial Services Limited and ICICI Capital Services Limited, with ICICI Bank.

Shareholders of ICICI and ICICI Bank approved the merger in January 2002, by the High Court of Gujarat at Ahmedabad in March 2002, and by the High Court of Judicature at Mumbai and the Reserve Bank of India in April 2002. The below mentioned table gives details of all the mergers and amalgamations done by ICICI Bank.

Table 1

Mergers by ICICI Bank Ltd. in India

S. No.	Mergers by ICICI Bank Ltd. in India	Year of Merger
1.	SCICI	1996
2.	ITC Classic Finance Ltd.	1997
3	Anagram Finance	1998
4.	Bank of Madura Ltd.	2001

5.	ICICI Personal Financial Services Ltd	2002
6.	ICICI Capital Services Ltd.	2002
7.	Standard Chartered Grindlays Bank	2002
8.	Sangli Bank Ltd.	2007
9.	The Bank of Rajasthan Ltd. (BoR)	2010

Source: Goyal, K. A. and Joshi, V. (2011) Mergers in Banking Industry of India: Some Emerging Issues. *Asian Journal of Business and Management Sciences*, 1(2), 157-165.

Review of Literature:

There are many variables, which have been considered as significant factor in managing Mergers and Acquisitions effectively. Communication is an unavoidable factor and effective communication can be of utmost importance for management to deal with the individual employee reactions to the merger, and the anxiety and stress levels following a merger.

According to Ivancevich, Schweiger and Power (1987) the aspects of communication should be expected to focus on employees' concern like layoffs, changes in work rules, compensation, and pension etc.

Ivancevich, Schweiger and Power (1987) studied the merger stress process, stages of the merger process and the sources of stress created and choosing guidelines and interventions to encourage more effective management of merger stress. They suggested some measures to effectively manage merger stress, like prevention, to reduce the actual stress-inducing merger events; secondly, reappraisal of employee which refers to changing initial cognitive appraisal of a situation and at last effective stress management and professional help which supports those employees that are already stressed.

Cartwright and Cooper (1990) studied current wave of merger activity and assessed the contribution of psychology to understand mergers and acquisitions in addressing the essence of the activity. They found the positive relationship in combination of people and the fusion of organizational cultures.

Cartwright and Cooper (1993) reported on a recent study of a sample of 157 middle managers involved in the merger of two U.K. Building Societies. Post-merger measures of mental health suggested merger to be a stressful life event, even when there is a high degree of cultural compatibility between the partnering organizations.

Appelbaum, Gandell, Yortis, Proper, and Jobin (2000) examined the multiple organizational factors, which directly affect a merger as well as the merger process. They addressed the issue of communication and its importance throughout the merger and acquisition (M&A) process. Further, they analyzed the corporate culture and its effects on employees when two companies merge, organizational change and the reaction of employees (resistance) to these changes. Further, they studied the issue of stress, which is an outcome of M&A within uncertain environment and reported high level of stress. Moreover, they evolved the five major sections such as communications, corporate culture, change, stress, and managing/strategy. These were sub-divided into three sub-sections: pre-merger; during the merger and post-merger.

Schuler and Jackson (2001) proposed a three-stage model of mergers and acquisitions that systematically identified several human resources issues and activities. Numerous examples were offered to illustrate the issues and activities in each of the three stages. The article concluded with a description of the role and importance of the HR department and leader has its presence in business environment, in order to get competitive advantage the acquirer must consider the HR perspective to bring effectiveness in a deal of a merger.

Researchers in some articles also raise issues related to human resource management. Bryson, (2003) reviewed the literature around managing HRM risk in a merger. He found that poor merger results are often attributed to HRM and organizational problems, and that several factors related to maintaining



workforce stability are identified as important in managing HRM risk. Schraeder and Self (2003) found that organizational culture is one factor as a potential catalyst to M&A success.

Paul (2003) studied the merger of Bank of Madura with ICICI Bank. The researcher evaluated the valuation of the swap ratio, the announcement of the swap ratio, share price fluctuations of the banks before the merger decision announcement and the impact of the merger decision on the share prices. He also attempted the suitability of the merger between the 57 year old Bank of Madura with its traditional focus on mass banking strategies based on social objectives, and ICICI Bank, a six year old 'new age' organisation, which had been emphasising parameters like profitability in the interests of shareholders. It was concluded that synergies generated by the merger would include increased financial capability, branch network, customer base, rural reach, and better technology. However, managing human resources and rural branches may be a challenge given the differing work cultures in the two organisations.

Salama, Holland and Vinten (2003) opined and explored the challenges and opportunities in integration process, studied the factors responsible for the success of cross-border acquisitions within related industries. They emphasised the corporate strategies the three partnered companies used to maximise synergies, and to minimise the negative effects of the unavoidable, but necessary and complex, acculturation process. They found in the case study that successful co-operation between the firms resulted from the learning process developed by the partners. Knowledge acquisition and the subsequent organisational learning were the important desirable outcomes of the acquisition processes experienced by the organisations.

Zollo & Singh (2004) studied the knowledge-based view of corporate acquisitions and tested the post-acquisition consequences on performance of integration decisions and capability-building mechanisms. They used a sample of 228 acquisitions in the U.S. banking industry and found that knowledge codification strongly and positively influences acquisition performance, while experience accumulation does not. Furthermore, increasing levels of post-acquisition integration strengthen the positive effect of codification. Finally, the level of integration between the two merged firms significantly enhances performance, while replacing top managers in the acquired firm negatively impacts performance, all else being equal. Implications were drawn for both organizational learning theory and a knowledge-based approach to corporate strategy research.

George & Hegde (2004) reported a case for the delicate aspect of employees' attitudes, their satisfaction and motivation, which are posited as prerequisites for customer satisfaction, which is, again necessary for the competitive sustenance of the organization.

Cartwright and Schoenberg (2006) assessed three primary streams of enquiry within the strategic and behavioural literature. They studied the issues of strategic fit, organizational fit, and the acquisition process itself. They briefly reviewed the recent achievements within each of these research streams. However, in parallel to these research advances, the failure rates of mergers and acquisitions have remained consistently high. Possible reasons for this dichotomy were discussed, which in turn highlight the significant opportunities that remain for future M&A research.

Saraswathi (2007, p. 230) studied the merger of Global Trust Bank and Oriental Bank of Commerce. It was found by the author that this merger paved the way to several things in the transition period and pre merger strategy. It visualized the need for the diverse cultures to arrive at an understanding and to work hand in hand. Apart from the integration of diverse cultures, a way to inherit the advanced processes and expertise of the staff in a phased and systematic manner should be paved. It is also equally important and challenging for the transferee bank in handling the issues relating to continuance of the services of employees of the transferor bank and their career planning.

Murthy (2007) studied the case of five bank mergers in India viz. Punjab National Bank and New Bank of India, ICICI Bank and Bank of Madura, ICICI Ltd. and ICICI Bank, Global Trust Bank and Oriental Bank of Commerce and Centurion Bank with Bank of Punjab. It was concluded by the author that

consolidation is necessary due to stronger financial and operational structure, higher resources, wider branch network, huge customer base, technological advantage, focus on priority sector, and penetration in rural market. Further, some issues as challenges in aforesaid mergers were identified as managing human resources, managing the client base, acculturation, and stress of bank employees.

Ellis, Reus and Lamont (2009) explored the independent and interactive effects of procedural justice and informational justice on post-deal value creation in large, related acquisitions. Their results showed that informational justice and procedural justice affect different components of value creation. Procedural justice is critical in realizing market position improvements following the integration process, while informational justice is essential in achieving market position gains during integration and financial return gains both during and post-integration. Indicating that the interrelationships between different justice dimensions may be more complex than previously thought, they found that procedural justice reduces the positive effects of informational justice on financial return during the integration process, while it magnifies the effects of informational justice on the combined firms' market position during integration efforts. Authors explored the implications of these results for future research on the acquisition integration process and for practicing managers engaging in large, related acquisitions.

Cascio (2010) discussed the lessons from HR professionals from the merger of health insurer Bupa Australia with the Medical Benefits Fund Group, the second largest health insurer in Australia. It was opined that Bupa Australia is the only Australian health insurer to have kept premium increases below the industry average for many years. It adds that being a privately managed company, Bupa Australia reinvests any financial surpluses for the benefit of its customers. Here, Merger Lessons for banking industry is that transferor's bank employees must be given some stimuli to boost their morale and they should be prevented from various stressors.

Maire and Colletette (2011) studied the case of an international post-merger integration project in the private banking sector. It raised the challenges that were met, describes the methodology and the tools used to manage the process, and highlights the factors that led to success. This experience suggests that successful integration management mainly rests upon capabilities in communication, organization, and change management. It also highlighted the importance of having an Integration Manager in charge of the process in order to favour integration success. In particular, it appears that pace is the heartbeat of integration progress and that one of the Integration Manager's main roles is to set the pace of integration by applying pressure to speed up progress, while also providing a climate where people can be motivated to work together towards organizational objectives and success.

Weber and Fried (2011) discussed the role of human resources (HR) practices in managing the cultural integration process in a post-merger and acquisition (M&A) culture. The authors argued that the pervasiveness and growth of M&A's stand in sharp contrast to their high failure rate. Topics include the neglected role of HR practices in the management of M&As and the contribution of HR practices to the success of M&As.

Chen and Lin (2011) examined the possible benefits and effects of post-M&A integration on new product development (NPD) performance in terms of efficiency and effectiveness. They took the sample size of 251 respondents. Research tools for statistical analysis were used as Confirmatory factor analysis (CFA) and structural equation modelling (SEM). They found that external integration correlates positively with internal integration. Although external integration relates positively to new product competitive advantage (NPCA), internal integration does not have a positive correlation with NPCA. Further, product vision positively correlates with NPCA and NPD performance, and NPCA positively correlates with NPD performance. In addition, they examined the mediation effect in terms of Sobel t-test, which revealed that the NPCA is a significant mediator for the influence of interdepartmental integration on NPD performance. Moreover, this study provides a framework for managing post-M&A integration and closes with a discussion of the theoretical and practical implications of the research findings.

Mergers and Acquisitions by ICICI Bank Ltd.

(1) Amalgamation of SCICI.

Effective April 1, 1996, ICICI acquired SCICI Limited, a diversified financial institution in which ICICI had an existing 19.9% equity interest. ICICI acquired SCICI principally to benefit from the scale efficiencies of being a larger entity. The assets of SCICI amounted to ₹ 50.4 billion (US\$ 1.0 billion), approximately 16.8% of ICICI's total assets at year-end fiscal 1996. The business combination was accounted for by the purchase method. The business combination resulted in negative goodwill of ₹ 3.1 billion (US\$ 65 million) as the purchase price was less than the fair value of the net assets acquired. Of this amount, ₹ 600 million (US\$ 13 million) was set-off against certain property and equipment and an amount of ₹ 253 million (US\$ 5 million) was accrued to income in each of the years for fiscal 1997 to fiscal 2001. In addition, in fiscal 1998, income of ₹ 242 million (US\$ 5 million) was accrued from the sale of SCICI's headquarters building in Mumbai.

(2) Amalgamation of ITC Classic Finance Ltd.

It was one of the first-of-its-kind mergers in the country's financial sector, ITC Classic Finance Ltd, the beleaguered non-banking financial arm of ITC Ltd, and country's premier development financial institution, Industrial Credit Investment Corporation of India (ICICI) to merge their operations and share swap ratio for ITC Classic-ICICI merger was 15:1.

Tobacco major, ITC was desperately scouting a buyer for ITC Classic, which had accumulated losses of over ₹ 300 crore.

ITC Classic Finance Ltd was named after ITC's premium cigarette brand 'Classic.' It was incorporated in 1986. ITC Classic was a non-banking finance company (NBFC). Largely, it was engaged in hire, purchase, and leasing operations. In addition, the company undertook investment operations on a substantial scale. The company did very well in the initial years and developed a strong network to mobilize retail deposits. Its fund-based activities such as corporate leasing, bill discounting, and equities trading also grew substantially over the years. At a compounded annual growth rate of 78% during 1991-96, ITC Classic's annual turnover increased from ₹ 17.3 crore to over ₹ 310 crore and net profits from ₹ 2.3 crore to ₹ 31 crore in the same period. By the June 1996, the company had a deposit portfolio of ₹ 800 crore consisting mainly of retail deposits. The capital market boom of the early 1990s was responsible largely for ITC Classic's impressive financials growth. Around 50% of ITC Classic's assets had to be kept in financing and a further 25% was to be held in liquid funds or cash to handle cash outflows. However, Classic was free to invest the remaining 25%, which happened to be in the 'boom stocks.' When the markets crashed in 1992, ITC Classic had to face heavy losses.

As far as ICICI was concerned, it was totally a 'win' proposition. The biggest benefit and opportunity for ICICI was ITC Classic's retail network, which comprised 8 offices, 26 outlets, 700 brokers, and a depositor-base of 7 lakhs investors. ICICI planned to use this to strengthen the operations of ICICI Credit (I-Credit), a consumer finance subsidiary that ICICI had floated in April 1997. It was rightly stated by the then ICICI managing director and CEO, K. V. Kamath said that the merger would give them a fantastic retail base as ITC Classic had an investor base of over seven lakhs. Besides, there would be a synergy in business profile as on the asset side the ITC outfit is into leasing, hire, purchase, and bill discounting as they had a common corporate clientele.

(3) Amalgamation of Anagram Finance

Anagram was primarily engaged in retail financing of cars and trucks. Between 1992 and 1998, Anagram has built a strong retail franchise, a distribution network of more than 50 branches, which were located in the prosperous states of Gujarat, Rajasthan, and Maharashtra, and it has a depositor base of 250,000 customers.

Anagram Finance was adversely affected by the problems faced by the banking sector because of diverse factors including accounting and financial issues such as non-performing assets and high cost of funding etc. Anagram Finance conducted a detailed examination and review of the operations

and financial condition of the company. It included a conservative estimation of provisions required for non performing or potential nonperforming assets had resulted in the net worth of the company becoming negative, necessitating infusion of further funds into the company.

In order to protect the interests of the creditors including depositors and public shareholders, the investment companies had decided to infuse long term resources of ₹125 crores convertible into nominal equity capital of the company upon the merger becoming effective in pursuance of the Articles of Agreement signed with ICICI on May 20, 1998. Share swap set for ICICI, Anagram Finance merger 1:15. Listing the reasons for the merger, ICICI said it has over the years consolidated its premier position as a wholesale provider of finance.

(4) Amalgamation of Bank of Madura

For over 57 years, Bank of Madura (BoM) operated as a profitable entity in Indian Banking Industry. It had a significant coverage in the southern states of India. It had extensive network of 263 branches across India. According to Murthy (2007), the bank had total assets of ₹ 39.88 billion and deposits of ₹33.95 billion as on September 30, 2000. It had a capital adequacy ratio of 15.8% as on March 31, 2000. With a view to expanding its assets, client base and geographical coverage, ICICI Bank was scouting for private banks for merger. In addition to that, its technological up gradation was inching upwards at snail's pace. In contrast, BoM had an attractive business per employee figure of ₹ 202 lakh, a better technological edge, and a vast base in southern India as compared to Federal Bank. While all these factors sound good, a tough and challenging task in terms of cultural integration and human resources issues lay ahead for ICICI Bank.

With these considerations, ICICI Bank announced amalgamation with the 57 year BoM, with 263 branches, out of which 82 were operating in rural areas; the majority of them were located in southern India. As on December 9, 2000, on the day of announcement of the merger, the Kotak Mahindra group was holding about 12% stake on BoM, the Chairman of BoM, Mr. K. M. Thaigarajan, along with his associated, was holding about 26% stake, Spic group had about 4.7%, while LIC and UTI were having marginal holdings. This merger was supposed to increase ICICI bank's hold on the South Indian market. The swap ratio was approved to be at 1:2.

(5) Merger of ICICI Personal Financial Services Ltd. and ICICI Capital Services Ltd.

Following the approval of shareholders, the High Court of Gujarat at Ahmedabad and the High Court of Judicature at Bombay, the Reserve Bank of India approved the amalgamation of ICICI, ICICI Personal Financial Services, and ICICI Capital Services with and into ICICI Bank on April 26, 2002.

(6) Takeover of Standard Chartered Grindlays Bank's Two Branches

ICICI Bank acquires Shimla and Darjeeling Branches from Standard Chartered Grindlays Bank Ltd. in these two most sought after tourist destinations in the Himalayas. In a telephonic conversation, ICICI Bank ED Chanda Kochhar told to Economic Times from Mumbai that the bank has been planning to grow its network countrywide, and "this acquisition is one step in that direction and a continuation of our strategy to expand our brand of technology banking". ICICI Bank senior vice-president and regional head, Chandigarh, Anand Kumar revealed that the Shimla branch had more than 3,000 retail accounts and a deposit base of ₹41 crore.

(7) Amalgamation of Sangli Bank

Sangli Bank Ltd. was an unlisted private sector bank headquartered at Sangli in the state of Maharashtra, India. As on March 31, 2006, Sangli Bank had deposits of ₹ 20.04 billion, advances of ₹ 8.88 billion, net NPA ratio of 2.3% and capital adequacy of 1.6%. In the year ended March 31, 2006, it incurred a loss of ₹ 29 crore. Sangli Bank had 198 branches and extension counters, including 158 branches in Maharashtra and 31 branches in Karnataka. Approximately 50% of the total branches were located in rural and semi-urban areas and 50% in metropolitan and urban centres. The bank had approximately 1,850 employees. The Board of Directors of ICICI Bank Ltd. and the Board of Directors of The Sangli Bank



Ltd. at their respective meetings approved an all-stock amalgamation of Sangli Bank with ICICI Bank on December 09, 2006. The amalgamation was subject to the approval of the shareholders of ICICI Bank and Sangli Bank, Reserve Bank of India and such other approvals required. The deal was in the ratio of one share of ICICI Bank for 9.25 shares of the privately-owned, non-listed Sangli Bank. The Bhate family of Sangli almost hold 30% of Sangli Bank.

The proposed amalgamation was expected to be beneficial to the shareholders of both entities. ICICI Bank would seek to leverage Sangli Bank's network of over 190 branches and existing customer and employee base across urban and rural centres in the rollout of its rural and small enterprise banking operations, which were key focus areas for the Bank. The amalgamation would also supplement ICICI Bank's urban distribution network. The amalgamation would enable shareholders of Sangli Bank to participate in the growth of ICICI Bank's strong domestic and international franchise. The amalgamation also provided new opportunities to Sangli Bank's employees, and gives its customers access to ICICI Bank's multi-channel network and wide range of products and services.

The provisions of Section 44(A) of the Banking Regulation Act, 1949, governed the proposed amalgamation. The proposed amalgamation had the approval of the respective Boards of ICICI Bank and Sangli Bank and to become effective, required the consent of a majority in number representing two-thirds in value of the shareholders of ICICI Bank and Sangli Bank, present in person or by proxy, at their respective meetings called for this purpose, the sanction of Reserve Bank of India by an order in writing and sanction or approval, if required, under any law or regulation, of the Government of India, or any other authority, agency, department or persons concerned

(8) Amalgamation of the Bank of Rajasthan Ltd.

The Bank of Rajasthan Ltd. was incorporated on May 7, 1943 as a Company defined under the Companies Act, 1956 and has its Registered Office at Raj Bank Bhawan, Clock Tower, Udaipur, Rajasthan. The Bank of Rajasthan had a network of 463 branches and 111 automated teller machines (ATMs) as of March 31, 2009. The primary object of the Transferor Bank was banking business as set out in its Memorandum of Association. For over 67 years, the Bank of Rajasthan had served the nation's 24 states with 463 branches as a profitable and well-capitalized Bank. It had a strong presence in Rajasthan with branch network of 294 that is 63 percent of the total branches of BoR with men power strength of more than 4300. The balance sheet of the Bank shows that it had total assets of ₹ 173 billion, deposits of ₹ 150.62 billion, and advances of ₹ 83.29 billion as on March 2010. The profit and loss account of the bank shows the net profit as ₹ -1.02 billion as on March 2010, which shows that bank, was not in good financial condition.

On the other hand, The ICICI Bank Ltd. was incorporated on January 5, 1994 under the Companies Act, 1956 and has its Registered Office at Landmark, Race Course Circle, Vadodara, Gujarat. The Transferee Bank, as of May 21, 2010, has a network of 2,000 branches and extension counters and has over 5,300 automated teller machines (ATMs). At present the bank has 79,978 employees with strong financial like total assets of ₹ 3634 billion, total deposits of ₹ 2020.16 billion, advances of ₹ 1812.06 billion and net profit of ₹ 42.25 billion as on March 2010.

The amalgamation of the Transferor Bank with the Transferee Bank was in accordance with the provisions of the Scheme formulated pursuant to Section 44A of the Banking Regulation Act, 1949, Reserve Bank of India's guidelines for merger/amalgamation of private sector banks dated May 11, 2005, and in accordance with the applicable provisions of the Companies Act, 1956, and the Memorandum and Articles of Association of the Transferor Bank and the Transferee Bank and other applicable provisions of laws.

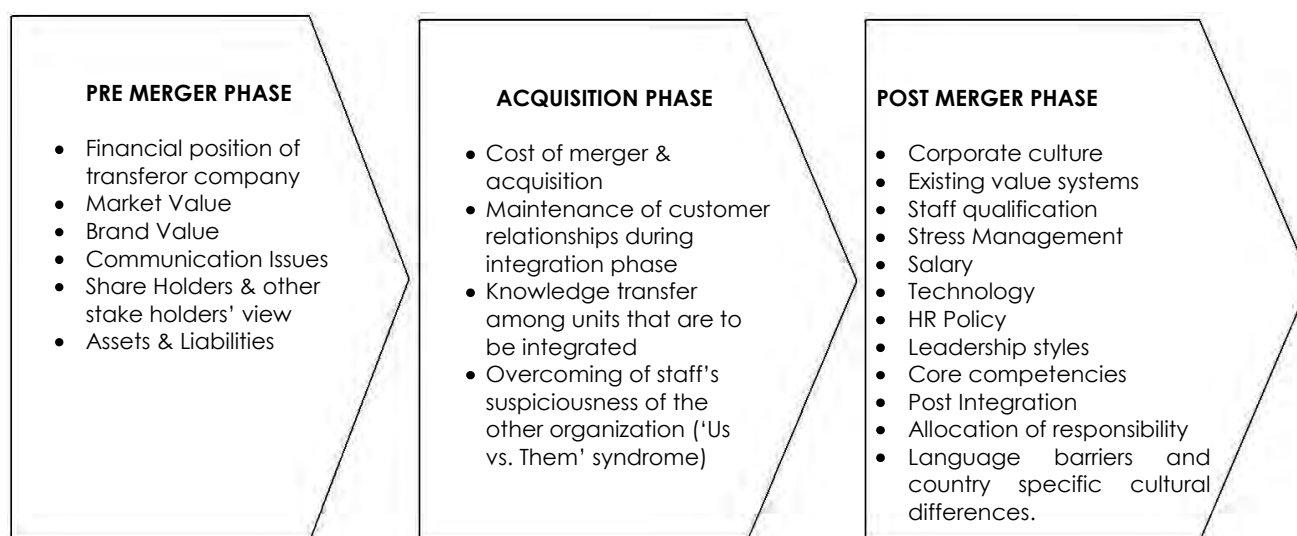
The objectives and benefits of this merger are clearly mentioned in the scheme of this merger by ICICI

Bank its customer centric strategy that places branches as the focal points of relationship management, sales, and service in geographical micro markets. As it is evident that the BoR had deep penetration with huge brand value in the State of Rajasthan where it had 294 branches with a market share of 9.3% in total deposits of scheduled commercial banks.

It was presumed that the merger of BoR in ICICI Bank will place the Transferee Bank among the top three banks in Rajasthan in terms of total deposits and significantly augment the Transferee Bank's presence and customer base in Rajasthan and it would significantly add 463 branches in branch network of ICICI Bank along with increase in retail deposit base. Consequently, ICICI Bank would get sustainable competitive advantage over its competitors in Indian Banking.

When the information about this merger was communicated to the employees, they did not accept this merger. All the employees were against this merger. All the three major employee unions i.e. All India Bank of Rajasthan Employees Federation, All India Bank of Rajasthan Officers' Association and Akhil Bhartiya Bank of Rajasthan Karmchari Sangh, called the strike demanding the immediate termination of the ICICI-BoR merger proposal. It is a very strong phenomenon of the behaviour of employees in the growth strategy like mergers and acquisitions. The issue of employees' perception towards mergers needs special attention from researchers and thinkers in order to convert mergers as synergy. At this juncture, the biggest challenge for ICICI Bank Ltd. was to encounter the agitation from the 4300 BoR employees. Now, since the merger has taken place the critical issue for discussion is the management of Human Resources in the course of Mergers and Amalgamation.

A merger can be distinguished in the following phases:



The above discussion convey a growth study of ICICI Bank Ltd. through mergers and acquisitions but at the same time the bank has to focus on manpower to get sustainable development.

Conclusion:

Thus, as per the above discussion we can say that Mergers and acquisitions (M&As) are considered as corporate events which helps an organization to create synergy and provide sustainable competitive advantage, but, simultaneous these sorts of corporate events have the potential to create severe personal trauma and stress which can result in psychological, behavioural, health, performance, and survival problems for both the individuals and companies, whether it is a bank or a non banking financial corporation, involved in it. It is evident from the case of ICICI Bank Ltd. that how an organization can



become market leader by adopting some strategic tools like mergers and acquisitions.

The post-merger integration process is a difficult and complex task. It comes along with long lists of activities and tasks that have to be fulfilled within a short time and partly with incomplete information (e.g. formation of new teams and departments). There are many opportunities to exploit and many decisions to take. However, we can divide various challenges and issues in three phases i.e. pre-merger phase, acquisition phase and post-merger phase, which has scope for further research.

Slump Sale

Slump Sale means transfer of undertaking or unit or division or business activity as a whole for lump sum consideration without values being assigned to individual assets and liabilities. Profits or gains arising from slump sale shall be chargeable as long term capital gain.

Examples:

(1) Sterlite Industries and Sterlite Optical :

Sterlite which was a diversified company with presence both in non-ferrous metal as well as Telecom cables decided to de-merge both the business into separate companies. The spin off was done in the ratio of 1:1.

(2) Raymonds Ltd :

Raymonds sold of Cement and Steel business to become one again, a purely fabric and garment company. The whole exercise fetched Raymonds ₹ 1140 crores. This enabled it to reduce high cost debts as well as buyback its own shares. Thus financially as well as in terms of shareholder value it was a correct step.

(3) GE Shipping :

The company has interests in shipping, property development, trading and finance. It was decided to de-merge property development business strategically with effect from 1st April, 1999.

(4) ABB and ABB Alstom Power India Ltd.

As a result of the global de-merger of ABB group and its hiring off power generation business with Alstom of France, ABB India was also de-merged in 1999. The objective was to remain in areas of power distribution and transmission services. The independent profitability of both the companies increased due to greater focus.

Reverse Merger

Reverse merger takes place when a healthy company merges into a financially weak company. Under the Companies Act there is no difference between regular merger and reverse merger. It is like any other amalgamation.

Reverse merger can be carried out through the High Court mode, but where one of the merging company is a sick industrial company under SICA, such merger must take place through BIFR.

On Amalgamation merger automatically makes the transferee company entitled to the benefits of carry forward and set off of loss and unabsorbed depreciation of the transferor company. There is no need to comply with Section 72 of Income Tax Act.

On amalgamation being effective, the weak company's name may be changed into that of a healthy company.

Examples :

(i) Maneklal Harilal Mills Ltd. merging into Sick company Bihari Mills Ltd.

(ii) Kirloskar Oil Engines Ltd. merged into Prashant Khosla Pneumatics Ltd. a sick unit.

Examples of Short lived Mergers

(a) Merger of ICICI and Anagram :

When employees of Anagram Finance heard that ailing firm was to be merged with ICICI there was a sigh of relief.

But two months later, reality was bitter. Out of 450 staff only 140 were repaid and all others were given pink slips with 3 months severance pay.

(b) Merger of Burroughs Welcome with Glaxo :

After world wide merger of Burroughs Welcome with Glaxo in 1996, 150 top managers left Burroughs Welcome.

(c) Takeover of Merind by Wockhardt :

There was exodus of top management team of Merind.

(d) CIBA and Sandoz merged to form Novartis:

115 out of 120 managers of new corporate office were Sandoz people with Sandoz India's erstwhile MD John Simon ailing the shareholders.

(e) ITC Classic with ICICI

Only 47 of 120 ITC classic executives were asked to remain. Its investment arm Classic credit was shut down.

Profile of Mergers and Acquisition in the Indian context

In India, the concept of mergers, acquisitions and takeovers has not been popular and kept a low profile, and the reason for this is quite obvious. The regulatory and prohibitory provisions of MRTP Act, 1969 provided for a cumbersome procedure to get approval for mergers and acquisitions under the Act. Most of the provisions of the MRTP Act, 1969, have been repealed as a part of economic liberalization drive of the Government of India. Still, in most of the cases, merger in India used to be friendly amalgamation resulting as a consequence of a negotiated deal, unless 1988 when there was the well-known unsuccessful hostile takeover bid by Swaraj Paul (of Caparo Group of the U.K.) to get control over DCM Ltd. and Escorts Ltd. Many other Nonresident Indians, such as Chabrias, Hinduja etc. also attempted to take over many Indian companies by buying shares of these companies at stock exchanges.

During recent years, there has been a spate of merger moves by various industrial groups. Volrho Ltd., a loss making company was amalgamated with Voltas Ltd. Hindustan Lever Ltd., First, acquired Tata Oil Mills from the Tata Group and then merged other group companies i.e., Brook Bond Lipton (India) Ltd. and Ponds (India Ltd.) with it. The SCICI Ltd. which was initially promoted by ICICI Ltd. has been merged with the latter. Jindal Ferroy Alloys Ltd. has been merged with Jindal Strips Ltd. ITC Classic Ltd. has been merged with ICICI Ltd. British Gas Company has taken over Gujarat Gas Company. Company like Nicholas Piramal has been built only by mergers and acquisitions. India Cement Ltd.'s offer for Raasi cement Ltd. and the offer of Sterlite Ltd. for taking over Indian Aluminum Company have heralded a new era of hostile takeovers in India.

Common factors that spurred the mergers and acquisition activity worldwide

Merger and acquisition the most talked about term today creating lot of excitement and speculative activity in the markets. However, before the idea of M&A crystallizes, the firm needs to understand its own capabilities and industry position. It also needs to know the same about the other firms it seeks to tie up with, to get a real benefit from a merger. A mergers and Acquisitions activity is that the divesting firm moves from diversifying strategy to concentrate on core activities in order to improve and increase competitiveness. Globalization has increased the competitive pressure in the markets. In



a highly challenging environment a strong reason for M&A is a desire to survive. Thus apart from growth, the survival factor has off late, spurred the M&A activity worldwide.

Some such factors are listed below:

- The company's business prospects and nature of its business
- The prospects for industry in which the company operates
- Management reputation
- Goodwill and brand value
- Marketing network
- Technology level
- Efficiency level in terms of employees
- Financial performance
- Future earnings
- The legal implications
- Government policy in general and in particular for that industry
- Current valuations of shares in stock markets

9.12 TYPES OF EXIT STRATEGIES AND THEIR IMPLICATIONS

9.12.1 Strategy

The term 'strategy' is derived from the Greek word *strategoos* which means generalship the actual direction of military force, as distinct from the policy governing its deployment. Therefore, the word strategy literally means the art of the general. Johnson and Scholes (Exploring Corporate Strategy) define strategy as follows: "Strategy is the **direction** and **scope** of an organisation over the **long-term**: which achieves **advantage** for the organisation through its configuration of **resources** within a challenging **environment**, to meet the needs of **markets** and to fulfil **stakeholder** expectations".

'Strategic Vision'

A 'strategic vision' is a broad term used to describe one of the essential elements of an overall strategic planning endeavour. Essentially, a vision is the identification of the ultimate aim or purpose for a business. Within this context, the strategic vision helps to set the parameters for the development of planning specific steps to go about making that vision come true, since it establishes the general direction that the business will pursue. A workable vision clearly looks beyond where the company is today and determines where the owners want the company to be at some point in the future.

In order to properly craft a strategic vision, several key elements must be considered. One of those elements is that the vision must be realistic. This means that vision must be somewhat specific rather than a vague idea about the future. For example, setting a vision to become the largest pencil manufacturer in the world may be a bit broad, whereas a vision to capture five percent of the pencil market within a given country within the next ten years does have focus and has the potential to be workable.

9.12.2 Steps of formulating a strategy

Strategic formation is a combination of three main processes which are as follows:

- (a) Performing a situation analysis, self-evaluation and competitor analysis: both internal and external; both micro-environmental and macro-environmental.

- (b) Concurrent with this assessment, objectives are set. These objectives should be parallel to a time-line; some are in the short-term and others on the long-term. This involves crafting vision statements (long term view of a possible future), mission statements (the role that the organization gives itself in society), overall corporate objectives (both financial and strategic), strategic business unit objectives (both financial and strategic), and tactical objectives.
- (c) These objectives should, in the light of the situation analysis, suggest a strategic plan. The plan provides the details of how to achieve these objectives.

9.12.3 Strategy at Different Levels of a Business

Strategies exist at several levels in any organisation - ranging from the overall business (or group of businesses) through to individuals working in it.

- (a) **Corporate Strategy** - is concerned with the overall purpose and scope of the business to meet stakeholder expectations. This is a crucial level since it is heavily influenced by investors in the business and acts to guide strategic decision-making throughout the business. Corporate strategy is often stated explicitly in a "mission statement".
- (b) **Business Unit Strategy** - is concerned more with how a business competes successfully in a particular market. It concerns strategic decisions about choice of products, meeting needs of customers, gaining advantage over competitors, exploiting or creating new opportunities etc.
- (c) **Operational Strategy** - is concerned with how each part of the business is organised to deliver the corporate and business-unit level strategic direction. Operational strategy therefore focuses on issues of resources, processes, people etc.

9.12.4 Early entry and market penetration strategy

An early mover strategy can reduce the lead time taken in establishing the facilities and distribution channels. So, acquiring companies with good manufacturing and distribution network or few brands of a company gives the advantage of rapid market share.

The ICICI, a leading financial institution secured a foot hold in retail network through acquisition of Anagram Finance Company and ITC classic. Anagram had a strong retail franchise, distribution network of over fifty branches in Gujarat, Rajasthan and Maharashtra and a depositor base of over two lakhs depositors. ICICI was therefore attracted by the retail portfolio of Anagram which was active in lease and hire purchase, car purchase, truck finance, and customer finance. These acquisitions thus helped ICICI to obtain quick access to well dispersed distribution network.

Further, market penetration means developing new and large markets for a company existing products. Market penetration strategy is generally pursued within markets that are becoming more global. Cross border merger are a means of becoming or remaining major players in such markets. Hence, this strategy is mainly adopted by MNC's to gain to new markets. They prefer to merge with a local established company which knows behaviour of market and has established customer base. One such example is Indian market. Few instances of MNC's related mergers are:

- (a) Whirlpool Corporation's entry into India by acquiring Kelvinator India.
- (b) Coca Cola while re-entering India market in 1993 acquired Parle, the largest player in market with several established brands and nationwide bottling and marketing network.
- (c) H.J. Heinz entered into India through acquisition of Glaxo Industries.
- (d) HLL acquired Dollops, Kwality, Milk food to gain an entry into ice cream market with the help of their marketing networks, production facilities, brands etc.



9.12.5 Cost of Entry of Mergers and Acquisitions.

A challenge in executing the strategy is finding the right kind of target company. A dilemma facing an acquirer is whether to pay a premium price and acquire a successful company or to buy a poorly performing company at a bargain price and transform it into a good performer. If the buying company is not constrained by funds and wants to enter a business it has little knowledge of, then the best thing to do would be to buy a strongly-positioned company, unless of course the cost of acquisition is high and it fails the cost-of-entry test. On the other hand, when the acquiring company has the resources, knowledge and patience, it would do well to acquire a struggling company as a better long-term investment.

The cost-of-entry test requires that the expected profit stream of an acquired business provide an attractive return on the total acquisition cost and on any new capital investment needed to sustain or expand its operations. A high acquisition price can render the meeting the test improbable or difficult.

Consider an acquirer paying a price of ₹ 30 crores for a business, which is earning a post-tax return of ₹2 crores on an equity investment of ₹ 10 crores, i.e., 20% annual return. A simple calculation will show that the acquired company's profits will have to be triples for the acquirer to earn the same 20% return on their investment of ₹ 30 crores, that the previous owners were getting on their ₹ 10 crores investment. Achieving the target earnings of ₹ 6 crores will take some time and may require additional investment, on which too the acquirer has to earn 20% return.

Normally, since the owners of a successful and growing company usually demand a price that reflects their business' future profit prospects, it is easy for such an acquisition to fail the cost-of entry test. A would-be diversifier cannot count on being able to acquire a desirable company in an appealing industry at a price that still offers attractive returns on investment.

9.12.6 Process of strategic planning

The process of strategic planning is discussed below :

(1) Monitoring environments:

A key to all approaches to strategic planning is continuous monitoring of the external environments. The environments should encompass both domestic and international dimensions and include analysis of economic, technological, political, social and legal factors. Different organization may give different emphasis and weights to each of the categories.

(2) Stakeholders:

Strategic planning process to take into account the diverse stakeholders of organization, which have interest in the organization i.e., customers, stockholders, creditors, employees, Government, Communities, Media, Political group, Educational institutions, financial community and international entity.

(3) Essential elements in strategic planning processes:

- (i) Assessment of changes in the environment.
- (ii) Evaluation of company capabilities and limitations.
- (iii) Assessment of expectations of stakeholders.
- (iv) Analysis of company, competitors, industry, domestic economy, and international economies.
- (v) Formulation of missions, goals and policies for master strategy.
- (vi) Development of sensitivity to critical external environmental changes.
- (vii) Formulation of Long-range strategy programmes.

- (viii) Formulation of internal organization performance measurements.
- (ix) Formulation of mid-range and short run plans.
- (x) Organization, Funding and other method to implement all preceding elements.
- (xi) Information flow and feedback system
- (xii) Review and evaluation process.

(4) Organization cultures:

How organization carries out the strategic thinking and planning processes will vary with its cultures.

- (i) Strong top leadership vs. Team appraisals.
- (ii) Management by formal paperwork vs. Management by wandering around.
- (iii) Individual decisions vs. Group decisions.
- (iv) Rapid evaluation based on performance vs. Long term relationship based on loyalty.
- (v) Rapid feedback for change vs. Formal bureaucratic rules and procedures.
- (vi) Risk taking encouraged vs. one mistake and you are out.
- (vii) Narrow responsibility vs. everyone in this is salesmen cost controller, product quality manpower or so on.
- (viii) Learn from customer's vs. we know what is best for customers.

(5) Alternative strategy methodologies:

- (i) SWOT or WOTS Up: Inventory and analysis of organization strength, weaknesses, environmental opportunities, and threats.
- (ii) Gap Analysis: Assessment of goals vs. forecasts or projections.
- (iii) Top down / Bottom up: Company forecasts v/s aggregation of segments.
- (iv) Computer models: Opportunity for detail and complexity.
- (v) Competitive Analysis: Assess customers, suppliers, new entrants, products and product substitutability.
- (vi) Synergy : Look for complementarily
- (vii) Logical incremental: Well supported moves from current bases.
- (viii) Muddling through: Incremental changes selected from small no. of policy alternatives.
- (ix) Comparative histories: Learn from experience of others.
- (x) Delphi Technique: Iterated opinion reactions.
- (xi) Discussion group technique: Simulating ideas by unstructured discussions aimed at consensus.
- (xii) Adaptive Processes: Periodic reassessment of environmental opportunity and organization capability adjustment required.
- (xiii) Environmental scanning: Continuous analysis of relevant environments.
- (xiv) Intuition: Insights of brilliant managers.
- (xv) Entrepreneurship: Creative leadership.
- (xvi) Discontinuities: Crafting strategy from recognition of trend shifts.
- (xvii) Brain storming: Free form repeated exchange of ideas.



(xviii) Game theory: Logical assessment of competitor's actions and reactions.

(xix) Game playing: Assign roles and simulate scenarios.

(6) Alternative Analytical framework:

- (i) Product Life cycles: Introduction, Growth, maturity, and decline stages with changing opportunities and threats.
- (ii) Learning curve: Costs decline with cumulative volume experience resulting in first mover competitive advantages.
- (iii) Competitive Analysis: Industry structure, rivals reactions, supplies and customer relations, product positioning.
- (iv) Cost leadership : Low cost advantages
- (v) Product differentiation: Develop product configuration that achieve customer preference.
- (vi) Value chain Analysis: Controlled cost outlays to add product characteristics valued by customers.
- (vii) Niche opportunities: Specialize to needs or interest of customer groups.
- (viii) Product breadth: Carryover of organizational capabilities.
- (ix) Correlation's with profitability: Statistical studies of factors associated with high profitability measures.
- (x) Market share: High market share associated with competitive superiority.
- (xi) Product quality: Customer allegiance and price differentials for higher quality.
- (xii) Technological leadership: Keep at frontiers of knowledge.
- (xiii) Relatedness matrix: Unfamiliar markets and products involve greatest risk.
- (xiv) Focus matrix : Narrow vs. Broad
- (xv) Growth / share matrix: Aim for high market share in high growth markets.
- (xvi) Attractiveness matrix : aim to be strong in attractive industries
- (xvii) Global matrix: Aim for competitive strength in attractive countries.

(7) Approaches to formulating Mergers and Acquisitions strategy:

- (i) Boston Consulting Group
- (ii) The Porter Approach
- (iii) Adaptive Processes

(i) Boston Consulting Group:

The three important concepts of BCG are as follows:

- Experience curve
- Product life cycle
- Portfolio balance

Experience curve: *It represents a volume-cost relationship. It is argued that as the cumulative historical volume of output increases, unit cost will fall at a geometric rate. This will result from specialization, standardization, learning and scale effects. The firm with target cumulative output will have lower costs, suggesting a strategy of early entry and price policy to develop volume.*

Product life cycle: Every product or a line of business proceeds through four phases:

- a. Development
- b. Growth
- c. Maturity
- d. And decline

During first two stages, sales and growth is rapid and entry is easy. As individual firms gain experience and as growth slows in last 2 stages, entry becomes difficult, because of cost advantages of incumbents.

In declining stage of product line, (as other substitutes emerge) sales and prices decline, firms which have not achieved a favourable position on the experience curve become unprofitable and either merge or exit from the industry.

Portfolio Approach: Rapid growth may require substantial investments. As requirements for growth diminish, profits may generate more funds than required for investments.

Portfolio balances seeks to combine

- Attractive investment segments (stars)
- Cash generating segments (cash cows)
- Eliminating segments with unattractive prospects (Dogs)

Overall, total cash inflows will balance and corporate investments.

(ii) The Porter Approach:

Michael Porter suggests the following:

- Select an attractive industry.
- Develop competitive advantage through cost leadership and product differentiation.
- Develop attractive value chain.

■ Attractive Industry in which:

- Entry barriers are high.
- Suppliers and buyers have only modest bargaining power.
- Substitute products or services are few.
- Rivalry among 'competitors' is stable.

■ Unattractive Industry will have:

- Structural flows
- Including plethora of substitute materials
- Powerful and price sensitive buyers.
- Excessive rivalry caused by high fixed costs and large group of competitors, many of whom are state supported, e.g. Steel Industry.

■ Competitive Advantage:

It may be based on cost leadership, product differentiation. Cost advantage is achieved by consideration of wide range of checklist factors including BCG's learning curve theory.



■ **Value chain:**

A matrix that relates the support activities of:

- Infrastructure
- Human Resource Management
- Technology development
- Procurement
- Operations
- Marketing / Sales / Service

Aim is to minimize outlays in adding characteristics valued by customers.

(iii) **Adaptive Processes:**

Adaptive processes orientation involves marketing resources to investment opportunities under environmental uncertainty compounded with uncertain competitor's actions and reactions. It involves ways of thinking which assess competitor's actions and reactions in relation to changing environments.

9.12.7 Strategic Imperatives behind successful mergers acquisitions

The first priority for successful acquisition implementation is to know precisely what you are buying and what are you going to do if and when the deal is completed.

• **Valid strategy for successful acquisition policy:**

- (i) To obtain presence for core business.
- (ii) To leverage marketing: Applying a massive marketing capability to a good product line is an excellent base for an acquisition strategy.
- (iii) To build an enlarged base
- (iv) To reposition the business

• **Drucker's five commandments for successful acquisitions**

- (i) The acquirer must contribute something to the acquired company
- (ii) Common ore of unity is required.
- (iii) Acquirer must respect the business of acquired company
- (iv) Within a year or so, acquiring company must be able to provide top management to the acquired company.
- (v) Within the first year of merger, management's in both companies should receive promotions across the entities.

• **Weston's Commentary on Drucker's Pentalegue**

- (i) Relatedness is a necessary requirement, but complimentary is an even greater virtue.
e.g., Combining a company, strong in research but weak in marketing with a company strong in marketing but weak in research may bring blessings to both.
- (ii) Relatedness or complementarities apply to general management functions such as research, plants control and financial manager as well as firm specific operations of production and marketing.
- (iii) Thus companies with cash flows or managerial capabilities in excess of investment opportunities

could effectively combine with companies lacking in financial or managerial resources to make the most of the prospects for growth and profits in their industries.

- (iv) An acquiring firm will experience negative results if it pays too much. It is difficult to accurately evaluate another organization. There can be great surprises on both sides after marriage. Expectation that a firm can improve average risk return relationship in an unfamiliar market or industries is likely to be disappointed.

- **Golden Rules of Integration**

- (i) Plan First: If you don't know what you are going to do, don't do it.
- (ii) Implement quickly: If you are going to do it, do it immediately.
- (iii) Communicate frankly: Cost of error is always on the side of inadequate communication. A change of plan can always be explained or admitted, with less adverse effect on morale and hence productivity, than a policy of silence.
- (iv) Sensitivity in the treatment of people, recognition of long service and proper and generous separation arrangements all count here.

9.12.8 Reasons for Strategic Success and Failure

Common Strategic traps :

Strategy Ground Result

- (a) Desire to move an acquisition policy or "aggressive acquisition policy".
- (a) A policy of this kind begets unrelated and messy situation that lead to "Conglomerates" at best and at worst a de stabilizing complexity that can be lethal.
- (b) Desire to acquire new technology hitches, more regulatory approvals all combined to keep prize out of reach. In many cases the previous owners sold out as a means to resolving this problem.
- (b) More investment, more details to be resolved, unforeseen technical
- (c) Attractive past experience
- (c) Purchase of obsolete concept- particularly past performance of aging firms.
- (d) Quest for complementarities
- (d) Synergy may be illusory and may drive away the company from their core business to related but highly dangerous area.
- (e) Inability to walk away
- (e) Once negotiations start, desire increases. Nothing seems to deter buyer. Price increases absorbed.

Takeover Strategies

Apart from tender offers the Acquiring Company can also use the following techniques –

1. **Street Sweep:** This refers the technique where the acquiring company accumulates larger number of shares in a target before making an open offer. The advantage is that the target company's substantial holding is controlled by the Acquiring company leaving little choice with the minority.
2. **Bear Hug:** Here the Target Company agrees to a settlement with the Acquiring Company for change of control, when the acquirer threatens to make an open offer.
3. **Strategic Alliance:** This involves disarming the acquirer by offering a partnership rather than a buyout. The acquirer asserts control from within and takes over the target company.
4. **Brand Power:** This refers to entering into an alliance with powerful brands to displace the target's brands and as a results, buyout the weakened company.



9.13 SHAREHOLDER VALUE ANALYSIS

Shareholder Value Analysis (SVA) focuses on the creation of economic value for Shareholders, as measured by share price performance and flow of funds.

Shareholder Value is used to link management strategy and decision to the creating of value for shareholders.

Value Drivers: Factors or value Drivers which influence the Shareholder's Value are identified.

Example: Growth in Sales, profit Margin, Capital Investments Decisions, etc.

Management Responsibilities: Management should pay attention to Value drivers, while taking investment and finance decisions.

9.13.1 Benefit

- (a) SVA helps the management to concentrate on activities which create value to the shareholders rather than on short- term profitability.
- (b) SVA and EVA together helps to strengthen the competitive position of the Firm, by focusing on wealth creation.
- (c) They provide an objective and consistent framework of evaluation and decision- making across all function, departments and units of the Company.

9.14 EXCHANGE RATIO-BASED USED FOR COMPUTATION

Commonly used bases to compute the Exchange Ratio

Aspect	Earnings Per share (EPS)	Market Price per share (MPS)	Book Value per share (BVS)
Computation		<u>MPS of Selling Co.</u> MPS of Buying Co.	<u>BVS of Selling Co.</u> BVS of Buying Co.
Suitability	When there are no differential risk associated with the two companies entering into Merger.	When the shares of the acquiring and the target Firm are actively traded in the market	If accounting policies are to be reflected in the determination of Exchange Ratio.
Demerits	1. Difference in growth rate of earnings of two companies will not be highlighted. 2. Gains in earnings arising out of merger is not considered to determine Exchange Ratio.	1. When the trading is thin, market prices may not be a reliable measure. 2. Market prices may be manipulated by vested interest and the Exchange Ratio determined may not reflect the true position.	Exchange ratio determined under this method does not reflect the purchasing power of money, and are highly different from true economic values.

Illustration 1

Assume the current market value of the bidding company is ₹40 crores, and that of the target company is also ₹40 crores. Then, the sum of the values as independent companies is ₹ 80 crores. Suppose, as a combined entity, due to synergistic effects, the value increases to ₹ 100 crores. The amount of value created is ₹20 crores. How will the increase in value be shared or divided between the bidder and the target company?

Solution:

Targets usually receive a premium. If the bidder pays the target a premium of less than ₹20 crores, it will share in the value increases. If the bidder pays ₹60 crores to the target, all gains will go the target company. The bidder achieves no value increase for itself. On the other hand, if the bidder pays ₹70 crores to the target, the value of bidder will down to ₹30 crores.

Illustration 2

Acquiring company is considering the acquisition of Target Company in a stock- for- stock transaction in which target Company would receive ₹90 for each share of its common stock. The Acquiring company does not expect any change in its price/ earnings ratio multiple after the merger and chooses to value the target company conservatively by assuming no earnings growth due to synergy.

Calculate:

- The purchase price premium
- The exchange ratio
- The number of new shares issued by the acquiring company.
- Post-merger EPS of the combined firms
- Pre-merger EPS of the Acquiring company
- Pre-merger P/E ratio
- Post-merger share price
- Post-merger equity ownership distribution.

The following additional information is available.

Particulars	Acquiring	Target
Earnings	₹2,50,000	₹72,500
Number of shares	1,10,000	20,000
Market Price per Share	₹50	₹60

Also, Comment on your results.

Solution:

- Purchase price premium = Offer price for Target company stock / Target company Market price per share = $90/60 = 1.5$
- Exchange ratio = Price per share offered for Target Company / Market Price per share for the acquiring company = $90/50 = 1.8$
Acquiring company issues 1.8 shares of stock for each of Target Company's stock.
- New shares issued by acquiring company = shares of Target Company x Exchange ratio
 $= 20,000 \times 1.8 = 36,000$.
- Post-merger EPS of the combined companies = Combined earning/ total number of share.



$$\begin{aligned}\text{Combined earnings} &= (2,50,000 + 72,500) \\ &= ₹3,22,500\end{aligned}$$

$$\begin{aligned}\text{Total shares outstanding of the new entity} \\ &= 1,10,000 + 36,000 = 1,46,000 \\ &= ₹3,22,500 \div 1,46,000 = ₹2.209\end{aligned}$$

(e) Pre-merger EPS of the acquiring company

$$\begin{aligned}&= \text{earnings} / \text{Number of shares} \\ &= 2,50,000 / 1,10,000 = ₹2.273\end{aligned}$$

(f) Pre-merger P/E = Pre-merger market price per share / Pre-merger earnings per share
 $= 50 / 2.273 = 22.00$

(g) Post-merger share price = Post-merger EPS x Pre-merger P/E
 $= 2.209 \times 22.00 = ₹48.60$ (as compared to ₹50 Pre-merger)

(h) Post-merger Equity Ownership Distribution

$$\begin{aligned}\text{Target Company} &= \text{Number of new shares} / \text{Total number of shares} \\ &= 36,000 / 1,46,000 = 0.2466 \text{ or } 24.66\%\end{aligned}$$

$$\text{Acquiring company} = 100 - 24.66 = 75.34\%$$

Comment – The acquisition results in an ₹1.40 reduction in the market price of the acquiring company due to a 0.064 decline in the EPS of the combined companies. Whether the acquisition is a poor decision depends upon what happens to the earnings would have in the absence of the acquisition, the acquisition may contribute to the market value of the acquiring company.

Illustration 4

R Ltd is intending to acquire S Ltd. (by merger) and the following information is available in respect of both the companies.

Particulars	R Ltd.	S Ltd.
Total current Earnings E	₹2,50,000	₹90,000
No. of Outstanding Shares	50,000	30,000
Market price per share	₹21	₹14

(a) What is the present EPS of both the companies?

(b) If the proposed merger takes place what would be the new earnings per share for R Ltd. (assuming the merger takes place by exchange of equity shares and the exchange ratio is based on the current market price)?

(c) What should be the exchange ratio if S Ltd. wants to ensure the same earnings to members as before the merger took place?

Solution:

(a) $\text{EPS} = \text{total earnings} / \text{No. of equity shares}$

$$\text{EPS}_{\text{R LTD}} = 2,50,000 / 50,000 = ₹5$$

$$\text{EPS}_{\text{S LTD}} = 90,000 / 30,000 = ₹3$$

- (b) No. of shares S Ltd. shareholders will get in R Ltd. based on market prices of shares is as follows:

$$\text{Exchange Ratio} = \frac{14}{21} = \frac{2}{3} \text{ i.e. for every 3 shares of S Ltd, 2 shares of R Ltd}$$

$$\text{Total No. of shares of R Ltd issued} = \frac{14}{21} \times 30,000 = 20,000 \text{ shares}$$

$$\text{Total number of shares of R Ltd after merger} = 50,000 + 20,000 = 70,000$$

$$\text{Total earnings of R Ltd after merger} = 2,50,000 + 90,000 = 3,40,000$$

[Remember no synergy given]

$$\text{The new EPS of R Ltd after merger} = \frac{\text{₹}3,40,000}{70,000} = \text{₹}4.86$$

- (c) Calculation of exchange ratio to ensure S Ltd to earn the same before the merger took place: Both acquiring and acquired firm can maintain their EPS only if the merger takes place based on respective EPS.

$$\text{Exchange Ratio based on EPS} = 3/5 = 0.6$$

$$\text{Total shares of R Ltd. receivable by S Ltd. shareholders} = 0.6 \times 30,000 = 18,000$$

$$\text{Total No. of shares of R LTD after merger} = 50,000 + 18,000 = 68,000$$

$$\begin{aligned} \text{EPS after merger} &= \text{Total Earnings} / \text{Total no. of shares} \\ &= [\text{₹}2,50,000 + \text{₹}90,000] / 68,000 = \text{₹}5.00 \end{aligned}$$

$$\text{Total earnings after merger of S Ltd.} = \text{₹}5 \times 18,000 = \text{₹}90,000$$

Illustration 5

A Ltd. is considering the acquisition of B Ltd. with stock. Relevant financial information is given below.

Particulars	A Ltd.	B Ltd.
Present earnings	₹7.5 lakhs	₹2.5 lakhs
Equity (No. of shares)	4.0 lakhs	2.0 lakhs
EPS	₹1.875	₹1.25
P/E ratio	10	5

Answer the following question:

- What is the market price of each company?
- What is the market capitalization of each company?
- If the P/E of A Ltd. changes to 7.5, what is the market price of A Ltd?
- Does market value of A Ltd. change?
- What would be the exchange ratio based on Market Price? (Take revised Price of A Ltd.)

Solution:

- (a) $P/E = \text{Market Price} / \text{EPS}$. Therefore we have, $\text{Market price} = P/E \times \text{EPS}$

$$\text{A Ltd.'s Market Price} = 10 \times 1.875 = \text{₹}18.75$$

$$\text{B Ltd.'s Market Price} = 5 \times 1.25 = \text{₹}6.25$$

- (b) Market Capitalization (same as market value or in short referred as market Cap)
= Number of outstanding shares $\times$ market Price



A Ltd.'s Market cap = 4.0 lakhs × ₹18.75 = ₹75 Lakhs

B Ltd.'s market cap = 2.0 lakhs × ₹6.25 = ₹12.5 Lakhs

(c) If the P/E of A Ltd. changes to 7.5, then the market price is given by

$$= 7.5 \times ₹1.875 = ₹14.0625$$

(d) Yes. The market value decreases. i.e. = A Ltd.'s market Value = 4.0 lakhs × ₹14.0625
= ₹56.25 Lakhs.

(e) General Formula for exchange ratio = $\frac{\text{MPS of Target Firm}}{\text{MPS of acquiring Firm}} = 6.25/14.0625 = 0.44$

Illustration 6

X Ltd. is considering the proposal to acquire Y Ltd. and their financial information is given below:

Particulars	X Ltd.	Y Ltd.
No. of Equity shares	10,00,000	6,00,000
Market price per share (₹)	30	18
Market Capitalization (₹)	3,00,00,000	1,08,00,000

X Ltd. intend to pay ₹ 1,40,00,000 in cash for Y Ltd., if Y Ltd.'s market price reflects only its value as a separate entity. Calculate the cost of merger: (i) When merger is financed by cash (ii) When merger is financed by stock.

Solution:

(i) Cost of Merger, when Merger is Financed by Cash = (Cash - MVY) + (MVY - PVY)

Where,

MVY = Market value of Y Ltd.

PVY = True/intrinsic value of Y Ltd.

$$\text{Then,} = (1,40,00,000 - 1,08,00,000) + (1,08,00,000 - 1,08,00,000) = ₹ 32,00,000$$

If cost of merger becomes negative then shareholders of X Ltd. will get benefited by acquiring Y Ltd. in terms of market value.

(ii) Cost of Merger when Merger is Financed by Exchange of Shares in X Ltd. to the shareholders of Y Ltd.

$$\text{Cost of merger} = \text{PVXY} - \text{PVY}$$

Where,

PVXY = Value in X Ltd. that Y Ltd.'s shareholders get.

Suppose X Ltd. agrees to exchange 5,00,000 shares in exchange of shares in Y Ltd., instead of payment in cash of ₹ 1,40,00,000. Then the cost of merger is calculated as below:

$$= (5,00,000 \times ₹ 30) - ₹ 1,08,00,000 = ₹ 42,00,000$$

$$\text{PVXY} = \text{PVX} + \text{PVY} = 3,00,00,000 + 1,08,00,000 = ₹ 4,08,00,000$$

Proportion that Y Ltd.'s shareholders get in X Ltd.'s Capital structure will be:

$$= \frac{5,00,000}{10,00,000 + 5,00,000} = 0.333$$

True Cost of Merger = PVXY - PVY

$$= (0.333 \times 4,08,00,000) - 1,08,00,000 = ₹ 27,86,400$$

The cost of merger i.e., ₹ 42,00,000 as calculated above is much higher than the true cost of merger ₹ 27,86,400. With this proposal, the shareholders of Y Ltd. will get benefited.

Note :

- (1) When the cost of merger is calculated on the cash consideration and when cost of merger is unaffected by the merger gains.
- (2) But when merger is based on the exchange of shares then the cost of merger depends on the gains which has to be shared with the shareholder of Y Ltd.

Illustration 7

A Ltd. is considering takeover of B Ltd. and C Ltd. The financial data for the three companies are as follows:

Particulars	A Ltd.	B Ltd.	C Ltd.
Equity Share Capital of ₹ 10 each (₹ crores)	450	180	90
Earnings (₹ crores)	90	18	18
Market price of each share (₹)	60	37	46

Calculate :

- (i) Price earnings ratios
- (ii) Earnings per share of A Ltd. after the acquisition of B Ltd. and C Ltd. separately. Will you recommend the merger of either/both of the companies? Justify your answer.

Solution :

Calculation of Price Earnings ratios

Particulars	A Ltd.	B Ltd.	C Ltd.
Earnings (₹ crores)	90	18	18
No. of shares (crores)	45	18	9
EPS (₹)	2	1	2
Market price per share (₹)	60	37	46
PE Ratio	30	37	23

Calculation of EPS of A Ltd. after acquisition of B Ltd. and C Ltd.

$$\text{Exchange ratio or rate} = \frac{\text{Buyer's P/E Ratio}}{\text{Seller's P/E Ratio}}$$

Particulars	A Ltd.	B Ltd.	C Ltd.
Exchange ratio in A Ltd.	–	0.81	1.30
Value of shares (₹ crores)	2700	666	414
No. of A Ltd.'s share to be given (crores)	–	666/60	414/60
EPS (₹)	–	11.10	6.9
Total earnings after acquisition (₹ crores)	–	108	108
Total number of shares (crores)	–	56.1	51.9
EPS after acquisition (₹)	–	1.93	2.08

Analysis: After merger of C Ltd. with A Ltd.'s. EPS is higher than A Ltd. (₹ 2.08). Hence merger with only C Ltd. is suggested to increase the value to the shareholders of A Ltd.



Illustration 8

XYZ Ltd. is considering merger with ABC Ltd. XYZ Ltd.'s shares are currently traded at ₹ 25. It has 2,00,000 shares outstanding and its profits after taxes (PAT) amount to ₹ 4,00,000. ABC Ltd. has 1,00,000 shares outstanding. Its current market price is ₹ 12.50 and its PAT are ₹ 1,00,000. The merger will be effected by means of a stock swap (exchange). ABC Ltd. has agreed to a plan under which XYZ Ltd. will offer the current market value of ABC Ltd.'s shares:

- What is the pre-merger earnings per share (EPS) and P/E ratios of both the companies?
- If ABC Ltd.'s P/E ratio is 8, what is its current market price? What is the exchange ratio? What will XYZ Ltd.'s post-merger EPS be?
- What must the exchange ratio be for XYZ Ltd.'s that pre and post-merger EPS to be the same?

Solution :

- Pre-merger EPS and P/E ratios of XYZ Ltd. and ABC Ltd.

Particulars	XYZ Ltd.	ABC Ltd.
Profits after taxes	₹ 4,00,000	₹ 1,00,000
Number of shares outstanding	2,00,000	1,00,000
EPS (Earnings after tax/No. of shares)	₹ 2	₹ 1
Market price per share	₹ 25.00	₹ 12.50
P/E Ratio (times)	12.50	12.50

- Current market price of ABC Ltd., if P/E ratio is 8** = ₹ 1 × 8 = ₹ 8

Exchange ratio = ₹ 25/8 = 3.125

Post merger EPS of XYZ Ltd. = $\frac{₹ 4,00,000 + ₹ 1,00,000}{2,00,000 + (1,00,000 / 3.125)} = \frac{₹ 5,00,000}{2,32,000} = 2.16$

- Desired exchange ratio**

Total number of shares in post-merged company

$$= \frac{\text{Post-merged earnings}}{\text{Pre-merger EPS of XYZ Ltd.}} = 5,00,000/2 = 2,50,000$$

$$\text{Number of shares required to be issued} = 2,50,000 - 200,000 = 50,000$$

$$\text{Therefore, the exchange ratio is} = 50,000 / 1,00,000 = 0.50$$

Illustration 9

Company X is contemplating the purchase of Company Y, Company X has 3,00,000 shares having a market price of ₹ 30 per share, while Company Y has 2,00,000 shares selling at ₹ 20 per share. The EPS are ₹ 4.00 and ₹ 2.25 for Company X and Y respectively. Managements of both companies are discussing two alternative proposals for exchange of shares as indicated below :

- in proportion to the relative earnings per share of two Companies.
- 0.5 share of Company X for one share of company Y (0.5 : 1).

You are required :

- to calculate the Earnings Per Share (EPS) after merger under two alternatives; and
- to show the impact on EPS for the shareholders of two companies under both alternatives.

Solution :**Working Notes:****Computation of total earnings after merger**

Particulars	Company X	Company Y	Total
Outstanding shares	3,00,000	2,00,000	
EPS (₹)	4	2.25	
Total earnings (₹)	12,00,000	4,50,000	16,50,000

(i) (a) Calculation of EPS when exchange ratio is in proportion to relative EPS of two companies

Company X	3,00,000
Company Y (2,00,000 × 2.25/4)	1,12,500
Total number of shares after merger	4,12,500

Company X

EPS before merger = ₹ 4

EPS after merger = ₹16,50,000/4,12,500 shares = ₹ 4

Company Y

EPS before merger = ₹2.25

EPS after merger

= EPS before merger / Share Exchange ratio on EPS basis

$$= \frac{2.25}{2.25 / 4} = \frac{2.25}{0.5625} = ₹ 4$$

(i) (b) Calculate of EPS when share exchange ratio is 0.5:1

Total earnings after merger = ₹ 16,50,000

Total number of shares after merger = 3,00,000 + (2,00,000 × 0.5) = 4,00,000 shares

EPS after merger = ₹ 16,50,000 / 4,00,000 = ₹ 4.125

(ii) Impact of merger on EPS for shareholders of Company X and Company Y**(a) Impact on Shareholders of Company X**

(₹)

EPS before merger	4.000
EPS after merger	4.125
Increase in EPS	0.125

(b) Impact on shareholders of Company Y

(₹)

Equivalent EPS before merger (2.25/0.5)	4.500
EPS after merger	4.125
Decrease in EPS	0.375

**Illustration 10**

The following information is provided in relation to the acquiring firm Mark limited and the target Mask Limited

Particulars	Firm Mark Limited	Firm Mask Limited
Earnings after tax (₹)	200 lacs	40 lacs
Number of shares outstanding	20 lacs	10 lacs
P/E ratio	10	5

Required:

- What is the swap ratio in terms of current market prices?
- What is the EPS of Mark Limited after acquisition?
- What is the expected market price per share of Mark Limited after acquisition assuming that P/E ratio of Mark limited remains unchanged?
- Determine the market value of the merged firm.
- Calculate gain/loss for shareholders of the two independent companies after acquisition.

Solution:**(a)**

Particulars	Firm Mark Limited	Firm Mask Limited
Earnings after tax (₹)	200 lacs	40 lacs
Number of shares outstanding	20 lacs	10 lacs
P/E ratio	10	5
EPS	= 200/20 = 10	= 40/10 = 4
Market Price = P/E x EPS	₹100	₹20

Therefore swap ratio in terms of market prices

= MPS of target firm/ MPS of acquiring firm = 20/100 = 0.20

- (b) We have general formula given by:

$$EPS_{AB} = \frac{(E_A + E_B)}{[S_A + S_B (ER_A)]}$$

$$\text{Therefore, EPS of Mark Limited after acquisition} = \frac{200 + 40}{20 + 0.2 \times 10} = \frac{240}{22} = ₹10.91$$

- (c) Expected market price per share of Mark Limited with the same P/E of 10 will be
= EPS x P/E = ₹10.91 x 10 = ₹109.10
- (d) Market Value of the merged firm
= Total number of outstanding shares x market price
= (20 + 2) lacs x ₹109.10 = ₹2400.2 lacs
- (e) Gain / Loss accruing to the shareholders of both companies

Particulars	Total	Mark	Mask
Number of shares after acquisition	22 lacs	20 lacs	2 lacs
Market price after acquisition	₹109.10	₹109.10	₹109.10
Total Market value after acquisition	₹2400.2 lacs	₹2182 lacs	₹218.2 lacs
Existing Market Value	₹2200 lacs	₹2000 lacs	₹200 lacs
Gain to shareholders	₹200.2 lacs	₹182	₹18.2 lacs

Illustration 11

ABC Ltd. run and managed by an efficient team that insists on reinvesting 60% of its earnings in projects that provide an ROE (return of equity) of 10%, despite the fact that the firm's capitalization rate (K) is 15%. The firm's current year's earnings is ₹10 per share.

At what price the stock of ABC Ltd. sell? What is the present value of growth opportunities? Why would such a firm be a takeover target?

Solution:

Dividend growth rate $G = ROE \times b$

Where, $b = 1 - \text{payout ratio} \therefore G = 10\% \times 0.60 = 6\%$

$$\text{Stock price of ABC Ltd.} = \frac{10 \times 0.4}{0.15 - 0.06} = \frac{4}{0.09} = ₹44.44$$

Present value of growth opportunities (PVGO)

= market price per share – No growth value per share

= ₹44.44 – (₹10/0.15)

= – ₹22.22

Reasons for takeover target – Negative PVGO implies that the net present value of the firm's projects is negative, the rate of return on those assets is less than the opportunity cost of capital. Such a firm would be subject to takeover target because another firm could buy the firm for the market price of ₹44.44 per share and increase the value of the firm by changing its investment policy. For example, if the new management simply paid out all earning as dividend, the value of the firm would increase up to its no growth value of ₹66.66.

Illustration 12

XY Ltd., a retail florist, is for sale at an asking price of ₹62,00,000. You have been contacted for a potential buyer who has asked you to give him opinion as to whether the asking price is reasonable. The potential buyer has only limited information about XY Ltd. he does not know that annual gross sales of XY Ltd. is about ₹82,00,000 and that last year's tax return reported an annual profit of ₹8,40,000 before tax. You have collected the following information from the financial details of several retail florists that were up for sale in the past:

Table 1

Particulars	Price-to-sale(P/S) ratio	Price-to-earnings (P/E) ratio
Number of firms	38.0	33.0
Mean ratio	0.55	3.29
Coefficient of Variation	0.65	1.52
Maximum ratio	2.35	6.29

Table 2 Top 10 players (in descending P/S order)

Firm	1	2	3	4	5	6	7	8	9	10
(P/S) ratio	2.35	1.76	1.32	1.17	1.09	1.01	0.96	0.85	0.72	0.68
(P/E) Multiple	5.65	6.29	5.31	4.60	3.95	3.25	3.10	2.96	2.90	2.75

Offer your opinion on the reasonableness of the asking price.

Solution:

Average P/S ratio of Industry = 0.55

Coefficient of variation of P/S ratio = 0.65

Average P/E ratio of Industry = 3.29

Coefficient of variation of P/E ratio = 1.52



The coefficient of variation of P/S ratio is much lower than the coefficient of variation of P/E ratio.

From this we can infer that there is a wider dispersion in case of P/E ratio than in case of P/S ratio. Therefore, while defining the market, it is preferable to take P/S as guiding factor.

Asking price of XY Ltd. ₹62,00,000

Annual sales of XY Ltd. ₹82,00,000

Asking P/S ratio of XY Ltd. = $62,00,000/82,00,000 = 0.76$

P/S ratio of XY Ltd. 0.76 is much higher than industry average 0.55, it is far below than the maximum P/S ratio of 2.35. The ratio of XY Ltd. is lying between 8th and 9th highest of the top ten players of the industry. In other words, XY Ltd. would need to be among the 22% ($8.5/38 \times 100$) most desirable florist business to justify the asking price of ₹62,00,000 with annual gross sales of ₹82,00,000. If the sales are likely to hold in the coming years, the price may be $(0.85 + 0.72)/2 \times ₹82 \text{ Lakhs} = ₹64.37 \text{ Lakhs}$.

Provided the buyer believes that XY Ltd. is a superior retail florist (among the top quartile), and the future sales are not likely to fall, the asking price of ₹62 lakhs appears to be reasonable. However, the buyer should make sure that the florist's accounts reflect a true and fair view of the business before he arrives at a final decision.

Illustration 13

Following are the financial statement for A Ltd. for the current financial year. Both the firm operate in the same industry:

Balance Sheet (₹)

Particulars	A Ltd.	B. Ltd.
Total Current assets	14,00,000	10,00,000
Total Fixed assets (net)	10,00,000	5,00,000
	24,00,000	15,00,000
Equity capital (of ₹ 100 each)	10,00,000	8,00,000
Retained earnings	2,00,000	
14% Long-term debt	5,00,000	3,00,000
Total Current liabilities	7,00,000	4,00,000
	24,00,000	15,00,000

Income-Statements (₹)

Particulars	A Ltd.	B. Ltd.
Net sales	34,50,000	17,00,000
Cost of goods sold	27,60,000	13,60,000
Gross profit	6,90,000	3,40,000
Operating expenses	2,00,000	1,00,000
Interest	70,000	42,000
Earnings before taxes	4,20,000	1,98,000
Taxes (50%)	2,10,000	99,000
Earnings after taxes (EAT)	2,10,000	99,000

Additional Information

Number of equity shares	10,000	8,000
Dividend payment ratio (D/P)	40%	60%
Market price per share (MPS)	₹ 400	₹ 150

Assume that the two firms are in the process of negotiating a merger through an exchange of equity shares. You have been asked to assist in establishing equitable exchange terms, and are required to –

- (i) Decompose the share prices of both the companies into EPS and P/E components, and also segregate their EPS figures into return on equity (ROE) and book value/intrinsic value per share (BVPS) components.
- (ii) Estimate future EPS growth rates for each firm.
- (iii) Based on expected operating synergies, A Ltd. estimates that the intrinsic value of B's equity share would be ₹ 200 per share on its acquisition. You are required to develop a range of justifiable equity share exchange ratios that can be offered by A Ltd. to B Ltd.'s shareholders. Based on your analysis in parts (i) and (ii) would you expect the negotiated terms to be closer to the upper, or the lower exchange ratio limits? Why?
- (iv) Calculate the post-merger EPS based on an exchange ratio of 0.4:1 being offered by A Ltd. Indicate the immediate EPS accretion or dilution, if any, that will occur for each group of shareholders.
- (v) Based on a 0.4:1 exchange ratio, and assuming that A's pre-merger P/E ratio will continue after the merger, estimate the post-merger market price. Show the resulting accretion or dilution in pre-merger market prices.

$$\text{Market price per share (MPS)} = \text{EPS} \times \text{P/E ratio} \text{ or } \text{P/E Ratio} = \text{MPS} / \text{EPS}.$$

Solution:

(i) Determination of EPS, P/E ratio, ROE and BVPC of A Ltd. and B Ltd.

Particulars		A Ltd.	B Ltd.
Profits After Tax	(PAT)	₹ 2,10,000	₹ 99,000
No. of Shares		10,000	8,000
EPS	(PAT/N)	₹ 21.00	₹ 12.375
Market price share	(MPS)	₹ 400	₹ 150
P/E ratio = (MPS/EPS)		19.05	12.12
Equity funds	(EF)	12,00,000	8,00,000
BVPC	(EF/N)	₹ 120	₹ 100
ROE = (PAT / EF) × 100		17.5%	12.375%

(ii) Estimates of Growth rates in EPS for each Firm

Retention ratio	(1-D/P ratio)	0.6	0.4
Growth rate	(ROE × Retention ratio)	10.5%	4.95%

(iii) Justifiable equity share exchange ratio

(a) Market price based $\frac{\text{MPS}_B}{\text{MPS}_A} = \frac{₹ 150}{₹ 400} = 0.375:1$ (lower limit)

(b) Intrinsic value based $= \frac{₹ 200}{₹ 400} = 0.5:1$ (upper limit)

Since A Ltd. has a higher EPS, ROE, P/E ratio, and even higher EPS growth expectations, the negotiated terms would be expected to be closer to the lower limit, based on the existing share prices.



(iv) Calculation of Post-merger EPS and other effects

Particulars		A Ltd.	B Ltd.	Combined
PAT	(i) (₹)	2,10,000	99,000	3,09,000
Shares outstanding	(ii)	10,000	8,000	13,200*
EPS	(i)/(ii) (₹)	21.00	12.375	23.41
EPS Accretion (Dilution)	(₹)	2.41	3.015**	—

(v) Estimate of Post-merger Market Price and other effects

Particulars		A Ltd.	B Ltd.	Combined
EPS	(i) (₹)	21.00	12.375	23.41
P/E Ratio		19.05	12.12	19.05
MPS	(ii) (₹)	400	150	446.00
MPS Accretion (Dilution)	(i) × (ii) (₹)	46	28.40***	

* Shares outstanding (combined) = 10,000 shares + (0.40 × 8,000) = 13,200 Shares

** EPS claim per old share = ₹ 23.41 × 0.40 = ₹ 9.36

EPS dilution = ₹ 12.375 – Re. 9.36 = ₹ 3.015

₹

MPS claim per old share	(₹ 446 × 0.4)	178.40
Less : MPS per old share		150.00
		28.40

Illustration 14

Illustrate two main methods of financing an acquisition referred to in Accounting Standard - 14 (AS-14)

Solution:

Accounting for Amalgamations

The provisions of Accounting Standard (AS-14) on Accounting for Amalgamations issued by the Institute of Chartered accountants of India need to be referred to in this context.

The two main methods of financing an acquisition are cash and share exchange:

Method I - Cash: This method is generally considered suitable for relatively small acquisitions. It has two advantages: (i) the buyer retains total control as the shareholders in the selling company are completely bought out, and (ii) the value of the bid is known and the process is simple.

Let us consider 2 Companies A & B whose figures are stated below:

Particulars	Company A	Company B
Market price per share	₹ 75	₹ 15
No. of shares	100,000	60,000
Market Value of the company	₹ 75,00,000	₹ 900,000

Assume Company A intends to pay ₹12,00,000 cash for Company B.

If the share price does not anticipate a merger:

The share price in the market is expected to accurately reflect the true value of the company.

The cost to the bidder Company A = Payment - The market value of Company B

$$= ₹12 \text{ lakhs} - ₹9 \text{ lakhs}$$

$$= ₹3 \text{ lakhs.}$$

Company A is paying ₹3 lakhs for the identified benefits of the merger.

If the share price includes a speculation element of ₹2 per share:

The cost to Company A = ₹3,00,000 + (60,000 × ₹2)

$$= ₹3,00,000 + ₹1,20,000$$

$$= ₹4,20,000$$

Worth of Company B = (₹15 - ₹2) × 60,000

$$= ₹13 \times 60,000$$

$$= ₹7,80,000$$

This can also be expressed as: ₹12,00,000 - ₹4,20,000 = ₹7,80,000

Method II - Share exchange: The method of payment in large transactions is predominantly stock for stock.

The advantage of this method is that the acquirer does not part with cash and does not increase the financial risk by raising new debt. The disadvantage is that the acquirer's shareholders will have to share future prosperity with those of the acquired company.

Suppose Company A wished to offer shares in Company A to the shareholders of Company B instead of cash:

Amount to be paid to shareholders of Company B = ₹12,00,000

Market price of shares of Company A = ₹75/

No. of shares to be offered = ₹12,00,000 / ₹75 = 16,000

Now, shareholders of Company B will own part of Company A, and will benefit from any future gains of the merged enterprise.

Their share in the merged enterprise = $16,000 / (1,00,000 + 16,000) = 13.8\%$

Further, now suppose that the benefits of the merger has been identified by Company A to have a present value of ₹4,00,000,

The value of the merged entity = ₹75,00,000 + (₹9,00,000 + ₹4,00,000) = ₹88,00,000



True cost of merger to the shareholders of Company A:

Particulars	Company A	Company B
Proportion of ownership in merged enterprise	86.2%	13.8%
Market Value: Total = ₹ 88,00,000	₹ 75,85,600	₹ 12,14,400
No. of shares currently in issue	100,000	60,000
Market price per share	₹ 75.86	₹ 20.24

The above gives the value of shares in the company *before* the merger is completed, based on estimates of what the company will be worth *after* the merger.

The valuation of each company also recognizes the split of the expected benefits which will accrue to the combined entity once the merger has taken place.

The true cost can be calculated as given below:

	₹
60,000 shares in Company B @ ₹ 20.24	12,14,400
Less: Current market value	9,00,000
Benefits being paid to shareholders of Company B	3,14,400

Illustration 15

X Ltd. is considering merger with A Ltd. X Ltd's shares are currently trade at ₹ 20. It has 2,50,000 shares outstanding and its earnings after taxes (EAT) amount ₹ 5,00,000. A Ltd. has 1,25,000 shares outstanding. Its current market price is ₹ 10 and its EAT are ₹ 1,25,000. The merger will be effected by means of a stock swap (exchange). A Ltd. has argued to plan under which X Ltd. will offer the current market value of A Ltd's shares :

- What is the pre merger EPS and P/E ratio of both the companies.
- If ABC Ltd's P/E ratio is 6.4, what is the current market price? What is the exchange ratio? What will X Ltd's post merger EPS be?
- What should be the exchange ratio, if X Ltd's pre merger and post merger EPS are to be the same?

Solution:

- Pre merger EPS and P/E ratio of X Ltd and A Ltd.

Particulars		X Ltd.	A Ltd.
(a) Earning after taxes	₹	5,00,000	1,25,000
(b) Number of shares outstanding		2,50,000	1,25,000
(c) EPS (a ÷ b)	₹	2	1
(d) Market price per share		20	10
(e) P/E ratio (d ÷ c)	₹	10	10

- Current market price of A Ltd. if P/E ratio is 6.4 = $1 \times 6.4 = ₹ 6.40$

$$\text{Exchange ratio} = \frac{20}{6.40} = 3.125$$

Post merger EPS of X Ltd.

$$\text{No. of shares after merger} = 2,50,000 + \left(\frac{1,25,000 \times 6.40}{20} \right) = 2,90,000 \text{ shares}$$

$$\therefore \text{Post merger EPS} = \frac{6,25,000}{2,90,000} = ₹ 2.16$$

(iii) Desired exchange ratio

$$\text{Total number of shares in post merger company} = \frac{6,25,000}{2} = 3,12,500$$

$$\text{Number of shares required to be issued} = 3,12,500 - 2,50,000 = 62,500$$

$$\text{Therefore, the exchange ratio is } 62,500 : 1,25,000 = \frac{62,500}{1,25,000} = 0.50.$$

Illustration 16

M. Co. Ltd. is studying the possible acquisition of N Company Ltd, by way of merger. The following data are available in respect of the companies.

Particulars	M Co. Ltd.	N Co. Ltd.
EAT (₹)	80,00,000	24,00,000
No. of equity shares	16,00,000	4,00,000
Market value per share (₹)	200	160

- (i) If the merger goes through by exchange of equity and the exchange ratio is based on the current market price, what is the new earning per share for M Co. Ltd.?
- (ii) N Co. Ltd wants to be sure that the earnings equitable to its shareholders will not be diminished by the merger. What should be the exchange ratio in that case?

Solution:**(i) Calculation of new EPS of M Co. Ltd.**

No. of equity shares to be issued by M Co. to N Co. Ltd.

$$= 4,00,000 \times \frac{160}{200} = 3,20,000 \text{ shares}$$

$$\therefore \text{Total number of shares} = 16,00,000 + 3,20,000 = 19,20,000 \text{ shares}$$

$$\text{Total EAT (after acquisition)} = ₹ (80,00,000 + 24,00,000)$$

$$= ₹ 1,04,00,000$$

$$\therefore \text{EPS} = \frac{₹ 1,04,00,000}{19,20,000 \text{ shares}} = ₹ 5.42$$

(ii) Calculations of exchange ratio which would not diminish the EPS of N Co. Ltd. after its merger with M Co. Ltd.

$$\text{Current EPS of M Co. Ltd.} = \frac{₹ 80,00,000}{16,00,000 \text{ shares}} = ₹ 5$$

$$\text{N Co. Ltd.} = \frac{₹ 24,00,000}{4,00,000 \text{ shares}} = ₹ 6$$

$$\therefore \text{Exchange ratio} = \frac{5}{6} = 1.20$$



No. of shares to be issued by M Co. Ltd. to N Co. Ltd.

$$= 4,00,000 \times \frac{6}{5} = 4,80,000 \text{ shares or, } = 4,00,000 \times 1.20 = 4,80,000 \text{ shares}$$

Total number of shares of M Co. Ltd. after acquisition

$$= 16,00,000 + 4,80,000 = 20,80,000 \text{ shares}$$

$$\text{EPS (after merger)} = \frac{\text{₹ } 1,04,00,000}{20,80,000 \text{ shares}} = \text{₹ } 5$$

Total earnings in M Co. Ltd. available to new shareholders of

$$\text{N Co. Ltd.} = 4,80,000 \times \text{₹ } 5 = \text{₹ } 24,00,000$$

Recommendation: The exchange ratio (6 for 5) based on market shares is beneficial to shareholders of N Co. Ltd.

Illustration 17

Fat Ltd. wants to acquire Lean Ltd., the balance sheet of Lean Ltd. as on 31.03.2009 is as follows :

Liabilities	₹	Assets	₹
Equity sh. capital (60,000 shares)	6,00,000	Cash	20,000
Retained Earnings	2,00,000	Debtors	30,000
12% Debenture	2,00,000	Inventories	1,70,000
Creditors and other	3,20,000	Plant & Equipment	11,00,000
	13,20,000		13,20,000

Additional information :

- Shareholders of Lean Ltd. will get one share in Fat Ltd. for every two shares. External liabilities are expected to be settled at ₹ 3,00,000. Shares of Fat Ltd. would be issued at its current price of ₹ 15 per share. Debenture holders will get 13% convertible debentures in the purchasing companies for the same amount. Debtors and inventories are expected to release ₹ 1,80,000.
- Fat Ltd. has decided to operate the business of Lean Ltd. as a separate division. The division is likely to give cash flow (after tax) to the extent of ₹ 3,00,000 per year for 6 years. Fat Ltd. has planned that after 6 year this division would be damaged and disposed off for ₹ 1,00,000.
- Company's cost of capital is 14%

Make a report to the managing director advising him about the financial feasibility of the acquisition.

Note : Present value of Re. 1 for six years @ 14% interest : 0.8772, 0.7695, 0.6750, 0.5921 and 0.4556.

Solution :

Cost of Acquisition	₹
Equity share capital $\left(\frac{60,000}{2} \times \text{₹ } 15 \right)$	4,50,000
13% convertible debenture	2,00,000
Cash (Payment for external liabilities – Realisation of Cash from Debtors and inventories – Cash of Lean Ltd.) i.e., (₹ 3,00,000 – 1,80,000 – 20,000)	1,00,000
Total Consideration	7,50,000

Calculation of NPV

Year	Cost inflow	PV factor @ 14%	Prevent value
1	3,00,000	0.8772	2,63,160
2	3,00,000	0.7695	2,30,850
3	3,00,000	0.6750	2,02,500
4	3,00,000	0.5921	1,77,630
5	3,00,000	0.5194	1,55,820
6	3,00,000 + 1,00,000	0.4556	1,82,240
	Total PV of cash inflow		12,12,200
	Less: Cost of acquisition		7,50,000
	NPV		4,62,200

Since the NPV is positive it is suggested to acquire Lean Ltd. to maximize the value of shareholders of both the companies.

Illustration 18

Firm A is studying the possible acquisition of firm B by way of merger. The following data are available :

Firm	After tax earnings	No. of Eq. sh.	Market price per share
A	₹ 10,00,000	2,00,000	₹ 75
B	₹ 3,00,000	50,000	₹ 60

- If the merger goes through by exchange of equity shares and the exchange ratio is set according to the current market price, what is the new earnings per share of firm A.
- Firm B wants to be sure that their earnings per share is not diminished by the merger. What exchange ratio is relevant to achieve the objective?

Solution :

- Exchange ratio = 75 : 60

No. of shares to be issued by A Ltd. = $\frac{60 \times 50,000}{75} = 40,000$ shares.

∴ Total number of shares = 2,00,000 + 40,000 = 2,40,000 shares

∴ Total after tax earnings = ₹ (10,00,000 + 3,00,000) = ₹ 13,00,000

∴ Earnings per share = $\frac{₹ 13,00,000}{2,40,000} = ₹ 5.42$

- Calculations of exchange ratio which would not diminish the EPS of B Ltd. :**

Current EPS of

$$\text{A Ltd.} = \frac{10,00,000}{2,00,000} = ₹ 5$$

$$\text{B Ltd.} = \frac{₹ 3,00,000}{50,000} = ₹ 6$$

$$\text{Exchange ratio} = \frac{6}{5} = 1.20 : 1$$



No. of shares to be issued by A Ltd. to B Ltd.

$$= 50,000 \times \frac{6}{5} \text{ shares} = 60,000 \text{ shares}$$

Total number of shares of A Ltd. after acquisition

$$= 2,00,000 + 60,000 = 2,60,000 \text{ shares}$$

$$\text{EPS (after merger)} = \frac{\text{₹}(10,00,000 + 3,00,000)}{2,60,000 \text{ shares}} = \text{₹ } 5$$

Total earnings in A Ltd. available to new shareholders of B Ltd.

$$= 60,000 \times 5 = \text{₹ } 3,00,000$$

Illustration 19

X Ltd. is intending to acquire B Ltd. by way of merger and the following information is available in respect of the companies.

Particulars	X Ltd.	B Ltd.
No. of Equity shares	5,00,000	3,00,000
Earning after tax (₹)	25,00,000	9,00,000
Market Value per share (₹)	21	14

- (i) What is the present EPS of both the companies?
- (ii) If the proposed merger takes place, what would be the new earning per share for X Ltd. (assuming that the merger takes place by exchange of equity shares and the exchange ratio is based on the current market price).
- (iii) What should be the exchange ratio, if B Ltd. want to ensure the same earnings to members as before the merger takes place?

Solution :

- (i) Earnings per share = $\frac{\text{Earnings after tax}}{\text{No. of equity shares}}$

$$\text{X Ltd.} = \frac{\text{₹ } 25,00,000}{5,00,000} = \text{₹ } 5 \text{ and B Ltd.} = \frac{\text{₹ } 9,00,000}{3,00,000} = \text{₹ } 3$$

- (ii) Calculation of new EPS of X Ltd. after merger (Exchange ratio based on market price)

No. of shares which B Ltd.'s shareholders will get in X Ltd. is based on market price of shares; i.e.

$$= \frac{\text{₹ } 14 \times 3,00,000 \text{ shares}}{\text{₹ } 21} = 2,00,000 \text{ shares}$$

$$\therefore \text{Total number of equity shares} = (5,00,000 + 2,00,000) \text{ shares} = 7,00,000 \text{ shares}$$

$$\text{Total earnings of X Ltd. after merger} = \text{₹ } (25,00,000 + 9,00,000) = \text{₹ } 34,00,000$$

$$\therefore \text{New EPS of X Ltd. after merger} = \frac{\text{₹ } 34,00,000}{7,00,000 \text{ shares}} = \text{₹ } 4.86$$

- (iii) **Calculation of exchange ratio to ensure B Ltd. to earn the same before the merger takes place**

$$\text{Original EPS :} \quad \text{X Ltd.} = \text{₹ } 5 \quad \text{Y Ltd.} = \text{₹ } 3$$

The number of shares to be exchanged by X Ltd. with B Ltd. is based on the EPS of the respective companies is as follows:

$$\frac{\text{₹ } 3 \times 3,00,000}{\text{₹ } 5} = 1,80,000 \text{ shares}$$

Total number of shares of X Ltd. after merger

$$= (5,00,000 + 1,80,000) \text{ shares} = 6,80,000 \text{ shares}$$

$$\text{EPS after merger} = \frac{\text{₹ } 34,00,000}{6,80,000 \text{ shares}} = \text{₹ } 5$$

Total earnings of X Ltd. available to new shareholder of B Ltd.

$$= \text{₹ } 1,80,000 \text{ shares} \times \text{₹ } 5 = \text{₹ } 9,00,000$$

Thus the exchange ratio based on market shares is beneficial to the shareholders of B Ltd.

Illustration 20

The following information is provided relating to the acquiring company X Ltd. and the target company Y Ltd.

	X Ltd.	Y Ltd.
No. of shares (F.V. ₹ 10 each)	10.00 lakhs	7.5 lakhs
Market capitalization	500.00 lakhs	750.00 lakhs
P/E ratio (times)	10	5
Reserve and surplus	300.00 lakhs	165.00 lakhs
Promoter's holding (No. of shares)	4.75 lakhs	5.00 lakhs

Board of directors of both the companies have decided to give a fair deal to the shareholders and accordingly for swap ratio the weights are decided as 40%, 25% and 35% respectively for Earnings, Book value and Market price of share of each company :

- Calculate the swap ratio and also calculate Promoters holding percentage after acquisition.
- What is the EPS of X Ltd. after acquisition of Y Ltd.
- What is the expected market price per share and market capitalization of X Ltd. after acquisition, assuming P/E ratio of firm X Ltd. remains unchanged.
- Calculate free float market capitalization of the merged fair.

Solution:

Calculation of swap ratio:

Swap ratio	X Ltd.	Y Ltd.
Market capitalization	500 lakh	750 lakhs
No. of shares	10 lakhs	7.5 lakhs
Market price per share	₹ 50	₹ 100
P/E ratio	10	5
EPS (MPS ÷ P/E Ratio)	₹ 5	₹ 20
Profit (No. of shares x EPS)	₹ 50 lakhs	₹ 150 lakhs
Share Capital	₹ 100 lakhs	₹ 75 lakhs
Reserve and surplus	₹ 300 lakhs	₹ 165 lakhs
Total (Share Capital + Reserve and Surplus)	₹ 400 lakhs	₹ 240 lakhs
Book value per share (Total ÷ No. of shares)	₹ 40	₹ 32



(i) Calculation of swap ratio

EPS	5 : 20 i.e., 1 : 4 i.e., $4 \times 40\%$	= 1.6
Book value	40 : 30 i.e., 1 : 0.8 i.e., $0.5 \times 25\%$	= 0.2
Market price	50 : 100 i.e., 1 : 2 i.e., $2 \times 35\%$	= 0.7
Total		= <u>2.5</u>

Swap ratio is for every one share of Y Ltd. to issue 2.5 shares of X Ltd. Hence total no. of shares to be issued = 7.5 lakhs $\times$ 2.5 = 18.75 lakh shares.

Promoters holding = 4.75 lakh shares + (5 $\times$ 2.5) lakh shares
= 17.25 lakh shares

So promoters holding percentage = $\frac{17.25}{28.75} \times 100 = 60\%$

Total no. of shares = 10 lakhs + 18.75 lakhs = 28.75 lakhs

(ii) $EPS = \frac{\text{Total profit}}{\text{No. of shares}} = \frac{50 \text{ lakh} + 150 \text{ lakh}}{28.75 \text{ lakh}} = ₹ 6.956$

(iii) Expected market price = $EPS \times P/E = 6.956 \times 10 = ₹ 69.56$

Market capitalization = ₹ 69.56 $\times$ 28.75 lakh shares = ₹ 1999.85 lakh

(iv) Free float of market capitalization = ₹ 69.56 $\times$ (28.75 $\times$ 40%)
= ₹ 799.94 lakh

Illustration 21

The following information is relating to Fortune India Ltd. having two division Pharma division and FMCG division. Paid up share capital of Fortune India Ltd. is consisting of 3,000 lakhs equity shares of Re. 1 each. Fortune India Ltd. decided to de-merge Pharma Division as Fortune Pharma Ltd. w.e.f. 1.4.2010. Details of Fortune India Ltd. as on 31.3.2010 and of Fortune Pharma Ltd. as on 1.4.2010 are given below :

Particulars	Fortune Pharma Ltd. (₹) in lakh	Fortune India Ltd. (₹) in lakh
Outside Liabilities		
Secured Loans	400	3,000
Unsecured Loan	2,400	800
Current Liabilities & Provision	1,300	21,200
Assets		
Fixed Assets	7,740	20,400
Investments	7,600	12,300
Current Assets	8,800	30,200
Loan & Advances	900	7,300
Deferred tax / Misc. exp.	60	(200)

Board of directors of the company have decided to issue necessary equity shares of Fortune Pharma Ltd. of Re. 1 each, without any consideration to the shareholders of Fortune India Ltd. For that purpose following points are to be considered :

(i) Transfer of Liabilities and Assets at Book value.

- (ii) Estimated profit for the year 2010-11 is ₹11,400 lakh for Fortune India Ltd. and ₹ 1,470 lakh for Fortune Pharma Ltd.
- (iii) Estimated Market price of Fortune Pharma Ltd. is ₹ 24.50 per share.
- (iv) Average P/E ratio of FMCG sector is 42 and Pharma sector is 25, which is to be expected for both the companies.

Calculate :

- (1) The Ratio in which shares of Fortune Pharma are to be issued to the shareholders of Fortune India Ltd.
- (2) Expected Market price of Fortune India Ltd.
- (3) Book value per share of both the Co's after demerger.

Solution :**Shareholder's fund**

	Fortune India Ltd.	Fortune Pharma Ltd.	Fortune India (FMCG) Ltd.
Assets	70,000	25,100	44,900
Outside Liabilities	25,000	4,100	20,900
Net worth	45,000	21,000	24,000

(1) Calculation of shares of Fortune Pharma Ltd. to be issued to shareholders of Fortune India Ltd. :

	Fortune Pharma Ltd.
Estimated Profit (₹ in lakhs)	1470
Estimated market price (₹)	24.50
Estimated P/E	25
Estimated EPS (₹) (24.50 ÷ 25)	0.98
No. of shares (lakhs) (1470 ÷ 0.98)	1500

Hence, Ratio is 1 shares of Fortune Pharma Ltd. for 2 shares of Fortune India Ltd.

(2) Expected market price of Fortune India Ltd.

	Fortune India (FMCG) Ltd.
Estimated Profit (₹ in lakhs)	11,400
No. of equity share (in lakhs)	3,000
Estimated EPS (₹)	3.8
Estimated P/E	42
Estimated market price (₹)	159.6

(3) Book value per share

	Fortune Pharma Ltd.	Fortune India (FMCG) Ltd.
Net worth (₹ in lakhs)	21,000	24,000
No. of shares (in lakhs)	1,500	3,000
Book value of shares (₹)	14	8



Illustration 22

The chief executive of a Company thinks that shareholders always look for the earnings per share. Therefore, he considers maximization of the earning per share (EPS) as his Company's objective. His company's current net profit are ₹80 lakhs and EPS is ₹4. The current market price is ₹42. He wants to buy another firm which has current income of ₹15.75 lakhs, EPS of ₹10.50 and the market price per share of ₹85. What is the maximum exchange ratio which the chief executive should offer so that he could keep EPS at the current level? If the chief executive borrows funds at 15 per cent rate of interest and buys out the other Company by paying cash, how much should he offer to maintain his EPS? Assume a tax rate of 50%.

Solution:

(Amount in ₹)

Current data	Acquiring company	Target company
Net profit	80,00,000	15,75,000
EPS	4	10.50
Market price of share	42	85
Number of equity shares	20,00,000	1,50,000

Assume X no. of shares issued.

Calculation of share Exchange Ratio

$$\frac{\text{Combined net profit}}{\text{No. of shares}} = 4$$

$$\frac{80,00,000 + 15,75,000}{20,00,000 + x} = 4$$

$$95,75,000 = 80,00,000 + 4x$$

$$\text{or, } 4x = 95,75,000 - 80,00,000$$

$$\text{or, } x = 15,75,000 / 4 = 3,93,750 \text{ shares}$$

Share exchange ratio = 3,93,750 shares / 1,50,000 = 2.625

The acquiring company can offer its 2.625 shares against the company's 1 share.

If funds borrowed @ 15% interest and buys out the target company by paying cash, and maintain the same level of EPS as before.

$$\frac{80,00,000 + 15,75,000 - 0.15 \text{ Debt } (1 - 0.50)}{20,00,000 \text{ shares}} = ₹4$$

$$95,75,000 - 0.075 \text{ Debt} = 80,00,000$$

$$0.075 \text{ Debt} = 95,75,000 - 80,00,000$$

$$\text{Debt} = 15,75,000 / 0.075 = ₹2,10,00,000$$

∴ CFO can offer ₹2,10,00,000 to acquire the target company.

Amount payable to each share in target company

$$= ₹2,10,00,000 / 1,50,000 = ₹140.00 \text{ per share.}$$

Illustration 23

Reliable Industries Ltd. (RIL) is considering a takeover of Sunflower Industries Ltd. (SIL). The particulars of 2 companies are given below :

Particulars	RIL	SIL
Earnings After Tax (₹)	20,00,000	10,00,000
Equity shares (No.)	10,00,000	10,00,000
EPS (₹)	2	1
P/E ratio (times)	10	5

Required :

- What is the market value of each company before merger?
- Assuming that the management of RIL estimates that the shareholders of SIL will accept an offer of one share of RIL for four shares of SIL. If there are no synergic effects, what is the market value of the post-merger RIL? What is the new price for share ? Are the shareholders of RIL better or worse off than they were before the merger.
- Due to synergic effects, the management of RIL estimates that the earnings will increase by 20%. What is the new post-merger EPS and price per share? Will the shareholders be better off or worse off than before the merger?

Solution :

- Market value of companies before merger

Particulars	RIL	SIL
EPS (₹)	2	1
P/E ratio	10	5
Market price per share (₹)	20	5
Equity shares	10,00,000	10,00,000
Total market value	2,00,00,000	50,00,000

- Post merger effect on RIL

Particulars	₹
Post merger earnings ₹ (20,00,000 + 10,00,000)	30,00,000
Equity shares $\left(10,00,000 + 10,00,000 \times \frac{1}{4}\right)$ As exchange ratio is 1 : 4	12,50,000
EPS : $\frac{30,00,000}{12,50,000}$	2.4
P/E ratio	10.00
Market value : 10×2.4	24
Total value (12,50,000 × 24)	3,00,00,000



Gains from Merger

Post Merger Market value of the firm	= ₹ 3,00,00,000
Less : Pre-Merger market value	
RIL 2,00,00,000	= ₹ 2,50,00,000
SIL <u>50,00,000</u>	= ₹ 50,00,000

Apportionment of Gains between shareholders

Particulars	RIL	SIL
Post merger market value		
10,00,000 × 24	2,40,00,000	
2,50,000 × 24		60,00,000
Less : Pre merged market value	2,00,00,000	50,00,000
	40,00,000	10,00,000

Thus the shareholders of both the Co. have gained from merger

(iii) Post Merger Earnings

Increase in earning by 20%

New earnings : ₹ 30,00,000 × 120% = 36,00,000

No. of equity share = 12,50,000

EPS = ₹ 36,00,000 ÷ 12,50,000 = ₹ 2.88

P/E ratio = 10

Market price per share = ₹ 2.88 × 10 = ₹ 28.80

∴ Hence, shareholders will be better off than before the merger situation.

Illustration 24

The following information is provided related to the acquiring firm Sun Ltd. and the target firm Moon Ltd. :

Particulars	Sun Ltd.	Moon Ltd.
Profits after tax	₹ 2,000 lakhs	₹ 400 lakhs
Number of shares outstanding	200 lakhs	100 lakhs
P/E ratio (Times)	10	5

Required :

- What is the swap ratio based on current market price?
- What is the EPS of Sun Ltd. after acquisition?
- What is the expected market price per share of Sun Ltd. after acquisition, assuming P/E ratio of Sun Ltd. remains unchanged?
- Determine the market value of the merged firm.
- Calculate gain/loss for shareholders of the two independent companies after acquisition.

Solution :**EPS before acquisition**

Sun Ltd. = ₹ 2000 lakhs / 200 lakh = ₹ 10

Moon Ltd. = ₹ 400 lakhs / 100 lakh = ₹ 4

Market price of shares before acquisition

Sun Ltd. = ₹ 10 × 10 = ₹ 100

Moon Ltd. = ₹ 4 × 5 = ₹ 20

(i) Swap ratio based on current market price

$$= \frac{₹ 20}{₹ 100} = 0.2 \text{ i.e., 1 share of Sun Ltd. for 5 shares of Moon Ltd.}$$

Number of shares to be issued = 100 lakhs × 0.20 lakh = 20 lakhs

(ii) EPS after acquisitions

$$= \frac{₹ 2000 \text{ lakhs} + ₹ 400 \text{ lakhs}}{₹ 200 \text{ lakhs} + 20 \text{ lakhs}} = ₹ 10.91$$

(iii) Expected market price per shares of Sun Ltd. after an acquisition assuming P/E ratio of Sun Ltd. remains unchanged.

$$= ₹ 10.91 \times 10 = ₹ 109.10$$

(iv) Market value of merged firm

$$= ₹ 109.10 \times 220 \text{ lakhs shares} = ₹ 24,002 \text{ crores}$$

(v) Gain from the Merger

$$\text{Post merger market value of merged firm} = ₹ 24,002 \text{ crores}$$

Less: Pre merger market value

$$\text{Sun Ltd. } 200 \text{ lakhs} \times ₹ 100 = 20,000 \text{ crores}$$

$$\text{Moon Ltd. } 100 \text{ lakhs} \times ₹ 20 = 2,000 \text{ crores} = ₹ 22,000 \text{ crores}$$

$$\text{Gain from merger} = ₹ 2,002 \text{ crores}$$

Gain to shareholders of Sun Ltd. and Moon Ltd.

Particulars	Sun Ltd.	Moon Ltd.
Post merger value (₹ 109.1 × 200)	21,820	
(₹ 109.1 × 20)		2,182
Less : Pre merger value	20,000	2,000
Gain to shareholders	1,820	182

Illustration 25

The Shareholders of A Co. have voted in favor of a buyout offer from B co. Corporation. Information about each firm is given here below. Moreover, A Co.'s shareholders will receive one share of B Co. Stock for every three shares they hold in A Co.

Particulars (amount in Rupees)	B Co.	A Co.
Present earnings	6.75 lakhs	3.00 lakhs
EPS	3.97	5.00
Number of Share	1.70 lakhs	0.60 lakhs
P/E ratio	20	5



a. What will the EPS of B. Co. be after the merger? What will the PE ratio be if the NPV of the acquisition is zero?

b. What must B Co. feel is the value of the synergy between these two firms?

Explain how your answer can be reconciled with the decision to go ahead with the takeover.

Solutions:

a. The EPS of the combined company will be the sum of the earnings of both companies divided by the shares in the combined company. Since the stock offer is one share of the acquiring firm for three shares of the target firm, new shares in the acquiring firm will increase by one- third [Exchange ratio = 1/3]. So, the new EPS will be: $EPS = (\text{₹}300,000 + 675,000) / [170,000 + (1/3) (60,000)] = \text{₹}5.132$.

The market price of B co. will remain unchanged if it is a zero NPV acquisition. Using the PE ratio, we find the current market price of B Co. stock, which is = $P/E \times EPS = 20 \times (6.75 \text{ lakhs} / 1.70 \text{ lakhs}) = \text{₹}79.41$

If the acquisition has a zero NPV, the stock price should remain unchanged. Therefore, the new PE will be: $P/E = \text{₹}79.41 / \text{₹}5.132 = 15.48$

b. If the NPV of the acquisition is zero, it would mean that B Co. would pay just the market value of A Co. i.e. Number of shares x market price of A Co. i.e. = 60000×25 [MPS = $P/E \times EPS = 5 \times 5 = 25$]. The market value received by B co. = ₹15,00,000.

The cost of the acquisition is the number of shares offered times the share price, so the cost is:

Cost = $(1/3) (60,000) (\text{₹}79.4118) = \text{₹}1,588,235.29$.

The difference is synergy i.e. ₹88235.29.

Illustration 26

AB Ltd. is planning to acquire and absorb the running business of XY Ltd. The valuation is to be based on the recommendation of merchant bankers and the consideration is to be discharged in the form of equity shares to be issued by AB Ltd. As on 31.3.2010, the paid up capital of AB Ltd. consists of 80 lakhs shares of ₹ 10 each. The highest and the lowest market quotation during the last 6 months were ₹ 570 and ₹ 430. For the purpose of the exchange, the price per share is to be reckoned as the average of the highest and lowest market price during the last 6 months ended on 31.3.2010. XY Ltd's Balance Sheet as at 31.3.2010 is summarized below :

	₹ lakhs
Sources :	
Share capital	
20 lakhs equity shares of ₹ 10 each fully paid	200
10 lakhs equity shares of ₹ 10 each, ₹ 5 paid	50
Loans	100
Total	350
Uses :	
Fixed Assets (Net)	150
Net Current Assets	200
Total	350

An independent firm of merchant bankers engaged for the negotiation have produced the following estimates of cash flows from the business of XY Ltd. :

Year ended	By way of	₹ Lakhs
31.3.11	After tax earnings for equity	105
31.3.12	Do	120
31.3.13	Do	125
31.3.14	Do	120
31.3.15	Do	100
	Terminal value estimate	200

It is the recommendation of the merchant banker that the business of XY Ltd. may be valued on the basis of the average of (i) Aggregate of discounted cash flows at 8% and (ii) Net assets value.

Present value factors at 8% for years

1 – 5 : 0.93 0.86 0.79 0.74 0.68

You are required to :

- Calculate the total value of the business of XY Ltd.
- The number of shares to be issued by AB Ltd. and
- The basis of allocation of the shares among the shareholders of XY Ltd.

Solution :

- (i) Price per share of AB Ltd. for determination of number of shares to be issued:

$$\frac{₹ (570 + 430)}{2} \quad ₹ 500$$

Value of XY Ltd. based on future cash flow capitalization

$$(105 \times 0.93) + (120 \times 0.86) + (125 \times 0.79) + (120 \times 0.74) + (300 \times 0.68) \quad ₹ 592.40 \text{ lakhs}$$

$$\text{Value of XY Ltd. based on net assets } (350 - 100) \quad ₹ 250 \text{ lakhs}$$

$$\text{Average value } \frac{592.40 + 250}{2} \quad ₹ 421.20 \text{ lakhs}$$

$$(ii) \text{ No. of shares in AB Ltd. to be issued } \frac{421.2 \text{ lakhs}}{500} \quad 84240 \text{ (Approx)}$$

(iii) Basis of allocation of shares

$$\text{Fully paid equivalent shares in XY Ltd.} \quad 250 \text{ lakhs}$$

$$\text{Distribution to fully paid shareholders } 84240 \times \frac{20}{25} \quad 67392$$

$$\text{Distribution to partly paid shareholders } 84240 \times \frac{5}{25} \quad 16848$$



Illustration 27

X Ltd. is considering the proposal to acquire Y Ltd. and their financial information is given below :

Particulars	X Ltd.	Y Ltd.
No. of equity shares	5,00,000	3,00,000
Market price per share (₹)	30	18
Market capitalisation (₹)	1,50,00,000	54,00,000

X Ltd. intend to pay ₹ 70,00,000 in cash for Y Ltd., if Y Ltd's market price reflects only its value as a separate entity. Calculate the cost of merger :

- When merger is financed by cash.
- When merger is financed by stock and X Ltd. agrees to exchange 2,50,000 shares in exchange of shares in Y Ltd.

Solution :

- Cost of merger (when merger is financed by cash)

$$= \text{Cash} - \text{True / Intrinsic value of Y Ltd.}$$

$$\therefore ₹ (70,00,000 - 54,00,000) = ₹ 16,00,000$$

If cost of merger becomes negative then shareholders of X Ltd. will get benefited by acquiring Y Ltd. in terms of market value.

- Cost of merger (when merger is financed by exchange of shares in X Ltd. to the shareholders of Y Ltd.)

$$\text{Cost of merger} = PV_{xy} - PV_y$$

$$PV_{xy} = \text{Value of X Ltd. that Y Ltd's shareholders get.}$$

$$PV_y = \text{True / Intrinsic value of Y Ltd.}$$

$$PV_{xy} = PV_x + PV_y$$

$$= ₹ (1,50,00,000 + 54,00,000)$$

$$= ₹ 2,04,00,000$$

Proportion that Y Ltd's shareholders get in X Ltd's capital structure :

$$= \frac{2,50,000}{(5,00,000 + 2,50,000)} = 0.33 \text{ i.e. } \frac{1}{3}$$

$$\text{True cost of merger} = PV_x + PV_y$$

$$= (2,04,00,000 \times \frac{1}{3}) - 54,00,000 = ₹ 14,00,000$$

The cost of merger i.e., $(2,50,000 \times 30) - ₹ 54,00,000$ ₹ 21,00,000 is much higher than the true cost of merger i.e., ₹ 14,00,000. So with this proposal the shareholders of Y Ltd. will get benefited.

Notes :

- When the cost of merger is calculated on the cash consideration, then cost of merger is unaffected by the merger gains.
- When merger is based on the exchange of shares, then the cost of merger depends on the gains, which has to be shared with the shareholder of Y Ltd.

Illustration 28

Two firms RAJJAN and REKHA Corporation operate independently and have the following financial statements:

Particulars	RAJJAN	REKHA
Revenues	8,00,000	4,00,000
Cost of Goods Sold (COGS)	6,00,000	2,40,000
EBIT	2,00,000	1,60,000
Expected growth rate	6%	8%
Cost of capital	10%	12%

Both firms are in steady state, with capital spending offset by depreciation. No working capital is required, and both firms face a tax rate of 40%. Combining the two firms will create economies of scale in the form of shared distribution and advertising cost, which will reduce the cost of goods sold from 70% of revenues to 65% of revenues. Assume that the firm has no debt capital.

Estimate

- The value of the two firms before the merger
- The value of the combined firm with synergy effect

Solution:

a. Value of the Firms before the Merger

Calculation of Free Cash Flow to each of the Firm

Free cash flow to RAJJAN = EBIT (1 – tax rate)

$$= 2,00,000 (1 - 0.4) = ₹1,20,000$$

Free cash flow to REKHA = EBIT (1 – tax rate)

$$= 1,60,000 (1 - 0.4) = ₹96,000$$

Value of the two firms independently

Value of RAJJAN = $[1,20,000 (1.06)] / (0.10 - 0.06)$

$$= ₹31,80,000$$

Value of REKHA = $[96,000 (1.08)] / (0.12 - 0.08)$

$$= ₹25,92,000$$

In the absence of synergy the combined firm value is:

Combined Firm Value with No Synergy

$$= 31,80,000 + 25,92,000$$

$$₹57,72,000$$

b. Value of the Firm with Synergy

On combining the two firm the cost of goods sold is reduced from 70% to 65% of revenues. The revenue of the combined firm = $8,00,000 + 4,00,000 = ₹12,00,000$

Cost of goods sold = 65% of revenues

$$= 0.65 \times 12,00,000 = ₹7,80,000$$



Weighted average cost of capital for the combined firm

$$= 10\% [31,80,000 / 57,72,000] + 12\% [25,92,000 / 57,72,000]$$
$$= 0.0551 + 0.0536 = 0.109$$

Or 11% approximately

Weighted average expected growth rate for the combined firm

$$= 6\% [31,80,000 / 57,72,000] + 8\% [25,92,000 / 57,72,000]$$
$$= 0.033 + 0.0359 = 0.0689$$

Or 7% approximately

Particulars	Firm with no synergy	Firm with synergy
Revenues	12,00,000	12,00,000
Cost of Goods Sold (COGS)	8,40,000	7,80,000
EBIT	3,60,000	4,20,000
Growth rate	7%	7%
Cost of capital	11%	11%
FCF = EBIT (1 – T)	2,16,000	2,52,000

Value of the Firm without Synergy

$$[2,16,000 (1.07)] / 0.11 - 0.07 = ₹57,78,000$$

Value of the firm with Synergy

$$= [2,52,000 (1.07)] / 0.11 - 0.07 = ₹67,41,000.$$

Illustration 29.

PQR Ltd. is intending to acquire DEF Ltd. by merger and the following information is available in respect of the companies:

	PQR Ltd.	DEF Ltd.
Number of equity shares	10,00,000	6,00,000
Earnings after tax (Rs.)	50,00,000	18,00,000
Market value per share (Rs.)	42	28

Required:

- What is the present EPS of both the companies?
- If the proposed merger takes place, what would be the new earning per share for PQR Ltd.? Assume that the merger takes place by exchange of equity shares and the exchange ratio is based on the current market price.
- What should be exchange ratio, if DEF Ltd. wants to ensure the earnings to members are as before the merger takes place?

Solution:

(i) Earnings per share = Earnings after tax / No. of equity shares

$$\text{PQR Ltd.} = ₹ 50,00,000 / 10,00,000 = ₹ 5$$

$$\text{DEF Ltd.} = ₹ 18,00,000 / 6,00,000 = ₹ 3$$

- (ii) Number of Shares DEF limited's shareholders will get in PQR Ltd. based on market value per share
 $= ₹ 28 / 42 \times 6,00,000 = 4,00,000$ shares

Total number of equity shares of PQR Ltd. after merger = 10,00,000 + 4,00,000 = 14,00,000 shares

Earnings per share after merger = $₹ 50,00,000 + 18,00,000 / 14,00,000 = ₹ 4.86$

- (iii) Calculation of exchange ratio to ensure shareholders of DEF Ltd. to earn the same as was before merger:

Shares to be exchanged based on EPS = $(₹ 3 / ₹ 5) \times 6,00,000 = 3,60,000$ shares

EPS after merger = $(₹ 50,00,000 + 18,00,000) / 13,60,000 = ₹ 5$

Total earnings in PQR Ltd. available to shareholders of DEF Ltd. = $3,60,000 \times ₹ 5 = ₹ 18,00,000$.

Exchange ratio based on market price is beneficial to shareholders of DEF Ltd. because of higher Earnings available to them i.e. $(4,00,000 \text{ shares} \times ₹ 4.86 = ₹ 19,44,000)$.

Illustration 30

Q Ltd. wants to acquire R Ltd. and has offered a swap ratio of 1:2 (0.5 shares for every one share of T Ltd.). Following information is provided:

	Q Ltd.	R Ltd.
Profit after tax	₹18,00,000	₹3,60,000
Equity shares outstanding (Nos.)	6,00,000	1,80,000
EPS	₹3	₹2
PE Ratio	10 times	7 times
Market price per share	₹30	₹14

Required:

- The number of equity shares to be issued by Q Ltd. for acquisition of R Ltd.
- What is the EPS of Q Ltd. after the acquisition?
- Determine the equivalent earnings per share of R Ltd.
- What is the expected market price per share of Q Ltd. after the acquisition, assuming its PE multiple remains unchanged?
- Determine the market value of the merged firm.

Solution:

- (i) **The number of shares to be issued by Q Ltd.:**

The Exchange ratio is 0.5

So, new Shares = $1,80,000 \times .5 = 90,000$ shares.

- (ii) **EPS of Q Ltd. after acquisition:**

Total Earnings	$(18,00,000 + 3,60,000)$	₹21,60,000
No. of Shares	$(6,00,000 + 90,000)$	6,90,000
EPS	$(21,60,000) / 6,90,000$	₹3.13



(iii) **Equivalent EPS of R Ltd.:**

No. of new Shares	0.5
EPS	₹3.13
Equivalent EPS (3.13 x .5)	₹1.57

(iv) **New Market Price of Q Ltd.**
(P/E remaining unchanged):

Present P/E Ratio of Q Ltd.	10 times
Expected EPS after merger	₹3.13
Expected Market Price (3.13 x 10)	₹31.30

(v) **Market Value of merged firm :**

Total number of Shares	6,90,000
Expected Market Price	₹31.30
Total value (6,90,000 x 31.30)	₹2,15,97,000

Illustration 31.

A Ltd., is studying the possible acquisition of B Ltd., by way of merger. The following data are available in respect of the companies:

Particulars	A Ltd.	B Ltd.
Earnings after tax (₹)	80,00,000	24,00,000
No. of equity shares	16,00,000	4,00,000
Market value per share (₹)	200	160

- If the merger goes through by exchange of equity and the exchange ratio is based on the current market price, what is the new earning per share for A Ltd.?
- B Ltd. wants to be sure that the earnings available to its shareholders will not be diminished by the merger. What should be the exchange ratio in that case?

Solution:

(i) **Calculation of new EPS of A Ltd.**

No. of equity shares to be issued by A Ltd. to B Ltd.

$$= 4,00,000 \text{ shares} \times \frac{\text{₹ } 1.6}{\text{₹ } 2.0} = 3,20,000 \text{ shares}$$

Total no. of shares in A Ltd. after acquisition of B Ltd.

$$= 16,00,000 + 3,20,000 = 19,20,000$$

Total earnings after tax [after acquisition]

$$= 80,00,000 + 24,00,000 = 1,04,00,000$$

$$\text{EPS} = \frac{\text{₹ } 1,04,00,000}{19,20,000 \text{ equity shares}} = \text{₹ } 5.42$$

(ii) **Calculation of exchange ratio which would not diminish the EPS of B Ltd. after its merger with A Ltd.**

Current EPS:

$$\text{A Ltd.} = \frac{\text{₹ } 80,00,000}{16,00,000 \text{ equity shares}} = \text{₹ } 5$$

$$\text{B Ltd.} = \frac{\text{₹ } 24,00,000}{4,00,000 \text{ equity shares}} = \text{₹ } 6$$

$$\text{Exchange ratio} = 6/5 = 1.20$$

No. of new shares to be issued by A Ltd. to B Ltd.

$$= 4,00,000 \times 1.20 = 4,80,000 \text{ shares}$$

Total number of shares of A Ltd. after acquisition

$$= 16,00,000 + 4,80,000 = 20,80,000 \text{ shares}$$

$$\text{EPS [after merger]} = \frac{\text{₹ } 1,04,00,000}{20,80,000 \text{ shares}} = \text{₹ } 5$$

Total earnings in A Ltd. available to new shareholders of B Ltd.

$$= 4,80,000 \times \text{₹ } 5 = \text{₹ } 24,00,000$$

Recommendation: The exchange ratio (6 for 5) based on market shares is beneficial to shareholders of 'B' Co. Ltd.

Study Note - 10

VALUATION OF ASSETS AND LIABILITIES



This Study Note includes

- 10.1 Forms of Intellectual Property and Methods of Valuation**
- 10.2 Valuation of Fixed Assets**
- 10.3 Valuation of Inventories**
- 10.4 Valuation of Investments**
- 10.5 Valuation of Share**
- 10.6 Human Resource Accounting**
- 10.7 Valuation of Goodwill, Patents and Copyrights**
- 10.8 Valuation of Brands**
- 10.9 Valuation of Real Estate**
- 10.10 Valuation of Liabilities**
- 10.11 MM Hypothesis**

10.1 FORMS OF INTELLECTUAL PROPERTY AND METHODS OF VALUATION

Introduction

We are now on throes of a new phase of evolution in the major global economies, which is characterized by new performance and value drivers that are mainly intangible in nature. Accordingly, the so called intangible or knowledge economy is the new environment that companies have to learn to cope with.

This new phase is having profound implications also for corporate accounting and reporting. It is widely known that there is a huge gap between the accounting book value and the market value of many internationally-listed companies. There is also widespread concern about the difficulty of valuing and assessing the performance of 'new economy' companies. Some companies have recognized this new phase and started to produce reports which are largely different from the traditional, financially-oriented ones. These reports may take different names such as intellectual capital report, auxiliary balance sheet, and report on intangibles, but they have a common goal of penetrating beyond the financial dimension in order to identify and track the new value drivers – mainly of an intangible nature - which permit long-term, sustainable growth of the company.

This new economic order poses challenges and offers innovative opportunities also to the profession of management accountants and financial analysts. In particular, the so-called intellectual capital supplements pose a clear problem of verification of the data and information which are disclosed to institutional investors and the general public. The procedures for verification and assessment of this new information set are immature and need to be standardized and agreed at an international level.

Traditional Accounting for Intangible Assets

Financial accounting and reporting practices have traditionally provided a basis for evaluating a company's business performance. The fundamental objective of financial accounting is to provide users of financial statements with useful information for the purpose of efficient and effective decision

making. Outside of the firm, financial reporting should provide information that is useful to present and potential investors and creditors in making rational investment and credit decisions. Within the firm, accounting information is essential for the purposes of efficient managerial decision making – as managers need timely and accurate information in order to carry out the budgeting process and implement effective control mechanisms.

Consequently, any event that is likely to affect a firm's current financial position or its future performance should be reflected in its annual accounts. Unfortunately, conventional financial statements appear to be rapidly becoming less useful within today's dynamic business environment.

Conventional accounting systems, as well as the system of national accounts used in all industrialised countries, were developed for manufacturing economies where most wealth was in the form of property, plant and equipment. These systems were designed to provide accurate and reliable cost-based information about the value of assets used in production, and about the net value (adjusted for depreciation) of the output produced by these assets.

A principal factor behind this growing irrelevance of conventional financial statements has been the global transition towards a knowledge driven economy. During the last two decades most industrialised economies have progressively moved towards a knowledge-based rapidly changing economy where investments in human resources, information technology, R&D and advertising have become essential in order to strengthen a firm's competitive position and ensure its future viability.

Intangible factors play a predominant role in the ability of companies to innovate and their subsequent competitiveness within a knowledge-based economy. Such assets enable knowledge intensive economies to maintain their competitive position compared to resource or labour intensive economies. This dematerialisation of the economy involves greater investment in intangibles. There is a growing awareness across the globe that an increasing part of total investment in the business enterprise sector is directed towards intangible "investment products" such as R&D, marketing, training, software.

With the transition to a knowledge-based economy, the principal source of economic value and wealth is no longer the production of material (tangible) goods but the creation and manipulation of intangible assets. In other words, economic growth is not as much influenced by investments in physical capital (i.e. land, machinery), as by knowledge which is a critical determinant for the productive application and exploitation of physical capital. Consequently, companies depend on being able to measure, manage and develop their knowledge.

Unfortunately conventional accounting systems still largely concentrate on and to measure only the value of financial and physical assets – plant, equipment, inventories, land and natural resources. In other words, conventional accounting principles simply do not account for many drivers of corporate success in the knowledge-based economy, eg. investments in intangible assets such as know-how, brands, patents and customer loyalty. There presently exist no adequate accounting techniques for determining and reporting the value of intangible assets such as the skills of workers, IP, business infrastructure, brand names, databases and relationships with customers and suppliers.

Accounting for Intangible Assets – General Approaches

The increased importance of intellectual capital (IC) to business competitiveness has driven change in the accounting treatment of intangibles. So far there are two broad streams of development.

One approach is to improve information about intangibles by making it easier to treat them as assets in financial statements, thereby increasing their visibility in financial accounting and reporting. The International Accounting Standards Committee (IASC) took a step in this direction with the 1998 approval of International Accounting Standard (IAS) 38 – a standard on intangibles, including advertising, training, start-up and R&D activities. For intangibles to be recognized as assets, they are required to meet definitions spelt out in the standard, generate a flow of benefits that are likely to accrue to the company, and are able to be measured reliably. Although this places businesses under the obligation of recognizing intangible assets on the balance sheet, it does impose certain strict conditions on the



capitalisation of such assets in order to get greater certainty on their future realisability. This fact, to a certain extent, limits its applicability in measuring and valuing a number of intangible assets.

Another approach is to increase the availability of non-financial information about investment and management of intangibles. This strategy is most evident in Europe, where some countries require companies to report certain information about human resources, for example, and where many companies have voluntarily disclosed non-financial information about everything from training efforts to customer networks and in-process R&D (e.g., Skandia, Ramboll and Ericsson). This second approach is promising, as it does not run afoul of objections by accountants and accounting standards. In contrast to reporting requirements linked to accounting standards, though, the disclosure of non-financial information about intangibles has been far less transparent. There is little clarity concerning definitions, measurement and verifiability of information; the consistency over time and the comparability of information across companies is not ensured.

10.1.1 Intellectual Capital: Definition and Classification

Intellectual capital can be described simply as knowledge that can be converted into profits. There is, however, a multitude of other IC definitions and experts have yet to reach a consensus on a commonly accepted definition. Researchers and other large accounting/consulting firms have played an important role in the search for suitable classification of intangibles. Other definitions of intellectual capital/assets include:

'The sum of everything everybody in a company knows that gives it the competitive edge.'

'Intellectual capital is intellectual material – knowledge, information, intellectual property, experience that can be put to use to create wealth.' (Stewart 1998)

'Knowledge that can be converted into value.'

(1996; Leif Edvinsson, Skandia, Pat Sullivan, European Management Journal, vol. 14)

'Intellectual material that has been formalised, captured and leveraged to produce a higher valued asset.'

(Klein & Prusak 1994)

'Intangible assets as non-monetary assets without physical substance that are held for use in the production or supply of goods or services, for rentals to others, or for administrative purposes:

- (a) that are identifiable;
- (b) that are controlled by an enterprise as a result of past events; and
- (c) from which future economic benefits are expected to flow to the enterprise (IAS 38).'

10.1.2 Components of Intellectual Capital

In order to arrive at the objective of valuing and measuring IC, it is necessary to understand the different components that make up intellectual capital. Intellectual capital includes/encompasses inventions, ideas, general know-how, design approaches, computer programs, processes and publications. Distinguishing between the different components of IC will help to improve the understanding of what IC is, and will hopefully allow us to apply the concept at a strategic and operational level. Some components of intellectual capital are difficult to measure, and the costs and benefits are difficult to quantify. For example, quantifying the value of customer relationships is highly subjective and determining a dollar measure would be very difficult.

One of the most popular models for classifying IC is the Hubert Saint-Onge model which is largely based on Sveiby's (1988). The Saint-Onge model, developed in the early 1990's, divides intellectual capital into three parts: human capital; structural capital; and customer capital. A slight variant of this model, devised by Dr Nick Bontis, Director of the Institute for Intellectual Capital Research, restates customer capital as relational capital to include relationship with suppliers and other strategic partners and stakeholders.

Adopting Bontis's classifications, intellectual capital can be divided into three categories:

Human Capital	Structural Capital	Relational Capital
Knowledge, competence, skills and experiences of employees; Training; Networks.	Organisational processes; Databases; Software; Manuals; Trademarks; Laboratories and market intelligence; Assembled workforce – the relationship between the business and its employees; training, employee contracts; Leadership; Organisational capacity for saleable innovation; Organisational learning capacity; Leaseholds; Franchises; Licenses; Patents; Mineral rights.	Customer relationship; Customer loyalty and satisfaction; Distribution relationships and agreements; Relationships with other partners and other stakeholders.

Human capital is often recognised as one of the largest and most important intangible asset in an organisation. It is the capital which ultimately provides the goods or services which customers require or the answers to their problems. Human capital includes the collective knowledge, competency, experience, skills and talents of people within an organisation. It also includes the creativity and innovativeness of the organisation. The predominant intangible in any organisation is largely driven by and derived from the human side of the enterprise, that is, its people and their collective intelligence. Improving productivity through the provision of employee training is not a new phenomenon, but the financial commitment and scale at which companies are now investing in human capital is growing. The effects of human capital formation are hard to determine, even how difficult they are to measure. Apart from the measurement difficulties, many argue against the inclusion of human capital into the balance sheet because (1) human capital is not owned by the organisation: it is only for rent, and (2) ethical reasons – placing a price on individuals runs the risk of making employees appear substitutable for other form of capital. However, in spite of these shortcomings, considerations of human capital provides another approach on training and human resource management policies, ultimately improving the management of an organisation.

Structural capital is often referred to as what is left when the employees go home at night and is considered the “hard” assets of the firm. It consists of the supporting resources and infrastructure of a firm and includes all of the assets found in the financial statements of a firm, such as cash and equivalents, property, buildings, and equipment. It reflects the collective capabilities of the organisation that



enable it to function to meet market requirements. Unlike human capital, structural capital is company property and can be traded, reproduced and shared by within the firm.

Relational capital comprises not only customer relations but also the organisation's external relationships with its network of suppliers, as well as its network of strategic partners and stakeholders. The value of such assets is primarily influenced by the firm's reputation. In measuring relational capital, the challenge remains in quantifying the strength and loyalty of customer satisfaction, longevity, and price sensitivity.

The International Federation of Accountants (IFAC) offers a slightly different and broader classification as given below in Table.

Classification of Intellectual Capital, IFAC (1998)

Human Capital	Relational (Customer) Capital
* Know-how * Education * Vocational qualification * Work related knowledge * Occupational assessments * Work related competencies * Entrepreneurial élan, innovativeness, pro-active and reactive abilities, changeabilities	* Brands * Customers * Customer loyalty * Company names * Backlog orders * Distribution channels * Business collaborations * Licensing agreements * Favourable contracts * Franchising agreements
Organisational (Structural) Capital Intellectual Property * Patents * Copyrights * Design rights * Trade secrets * Trademarks * Service marks	Infrastructure assets * Management philosophy * Corporate culture * Management processes * Information systems * Networking systems * Financial relations

Knowledge Companies:

The term knowledge companies or knowledge intensive companies is increasingly being used to describe companies that focus or leverage their intellectual capital. Knowledge companies are utilising their intellectual capital as a key source of competitive advantage. In a knowledge company, profits are generated primarily through the commercialisation of new ideas and innovations, that is through the interaction of the company's human capital and structural capital. Activities that create intangibles always lead to a seat of tangible outcomes, over a period of time. It is the interaction between tangible and intangibles that determine the corporate value. It is this entrepreneurial activity that generates the primary value of so many businesses. The embedded 'know-how' or knowledge of an organisation is dynamic, complex, heterogeneous and networked.

10.1.3 Why do Companies want to measure Intellectual Capital?

Before going into the issues surrounding the measurement and reporting of intellectual capital, we need to examine why firms want to measure IC. Young, knowledge-intensive organizations encounter

great difficulty in attracting external financiers, and as such need to develop a way to quantify their intellectual capital to investors and financiers. There a number of reasons why firms want to measure IC and the predominant reason has been for strategic or internal management purposes. Specifically, the reasons include:

- (a) Alignment of IC resources with strategic vision. To support the implementation of a specific strategy via a general upgrading of the work with the companies' human resources (support and maintain a strategy concerning the composition of staff as regards seniority, professional qualifications and age. Through the description of the staff profile, measuring, discussion and adjustment become possible).
- (b) To support or maintain various parties' awareness of the company.
- (c) To help bridge the present and the past (stimulates the decentralised development of the need for constant development and attention towards change).
- (d) To influence stock prices, by making several competencies visible to current and potential customers.
- (e) To make the company appear to the employees as a name providing an identity for the employees and visualising the company in the public. Knowledge of employees and customers will stimulate the development of a set of policies to increase customer satisfaction and customer loyalty.
- (f) Assessing effectiveness of a firm's IC utilisation – Allocate resources between various business units. Extract full value from acquisition and joint ventures.
- (g) Determine the most effective management incentive structures.

10.1.4 The Valuation of Intellectual Capital

The growing interest in benchmarking intellectual capital stock between firms has led to the development of three broad indicators – market-to-book ratios, Tobin's Q and Calculated Intangible Value (CIV). The value of intellectual capital is both time and context dependent. As a result, these measures of intellectual capital should be interpreted as a stock valuation, not a flow.

10.1.4.1 Market-to-book values

The value of intellectual capital is commonly expressed as the difference between the market value of the company and its book (equity) value. People are recognising the growing divergence occurring in the marketplace between the book value and the market capital of various corporations. This divergence indicates that there is something not accounted for on the balance sheet. Recent acquisitions show that the price paid for an acquired company is almost invariably higher than its book value, and this difference has been incorporated under conventional accounting practices as goodwill. In today's increasingly fast-paced business environment, where mergers and acquisitions are occurring more frequently, what has changed, is increasingly the size of the value of goodwill that has been paid.

The growing disparity between market value (MV) and book value (BV) is largely based on the intangibles of the business providing the foundation for future growth. The largest disparity occurs in high-tech and knowledge-intensive industries, where investment is heavily weighted in intangible assets such as R&D and brands.

From an internal perspective, differences between MV and BV are due primarily to assets that are not currently included in the conventional balance sheet total, such as knowledge, relationships, and image. The external perspective on the gap between MV and BV is due primarily to the company's future opportunities and these are currently not valued in the conventional balance sheet.

Limitations of market-to-book values

Market-to-book ratios have both theoretical and practical problems. First, the stock market is volatile



and responds, often strongly, to factors entirely outside the control of management. Stock market price data are a highly volatile series, which can often be dominated by irregular, seasonal and cyclical factors. Furthermore, market-to-book values ignore exogenous factors that can influence MV, such as deregulation, supply conditions, general market nervousness, as well as the various other types of information that determine investors' perceptions of the income-generating potential of the firm, such as industrial policies in foreign markets, media and political influences.

Companies with large intangible values tend to have share prices that fluctuate more than other companies. In a publicly traded company, the greater the ratio of intangible to book value, the more uncertain the investment, as witnessed by recent falls in technology stocks.

Second, there is evidence that both MV and BV are usually understated. To encourage companies to invest in new equipment, Internal Revenue Services rules deliberately permit companies to depreciate assets faster than the rate at which they actually wear out. Calculations of IC that use the difference between market and book values can also suffer from inaccuracy because book values can be impacted if firms choose to, or are required to, adopt tax depreciation rates for accounting purposes.

Third, adopting the market-to-book approach for valuing intangibles suffers from timing inconsistencies because market value is determined and revised constantly whereas book values are only updated periodically.

The reliability and usefulness of the difference between MV and BV can be enhanced by looking at the ratio between the two, rather than at the raw number. One can then compare a company with similar competitors or benchmarked against the industry average and also make year-to-year comparisons of the ratios. While the market-to-book method of valuing IC is subject to several problems, it has served to draw attention to the undeniable existence of IC, and for that reason alone has been a constructive innovation.

10.1.4.2 Tobin's Q

Traditionally, Tobin's Q was used as a method for predicting investment behaviour. Tobin's Q compares the market value of a company with the replacement cost of its assets. It uses the ratio (the "Q") to predict the investment decisions of the firm, independent of macroeconomic conditions such as interest rates. The replacement cost of fixed assets can be calculated as the reported value of a company's fixed assets plus the accumulated depreciation and adjusted for inflation.

As with market-to-book ratios, Tobin's Q is most revealing when like companies are compared over a period of several years. Use of both Tobin's Q and the market-to-book ratio are best suited to making comparisons of the value of intangible assets of firms within the same industry, serving the same markets, that have similar types of hard assets. These ratios are useful for comparing the changes in the value of IC over a number of years. When both the "Q" and the market-to-book ratio of a company are falling over time, it is a good indicator that the intangible assets of the firm are depreciating. This may provide a signal to investors that a particular company is not managing its intangible assets effectively and may cause them to adjust their investment portfolios towards companies with climbing, or stable "Q's". An advantage of Tobin's Q over the market-to-book ratios, is that the Tobin's Q approach neutralises the effects of different depreciation policies.

Tobin's Q can be a useful measure of intellectual capital because it can reflect the value markets place on assets which are not typically reported in conventional balance sheet. By making intra-industry comparisons between a firm's primary competitors, these indicators can act as performance benchmarks that can be used to improve the internal management or corporate strategy of the firm. The information provided by these ratios facilitates internal benchmarking; enabling the organisation to track its progress in the area that it has defined as being integral to its success.

10.1.4.3 Calculated Intangible Value (CIV)

Developed by NCI Research, calculated intangible value allows us to place a monetary value on intangible assets. This method allows us to calculate the fair value of the intangible asset. CIV computes

the value of intangible assets by comparing the firm's performance with an average competitor that has similar tangible assets. An advantage of the CIV approach is that it allows firm-to-firm comparisons using audited financial data and, as such, CIV can be used as a tool for benchmarking.

Determining CIV:

1. Calculate average pre-tax earnings
2. Calculate average year-end tangible asset (from balance sheet)
3. Return on assets (ROA) = Average pre-tax earnings/Average year-end tangible assets
4. Benchmark/compare the ROA against the industry's average ROA. If a company's ROA > Industry ROA proceed to step 5.
5. Excess return = Pre-tax earnings - [industry - average ROA × company's average tangible assets]
6. $(1-t) \times \text{excess return} = \text{premium attributable to IA}$ (where t = average income tax rate and IA = intangible assets)
7. Premium = premium/company's cost of capital = CIV.

Limitations of CIV method:

First, the CIV uses average industry ROA as a basis for determining excess returns. By nature, average values suffer from outlier problems and could result in excessively high or low ROA.

Secondly, the NPV of intangible assets will depend on the company's cost of capital. However, for comparability within and between industries, the industry average cost of capital should be used as a proxy for the discount rate in the NPV calculation. Again the problem of averages emerges and one must be careful in calculating an average that has been adjusted for outliers.

10.1.4.4 Real Options-based Approach:

An emerging new market approach to the valuation of intangibles is now gaining currency. Over the past twenty years, there has been a growing body of academic research that has taken the theory and methodology of financial options and applied it to the valuation of intangible assets. This is known as real option theory, an extension of financial option theory. An option is the right, but not the obligation to buy (or sell) an underlying asset at some fixed price for a predetermined period of time. A real option is an option that is based on non-financial assets. It applies the same techniques and variables as the Black-Scholes model on which financial options are based, but uses non-financial inputs. Real options can be applied by using nonnumeric strategy options to determine the value to proceed, defer, expand or abandon investment. By drawing on financial markets' techniques, benchmarks, and information, businesses can discipline their investment decisions and align them with the investment decisions of the market. They can close the gap between strategy and shareholder value.

Reporting Intellectual Capital is often criticised by accounting professionals for the high uncertainty associated with the returns on intellectual assets. Intellectual capital by its very nature, derives its value from the opportunities it creates. Unlike the previous measures of IC - market-to-book value, Tobin's Q, and CIV - real options (option pricing models) provides an approach which values the opportunities arising from IC. Deciding how much to spend on R&D, or the kind of R&D in which to invest, translates to the valuation of opportunities. Companies with new technologies, product, development ideas, defensible positions in fast-growing markets, or access to potential new markets own valuable opportunities. For some companies, opportunities are the most valuable things they own and the question is how do we map the opportunity to reality. The analysis of real options is more than simply a valuation tool. It is also a formal strategic tool, offering a proactive rather than just reactive flexibility.

10.1.5 Intellectual Capital: Some Analytical Measures and Models

There is a general consensus among managers, investors, financiers and accountants that intangibles are important factors in company performance. Businesses are discovering that fostering growth in



intellectual capital can improve profits and are attempting to quantify this in their financial statements. Reporting such information has the potential to improve internal management and improve the efficiency of the allocation of resources by providing more explicit recognition of assets. Other benefits include increased transparency, better information for investors and lenders, and more effective and efficient allocation of investments in the capital market. Firms that are actively measuring and reporting IC, obviously see value or benefits in such activities, otherwise they would choose not to engage in such activities.

Reasons for reporting on intellectual capital can be broadly classified as follows:

1. Reasons for internal reporting:

- (a) Demands are growing for effective governance of intangibles, of which social and environmental reporting are already evident.
- (b) 'What gets measured, gets managed' – it therefore focuses on protecting and growing those assets that reflect value.
- (c) Managing the firm's intellectual assets.
- (d) Assessing the effectiveness of the firm's IC utilisation/management.
- (e) Reports of current and future income from IC.
- (f) Relating employee contributions to IC to profits.
- (g) Alignment of IC resources with strategic vision.

2. Reasons for external reporting:

- (a) It more truly reflects the actual worth of the company.
- (b) Improve stock prices, by providing a more accurate picture of a firm's assets.
- (c) It supports a corporate goal of enhancing shareholder value.
- (d) It provides more useful information to existing and potential investors.
- (e) Strategic positioning.
- (f) Effect on the cost of capital.

There are several substantial difficulties associated with the valuation of intangibles – values are subject to frequent changes, many intangible assets are produced internally, rather than acquired in an arm's length transactions. In addition, the value of an intangible asset often depends on the value of other related intangible and/or tangible assets. According to an OECD study undertaken by Mavrinac and Siesfeld (1998), empirical results collected using revealed preference analysis suggest that non-financial measures of quality and strategic achievement have a profound effect on investment and valuation.

In a world of increasing technological change and shortened product life cycles, and in a world where "knowledge work" and intangible assets are of profound importance, future financial performance is often better predicted by non-financial indicators than by financial indicators. The underlying principle of measuring intangible assets must be that it complements the accounting system with a new language, not replace it with a new control system. A growing number of measurement systems are appearing, and one of the challenges for their users is to determine their relative merits and the scope and suitability of each.

The five popular approaches to intellectual capital measurement are:

- 1. EVA (Economic Value Added).
- 2. Human Resource Accounting.
- 3. The Intangible Assets Monitor.

4. The Skandia Navigator.
5. The Balanced Scorecard.
6. Performance Prism.

10.1.6 Economic Value Added (EVA)

EVA (economic value added) is a measure developed in the 1980's by New York consultancy Stern Stewart & Co. as an indicator of returns to shareholders. EVA is common in many large US companies, including AT&T and Coca – Cola. EVA represents the difference between profit and the cost of capital. It provides a measure directly linked to return on capital employed. In simple terms:

$$\text{EVA} = \text{net operating profit after taxes} - (\text{capital} \times \text{the cost of capital})$$

As such, EVA is an estimate of the amount by which earnings exceed or fall short of the required minimum rate of return that shareholders and lenders could get by investing in other securities of comparable risk. By taking all capital costs into account, including the cost of equity, EVA shows the amount of wealth a business has created or destroyed in each reporting period. The related measure MVA (market value added) compares total market value (less debts) with the money invested in the firm, represented by share issues, borrowings and retained earnings.

According to Stern Stewart, when used as a management tool, EVA shift's managers' focus to a balance sheet rather than an income focus:

“By assessing a charge for using capital, EVA makes managers care about managing assets as well as incomes, and for properly assessing the trade-offs between them. All key management decisions and actions are thus tied to just one measure, EVA”.

According to Stern Stewart, conventional financial balance sheets often need restating to give an accurate picture of the capital employed in the business, and often this involves adding in intangibles. They have identified over 160 possible balance sheet adjustments, of which an obvious one is to write back goodwill that has been written off. Other adjustments may include adding back R&D costs, and appropriate parts of marketing expenditure as well. If this was not done the EVA would show a short-term reduction even though the investment may ultimately increase the MVA.

Despite its popularity, measures like EVA have numerous critics. First, among analysts there is a feeling that EVA relies too much on accounting profits and adjustments, whereas cash flows might be a more reliable indicator. Analysts are beginning to recognise that EVA should be complemented with measures that created stronger linkages between long-range plans, financial and stock price goals. Critics also argue that EVA is still too historic a measure and does not provide any sense of the linkages between a company's investments in intangibles and its financial performance. Furthermore, EVA has also been criticised for its inability to explain why firms can be successful one year and then a complete failure the next.

10.1.7 Human Resource Accounting

Human Resource Accounting (HRA) is a set of accounting methods that seek to settle and describe the management of a company's staff. It focuses on the employees' education, competence and remuneration. HRA promotes the description of investments in staff, thus enabling the design of human resource management systems to follow and evaluate the consequences of various HR management principles. There are four basic HRA models:

1. The anticipated financial value of the individual to the company. This value is dependent on two factors – the person's productivity, and his/her satisfaction with being in the company.



2. The financial value of groups, describing the connection between motivation and organisation on one hand, and financial results on the other. This model does not measure value, but concepts such as motivation and welfare. Under this model, measurements of employee satisfaction are represented with great importance.
3. Staff replacement costs describing the financial situation in connection with recruitment, re-education and redeployment of employees. This model focuses on replacement costs related to the expenses connected with staff acquisition, training and separation. Acquisition covers expenses for recruitment, advertising etc. Training covers education, on-the-job training etc. Separation covers lost production etc, when a person leaves a job. This model can be used to describe the development of costs in connection with replacements. In many firms, such replacement costs are included in accounts as an expression of staff value to the company.
4. Human resource accounting and balancing as complete accounts for the human resource area. This model concentrates on cost control, capitalisation and depreciation of the historic expenses for human resources. One effect of such a system is the visualisation of the impacts of human resource management – through revealing the consequences of inexpedient human resource management routines.

The basic aims of HRA are several. First, HRA improves the management of human resources from an organisational perspective – through increasing the transparency of human resource costs, investments and outcomes in traditional financial statements. Second, HRA attempts to improve the bases for investors company-valuation.

Unfortunately, for several reasons, the accuracy of HRA is often called into suspicion. This doubt stems from difficulties with several major human resource evaluation methods:

1. Input Measurement. Inputs (such as training) are not necessarily effective, so cost is not always a good proxy measure of output value. Trained personnel may also move to another employer through higher labour mobility – thus inhibiting the returns from corporate training investment.
2. Output Measurement. Virtually no firm actively measures the output benefits from training.
3. Replacement Values. Such values are rare, usually calculated to help product sales or the sale of the company, and are often highly debatable.

10.1.8 Intangible Asset Monitor

The Intangible Assets Monitor (IAM) was developed by Karl-Erik Sveiby as a management tool for organisations that wish to track and value their intangible assets. Sveiby was one of the first to develop a method for measuring intangible assets in the 1980's, in an attempt to demonstrate how the intangible assets account for the difference between a company's market value and book value. The "Konrad Group", to which Sveiby belonged, introduced the "family of three" concept of intellectual capital – the division of IC into:

1. External structures, or customer capital: This consists of relationships with customers and suppliers, brand names, trademarks and organisational reputation or "image".
2. Internal structures, or organisational capital: They include patents, processes, systems, concepts, and computer and administrative systems. Such structures are generally created by the employees and are thus generally 'owned' by the organisation, and adhered to. A key feature of such structures, is that they largely remain intact even if people leave the organisation.
3. Individual competence, or human capital: This is one's ability to act in various situations. It includes skills (including social skills), education, experience, and values.

This concept has become the basis for many IC measurement systems, including Sveiby's Intangible Asset Monitor.

The IAM is based on the fundamental premise of people being an organisation's only profit generators. According to Sveiby, people are the only true agents in business; all assets and structures, whether tangible physical products or intangible relations, are the result of human action and depend ultimately

on people for their continued existence. Therefore, according to the IAM, human actions are converted into both tangible and intangible knowledge “structures”. Such structures are either directed outwards (external structures) or inwards (internal structures). These structures are assets, because they affect the organisation’s revenue streams. According to the IAM, the profits generated from people’s actions are signs of that success, but not the originators of it.

The IAM is a stock/flow theory. It assumes that some of the organisation’s assets are intangible assets and the purpose of the IAM is to guide managers in how they utilise the intangible assets, identify the flows that are increasing and renewing them and guard against the risk of losing them.

10.1.9 The Skandia Navigator

The world’s first annual intellectual capital report was prepared by the Swedish financial services firm, Skandia. Skandia’s 1994 IC report, *Visualising Intellectual Capital*, represented a coherent first attempt to report the value of intellectual capital in an organisation. The Skandia “Navigator” is perhaps the best known business model developed to identify the intangible assets that are key to company performance. A feature of the Skandia Navigator is its definition of the intellectual capital as not just the skills and expertise of its workforce, but also the systems and processes that it has put in place to capture and exploit all the knowledge it can. The Navigator is based upon the same broad conceptual framework as the IAM.

The Navigator is designed to provide a balanced picture of the financial and intellectual capital. Consequently, it incorporates measures in categories similar to those of the balanced scorecard. The focus on financial results, capital, and monetary flows, is complemented by a description of intellectual capital and its development. The Navigator framework, as expected, has at its top end a series of measures relating to the **financial focus**. But it also has “below the line” measures of intellectual capital. These involve four areas and two dimensions. The four areas are:

1. **Customer Focus** – which quantifies how the organisation is to look to its customer.
2. **Process Focus** – which quantifies key aspects of the organisation’s process performance.
3. **Renewal and Development Focus** – which quantifies what is being done to renewal and develop the intellectual asset base.
4. **Human Focus** – the “virtual” binding force of customer, process, renewal and development and finance.

The Navigator incorporates a total of about 30 key indicators in the various areas, which are monitored internally on a yearly basis. The key indicators for customer focus include number of accounts, number of brokers and number of lost customers. The key indicators for process focus include number of accounts per employee and administrative costs per employee. The key indicators for human focus include personnel turnover, proportion of managers, proportion of female managers and training and/or education costs per employee. The key indicators for development/renewal focus include satisfied employee index, marketing expense/customer, share of training hours. Almost more importantly, the Navigator includes two dimensions. The measures in each focus area specified in terms of today’s performance and tomorrow’s performance - a clear view of articulating “targets” for the Navigator.

The Skandia Navigator is used to identify, the important areas of know-how in the organization which need to be developed and shared. Each of Skandia’s strategic business units have used the Navigator framework to develop their own specific measures of intellectual capital. By identifying important assets like its customer and innovation capital more systematically, Skandia says the Navigator has improved its management of these assets, benefited overall performance and increased its share value. Skandia says that its ability to identify and draw upon the relevant know-how easily has enabled it to set up foreign offices much more quickly than in the past. The Skandia Navigator model has been applied by the Swedish Government and also developed by other companies.



Criticisms of the Intangible Assets Monitor and Skandia Navigator: The Skandia Navigator and Intangible Assets Monitor are two popular methods for calculating and visualising the value of the intangible capital. Despite this widespread popularity both approaches are not without their critics. Both approaches share the presupposition that IC represents the difference between market and book value of a company. Some authors, however, have expressed concerns that two other important aspects of evaluation and value creation remain unresolved by the Navigator and IAM:

1. Market based IC value can not be calculated for the companies, which are not on the stock market so that these companies need an alternative way to determine their market based IC value.
2. There is no adequate system monitoring the efficiency of current business activities performed by the employees, indicating whether their potential is directed towards value creation or value destruction.

Another criticism of these two models revolves around how they define intellectual capital. Both models define IC as being divided into essentially three parts: human, customer and structural capital. The problem arising from this approach, critics argue, is how to measure IC performance defined as such. For the analysis of human, customer and structural capital many indicators have been developed, but most of them are subjective. Many critics argue that one common objective indicator is needed - as to facilitate comparisons between companies.

10.1.10 The Balanced Scorecard

The Balanced Scorecard (BSC), developed by Prof. Robert Kaplan of Harvard Business School, is an organisational framework for implementing and managing a strategy at all levels of an enterprise by linking objectives, initiatives and measures to an organisation's vision and strategy.

The BSC translates a business's vision and strategy into objectives and measures across four balanced perspectives – financial performance, customers, internal business processes, and organisational growth, learning and innovation. A BSC is a structured way of communicating measurements and targets, and is becoming a widespread way of how to manage, measure and communicate the financial, non-financial and intangible assets of a company. The BSC allows an organisation to monitor both its current performance (financial, customer satisfaction and business process) and its efforts to improve processes, motivate and educate employees and enhance its ability to learn and improve. The BSC is closely related to the concept of intellectual capital and comprises not only tools for the measurement of intangible resources but also a vision of continuous learning and change as to create value for the future. Since being introduced in 1992, the balanced scorecard concept has been implemented at the corporate, strategic business unit and even individual level in hundreds of public and private sector organisations worldwide.

Despite its widespread use, the balanced scorecard concept does suffer from several shortcomings. Firstly, the creation of a BSC can involve a considerable amount of time on the part of everyone whose performance is to be measured. The selection of appropriate measures for the four perspectives can be especially time consuming. This is due to that fact that in any company there are a large number of potential goals and targets, and even more ways to measure them. People are likely to disagree about which objectives should be measured and how to measure those objectives, and it will take time until consensus is achieved. Secondly, a well-designed scoreboard will be useless without the participation and commitment of staff in implementing and using it. Thirdly, companies using BSC often come up with too many measures. For example, a division of one company came up with 500 important measures for its scorecard on the first pass. This is a problem because it is very difficult to accurately track a large number of measures. Fourthly, the BSC does not have an explicit focus on intellectual capital - unlike some later IC measurement models. Finally, the fact that a BSC gathers all key indicators of business performance (and their linkages) into one management tool may deprive a company's executives of the various information flows required to remain competitive in today's challenging business environment.

10.1.11 Performance Prism

The performance prism is a second-generation performance measurement and management approach developed by Cranfield School of Management in collaboration with consultancy Accenture. It recognises the importance of companies taking a holistic approach to stakeholder management in today's culture of involvement. Its advantages are that it addresses all stakeholders—not only investors but customers and intermediaries, employees, suppliers, regulators and communities. It does this in two ways: by considering the requirements of those stakeholders and, uniquely, what the organisation wants and needs from its stakeholders. In this way, the reciprocal relationship and the exchange process with each stakeholder is examined. The performance prism addresses the strategies, processes and, importantly, the capabilities that are needed to satisfy these two critical sets of wants and needs.

The flexibility of the performance prism allows it to be applied to any organisation or organizational component. The focus on intangible performance drivers makes the framework useful for companies attempting to measure their intellectual capital. Also, it creates a visual map of how the different areas of performance interrelate. It explicitly acknowledges that all five facets of the performance prism should be covered in a so-called success map. This way, it avoids the often-criticised narrowness of the balanced scorecard.

Case Study:-

Intellectual Capital at Skandia

Maylun Bucklew

Ernst & Young Center for Information Technology and Strategy

Leif Edvinsson, Skandia AFS

The Hidden Value of Companies

The “dawning of new insight” has struck executives after they have spent a decade running companies based on bottomline. Executives are rethinking quality management, core competencies, and the value of employees, their knowledge, and experience on the job. This profile looks at what Skandia, an international, knowledge intensive company, has done since 1991 to highlight the hidden value of a company. Skandia uses, in addition to the standard book value of the official balance sheet, a new systematised approach to make tangible these hidden values. Factors such as competence base and well managed performance procedures contribute to the total value of a company. Competence base is defined as employees' professional insights, applied experience, and organisational learning. Performance procedures are defined as how customers are handled, and how the operations, processes, business development and logistics are conducted. The more knowledge intensive a company is, the more important are these soft dimensions.

Skandia and its Growth

Skandia, a multinational insurance and financial services company, is based in Stockholm, Sweden. In 1855, Skandia was founded as an international insurance company. In 1900, Skandia was the first non-British reinsurer to have a New York office. Today, five divisions comprise Skandia: Skandia Norden, Direct Insurance Nonlife, Assurance and Financial Services, Skandia Investment Management, and Reinsurance. Employing approximately 11,000 people worldwide, Skandia has total assets of \$35 billion.

Assurance and Financial Services, AFS is the division with which this profile is concerned. AFS addresses individual clients' financial well being through programs of long-term savings solutions. The most rapidly growing division within Skandia, AFS has grown swiftly more than 30% annually during the last six years. Spanning 10 countries with 1,200 employees and actively engaging more than 12,000 brokers, AFS takes care of almost 500,000 customers. True of most growth companies, Skandia is interested in attracting



investors, and in having current as well as prospective investors understand and recognize the full value of the company.

While most companies appoint directors of finance and operations and focus company valuation on finance and operations, they lack a function to deal with hidden values. To address this, AFS created a position that focuses on developing and applying a systematic approach to hidden values. It has a director of intellectual capital. The mission of this function is to identify and improve the visibility of intangible and non material items, to capture and package these items for transfer to users, to cultivate and develop these items through training and knowledge networking, and to capitalize and economize on these items through rapid recycling of knowledge and increased commercialization.

The Director of Intellectual Capital at Skandia AFS, Leif Edvinsson, reports to the Chief Operating Officer of the AFS division and is a member of the COO team. Charged with enhancing and systematically developing the intellectual capital of the division, Leif Edvinsson works through project teams. He faces the challenge of leveraging work related to intellectual capital through other functions such as human resources, information technology, and business development.

With this approach, AFS is trying to build more than a "learning organization." AFS strives for an "intelligent organization." This is a dynamic learning and teaching organization that continuously renews its performance. Critical for this development is a federated global organization with competencies and alliances built on intellectual capital, information technology, and leadership around core cultural values.

10.1.12 Defining Intellectual Capital

Traditionally, companies have been assigned book values which appear in Dun and Bradstreet and Moody's. These values are assumed to reflect the worth of the respective company, based on the financial value and the confidence in the company. Such book values are frequently referenced in traditional reporting. However, some companies can be undervalued, because they possess considerable hidden values that are not accounted for in the book value. According to Leif Edvinsson, these hidden values differentiate companies and give them a competitive edge. Therefore, grasping and systematically managing the resources that contribute to intellectual capital is essential. For companies in the knowledge area, development of new measurement approaches and indicators, in addition to traditional financial indicators, has become critical.

The AFS definition of intellectual capital is the knowledge, skill, and technologies used to create a competitive edge for Skandia. Intellectual capital encompasses the access to and use of all employees' knowledge and applied experience, and the organizational structure, technology, and professional systems within a firm. These elements translate into competitive advantage and monetary gains.

Intellectual capital is the soft and intangible part of the value of the company in addition to the financial balance sheet. It is sometimes referred to as goodwill, technologies, competence, etc. A more managerial definition of **Intellectual capital is the sum of structural capital and human capital**. Human capital refers to the knowledge, skill, and experience of the employees. Structural capital refers to the extension and manifestation of human capital. It includes tangibles such as the information technology systems, brand and company images, customer databases, organizational concepts and manuals.

10.1.13 Describing Intellectual Capital

Leif Edvinsson uses the metaphor of a tree to describe hidden value. "Hidden value," he says, "is the root system for the tree." In order for it to flourish and bear fruit, the tree must have healthy, strong roots to provide the nutrients and nourishment necessary for its growth and production of fruit. The quality of the fruit, which you can see, is dependent on the roots, which you cannot see. The same goes for financial capital. To get it to flourish, you must cultivate the roots. In effect, this search for new indicators in the knowledge area turns traditional bottom line accounting upside down. Since Leif has been director, recognition of the importance of hidden values and their systematic management has increased within Skandia and AFS.

To demonstrate what intellectual capital is, take the following example. A software company has a value 15 times greater than the published book value. This greater value goes beyond the finite software products delivered. The accounting gap is due to unaccounted factors such as the millions of customers, intensive research and development, a strong market position, company brand name, etc. Very detailed financial accounting exists for the sales of software products. Rare, however, is any systematic accounting for the hidden value of customer bases, knowledge levels of people, replacement costs of information technology systems, and the return on investment for training and development. Each employee comes equipped with his/her unique set of experiences, education, background, skills, and outside interests that amplify intelligence and combine knowledge. This set is called a competence base. What does not appear in the book value is the inherent value of the existing people, their bright ideas and competence bases, the systems, the organizational infrastructure, R&D portfolios, and customer base.

As another example, consider a film processing company. Once a chemically based operation, the company has had to transform its operations to use computer technology and electronic processing to stay competitive. This has caused the company to shift its competence base from chemistry to electronics. Such a shift is costly and not positively reflected in traditional accounting procedures. In fact, the valuation of the company may even decrease with current accounting practices. The costs of replacing staff, developing or acquiring new talent to accommodate and support the shift, maintaining that talent, and transferring the knowledge are significant. However, in terms of the company's future in image and film processing industry, such costs are necessary and positive to the well being of the company.

What led AFS to the concept of intellectual capital is the concern with speed of learning, recycling of applied experience, and international transfer of skill. Ironically, intellectual capital is invaluable to a company, and yet is assigned no value. Intellectual capital is the essential root system of companies but is often invisible in the accounting systems. Such systems show historical statistics. Intellectual capital indicates the future. Traditional systems seldom account for and measure the worth of concepts, competence, and innovation. AFS, therefore, is consciously making sure that the transfer of skills, learning, and experience takes place through the procedures it puts in place. However, managing intellectual capital is cross-functional. It is a combination of human resources development, business development and strategy, and information technology development. So, to reveal hidden value, AFS defines what performance items must be measured and how those items can be made tangible. Through this process, intellectual capital is transformed into added value.

10.1.14 Promoting Intellectual Capital

How does Mr. Edvinsson spend time as the Director of Intellectual Capital? Initially, much time was spent developing a language, or taxonomy, to increase awareness and share insights on the four functions of intellectual capital development. These functions are: to identify, capture, cultivate, and capitalize on intellectual capital. As part of his responsibility, Mr. Edvinsson meets with colleagues to do "missioning". A portion of his time is spent implementing information technology with the systems group for knowledge networking. This means communication technology is used to knit together employees and give them access to knowledge inside and outside the company. To refine company culture, cultivate core values, and channel leadership, he cooperates with human resources. With people in accounting he works to develop ways to measure hidden value and create intellectual capital ratios. And to initiate and implement projects, programs, and joint activities that will add to the business of AFS, he works with operating units. Another important role for the Director is to make people within and outside of Skandia aware of the hidden value of AFS, and engender cooperation for joint business growth beyond the published book value. A primary focus is to identify and measure, or "map," critical intellectual capital items within each operating unit of AFS. Through this, the importance of information technology (IT) in developing intellectual capital has become evident.



10.1.15 Using IT to Fertilize Intellectual Capital

A critical part to growing intellectual capital is the technological and organizational structure of the company. Hierarchically structured organizations tend to kill intellectual capital growth unless they are changed to more interactive structures which are process oriented and knowledge transfer oriented. Information technology fosters such knowledge sharing among employees and promotes efficient processes, in the case of AFS. Information technology is augmenting both the AFS operations and business.

Because IT is strategically important for the growth of AFS, it is essential to note how IT intensive AFS is. Today AFS spends twice as much, and some AFS units four times as much, as the industry average. This has led to higher administrative processing efficiency, which is measured and reported. Productivity gains there have grown about 54% over the last two years, combined with a gross income growth of over 200%.

In its growth, AFS does not acquire companies but starts them up from scratch. To minimize the startup costs of new operations and promote productivity throughout the company, AFS has developed a special prototyping system to set up AFS companies. This IT based process supports employees in opening and operating an office. Prototyping involves installing a composite of standard modules into an office. Used for a new office, these modules contain procedures and routines needed in the business. Among other things, the modules will cover how to design contracts, how to set up accounting procedures, and how to administer the product. These modules shorten time for local product customizing. Prototyping has reduced startup time by as much as 50% for some operations.

Accounting, invoicing, and financial reporting are standardized through the same body of software that supports all operations. Existing companies as well as startups use the software. Some adaptation is necessary for each location, because the computer technology used varies greatly in the already established companies. As a practical matter, Skandia has chosen to retain the existing hardware (mainframes, AS400's, IBM PC's and compatibles, and Macintoshes) and make the software work on a variety of platforms. New companies install IBM PC's and compatibles. Because the software forces standardization, employees can transfer their skills in using the software from one location to another. The AFS information technology system will integrate business units to increase the range of financial services for the client and produce a package of financial services at a lower cost than competitors.

Another way that AFS uses technology to support intellectual capital is found in the computer based training for employees. Skandia Life, an AFS daughter company, maintains one training center in England, which has specialized in self instruction training systems. Employees can choose among some 30 different computer based packages from the center and learn about product information, sales techniques, customer development, and other topics.

To facilitate knowledge sharing and transnational communication among employees, AFS is building an electronic knowledge networking and transfer system for the competence base. Plans are to make available customer and sales information and to have applications which do the processing for services that AFS provides. Employees will be able to access databases internal and external to AFS. Some of the internal databases contain overheads and other audiovisual materials, which are used in presentations. These are examples of knowledge tools. Others contain fund performance information. An IT based competence network will connect AFS worldwide and provide access to the knowledge tools and systems to transnational competencies.

10.1.16 Measuring Intellectual Capital

Skandia has started to describe intellectual capital through measurement of new indicators. Periodically, a balance scorecard for measuring performance on financial capital and various intellectual capital dimensions is presented to Skandia management. To define what to measure, each of the operating units of Skandia (located in the U.S., England, Columbia, Spain, Germany, and Switzerland) identified the five most relevant and critical intellectual capital items for itself, using a proprietary list of over 30 intellectual capital items. Identification was done through dialogue with local management. From these

sets of the five most relevant and critical items, a set of three major intellectual capital dimensions (or categories) was derived. These are customer capital ratios, human capital ratios, and structural capital ratios. Within each of these dimensions, a number of intellectual capital ratios can be defined. Each intellectual capital item was discussed with management and accounting to establish a baseline ratio.

As an example, suppose the number of existing customer accounts is one ratio for which a baseline is established. That ratio can be used to measure how well the business is doing in terms of that intellectual capital item. We would score the number of new customer accounts or the growth per account. This number would be compared with the strategic goal, and then, we would look at the effect on the business by examining the profit per customer. By computing the ratio periodically, a performance controller or manager can plot the trend of the ratio and determine what intellectual capital factors should be focused on and changed in the business to improve the performance of the company.

In the interest of intellectual capital AFS invests in training and development of its employees, **places value on their** applied experience and competence, and seek cross-fertilization within the organization. Such cross-fertilization adds to another critical ratio, innovation and development. This is one of the most important ratios to follow for the future value of a company.

This procedure produces more balanced reporting through the addition of intellectual capital items to traditional financial ones. Such reporting leads to more systematic management of hidden values. To sum up, this whole intellectual capital and hidden value pursuit is very much a pedagogical one. The hidden value of the company, which is not shown in traditional accounting is articulated and made tangible to provide deeper insight into future growth. The mission is to reveal hidden values which are strategic to the company's future, in order to fertilize continued growth of AFS. Transnational and global development of AFS as an entity is heavily based on further development of concepts, systems, competencies, alliances, customer bases, and organizational issues, and on packaging and dissemination of nonmaterial values throughout AFS. The speed of development relies on linking human capital to structural capital. This calls for systematic management of human and structural capital.

Intellectual capital managed this way also cultivates investors' relationships. The first time information about intellectual capital values was presented, verbally, was in the 1992 Skandia annual report. Now, such information supplements are provided quarterly as a number of balanced performance indicators for AFS. These supplements also serve to deepen the perspectives of analysts and investors.

Costs and Gains from Intellectual Capital

The intellectual capital effort is expected to save a significant amount of money over time. By using the prototyping process, AFS has reduced startup time for a new office by one third or more. For a 30% growth rate in new businesses, this amounts to sizable savings. In the area of competence development, the computer based training and network are expected to reduce traveling and expenditures for training. The savings each year are projected to be several times the cost of developing the systems. Other major gains are increased speed of strategic learning, systematic focusing of leadership, and increases in valuation of the company over the **book value**.

The Reach on to Intellectual Capital

Externally and internally, reactions to intellectual capital have been very good. Senior **managers** have been very supportive. They agree with the concept, appreciate the new insights, and promote key activities related to intellectual capital. Middle managers have also been supportive. They have experienced a growing need for a formal approach to intellectual capital issues in recent years. Frontline staff and the union agree with the concept and actively participate.

Many people still mistakenly view intellectual capital as a resurrection **of human resource** accounting of companies. Twenty years ago, European companies tried to establish connected audit systems to monitor training and people's attitudes, behavior, and performance. Eventually, the effort was



abandoned. In contrast, the intellectual capital approach covers both human and structural capital, joining them together for more rapid growth.

10.1.17 The Importance of Intellectual Capital

Systematic treatment of intellectual capital at AFS highlights how important intellectual capital is. Company value depends on and includes the total worth of individuals plus company structure. That worth encompasses the knowledge, skills, and inhouse experience of each person, as well as the shared knowledge, skills and experience of all employees combined, and the organizational procedures followed in the business. That worth is dynamic and difficult to measure. AFS, however, has started to articulate and make tangible, ratios for systematic management of these factors. For AFS, intellectual capital increases company value and makes business operations more efficient. AFS is showing investors that the value of a company is dynamic and is more than just hard financial ratios. In addition, the sharing of competencies requires management of information. Information management and intellectual capital are, therefore, related. Intellectual capital at AFS involves human resources, information technology, business strategy, and the participation of employees, in order to rapidly transfer experience in the company. It is energizing and charging both the national and transnational operations at AFS.

To get people to share competencies, a company must facilitate exchange of knowledge among employees. The company must inform people of intelligence that is available, make people and intelligence accessible, and train everyone to use the information and any supporting technology.

AFS has developed vehicles to do this, using technology when appropriate. The technology and its degree of sophistication are less important than the organizational intelligence and competence of the employees. Leadership and organizational design are crucial to this process.

Measuring and valuing intellectual capital, as AFS does, promotes strategic organizational learning and teaching, and a balanced management focus on hidden values which encourages organizational survival. Intellectual capital gives sharing of knowledge legitimacy, establishes the worth of competence in a company, and places value on combined and individual skills and experience of coworkers. Intellectual capital is invaluable and intangible. However, it manifests itself in business through productive, consistent, and efficient operations, and management that adds value. Leadership must focus on linking human capital to structural capital and producing sustained value. The ultimate target is to transform IQ into ECU (European Currency Units). In other words, the gray cells and intelligence are translated into hard currency.

10.2 VALUATION OF FIXED ASSETS

10.2.1 Importance of Asset Valuation

Every asset, financial as well as real, has a value. The key to successfully investing in and managing these assets lies in understanding not only what the value is but also the sources of the value. Any asset can be valued, but some assets are easier to value than others and the details of valuation will vary from case to case. Thus, the valuation of a share of a real estate property will require different information and follow a different format than the valuation of a publicly traded stock. What is surprising; however, is not the difference in valuation techniques across assets, but the degree of similarity in basic principles. There is undeniably uncertainty associated with valuation. Often that Uncertainty comes from the asset being valued, though the valuation model may add to that uncertainty.

Fixed asset is an asset held with the intention of being used for the purpose of producing or providing goods or services and is not held for sale in the normal course of business.

Fair market value is the price that would be agreed to in an open and unrestricted market between knowledgeable and willing parties dealing at arm's length who are fully informed and are not under any compulsion to transact.

Gross book value of a fixed asset is its historical cost or other amount substituted for historical cost in the books of account or financial statements. When this amount is shown net of accumulated depreciation, it is termed as net book value.

10.2.2 Identification of Fixed Assets

The definition in the previous paragraph gives criteria for determining whether items are to be classified as fixed assets. Judgement is required in applying the criteria to specific circumstances or specific types of enterprises. It may be appropriate to aggregate individually insignificant items, and to apply the criteria to the aggregate value. An enterprise may decide to expense an item which could otherwise have been included as fixed asset, because the amount of the expenditure is not material.

Stand-by equipment and servicing equipment are normally capitalised. Machinery spares are usually charged to the profit and loss statement as and when consumed. However, if such spares can be used only in connection with an item of fixed asset and their use is expected to be irregular, it may be appropriate to allocate the total cost on a systematic basis over a period not exceeding the useful life of the principal item.

In certain circumstances, the accounting for an item of fixed asset may be improved if the total expenditure thereon is allocated to its component parts, provided they are in practice separable, and estimates are made of the useful lives of these components. For example, rather than treat an aircraft and its engines as one unit, it may be better to treat the engines as a separate unit if it is likely that their useful life is shorter than that of the aircraft as a whole.

10.2.3 Related Costs in Relation to a Fixed Asset Valuation

The cost of an item of fixed asset comprises its purchase price, including import duties and other non-refundable taxes or levies and any directly attributable cost of bringing the asset to its working condition for its intended use; any trade discounts and rebates are deducted in arriving at the purchase price. Examples of directly attributable costs are:

- site preparation;
- initial delivery and handling costs;
- installation cost, such as special foundations for plant; and
- professional fees, e.g., fees of architects and engineer



Administration and other general overhead expenses are usually excluded from the cost of fixed assets because they do not relate to a specific fixed asset. However, in some circumstances, such expenses as are specifically attributable to construction of a project or to the acquisition of a fixed asset or bringing it to its working condition, may be included as part of the cost of the construction project or as a part of the cost of the fixed asset.

The expenditure incurred on start-up and commissioning of the project, including the expenditure incurred on test runs and experimental production, is usually capitalised as an indirect element of the construction cost. However, the expenditure incurred after the plant has begun commercial production, i.e., production intended for sale or captive consumption, is not capitalized and is treated as revenue expenditure even though the contract may stipulate that the plant will not be finally taken over until after the satisfactory completion

If the interval between the date a project is ready to commence commercial production and the date at which commercial production actually begins is prolonged, all expenses incurred during this period are charged to the profit and loss statement. However, the expenditure incurred during this period is also sometimes treated as deferred revenue expenditure to be amortised over a period not exceeding 3 to 5 years after the commencement

10.2.4 Value of Self-Constructed Fixed Assets

In arriving at the gross book value of self-constructed fixed assets, the same principles apply as those described previously. Included in the gross book value are a cost of construction that relate directly to the specific asset and costs that are attributable to the construction activity in general and can be allocated to the specific asset. Any internal profits are eliminated in arriving at such costs.

10.2.5 Value a fixed asset when it is acquired in an exchange

When a fixed asset is acquired in exchange for another asset, its cost is usually determined by reference to the fair market value of the consideration given. It may be appropriate to consider also the fair market value of the asset acquired if this is more clearly evident.

When a fixed asset is acquired in exchange for shares or other securities in the enterprise, it is usually recorded at its fair market value, or the fair market value of the securities issued, whichever is more.

10.2.6 Improvements and repairs in relation to valuation of a fixed asset

Frequently, it is difficult to determine whether subsequent expenditure related to fixed asset represents improvements that ought to be added to the gross book value or repairs that ought to be charged to the profit and loss statement. Only expenditure that increases the future benefits from the existing asset beyond its previously assessed standard of performance is included in the gross book value, e.g., an increase in productivity.

The cost of an addition or extension to an existing asset which is of a capital nature and which becomes an integral part of the existing asset is usually added to its gross book value. Any addition or extension, which has a separate identity and is capable of being used after the existing asset is disposed of, is accounted for separately.

10.2.7 Value a fixed assets when financial statements are not prepared on a historical cost basis

Sometimes financial statements that are otherwise prepared on a historical cost basis include part or all of fixed assets at a valuation in substitution for historical costs and depreciation is calculated accordingly. Such financial statements are to be distinguished from financial statements prepared on a basis intended to reflect comprehensively the effects of a commonly accepted and preferred method of restating fixed assets. This is usually done by appraisal, normally undertaken by competent valuer. Other methods sometimes used are indexation and reference to current prices which when applied is cross checked periodically by appraisal method.

The revalued amounts of fixed assets are presented in financial statements either by restating both the gross book value and accumulated depreciation so as to give a net book value equal to the net

revalued amount or by restating the net book value by adding therein the net increase on account of revaluation. Different bases of valuation are sometimes used in the same financial statements to determine the book value of the separate items within each of the categories of fixed assets or for the different categories of fixed assets. In such cases, it is necessary to disclose the gross book value included on each basis.

Selective revaluation of assets can lead to unrepresentative amounts being reported in financial statements. Accordingly, when revaluations do not cover all the assets of a given class, it is appropriate that the selection of assets to be revalued be made on a systematic basis. For example, an enterprise may revalue a whole class of assets within a unit.

It is not appropriate for the revaluation of a class of assets to result in the net book value of that class being greater than the recoverable amount of the assets of that class.

An increase in net book value arising on revaluation of fixed assets is normally credited directly to owner's interests under the heading of revaluation reserves and is regarded as not available for distribution. A decrease in net book value arising on revaluation of fixed assets is charged to profit and loss statement except that, to the extent that such a decrease is considered to be related to a previous increase on revaluation that is included in revaluation reserve, it is sometimes charged against that earlier increase. It sometimes happens that an increase to be recorded is a reversal of a previous decrease arising on revaluation which has been charged to profit and loss statement in which case the increase is credited to profit and loss statement to the extent that it offsets the previously recorded decrease.

10.2.8 Value fixed asset which is held for disposal

An item of fixed asset is eliminated from the financial statements on disposal.

Items of fixed assets that have been retired from active use and are held for disposal are stated at the lower of their net book value and net realisable value and are shown separately in the financial statements. Any expected loss is recognised immediately in the profit and loss statement.

In historical cost financial statements, gains or losses arising on disposal are generally recognised in the profit and loss statement.

On disposal of a previously revalued item of fixed asset, the difference between net disposal proceeds and the net book value is normally charged or credited to the profit and loss statement except that, to the extent such a loss is related to an increase which was previously recorded as a credit to revaluation reserve and which has not been subsequently reversed or utilised, it is charged directly to that account. The amount standing in revaluation reserve following the retirement or disposal of an asset which relates to that asset may be transferred to general reserve.

10.2.9 Value fixed assets when it is acquired on hire purchase system

In the case of fixed assets acquired on hire purchase terms, although legal ownership does not vest in the enterprise, such assets are recorded at their cash value, which, if not readily available, is calculated by assuming an appropriate rate of interest. They are shown in the balance sheet with an appropriate narration to indicate that the enterprise does not have full ownership thereof.

Where an enterprise owns fixed assets jointly with others (otherwise than as a partner in a firm), the extent of its share in such assets, and the proportion in the original cost, accumulated depreciation and written down value are stated in the balance sheet. Alternatively, the *pro rata* cost of such jointly owned assets is grouped together with similar fully owned assets. Details of such jointly owned assets are indicated separately in the fixed assets register.

Where several assets are purchased for a consolidated price, the consideration is apportioned to the various assets on a fair basis as determined by competent value[₹]



Illustration 1

Dr. M. Chatterjee has just completed her post qualification internship in a reputed medical hospital. She wants to buy the running practice of Dr. D Ganguly, a renowned child specialist located at Lansdowne in Kolkata. The revenues and the costs of this practice in 2009-10 were as under:

	₹
Revenue	10,00,000
Employee expenses	3,00,000
Annual rent for facilities	1,00,000
Rental for medical equipments	80,000
Medical insurance	90,000
The tax rate on income including local taxes and subscription	35%
The cost of capital for this practice	10%

The above and all the associated expenses are estimated to grow at 4% p.a. for the next 10 years if Dr. Ganguly continues to run practice. Dr. Chatterjee anticipates that upon the changeover there will be drop in revenue by 25% in the first year of her practice. The growth rate in revenue and expenses will remain at 4% p.a. thereafter, i.e for year 2 onwards. Dr. M Chatterjee wants your advice for the price she should offer to Dr. Ganguly to purchase the latter's practice at Lansdowne, Kolkata.

Solution:

We make two evaluations of the practice-

- 1) run by Dr. D Ganguly as if he is continuing as before, and
- 2) run by Dr. M Chatterjee assuming that she has bought the practice from Dr. D Ganguly.

$$\begin{aligned}
 1) \text{ Cash flow in year 1} &= (\text{Revenue} - \text{Operating Expenses}) (1 - \text{Tax rate}) \\
 &= [10,00,000(1.04) - (3,00,000 + 1,00,000 + 80,000 + 90,000) (1.04)] \\
 &\quad (1 - 0.35). \\
 &= [10,40,000 - 5,92,800] * (0.65) \\
 &= ₹ 2,90,680.
 \end{aligned}$$

With the growth rate of 4% p.a and using the cost of capital as discount rate and assuming that the practice will have no terminal value after 10 years, the value of practice:

$$\begin{aligned}
 \text{Value of practice} &= CF [1 - (1+g)^n / (1+r)^n] / (r-g) \\
 &= ₹ 2,90,680 [1 - \{(1.04)^{10} / (1.10)^{10}\}] / (0.10 - 0.04) \\
 &= ₹ 2,90,680 [\{(1.10)^{10} - (1.04)^{10}\} / (1.10)^{10}] / (0.06) \\
 &= ₹ 2,90,680 [(2.5937 - 1.4802) / 2.5937] / (0.06) \\
 &= ₹ 2,90,680 [1.1135 / 2.5937] / (0.06) \\
 &= ₹ 2,90,680 (0.4293 / 0.06) \\
 &= ₹ 2,90,680 * 7.155 \\
 &= ₹ 2,07,9815.4
 \end{aligned}$$

2) Similarly cash flow in year 1 under Dr. Chatterjee,

$$= ₹[750000 \times (1.04) - 592800] \times 0.65$$

$$= ₹187200 \times 0.65$$

$$= ₹121680$$

Value of practice of Dr. Chatterjee = ₹121680 × 7.155

$$= ₹870620.4$$

The difference of ₹1209195 is attributable as the value of Dr. D. Ganguly the key person.

Dr. Chatterjee should offer ₹ 870620 to Dr. Ganguly for practice. Should Dr. Ganguly agree to stay with practice for the transition period after transfer of business, a higher price may be paid.

Dr. Chatterjee should ensure by the agreement of transfer of practice that Dr. Ganguly cannot start a competing practice and extract business from Dr. Chatterjee for the foreseeable future.

Illustration 2

ABC Ltd. had started negotiation with a supplier to purchase a heavy machinery costing ₹ 20 crores on 1st January 2008. The machinery was delivered at buyer's cost at the factory of ABC Ltd. on 1st May 2008. ABC Ltd. Secured term loan from a commercial bank to finance 75% of the cost of the asset at an interest of 16% p.a. the loan was disbursed on delivery of the machinery at buyer's factory.

ABC Ltd. Incurred the following expenses with respect to the machinery:

Transportation charge	₹ 2, 50,000
Handling and installation charges	₹ 1,65,000
Trial and expenses	₹ 80,000

The machinery was certified as ready for commercial use on 1st August, 2008.

But on 1st August, 2008 the machinery was not used for commercial production due to decision of the top management to cut down production temporarily. The machinery was actually put to use only from 1st January, 2009. During the period (Aug-Dec, 2008) ABC Ltd. incurred additional trial run expenses of ₹ 140000.

Compute the cost of heavy machinery for ABC Ltd.

Solution:

Computation of cost	₹
Purchase price	20,00,00,000
Transportation charges	2,50,000
Handling and installation charges	1,65,000
Trial run expenses	80,000
Interest cost @ 16% p.a. (from 1-5-08 to 31-7-08)	60,49,315*
	20,65,44,315

$$* (20,00,00,000) \times 0.75 \times 0.16 \times (92/356)$$

Expenditure incurred during the interval between the date the asset is ready for use and the date of actual use:



Trial run expense	1,40,000
Interest cost $[20,00,00,000 \times 0.75 \times 0.16 \times (153/365)]$ (1-8-08 to 31-12-08) = 153 days	100,60,274
	1,02,00,274

The expenditure incurred during the interval period cannot be capitalized. It should normally be charged to profit and loss account in full. However, considering the prolonged interval period (5 months), the expenditure of ₹ 102,00,274 incurred can be considered as deferred revenue expenditure and amortized over a period of 5 years.

Illustration 3

Surya Ltd. Exchanged one of its old machinery to acquire a new one from its supplier. The book value of the old machinery exchanged was ₹ 20,65,000. The supplier agreed to consider 80% of the book value as the worth of the old asset and asked for an additional payment of ₹ 15,40,000 for the new machinery.

What will be the cost of new machinery? Will the cost change if the market value of the asset acquired is ₹ 35,00,000. Show the accounting treatment in both the cases.

Solution:

Situation 1:

Cost of new machinery

Agreed value of old asset (80% of the ₹ 20,65,000)	16,52,000
Add: Additional payment in cash	15,40,000
	31,92,000

Accounting treatment:

Machinery (new) A/C	Dr.	1,92,000	
Profit & Loss A/C	Dr.	4,13,000*	
To Machinery (old) A/C			20,64,000
To Cash A/C			15,40,000

* loss on exchange of asset i.e. $20,65,000 \times 20\%$

Situation 2:

Cost of new machinery (fair value of the asset acquired) 35,00,000

Accounting treatment

Machinery (new) A/C	Dr.	35,00,000	
Profit & Loss A/C	Dr.	1,05,000*	
To Machinery (old) A/C			20,65,000
To Cash A/C			15,40,000

* Loss on exchange of asset

Illustration 4

The original cost of the machine shown in the books of Dutta Ltd. as on 1st Jan, 2007 ₹ 200 lakhs which they revalued upward by 10% in the year 2007, it appears that a 5% downward revaluation should be made to arrive at the true value of the asset in the changed economic and industry condition. They charged 15% depreciation on the W.D.V of the asset.

Show the value of the asset at which it should appear in the balance sheet dated 31st December 2009.

Solution:

	₹ In lakhs
Determination of cost ₹ In lakhs	
W.D.V as on 1-1-2007	200.00
Add: revaluation profit	<u>20.00</u>
	220.00
Less: depreciation for 2007	<u>33.00</u>
W.DV on 1-1-2008	187.00
Less: Depreciation for 2008	<u>28.05</u>
W.DV on 1-1-2009	158.95
Less revaluation loss	<u>7.95</u>
	151.00
Less: depreciation for 2009	<u>22.65</u>
W.DV on 31-12-2009	<u>128.35</u>

So the value of the machine as on 31-12-2009 is ₹ 128.35 lakhs.

Illustration 5

S Ltd. expects that a plant has become useless which is appearing in the books at ₹ 20 lacs gross value. The company charges SLM depreciation on a period of 10 years estimated life and estimated scrap value of 3%. At the end of 7th year the plant has been assessed as useless. Its estimated net realizable value is ₹ 6,20,000. Determine the loss/gain on retirement of the fixed assets.

Solution:

Cost of the plant	₹ 20,00,000
Estimated realizable value	₹ 60,000
Depreciable amount	₹ 19,40,000
Depreciation per year	₹ 1,94,000

Written down value at the end of 7th Year = $20,00,000 - (1,94,000 \times 7) = ₹ 6,42,000$

As per Para 14.2 of AS-10, items of fixed assets that have been retired from active use and are held for disposal are stated at the lower of their net book value and net realizable value and are shown separately in the financial statements. Any expected loss is recognized immediately in the profit and loss statement. Accordingly, the loss of ₹ 22,000 ($6,42,000 - 6,20,000$) to be shown in the profit and loss account and asset of ₹ 6,20,000 to be shown in the balance sheet separately.

Illustration 6

A company has purchased plant and machinery in the year 2009-10 for ₹ 90 lacs. A balance of ₹ 10 lakhs is still payable to the suppliers for the same. The supplier waived off the balance amount during the financial year 2008-2009. The company treated it as income and credited to profit and loss account during 2011-2012.

Whether accounting treatment of the company is correct. If not, state with reasons.

Solution:

As per Para 9.1 of AS-10 the cost of fixed assets may undergo changes subsequent to its acquisition or construction on account of exchange fluctuation, price adjustments, changes in duties or similar factors. Considering Para 9.1 the treatment done by the company is not correct.



₹ 10 lacs should be deducted from the cost of fixed assets.

Illustration 7

A Ltd. purchased fixed assets costing ₹ 3,000 lacs on 1.1.11 and the same was fully financed by foreign currency loan (U.S. Dollars) payable in three annual equal installments. Exchange rates were 1 Dollar = ₹ 40.00 and ₹ 42.50 as on 1.1.11 and 31.12.11 respectively. First installment was paid on 31.12.11. The entire difference in foreign exchange has been capitalized.

You are required to state, how these transactions would be accounted for.

Solution :

As per para 13 of AS 11 (Revised 2003) 'The Effects of Changes in Foreign Exchange Rates', exchange differences arising on the settlement of monetary items or on reporting an enterprise's monetary items at rates different from those at which they were initially recorded during the period, or reported in previous financial statements, should be recognized as income or expenses in the period in which they arise. Thus exchange differences arising on repayment of liabilities incurred for the purpose of acquiring fixed assets are recognized as income or expense.

Calculation of Exchange Difference:

Foreign Currency Loan = ₹ 3,000 lakhs / ₹ 40 = 75 lakhs US Dollars

Exchange difference = 75 lacs US Dollars x (42.50 – 40.00)

= ₹ 187.50 lacs

(including exchange loss on payment of first installment)

Therefore, entire loss due to exchange differences amounting ₹ 187.50 lacs should be charged to profit and loss account for the year.

Illustration 8

Prepare a schedule as on 31.3.2011 in respect of the below three categories of assets and support the schedule with relevant accounting standards.

- (i) W. Ltd. imported fixed assets worth ₹ 1,000 lacs on 1.4.2010, when the exchange rate was ₹ 40 per US \$. The assets were fully financed by foreign currency loan repayable in five equal annual installments. As on 31.3.2011, the first installment was paid at the Exchange Rate of ₹ 42.
- (ii) The company's fixed assets stood at ₹ 3,000 lacs as on 1.4.2010. It provides depreciation at 10% per annum under the WDV method. However it noticed that about ₹ 500 lacs worth of non-imported assets acquired on 1.4.2010 will be obsolete in 2 years time. It wants to write off these assets over 2 years.
- (iii) A few days after the beginning of the year, the company acquired assets for ₹ 500 lacs on which it received a government grant of 10%.

Solution :

In the books of W Ltd.
Schedule of Fixed Assets as on 31st March, 2011

(Amount in ₹ lacs)

Fixed Assets	Gross Block (at cost)	Depreciation	Net Block	As at 31.3.2011	Up to 31.3.2010	For the year	On Deductions	Total upto 31.3.2011	As at 31.3.2011	As at 31.3.2010
	As at 1.4.2010	Additions	Deductions	As at 31.3.2011	Up to 31.3.2010	For the year	On Deductions	Total upto 31.3.2011	As at 31.3.2011	As at 31.3.2010
Imported Assets	–	1,000	–	1,000	–	100	–	100	900	–
Non - Imported Assets (acquired on 1.4.2010)	–	500	–	500	–	250	–	250	250	–
Other Assets 3,000	450	–	3,450	–	345	–	345	3,105	3,000	
Total	3,000	1,950	–	4,950	–	695	–	695	4,255	3,000



- (1) As per para 13 of AS 11 (Revised 2003) 'The Effects of Changes in Foreign Exchange Rates', exchange differences arising on repayment of liabilities incurred for the purpose of acquiring fixed assets are recognized as income/expense in the period in which they arise.

Calculation of Exchange Difference:

$$\begin{aligned}\text{Foreign currency loan} &= ₹ 1,000 \text{ lacs} / ₹ 40 \\ &= 25 \text{ lacs US \$}\end{aligned}$$

$$\begin{aligned}\text{Exchange difference} &= 25 \text{ lacs US \$} \times (42 - 40) \\ &= ₹ 50 \text{ lacs (including exchange loss on payment of first instalment)}\end{aligned}$$

Thus, exchange loss of ₹ 50 lacs should be recognized as expense in the profit and loss account for the year ended 31st March, 2011.

- (2) It was noticed that about ₹ 500 lacs worth of non-imported assets acquired on 1.4.2010 will be obsolete in two years time. Hence, these assets have been written off at the rate of 50%.
- (3) Para 14 of AS 12 on Accounting for Government Grants regards two methods of presentation of grants related to specific fixed assets in financial statements. Under the first method which has been applied in the given case, the grant is shown as a deduction from the gross value of the fixed assets in arriving at its book value. Thus, only 90% of the cost of fixed assets has been shown as addition after adjusting the grant amount.

Alternatively, the grant can be treated as a deferred income which should be recognised in the profit and loss statement over the useful life of fixed assets in the proportions in which depreciation on the assets will be charged.

Note: As regards fixed assets standing at ₹ 3,000 lacs as on 1.4.2010, in the absence of information in respect of cost and depreciation amount provided upto 31.3.2010, the entire given amount has been shown under gross block as at 1.4.2010.

Illustration 9

A conveyor system was capitalized on 01-01-11 with value of ₹ 82.74 lacs. The break-up of the capital cost was as follows :

Civil & Mechanical structure	23.44
Driving units and plumbing	10.80
Rope	5.66
Belt	22.34
Safety and electrical equipments	12.30
Other accessories	8.20
	<u>82.74</u>

During the financial year 2011-2012 due to wear and tear, the rope used in the conveyor system was replaced by a new one at cost of ₹ 16 crores. As new rope did not increase the capacity and is a component of the total assets. The company charged the full cost of the new rope to repairs and maintenance. Old rope continues to appear in the books of account and is charged with depreciation every year. Whether the above accounting treatment is correct. If not, give the correct accounting treatment with explanation.

Solution:

As per Para 23 of AS-10 - Subsequent expenditure relating to an item of fixed asset

should be added to its book value only if it increases the future benefits from the existing asset beyond its previously assessed standard of performance. In the instant case, the new replaced rope does not increase the future benefits from the assets beyond their previously assessed performance, therefore the cost of replacement of rope should be charged to revenue, however in doing so the estimated scrap value of the old rope should be deducted from the cost of new rope.

10.3 VALUATION OF INVENTORIES

10.3.1 Valuation of Inventory – Important for different types of merchandising and manufacturing companies

An inventory valuation allows a company to provide a monetary value for items that make up their inventory. Inventories are usually the largest current asset of a business, and proper measurement of them is necessary to assure accurate financial statements. If inventory is not properly measured, expenses and revenues cannot be properly matched and a company could make poor business decisions.

The inventory valuation involves two major aspects:

The cost of the purchased or manufactured inventory has to be determined and

Such cost is retained in the inventory accounts of the company until the product is sold

A single company may conduct merchandising, service, and/or manufacturing activities. For convenience, we shall assume that each company described here conducts only one type. If a company does conduct more than one type of activity, it will use the accounting method appropriate for each type.

Retail stores, wholesalers, distributors, and similar companies that sell tangible goods are merchandising companies. A merchandising company sells goods in substantially the same physical form as that in which it acquires them. Its cost of sales is therefore the acquisition cost of the goods that are sold. On the balance sheet, a current asset, Merchandise Inventory, shows the cost of goods that have been acquired but not yet sold as of the balance sheet date.

A manufacturing company converts raw materials and purchased parts into finished goods. Its cost of sales includes the conversion costs as well as the raw material and parts costs of the goods that it sells. A manufacturing company has three types of inventory accounts: Materials, Work in Process, and Finished Goods.

Since both merchandising and manufacturing companies sell tangible goods, their income statements sometimes use the term cost of goods sold rather than cost of sales. We shall use the two terms interchangeably for merchandising and manufacturing companies, but use only cost of sales for service organizations.

Service organizations furnish intangible services rather than tangible goods. They include hotels, beauty parlors and other personal services organizations, hospitals and other health care organizations, educational organizations, banks and other financial institutions, and governmental units. Service organizations may have materials inventories—for example, the pipes and fittings of a plumbing company. Professional service firms, such as law, consulting, accounting, and architectural firms, may have intangible inventories consisting of costs that have been incurred on behalf of clients but that have not yet been billed to clients. These inventories, often called jobs in progress or unbilled costs, correspond to work in process inventories in a manufacturing company. Service organizations do not have finished goods inventories.

(i) Merchandising Companies

Acquisition Cost: Merchandise is added to inventory at its cost, in accordance with the basic cost concept. Cost includes both the cost of acquiring the merchandise and also any the purchase expenditures made to make the goods ready for sale. Thus, merchandise cost includes not only the invoice cost of the goods purchased, but also freight and other shipping costs of bringing the goods to the point of sale and the cost of unpacking the goods and marking prices on them. Since the recordkeeping task of attaching these latter elements of cost to individual units of merchandise may be considerable, some or all of them may be excluded from merchandise product costs and



reported as general operating expenses of the period in which they are incurred. The purchase cost also is adjusted for returns and allowances and for cash discounts given by the suppliers of the merchandise. As was the case with sales discounts, purchase discounts can be accounted for either by recording the purchase amount as net of the discount or by recording the purchase amount at the invoice price and recording the discount when it is taken.

In accounting, the word purchase refers not to the placing of a purchase order but rather to the receipt of the merchandise that was ordered. No accounting entry is made when merchandise is ordered. The entry is made only when the merchandise becomes the property of the buyer.

(ii) Manufacturing Companies

A manufacturing company has as a major function – conversion of raw materials and purchased parts into finished goods. In any company, cost of sales is the total of the acquisition cost plus conversion costs of the products that are sold. The difference between accounting for the cost of sales in a merchandising company and in a manufacturing company arises because the merchandising company usually has no conversion costs.

The measurement of cost of goods sold is therefore more complicated in a manufacturing company than in a merchandising company. In a manufacturing company, this cost must be obtained by collecting and aggregating the several elements of manufacturing cost.

10.3.2 Inventory Accounts

Types of inventory accounts a manufacturing company is required to maintain

A manufacturing company has three types of inventory accounts. Their names and the nature of their content are as follows:

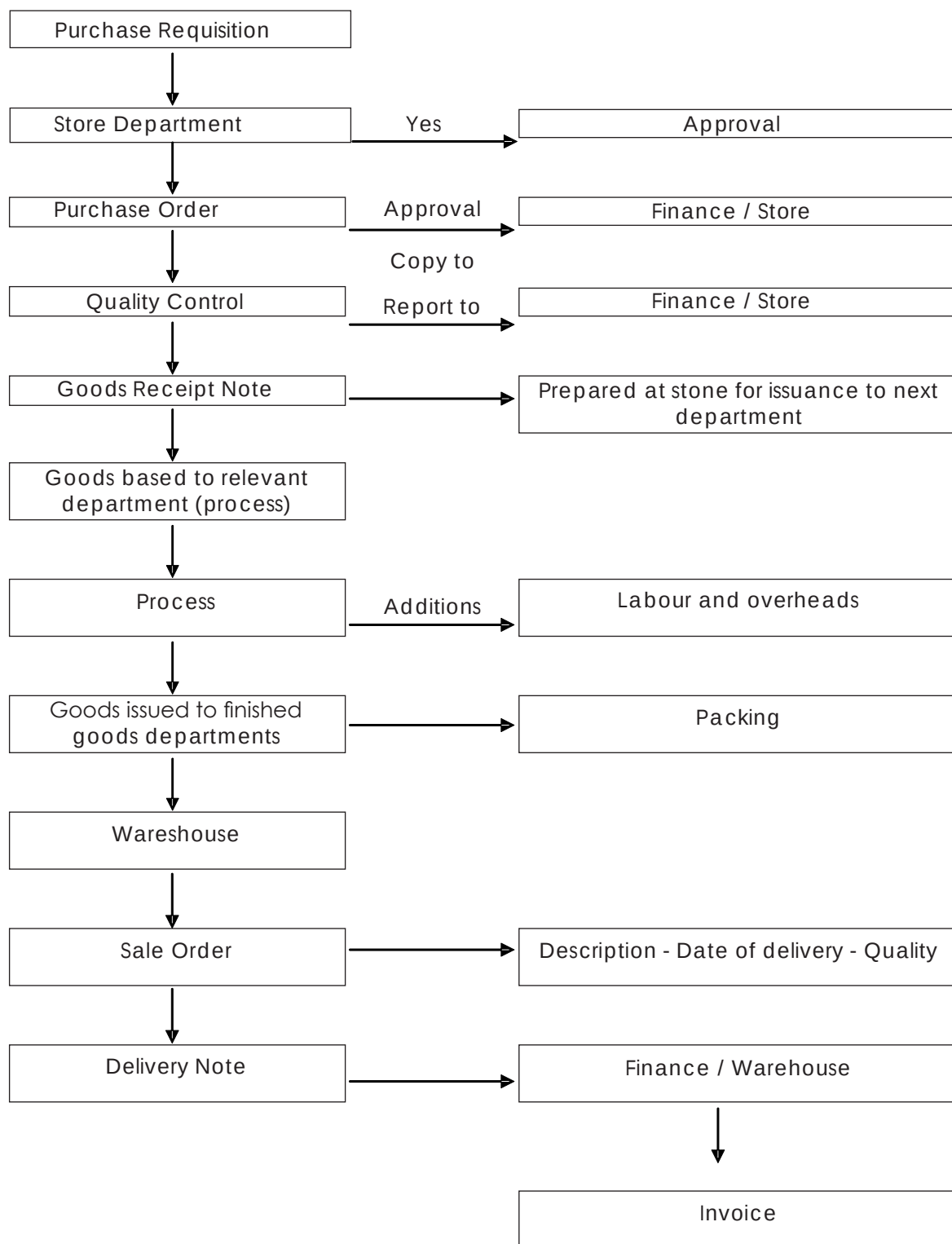
Materials Inventory: Items of material that are to become a part of the ultimately saleable goods that result from the manufacturing process. They are priced at acquisition cost, with the same types of adjustments for freight-in and returns as those made in calculating the net purchase cost of merchandise inventory.

Work in Process Inventory: Goods that have started through the manufacturing process but have not yet been finished. They are priced as the sum of (1) the materials thus issued for them plus (2) the conversion costs incurred on these items up to the end of the accounting period.

Finished Goods Inventory: Goods that have been manufactured but have not yet been shipped to customers. They are priced at the total cost incurred in manufacturing them. This account is essentially the same as Merchandise Inventory in a merchandising company, except that the items are recorded at the cost of manufacturing them rather than at their acquisition cost.

Product costing system for a service company

In principle, product costing in service firms is the same as in manufacturing firms. Application of these principles is described below for three types of service organizations. Personal services organizations such as barber shops, beauty parlors, and medical and dental practices have no inventories other than supplies inventory. Although these organizations may estimate the average cost of a haircut, a wash and set, or a routine office visit to aid them in pricing these services, these costs do not flow through inventory accounts, as do product costs in a merchandising or manufacturing firm. A personal services organization may identify the labor costs of the people directly providing the service (e.g., a dental hygienist) and supplies costs (X-ray film) as elements of cost of sales, to distinguish them from “office overhead” costs (receptionist, rent, utilities, and so on).

Inventory control system of a company



10.3.3 Costs of Inventories

Cost of inventory can be classified as

- (a) Costs of purchase
- (b) Costs of conversion
- (c) "Other costs" incurred in bringing the inventories to their present location and condition

(a) Costs of Purchase

The costs of purchase includes:-

- The purchase price
- Import duties
- Transportation costs
- Handling costs directly pertaining to the acquisition of the goods

(b) Costs of Conversion of Inventory

Cost of conversion of inventory includes costs directly attributable to the units of production, for example, direct labor. The conversion costs could also include variable and fixed manufacturing overhead incurred in converting raw material into finished goods. Fixed overhead costs remain constant irrespective of the units of production. Variable costs are those costs that vary directly with the volume of production. The allocation of overhead to the cost of conversion is based on the "normal capacity" of the facility. Normal capacity is the production that is normally achieved on average over a number of periods.

(c) Other Costs in Valuing Inventories

Valuing inventories include those costs that are incurred in bringing the inventories to their present location and condition in other cost. For example cost for designing product on the basis of customer needs.

Costs that are excluded from inventory valuation

Certain costs are excluded in valuing inventory are:-

- (a) Abnormal amounts of wasted materials, labor, or other production costs
- (b) Storage costs unless they are essential to the production process
- (c) Administrative overheads that do not contribute to bringing inventories to their present location and condition
- (d) Selling costs.

List of disclosure requirements in the Balance Sheet (BS)/Statement of Financial Position (SOF)

The financial statements should disclose

- Accounting policies adopted for measuring inventories and the cost flow assumption (i.e., cost formula) used
- Total carrying amount as well as amounts classified as appropriate to the entity
- Carrying amount of any inventories carried at fair value less costs to sell
- Amount of inventory recognized as expense during the period
- Amount of any write-down of inventories recognized as an expense in the period

- Amount of any reversal of a write-down to net realizable value and the circumstances that led to such reversal
- Circumstances requiring a reversal of the write-down
- Carrying amount of inventories pledged as security for liabilities

10.3.4 TECHNIQUES OF MEASUREMENT OF COSTS (To be deleted FIFO/LIFO)

Several acceptable methods of handling those are

Specific identification.

Average cost.

First-in, first-out (FIFO).

Last-in, first-out (LIFO).

We shall explain these methods with an example from a merchandising company, but the same principles apply to a manufacturing company. In our illustration, we assume the following for a year:

	Units	Unit Cost ₹	Total Cost ₹
Inventory, January 1	100	8	800
Purchased June 1	60	9	540
Purchased October 1	80	10	800
Goods available for sale	240	8.917	2140
Goods sold during the year	150	?	?
Ending inventory	?	?	?

10.3.4.1 Specific Identification

Specific identification method is common practice with certain big-ticket items such as automobiles and with unique items such as paintings, expensive jewelry, custom-made furniture; and bar codes and scanners are making it feasible with lower cost items. In many cases, however, when a substantial number of physically similar items are sold, this method can be unsatisfactory because the cost of goods sold depends on what specific items happen to be sold.

Illustration 10

In the above Example, 150 units were sold. If the merchant selected the 100 units with a unit cost of ₹8 and 50 of the units having a unit cost of ₹9, the cost of goods sold would be

$(100 \times ₹8) + (50 \times ₹9) = ₹1,250$. If the 150 units with the highest cost were selected, the cost of goods sold would be $(80 \times ₹10) + (60 \times ₹9) + (10 \times ₹8) = ₹1,420$.

10.3.4.2 Average cost

The average cost method, the average cost of the goods available for sale is calculated, and the units in both cost of goods sold and ending inventory are costed at this average cost. In the periodic inventory method, this average is computed for the whole period. It is a weighted average: Each unit cost is weighted by the number of units with that cost. In the perpetual inventory method, a new average unit cost is sometimes calculated after each purchase. In either case, the average cost is representative of the cost of all of the items that were available for sale during the period.

Illustration 11

Assuming the periodic inventory method, the 240 units available for sale have a total cost of ₹2,140; hence, the average cost is $₹2,140 / 240 = ₹8.917$. The calculations cost of goods sold and ending



inventory are as follows:

	Units	Unit ₹	Cost Total ₹
Cost of Goods sold	150	8.917	1338
Ending Inventory	90	8.917	802
	<u>240</u>		<u>2140</u>

10.3.4.3 First-in, First-Out (FIFO)

The FIFO method assumes that the oldest goods are sold first and that the most recently purchased goods are in the ending inventory. In the illustration, for the 150 units sold, it is assumed that the 100 units in beginning inventory were sold first and that the other 50 units sold were from the purchase made on June 1.

	Units	Unit Cost ₹	Total Cost
Cost of Goods Sold:			
From beginning inventory	100	8	800
From purchase of June 1	<u>50</u>	9	<u>450</u>
Cost of Goods Sold	150		1250
Ending Inventory:			
From Purchase of June 1	10	9	90
From purchase of October 1	<u>80</u>	10	<u>800</u>
Ending Inventory	90		890

For the moment, it is sufficient to note that with FIFO (1) cost of goods sold is likely to approximate the physical flow of the goods because most companies sell their oldest merchandise first and (2) the ending inventory approximates the current cost of the goods, since it is costed at the amounts of most recent purchases.

10.3.4.4 Last-In, First Out

The LIFO method is the reverse of FIFO. Cost of goods sold is based on the cost of the most recent purchases, and ending inventory is costed at the cost of the oldest units available.

	Units	Unit Cost	Total Cost
Cost of Goods Sold:			
From purchase of October 1	80	10	800
From Purchase of June 1	60	9	540
From beginning inventory	<u>10</u>	8	<u>80</u>
Cost of Goods Sold	150		1420
Ending Inventory:			
From beginning inventory	90	8	<u>720</u>

LIFO (1) cost of goods sold does not reflect the usual physical flow of merchandise and (2) the ending inventory may be costed at amounts prevailing several years ago, which in an era of repaid inflation are for below current costs.

(Note that LIFO is not permitted under international accounting standards. LIFO is sometime used where permitted by local GAAP)

LIFO Dollar Value Method of valuation of inventory

Originally LIFO was used only by companies whose inventory consisted of fungible products, such as wheat, each unit of which is physically like every other unit. Other companies, however, successfully argued that this was unfair to them. Thus, LIFO may now be used for almost any kind of inventory. It is applied to an inventory of physically unlike items by the so-called LIFO dollar value method. In this method, items whose prices tend to move together are grouped into an inventory pool. For example, a pool may consist of all the items in the inventory of the house wares department in a store. The calculations required to determine cost of goods sold and inventory amounts with this method are beyond the scope of this book. Compared with the unit-by-unit LIFO method, dollar value LIFO saves a considerable amount of recordkeeping effort.

Changes in Inventory

In a year when the physical size of the inventory increases above the amount on hand at the beginning of the year, with LIFO the inventory account is increased by the additional quantity valued at the costs existing during that year. During a period of growth, the inventory account will therefore consist of a number of layers, a new layer being added each year. If subsequently the physical inventory should decrease in size, these layers are, in effect, stripped off, taking the most recently added layer first in accordance with the basic LIFO rule. This process can have a peculiar effect on the income statement. If inventory is decreased to the extent that several LIFO layers are stripped off, then inventory items will be moving into cost of goods sold at costs established several years previously. If there has been constant inflation during the interim, such a decrease in inventory can result in a significant increase in reported income. Some people assert that in a recession, some companies deliberately eat into their LIFO inventories in order to increase reported income in a lean year. Careful readers of financial statements are not fooled by this practice, since the profit effect of reducing LIFO inventories must be disclosed in the notes to the financial statements.

LIFO Reserve

Companies that use LIFO for determining their balance sheet valuation of inventory nevertheless keep their detailed inventory records on a FIFO or average cost basis. The inventory amounts on these other bases usually will be higher than the LIFO valuation shown on the balance sheet. At the end of each accounting period, the difference between the LIFO valuation and the FIFO or average cost valuation is determined. (This is a complex calculation that is covered in advanced accounting texts.) This difference is sometimes called the LIFO reserve. The terminology is unfortunate because “reserve” suggests something set aside or saved for some special future purpose. The LIFO reserve is nothing more than the mathematical difference between two inventory amounts, one based on LIFO and the other one based on a different method of valuing inventory. LIFO companies disclose their LIFO reserve in the notes for their financial statement.

10.3.5 Income Tax Considerations

FIFO, average cost, and LIFO are all permitted for inventory, valuation as well as income computation. Once a method is chosen, a company cannot change it without seeking permission from the Internal Revenue Service (IRS). If a company chooses the LIFO method for tax purposes, it must also use LIFO in its published financial statements. This LIFO conformity rule is the only significant instance in which the IRS requires use of the same accounting method for income tax and “book” (financial reporting) purposes.

In periods of inflation, LIFO results in lower income than FIFO or average costs, and thus results in lower income taxes. If the physical size of inventory remains constant or grows, LIFO reduces taxable income indefinitely. Only if LIFO layers are stripped off in future years might taxable income under LIFO exceed taxable income under FIFO; and even in that case, LIFO will have postponed some income tax payments. These tax advantages of LIFO in periods of rising prices can improve a company's cash flow and therefore lead many companies to select the LIFO method regardless of the conceptual pros and cons of the various alternatives.



Illustration 12

(i) ABC Stores is a departmental store, which sell goods on retail basis. It makes a gross profit of 20% on net sales. The following figures for the year-end are available:

Opening Stock	₹ 50,000
Purchases	₹ 3,60,000
Purchase Returns	₹ 10,000
Freight Inwards	₹ 10,000
Gross Sales	₹ 4,50,000
Sales Returns	₹ 11,250
Carriage Outwards	₹ 5,000.

Calculate the estimated cost of the inventory on the closing date.

Solution:

Calculation of Cost for closing stock

Particulars	₹
Opening Stock	50,000
Purchases less returns (360000-10000)	3,50,000
Freight Inwards	<u>10,000</u>
	4,10,000
Less: net sales (450000-11250)	<u>4,38,750</u>
	(28,750)
Add: gross profits (438750x 20%)	<u>87,750</u>
Closing stock	<u>59,000</u>

Illustration 13

Oil company is a bulk distributor of high octane petrol. A periodic inventory of petrol on hand is taken when the books are closed at the end of each month. The following summary of information is available for the month of June, 2009.

Sales	₹ 9,45,000
General Administrative cost	₹ 25,000
Opening stock 100000 litres @ ₹ 3 per litre	₹ 3,00,000
Purchases (including freight):	
June 1-2,00,000 litres @ ₹ 2.85 per litre	
June 30-1,00,000 litre @ ₹ 3.03 per litre	
Closing stock on June 30-1,30,000 litres	

Compute the following data by FIFO, Weighted average and LIFO methods of inventory costing on June 30.

Solution:

Statement showing value of closing stock or inventory on 30th June, 2009 under FIFO, weighted and LIFO methods of pricing of issues [quantity of closing stock (100000+20000) litres.]

Particulars	FIFO	Weighted Average	LIFO
(1) First-in-First out Method:*			
100000 litres @ ₹ 3.03 per litres	3,03,000		
30000 litres @ ₹ 2.85 per litres	85,500		
(2) Weighted Average Method:**			
100000 litres @ ₹ 3.03 per litres		3,03,000	
30000 litres @ ₹ 2.90 per litres		87,000	
(3) Last-in First out Method:***			
100000 litres @ ₹ 3.00 per litres			3,00,000
30000 litres @ ₹ 2.85 per litres			85,500
Value of Closing Stock	<u>3,88,500</u>	<u>3,90,000</u>	<u>3,85,500</u>

* Under FIFO method old lots are exhausted and new lots are kept in hand on 30.6.2009.

** Under Weighted Average method, the Weighted Average rate is to be calculated or follows:
 $100000 \text{ Litres} \times ₹3 + 200000 \text{ litres} \times ₹2.85$
 $= ₹ 2.90 \quad (100000+200000) \text{ litres}$

*** Under LIFO method, new lots are exhausted except purchased on 30.06.09 and old lots are kept in hand on 30.06.09

Illustration 14**Closing Stock Valuation of Budgeted Raw Material Purchases**

Quarter	1st	2nd	3rd	4 th
Working Days	65	60	55	60
Production (units per working day)	100	110	120	105
Raw Material Purchase (% by weight of annual total)	30%	50%	20%	
Budgeted purchase price (₹ Per kg.)	1.00	1.05	1.125	

Quantity of raw material per unit of production: 2kg

Budgeted opening stock of raw material: 4000kg (cost ₹4000)

Budgeted closing stock of raw material: 2000kg

Issues are priced on FIFO basis.

Calculate the following budgeted figures:

Quarterly and annual purchases of raw material, by weight and value.

Closing quarterly stock by weighted and value.

**Solution:**

		Consumption				
Quarter	Day		Production per day qty. of RM per unit of production			Kg.
1st	65	x	100	x	2	13000
2nd	60	x	110	x	2	13200
3rd	55	x	120	x	2	13200
4th	60	x	105	x	2	<u>12600</u>
Total consumption for the year						<u>52000</u>

We know that:

Consumption = opening stock + purchases-closing stock

Purchases = consumption + closing stock-opening stock

= 52000 = 2000-4000 or, 50000Kg.

(a) Purchases:

Quarter	Kg.	Purchase Price	Value (₹)
1	50000×30% i.e. 15000	1.00	15000
2	50000×50% i.e. 25000	1.05	26250
3	50000×20% i.e. 10000	1.125	11250
			<u>52500</u>

(b) Closing quarterly Stock by weighted and value:

1st Quarter(FIFO method)		Quantity Kg.	Rate ₹	value ₹
	Opening Stock	4000	1	4000
	Purchase	<u>15000</u>	1	<u>15000</u>
	total	19000		19000
less:	consumption	<u>13000</u>	1	<u>13000</u>
	closing stock	<u>6000</u>	1	<u>6000</u>
2nd quarter				
	opening stock	6000	1	6000
	purchase	<u>25000</u>	1.05	<u>26250</u>
	total	31000		32250
less:	consumption	<u>13200</u>		<u>13560*</u>
	closing stock	<u>17800</u>		<u>18690</u>
		*6000 @ ₹1.00 =		6000
		7200 @ ₹1.05 =		<u>7560</u>
		<u>13200</u>		<u>13560</u>
3rd quarter				
	opening stock	17800	1.05	18690
	purchase	<u>10000</u>	1.125	<u>11250</u>
	total	27800		29940
less:	consumption	<u>13200</u>	1.05	<u>13860</u>
	closing stock	<u>14600</u>		<u>16080</u>

4th quarter			
	opening stock	14600	16080
	purchase	<u>nil</u>	<u>nil</u>
	total	14600	14600
less:	consumption	<u>12600</u>	<u>13830*</u>
	closing stock	<u>2000</u>	<u>2250</u>
	* 4600 (i.e 17800-13200) @ ₹1.05	4830	
	<u>8000</u> @ ₹ 1.125	<u>9000</u>	
	<u>12600</u>	<u>13830</u>	

Illustration 15

The XYZ Machineries Ltd. requests you to ascertain the amount at which the inventory should be included in the financial statement for the year 2008-09. The value of inventory as shown in the books is ₹12, 50,000.

To determine the net realisable value of the inventory (on a test check basis), you had selected several items whose book value was ₹ 3, 50,000. You ascertain that except for items (a) to (b) mentioned below, the cost was in excess of the realisable value by ₹ 29,532.

The following items require special treatment.

- One machine (cost ₹ 1, 30,000) can now fetch ₹ 1, 15,000. It was priced at ₹ 70,000 and was written down to the same figure at the end of 2008-09.
- A pump (cost ₹ 50,000) was expected to realise ₹ 35,000. A special commission would have to be paid to the broker.
- 6 units of product No. 15,710 were in stock valued each at ₹ 5,520; the selling price was ₹ 4,500 per unit; selling expenses are 10% of the selling price.

Taking into consideration only the above mentioned items requiring special treatment, compute the value of their inventory as at 31 st March, 2009 you would consider reasonable.

Solution:

Book value of selected items is given. From the given information, realisable value of remaining selected items will have to be found. Then the value of inventory (net realisable value) for all the items to be included in the financial statements of the company for the year 2008-09 is to be determined.

Working showing Realisable Value of Selected Items

Book value of selected items		₹ 350000
Less: Book value of items (a) to (c)		
(a) One machine	₹ 70000	
(b) One pump	₹ 50000	
(c) 6 units of product No. 15,710@ ₹ 5,520	<u>33120</u>	<u>153120</u>
Remaining book value		196880

It is given in the question that except for the items (a) to (b) the cost was in excess of realisable value by ₹ 29,532. In order to find out the realisable value of remaining items, this amount should be deducted from the book value of selected items.

The realisable value of remaining selected items will be : ₹ 1,96,880 - ₹ 29,532 = ₹ 1,67,348. Percentage



of the cost in excess of realisable value to the book value of selected items = $(29,532/1,96,880) \times 100 = 15\%$

Working showing the Inventory Valuation (on Net Realisable Value Basis)
(as on 31-03-2009)

	₹	₹
Value of all the items as shown in the books		1250000
Less: Book value of special items		<u>350000</u>
Book value of the remaining items		900000
Less: Cost of excess of realisable value by 15% i.e. $(9,00,000 \times 15\%)$		<u>135000</u>
		765000
Add: Realisable value of remaining selected items		167348
		932348
Add: Realisable value of selected items:		
One machine	₹115000	
One pump (₹ 35,000 less 15% brokerage)	29750	
6 units of product No. 15,710 $(6 \times 4,500 \text{ less } 10\% \text{ selling expenses})$	<u>24300</u>	<u>169050</u>
Value of all items of inventory (as on 31-3-09)		1101398

10.4 VALUATION OF INVESTMENTS

10.4.1 Characteristics of Investment Companies

Investment Companies are financial intermediaries that collect funds from individual investors and invest those funds in a potentially wide range of securities or other asset.

Types: Unit investment trusts and managed investment companies (either closed-end or open-end). Open-end companies are called mutual funds.

Unit investment trusts (unmanaged): invested in a portfolio that is fixed for the life of the fund. Most unit trusts hold fixed-income securities and expire at their maturity. 90% of all unit trusts are invested in fixed-income portfolios, and about 90% of fixed-income unit trusts are invested in tax-exempt debt.

$NVA = (\text{asset-liabilities}) / \text{share outstanding}$

Mutual funds (open-end investment companies): account for about 90% of investment company assets.

10.4.2 Basic tenets of risk & return

The investment process consists of two broad tasks. One task is security and market analysis, by which we assess the risk and expected-return attributes of the entire set of possible investment vehicles. The second task is the formation of an optimal portfolio of assets. This task involves the determination of the best risk-return opportunities available from feasible investment portfolios and the choice of the best portfolio from the feasible set. The formal analysis of investments with the latter task is called portfolio theory. Three central themes in portfolio theory, all centering on risk are as follows.

- The first is the basic tenet that investors avoid risk and demand a reward for engaging in risky investments. The reward is taken as a risk premium, the difference between the expected rate of return and that available on alternative risk-free investments.
- The second theme allows us to quantify investors' personal trade-offs between portfolio risk and expected return. To do this we introduce the utility function, which assumes that investors can assign a welfare or "utility" score to any investment portfolio depending on its risk and return.

- The third theme is that we cannot evaluate the risk of an asset separate from the portfolio of which it is a part; that is, the proper way to measure the risk of an individual asset is to assess its impact on the volatility of the entire portfolio of investments. Taking this approach, we find that seemingly risky securities may be portfolio stabilizers and actually low-risk assets.
- 1. **Risk:** The chance that an investment's actual return will be different than expected. This includes the possibility of losing some or all of the original investment. It is usually measured using the historical returns or average returns for a specific investment. Higher risk means a greater opportunity for high returns and a higher potential for loss.
- 2. **Risk Premium:** The extra return that a risky investment provides over the risk free rate to compensate for the risk of the investment. A higher rate of return is required to entice investors into a riskier investment.
- 3. **Risk Averse Investor:** Describes an investor who, when faced with two investments with a similar expected return (but different risks), will prefer the one with the lower risk. A risk averse person dislikes risk.
- 4. **Utility score:** Assume each investor can assign a welfare, or utility, score to competing investment portfolios based on the expected return and risk of those portfolios. The utility score may be viewed as a means of ranking portfolios. Portfolios receive higher utility scores for higher expected returns and lower scores for higher volatility. Many particular "scoring" systems or utility functions are legitimate.
- 5. **Certainty equivalent rate** of a portfolio is the rate that risk-free investments would need to offer with certainty to be considered equally attractive as the risky portfolio. A portfolio is desirable only if its certainty equivalent return exceeds that of the risk-free alternative. A sufficient risk-averse investor may assign any risky portfolio, even one with a positive risk premium, a certainty equivalent return that is below the risk-free rate, which will cause the investor to reject the portfolio.
- 6. **Risk neutral investors** judge risky prospects solely by their expected return. The level of risk is irrelevant to the risk-neutral investor, meaning that there is no penalization for risk. For this investor a portfolio's certainty equivalent rate is simply its expected return.

On the contrary, a risk lover is willing to engage in fair games and gambles; this investor adjusts the expected return upward to take into account the "fun" of confronting the prospect's risk. Risk lovers will always take a fair game because their upward adjustment of utility for risk gives the fair game a certainty equivalent that exceeds the alternative of the risk-free investment.
- 7. **Indifference curve:** the curve that connects all portfolio points with the same utility value in the mean-standard deviation plan.

10.4.3 Investment property – Associated issues/terminologies in relation to investment properties

Investment properties are those properties,

- (a) in respect of which construction work and development have been completed; and
- (b) Which is held for its investment potential, any rental income being negotiated at arm's length?

Following terminologies are used in this Standard with the meanings specified: A current investment is an investment that is by its nature readily realisable and is intended to be held for not more than one year.

Fair value is the amount for which an asset could be exchanged between a knowledgeable, willing buyer and a knowledgeable, willing seller in an arm's length transaction.

An investment is an asset held by an enterprise for the accretion of wealth through distribution (such as interest, royalties, dividends and rentals), for capital appreciation or for other benefits to the investing enterprise such as those obtained through trading relationships. Inventories as defined in FRS 2



Inventories, are not investments. Property, plant and equipment as defined in FRS 16 Property, Plant and Equipment, (other than investment properties) are not investments.

An investment property is an investment in land or buildings that are not occupied substantially for use by, or in the operations of, the investing enterprise or another enterprise in the same group as the investing enterprise.

A long-term investment is an investment other than a current investment. Market value is the amount obtainable from the sale of an investment in an active market. Marketable means that there is an active market from which a market value (or some indicator that enables a market value to be calculated) is available. It is to be noted that

- A property which is owned and used by an entity for its own purposes is not an investment property, for example, a hotel or a warehouse.
- A property let to, and occupied by, another group company is not an investment property for the purposes of its own financial statements or the group financial statements.

Investment properties may be held by an entity which holds investments as part of its business such as an investment trust or a property investment company. Investment properties may also be held by an entity whose main business is not the holding of investments. For the purpose of this Standard, the term "same investment" should be interpreted as "same class of investments". "Same class of investments" means a category of investments which have a similar nature or function in the operations of the reporting enterprise.

10.4.4 Enterprisers hold investments

Enterprises hold investments for diverse reasons. For some enterprises, investment activity is a significant element of operations and assessment of the performance of the enterprise may largely, or solely, depend on the reported results of this activity. Some hold investments as a store of surplus funds and some hold trade investments in order to cement a trading relationship or establish a trading advantage.

Enterprises, for which investment activity is a significant element of operations, such as insurance companies and some banks, are often subject to regulatory control. The Preface to Financial Reporting Standards provides that Financial Reporting Standards do not override local regulations governing the issue of financial statements.

Some investments are represented by certificates or similar documents; others are not. Then nature of an investment may be that of a debt, other than a short or long-term trade debt, representing a monetary amount owing to the holder and usually bearing interest; alternatively it may be a stake in an enterprise's results, such as an equity share. Most investments represent financial rights, but some are tangible — such as certain investments in land or buildings and direct investments in gold, diamonds or other marketable commodities.

For some investments, and active market exists from which a market value can be established. For such investments, market value is an indicator of fair value. For other investments, an active market does not exist and other means are used to determine fair value.

10.4.5 Classification of Investments

An enterprise that distinguishes between current and long-term assets in its financial statements should present current investments as current assets and long-term investments as long-term assets.

Enterprises that do not distinguish between current and long-term investments in their balance sheets should nevertheless make a distinction for measurement purposes and determine the carrying amount for investments.

Current investments are included in current assets. The fact that a marketable investment has been retained for a considerable period does not necessarily preclude its classification as current.

Investments held primarily to protect, facilitate or further existing business or trading relations, often called trade investments, are not made with the intention that they will be available as additional cash resources and are thus classified as long-term. Other investments, such as investment properties, are intended to be held for a number of years to generate income and capital gain. They are therefore classified as long-term assets even though they may be marketable.

Some enterprises choose not to distinguish between current and long-term assets, and others may be required by regulations to adopt a balance sheet format that makes no distinction. Many such enterprises operate in the financial field, such as banks and insurance companies. Although such enterprises do not intend to realise their assets in current operations, they usually regard many of their investments as being available for the purposes of their current operations if required.

However, such enterprises may have investments properly regarded as long-term assets, for example a bank may hold shares in a leasing company.

Many such enterprises therefore analyse their investments and attribute carrying amounts to them according to whether their characteristics are those of current investments or long-term investments.

10.4.6 Cost of investments

The cost of an investment includes acquisition charges such as brokerages, fees, duties and bank fees. If an investment is acquired, or partly acquired, by the issue of shares or other securities, the acquisition cost is the fair value of the securities issued and not their nominal or par value. If an investment is acquired in exchange, or part exchange, for another asset, the acquisition cost of the investment is determined by reference to the fair value of the asset given up. It may be appropriate to consider the fair value of the investment acquired if it is more clearly evident.

Interest, royalties, dividends and rentals receivable in connection with an investment are generally regarded as income, being the return on the investment. However, in some circumstances, such inflows represent a recovery of cost and do not form part of income. For example, when unpaid interest has accrued before the acquisition of an interest-bearing investment and is therefore included in the price paid for the investment, the subsequent receipt of interest is allocated between pre-acquisition and post-acquisition periods; the pre-acquisition portion is deducted from cost. When dividends on equity securities are declared from pre-acquisition profits a similar treatment applies. If it is difficult to make such an allocation except on an arbitrary basis, the cost of an investment is normally reduced by dividends receivable only if they clearly represent a recovery of part of cost.

The difference between the acquisition cost and redemption value of an investment in debt securities (the discount or premium on acquisition) is usually amortised by the investor over the period from acquisition to its maturity so that a constant yield is earned on the investment. The amortised discount or premium is credited or charged to income as though it were interest and added to or subtracted from the carrying amount of the security. The resulting carrying amount is then regarded as cost.

10.4.7 Carrying amounts of investments

Investments classified as current assets should be carried in the balance sheet at either:

- (a) market value; or
- (b) the lower of cost and market value.

If current investments are carried at the lower of cost and market value, the carrying amount should be determined either on an aggregate portfolio basis, in total or by category of investment, or on an individual investment basis.

Opinions differ on the appropriate carrying amount for current investments. Some maintain that, for financial statements prepared under the historical cost convention, the general rule of lower of cost and net realisable value is applicable to investments; and since most current investments are marketable, the carrying amount is the lower of cost and market value. Supporters of this method of



determining carrying amount claim that it provides a prudent balance sheet amount and does not result in recognising unrealised gains in income.

Others argue that, since current investments are a readily realisable store of wealth, or a cash substitute, it is appropriate to value them at fair value, usually market value. The enterprise is not concerned with the cost of such items but with the cash it could raise by disposing of them. Investments are distinguished from inventories because they can generally be sold without effort, whereas it would normally be inappropriate to recognise profit on sale of inventories before the sale was assured. Each investment is dispensable by the business - for example an equity investment could be sold and the proceeds re-invested in a bank deposit account without detriment to the business - and therefore it is appropriate to report it at market value. Supporters of market value also argue that reporting investments at historical cost allows management to recognise income at its discretion, since selected investments can be sold and immediately repurchased and the resulting profit reported in income, although such transactions have not changed the enterprise's economic position.

10.4.8 Valuation of Investments on the basis of their classification

Investments classified as long-term assets should be carried in the balance sheet at either:

- (a) cost;
- (b) revalued amounts; or
- (c) in the case of marketable equity securities, the lower of cost and market value determined on a portfolio basis.

If revalued amounts are used, a policy for the frequency of revaluations should be adopted and an entire category of long-term investments should be revalued at the same time. The carrying amount of all long-term investments should be reduced to recognise a decline other than temporary in the value of the investments, such reduction being determined and made for each investment individually.

Long-term investments are usually carried at cost. However, when there is a decline, other than temporary, in the value of a long-term investment, the carrying amount is reduced to recognize the decline. Indicators of the value of an investment may be obtained by reference to its market value, the investee's assets and results and the expected cash flows from the investment. Risk and the type and extent of the investor's stake in the investee are also taken into account. Restrictions on distributions by the investee or on disposal by the investor may affect the value attributed to the investment.

Reductions for other than a temporary decline in the carrying amounts of long-term investments are charged in the income statement unless they offset a previous revaluation.

Reductions in carrying amount may be reversed when there is a rise in the value of the investment, or if the reasons for the reduction no longer exist. However, in some countries reductions in the carrying amount are not reversed.

10.4.9 Recognise carrying amount in relation to disposals of Investments

On disposal of an investment the difference between net disposal proceeds and the carrying amount should be recognised as income or expense. If the investment was a current asset carried on a portfolio basis at the lower of cost and market value, the profit or loss on sale should be based on cost. If the investment was previously revalued, or was carried at market value and an increase in carrying amount transferred to revaluation surplus, the enterprise should adopt a policy either of crediting the amount of any remaining related revaluation surplus to income or of transferring it to retained earnings. This policy should be applied consistently in accordance with Financial Reporting Standard.

Any reduction to market value of current investments carried at the lower of cost and market value on a portfolio basis is made against the cost of the portfolio in aggregate; individual investments continue to be recorded at cost. Accordingly the profit or loss on sale of an individual investment is based on cost; however the aggregate reduction to market value of the portfolio needs to be assessed.

When disposing of part of an enterprise's holding of a particular investment, a carrying amount must be allocated to the part sold. This carrying amount is usually determined from the average carrying amount of the total holding of the investment.

10.4.10 Transfers of Investments

For long-term investments re-classified as current investments, transfers should be made at:

- the lower of cost and carrying amount, if current investments are carried at the lower of cost and market value. If the investment was previously revalued, any remaining related revaluation surplus should be reversed on the transfer; and
- carrying amount if current investments are carried at market value. If changes in market value of current investments are included in income any remaining related revaluation surplus should be transferred to income.

Investments re-classified from current to long-term should each be transferred at the lower of cost and market value or at market value if they were previously stated at that value.

10.4.11 Switching of Investments within a Portfolio

An enterprise with significant investment activity typically maintains a portfolio of investments in which it trades constantly. In doing so, the enterprise seeks to improve the quality and yields of its portfolio of investments. On disposing of a particular investment, funds released are available for reinvestment or may remain as the cash element of the investment portfolio.

In view of the constant changes in investments in such a portfolio, different opinions are held as to the appropriate accounting treatment on disposal of a particular investment:

- some maintain that an excess or deficiency of net sale proceeds over carrying amount represents a realised profit or loss, which should be recognised in income immediately;
- others argue that the disposal merely reflects an adjustment of the constituents of the portfolio, representing no value increase or decrease since it is only a substitution of one investment for another, and that therefore no profit or loss should be reflected in income; and
- a few advocate a middle course, whereby the difference between net sale proceeds and cost is amortised to income over a given period.

Some enterprises that carry current investments at market value on the grounds that they are a store of freely disposable wealth recognise any gains or losses in market value as an element of income to be accounted for in the income statement along with profits and losses on disposals. However, in some countries such gains are not permitted to be included in income and are credited direct to owners' equity and accounted for in the same way as revaluation surplus on long-term investments.

If current investments are carried at the lower of cost and market value, any reductions to market value and any reversals of such reductions are included in the income statement along with profits and losses on disposals.

Any reductions in carrying amount for other than a temporary decline in value of long-term investments, and reversals of such reductions, and profits and losses on disposal of long-term investments are included in income.

10.4.12 Specialised Investment Enterprises

Specialised investment enterprises which are prohibited from distributing profits on the disposal of investments may exclude from income changes in value of investments, whether realised or not, provided they carry their investments at fair value. Such enterprises should include in the financial statements a summary of all the movements in value of their investments for the period.

In certain countries, there are specialised investment enterprises whose main business is the holding of a portfolio of marketable securities as an investment vehicle for their individual shareholders. These



enterprises carrying their investments at fair value, usually market value, because this is the most appropriate basis in the circumstances. They regard realised profits and losses on their investments as being the same in substance as unrealized gains and losses and therefore account for them in the same way. They disclose a summary of all the movements in the value of their investments for the period.

The constitutions of these enterprises prohibit the distribution as dividends of profits on disposal of investments and require a distinction to be drawn between income arising from interest and dividends and the gains or losses arising on the disposal of the investments. Hence these enterprises exclude from income all changes in value of investments whether or not they are realised.

Illustration 16

X Ltd. has the following portfolio of investment on 31st march 2010

Current investment	Cost	Market Value
Shares of A Ltd.	250	265
Units of UTI	160	160
Shares of C Ltd.	125	100
	535	525
Long term investment		
Shares of Y Ltd. (subsidiary)	200	210
Shares of Z Ltd.	150	130
Shares of W Ltd. (subsidiary)	80	10
	430	350

Compute the value of investment for balance sheet purpose assuming that the fall in value of investment Z Ltd. is temporary and that of W Ltd. is permanent.

Solution:

Current investment(at lower of cost or market value, individually)

(₹ In thousand)

Shares of A Ltd.	250	
Units of UTI	160	
Shares of C Ltd.	100	510
Long term investments		
Shares of Y Ltd.	200	
Shares of Z Ltd	150	
Shares of W Ltd.	80	
	430	
Less: Provision for permanent diminution	70	360
Total: (510 + 360)		870

Interest, dividend and rental receivables in connection with an investment are generally regarded as income, being the return on the investment. However, in some circumstances, such inflows represent a recovery of cost and do not form part of income. This happens when the inflows relate to a period prior to the date of acquisition of investment. Such inflows will be deducted from the cost of acquisition.

Illustration 17

Navaratna Ltd. furnishes the following particulars about their investment in shares of Samay Ltd. for the year 2009-10

Balance of shares held on 1 st April 2009	₹ 262000	(10000 shares of ₹ 10 each)
Purchased 2000 shares on 1 st July 2009	₹ 60000	
Sold 500 shares on 1 st August 2009 @ ₹ 35 per share cum dividend	₹ 17500	
Navaratna Ltd. declared final dividend for 2008-09 on 1 st September 2009.	20%	
Received 1:5 bonus shares on 1 st February, 2010.		

Brokerage for each transaction is 2%. Find out cost of shares held by Navaratna Ltd. as on 31st March 2010.

Solution:**Statement of cost**

Date	Particulars	Amount (₹)
1-4-09	Balance (10000 shares)	2,62,000
1-7-09	Purchased (2000 shares):	
	Cost (cum-div)	60000
	Add brokerage	<u>1200</u>
		61200
	Less: Dividend for 2008-09	<u>4000</u>
	Sold (500 shares cum div)	57200
1-8-09		
	Sale proceeds	17500
	Less: brokerage 2%	<u>350</u>
		17150
	Less: Dividend for 2008-09	<u>1000</u>
	Cost of sales (500 × 319200/1200)	(13300)
1-2-10	Bonus shares (1:5) i.e. (11,500 × 1/5)	
	Cost of Investment	3,05,900

** Cost of investment a 305900

* Cost of sales is computed on averse cost basis.

** Bonus shares are free and hence nothing is shown in amount column.

Treatment of dividend received:

Dividend received from Samay Ltd. during 2009-10

(11500 × ₹10) × 20% 23,000

Less: Dividend deducted from cost of investment 4,000

19,000

Add: Dividend included in sales proceeds of 500 shares
(received by the new buyer)

1,000

Dividend received to be shown in Profit & Loss A/c

20,000

Profit on sale of investment:

Sale proceeds of 500 shares (net of brokerage) 17,150

Less: Dividend for 2008-09 included above (to be considered as income) 1000

Less: cost of sales (on average cost basis) 13300

Profit on sales 2850



10.5 VALUATION OF SHARE

10.5.1 Basic Definitions

Common Stock - Ownership shares in a publicly held corporation.

Secondary Market - market in which already issued securities are traded by investors.

Dividend - Periodic cash distribution from the firm to the shareholders.

P/E Ratio - Price per share divided by earnings per share.

Book Value - Net worth of the firm according to the balance sheet.

Liquidation Value - Net proceeds that would be realized by selling the firm's assets and paying off its creditors.

Market Value Balance Sheet - Financial statement that uses market value of assets and liabilities.

Expected Return - The percentage yield that an investor forecasts from a specific investment over a set period of time. Sometimes called the **market capitalization rate**.

Payout Ratio - Fraction of earnings paid out as dividends.

Plowback Ratio - Fraction of earnings retained by the firm.

Present Value of Growth Opportunities (PVGO) - Net present value of a firm's future investments.

Sustainable Growth Rate - Steady rate at which a firm can grow: plowback ratio X return on equity.

10.5.2 Basics of Company Analysis and Stock Selection

It should be remembered that good companies are not necessarily good investments. As an investor we are interested in comparing the intrinsic value of a stock to its market value. A prudent investor should bear in mind that the stock of a great company may be overpriced, while the stock of a lesser company may be a superior investment since it is undervalued.

What are growth companies and growth stocks? Companies that consistently experience above-average increases in sales and earnings have traditionally been thought of as growth companies. Financial theorists define a growth company as one with management and opportunities that yield rates of return greater than the firm's required rate of return.

Growth stocks do not necessarily refer to shares in growth companies. A growth stock has a higher rate of return than other stocks with similar risk. Superior risk-adjusted rate of return occurs because of market under-valuation compared to other stocks. Studies indicate that growth companies have generally not been growth stocks.

Defensive companies' future earnings are more likely to withstand an economic downturn, due to low business risk and not excessive financial risk. Defensive stocks' returns are not as susceptible to changes in the market, as they represent stocks with low systematic risk.

Cyclical companies' sales and earnings heavily influenced by aggregate business activity, due to high business risk and sometimes high financial risk as well. Cyclical stocks experience high returns in up markets, low returns in down markets. They are stocks with high betas.

Speculative companies invest in assets involving great risk, but with the possibility of great gain as they have very high business risk. Speculative stocks have the potential for great percentage gains and losses. They may be firms whose current price-earnings ratios are very high.

Growth stocks will have positive earnings surprises and above-average risk adjusted rates of return because the stocks are undervalued. Value stocks appear to be undervalued for reasons besides earnings growth potential. They usually have low P/E ratio or low ratios of price to book value.

10.5.3 Theory of Valuation

The value of a financial asset is the present value of its expected future cash flows. The inputs required for valuation are:

- (a) The stream of expected future returns, or cash flows,
- (b) The required rate of return on the investment.

10.5.3.1 Stream of Expected Returns (Cash Flows):

Depending on the investment, returns can be in the form of:

- Earnings
- Dividends
- Interest payments
- Capital gains

The time period and growth rate of returns are important. This essentially means when the cash flows from the investment will be received.

10.5.3.2 Required Rate of Return:

This is determined by the risk of an investment and available returns in the market. Therefore, this is determined by:

1. The real risk-free rate of return, plus
2. The expected rate of inflation, plus
3. A risk premium to compensate for the uncertainty of returns

Sources of uncertainty, and therefore risk premiums, vary by the type of investment.

10.5.4 Investment Decision Process:

Once the expected (intrinsic) value is calculated, the investment decision is rather straightforward and intuitive:

- If Estimated Value > Market Price, buy
- If Estimated Value < Market Price, do not buy

The particulars of the valuation process vary by type of investment.

10.5.5 Valuation of Alternative Investments:

We will consider the valuation of two important types of investments:

- (a) The valuation of bonds
- (b) The valuation of common stock

Valuation of Bonds:

The cash flows for Bond are typically fixed:

- (a) Interest payments, for example, every six months equal to one-half of: (Coupon rate x Face value).
- (b) The payment of principal (Face or par value) at maturity.

Discount at the required rate of return to find the bond's value. The process made relatively easy with a financial calculator or spreadsheet software.



10.5.6 Approaches to Common Stock Valuation:

There are a number of methods when it comes to common stock valuation. They are given below:

1. Discounted Cash Flow Techniques:

- Present value of Dividends (DDM)
- Present value of Operating Cash Flow
- Present value of Free Cash Flow

2. Relative valuation techniques:

- Price-earnings ratio (P/E)
- Price-cash flow ratios (P/CF)
- Price-book value ratios (P/BV)
- Price-sales ratio (P/S)

10.5.6.1 Discounted Cash Flow Techniques:

This is based on the basic valuation model: the value of a financial asset is the present value of its expected future cash flows:

$$V_j = \sum CF_t / (1+k)^t$$

The different discounted cash flow techniques consider different cash flows and also different appropriate discount rates.

10.5.6.2 Dividend Discount Models:

Simplifying assumptions help in estimating present value of future dividends:

$$V_j = \sum D_t / (1+k)^t$$

Can also assume various dividends for a finite period of time with a reselling price, and simply calculate the combined present value of the dividends.

Alternative dividend assumptions:

Constant Growth Model:

- Assumes dividends started at D_0 (last year's dividend) and will grow at a constant growth rate
- Growth will continue for an infinite period of time
- The required return (k) is greater than the constant rate of growth (g)

$$V = D_1 / (k-g)$$

where $D_1 = D_0(1+g)$

The growth rate can be estimated from past growth in earnings and dividends, using the sustainable growth model. The discount rate would consider the systematic risk of the investment (beta).

Valuation with Temporary Supernormal Growth:

If you expect a company to experience rapid growth for some period of time:

- (a) Find the present value of each dividend during the supernormal growth period separately.
- (b) Find the present value of the remaining dividends when constant growth can be assumed.
- (c) Find the present value of the remaining dividends by finding the present value of the estimate obtained in step 2.

Present Value of Operating Cash Flows:

Another discounted cash flow approach is to discount operating cash flows. Operating cash flows are pre-interest cash flows, so the required rate of return would be adjusted to incorporate the required returns of all investors (use the WACC)

$$V_{Fj} = \sum OCF_t / (1 + WACC_j)^t$$

If we further assume a growth rate of g_{OCF} for operating cash flows, we can value the firm as:

$$V_{Fj} = OCF_t / (WACC_j - g_{OCF})$$

Present Value of Free Cash Flow to Equity:

A third discounted cash flow technique is to consider the free cash flows of a firm available to equity as the cash flow stream to be discounted. Since this is an equity stream, the appropriate discount rate is the required return on equity:

$$V_{sj} = \sum FCF_t / (1 + k_j)^t$$

Once again, if we want constant growth in free cash flows, this expression reduces to the following:

$$V_{sj} = FCF_t / (k_j - g_{FCF})$$

Relative Valuation Techniques:

These techniques assume that prices should have stable and consistent relationships to various firm variables across groups of firms:

- (a) Price-Earnings Ratio
- (b) Price-Cash Flow Ratio
- (c) Price-Book Value Ratio
- (d) Price-Sales Ratio

Price – Earnings Ratio:

The Price-Earnings ratio, popularly known as P/E ratio, is affected by two variables:

1. Required rate of return on its equity (k)
2. Expected growth rate of dividends (g)

$$P/E_1 = \frac{D_1/E}{k - g}$$

Look at the relationship between the current market price and expected earnings per share over the next year. The ratio is the earnings multiplier, and is a measure of the prevailing attitude of investors regarding a stock's value.

Using the P/E approach to valuation:

1. Estimate earnings for next year
2. Estimate the P/E ratio (Earnings Multiplier)
3. Multiply expected earnings by the expected P/E ratio to get expected price

$$V = E_1 \times (P/E)$$

**Price - Cash Flow Ratio:**

Cash flows can also be used in this approach, and are often considered less susceptible to manipulation by management. The steps are similar to using the P/E ratio.

$$V = CF_1 \times (P/CF)$$

Price-Book Value Ratio:

Book values can also be used as a measure of relative value. The steps to obtaining valuation estimates are again similar to using the P/E ratio.

$$V = BV_1 \times (P/BV)$$

Price-Sales Ratio:

Finally, sales can be used in relation to stock price. There are some drawbacks, in that sales do not necessarily produce profit and positive cash flows. The advantage is that sales are also less susceptible to manipulation. The steps are similar to using the P/E ratio.

$$V = S_1 \times (P/S)$$

Examples:

$$\text{Expected Return} = r = (\text{Div}_1 + P_1 - P_0) / P_0$$

Illustration 18

If Modern Electronics is selling for ₹100 per share today and is expected to sell for ₹110 one year from now, what is the expected return if the dividend one year from now is forecasted to be ₹5.00?

Solution:

$$\text{Expected Return} = r = (5 + 110 - 100) / 100 = 0.15$$

The formula can be broken into two parts:

Dividend Yield + Capital Appreciation

$$\text{Expected Return} = r = (\text{Div}_1 / P_0) + [(P_1 - P_0) / P_0]$$

Capitalization Rate can be estimated using the perpetuity formula, given minor algebraic manipulation.

$$\begin{aligned} \text{Capitalization Rate} = P_0 &= [\text{Div}_1 / (r - g)] \\ r &= (\text{Div}_1 / P_0) + g \end{aligned}$$

$$\text{Dividend Yield} = \text{Div}_1 / P_0$$

$$\text{Return on Equity} = \text{ROE} = \text{EPS} / \text{Book Value per share}$$

Dividend Discount Model - Computation of today's stock price which states that share value equals the present value of all expected future dividends.

$$i = n$$

$$P_0 = \sum [\text{Div}_i / (1+r)^i]$$

$$i = 1$$

i = the time horizon of the investment.

Illustration 19

Current forecasts are for XYZ Company to pay dividends of ₹3, ₹3.24, and ₹3.50 over the next three years, respectively. At the end of three years you anticipate selling your stock at a market price of ₹94.48. What is the price of the stock given a 12% expected return?

Solution:

$$PV = \frac{3.00}{(1+0.12)^1} + \frac{3.24}{(1+0.12)^2} + \frac{3.50+94.48}{(1+0.12)^3}$$

$$PV = ₹ 75.$$

If we forecast no growth, and plan to hold out stock indefinitely, we will then value the stock as a PERPETUITY.

$$\text{Perpetuity} = P_0 = (\text{Div}_1 / r)$$

$$= \text{EPS}_1 / r = [\text{Assumes all earnings are paid to shareholders}]$$

Constant Growth DDM - A version of the dividend growth model in which dividends grow at a constant rate (Gordon Growth Model).

Illustration 20

(Continued of Illustration 13.)

If the same stock is selling for ₹100 in the stock market, what might the market be assuming about the growth in dividends?

Solution:

$$100 = 3 / (0.12 - g)$$

$$g = 0.09$$

The market is assuming the dividend will grow at 9% per year, indefinitely.

If a firm elects to pay a lower dividend, and reinvest the funds, the stock price may increase because future dividends may be higher.

Growth can be derived from applying the return on equity to the percentage of earnings plowed back into operations.

$$g = \text{return on equity} \times \text{plowback ratio}$$

Illustration 21

Our company forecasts to pay a ₹5.00 dividend next year, which represents 100% of its earnings. This will provide investors with a 12% expected return. Instead, we decide to plow back 40% of the earnings at the firm's current return on equity of 20%. What is the value of the stock before and after the plowback decision?

Solution:

No Growth

$$P_0 = (5 / 0.12)$$

$$= ₹41.67$$

With Growth

$$g = 0.2 \times 0.4 = 0.08$$

$$P_0 = [3 / (0.12 - 0.08)]$$

$$= ₹ 75$$



If the company did not plowback some earnings, the stock price would remain at ₹41.67. With the plowback, the price rose to ₹75.00.

The difference between these two numbers (75.00-41.67=33.33) is called the Present Value of Growth Opportunities (PVGO).

Free Cash Flows (FCF) should be the theoretical basis for all PV calculations.

FCF is a more accurate measurement of PV than either Div or EPS.

The market price does not always reflect the PV of FCF.

When valuing a business for purchase, always use FCF.

Valuing a Business

The value of a business is usually computed as the discounted value of FCF out to a **valuation horizon (H)**.

The valuation horizon is sometimes called the terminal value and is calculated like PVGO

$$PV = \frac{FCF_1}{(1+r)^1} + \frac{FCF_2}{(1+r)^2} + \dots + \frac{FCF_i}{(1+r)^i} + \frac{PV_i}{(1+r)^i}$$

PV (free cash flows)

$$= \frac{FCF_1}{(1+r)^1} + \frac{FCF_2}{(1+r)^2} + \dots + \frac{FCF_i}{(1+r)^i}$$

$$PV \text{ (horizon value)} = \frac{PV_i}{(1+r)^i}$$

Illustration 22

Given the cash flows for Modern Manufacturing Division, calculate the PV of near term cash flows, PV (horizon value), and the total value of the firm. $r = 10\%$ and $g = 6\%$

	Year									
	1	2	3	4	5	6	7	8	9	10
Asset Value	10.00	12.00	14.40	17.28	20.74	23.43	26.47	28.05	29.73	31.51
Earnings	1.20	1.44	1.73	2.07	2.49	2.81	3.18	3.36	3.57	3.78
Investment	2.00	2.40	2.88	3.46	2.69	3.04	1.59	1.68	1.78	1.89
Free Cash Flow	-.80	-.96	-1.15	-1.39	-.20	-.23	1.59	1.68	1.79	1.89
EPS growth (%)	20	20	20	20	20	13	13	6	6	6

Solution:

$$PV \text{ (horizon value)} = \frac{1}{(1.1)^6} \left(\frac{1.59}{.10 - .06} \right) = 22.4$$

$$PV \text{ (FCF)} = -\frac{.80}{1.1} - \frac{.96}{(1.1)^2} - \frac{1.15}{(1.1)^3} - \frac{1.39}{(1.1)^4} - \frac{.20}{(1.1)^5} - \frac{.23}{(1.1)^6} = -3.6$$

$$\begin{aligned} PV \text{ (business)} &= PV(FCF) + PV(\text{horizon value}) \\ &= -3.6 + 22.4 \\ &= ₹18.8 \end{aligned}$$

SHARES**Illustration 23**

The Directors of Kamdhenu Private Ltd are planning to sell the Company. For this purpose they want you to put a value on the equity share of the Company using the methods which a prospective purchaser might apply.

The following information should be considered in valuing the shares under each method, commenting briefly on each method adopted –

1. Balance Sheet as on 31st March 2013

Liabilities	₹	Assets	₹
20,000 Equity Shares of ₹10 each fully paid	2,00,000	Fixed Assets - Net Block	
Revenue Reserves	5,95,000	Land & Building	5,00,000
Secured Loan (Secured on Land & Building)	1,50,000	Plant & Machinery	2,75,000
Trade & Expense Creditors	1,35,000	Motor Vehicles	55,000
Provision for Taxation	45,000	Stock in Trade	1,33,000
		Sundry Debtors	1,45,000
		Cash at Bank	15,000
		Preliminary Expenses	2,000
	11,25,000		11,25,000

2. Profit/ Dividend record: The Profit record after tax and interest but before dividends over the last five years have been as follows:

Year	2009	2010	2011	2012	2013
Profit	₹ 80,000	₹ 75,000	₹ 95,000	₹ 80,000	₹ 85,000

The average dividend has been ₹30,000 (gross) for the last ten years.

3. The operating budget shows that estimated after tax profit for the next year will be ₹85,000 and thereafter it is estimated that this will increase by 5% p.a over the next four years.

4. in the light of recent developments in the field of financial reporting, the Company has had its Fixed Assets valued by an independent expert whose report discloses the following values – Land & Building - ₹6,10,000, Plant & Machinery- ₹2,88,000, Motor Vehicles - ₹1,02,000.

5. A study of three public companies in the same market as Kamdhenu Private Ltd shows that the average dividend yield and price earning ratio of these over last three years have been ----

Year	Abhilasha Ltd		Ninder Ltd		Sanju Ltd	
	Dividend Yield %	P/E Ratio	Dividend Yield %	P/E Ratio	Dividend Yield %	P/E Ratio
2007	17.00	8.00	17.00	8.50	16.50	9.00
2008	17.00	8.00	15.00	9.00	17.00	10.00
2009	17.00	9.00	18.00	10.00	17.50	11.50
Average	17.00	8.33	16.70	9.17	17.00	10.17

6. One of the Directors has indicated that after tax cost of capital is now 17½%. The estimated net cash flow of the Company after taking into consideration taxation and capital expenditure over next five years in order to achieve / and as a result of, the five years profit plan, are as follows:



Year	2014	2015	2016	2017	2018
CF (₹)	1,00,000	1,20,000	1,40,000	10,000	1,50,000

Another Director is of the view that profitability be measured at 12 ½% on Tangible Capital and 17 ½% on Intangible Capital.

Solution:

1. Net Assets Method

Particulars	₹	₹
Land and Building (at revalued amount)		6,10,000
Plant and Machinery (at revalued amount)		2,88,000
Motor Vehicles (at revalued amount)		1,02,000
Stock in trade (at Balance Sheet Value)		1,33,000
Sundry Debtors (at Balance Sheet Value)		1,45,000
Cash at Bank (at Balance Sheet Value)		15,000
Total Assets		12,93,000
Less: Outside Liabilities		
Secured Loans	(1,50,000)	
Sundry creditors	(1,35,000)	
Provision for Taxation	(45,000)	3,30,000
Net Tangible Assets		9,63,000
Number of Equity Shares		20,000
Value per Equity Share (₹9,63,000 ÷ 20,000)		48.15

2. Dividend Yield Method

a. Actual Dividend Rate of the Company = Average Dividend ÷ Paid Up Capital	
= ₹ 30,000 ÷ ₹ 2,00,000 =	15.00%
b. Average Industry Dividend Rate = (17% + 16.70% + 17%) ÷ 3	16.90%
c. Value per Equity Share = (Face Value x Actual Yield) / Industry Dividend Rate	
= (₹10 x 15.00%) ÷ 16.90%	8.88

3. PE Multiple Method (based on Projected Earnings)

Note: Industry Average PE Ratio = (8.33 + 9.17 + 10.17)/3 = **9.22 times**

Year	Profit after Tax	Weights	Product
2014	₹85,000	5	4,25,000
2015	85,000 x 1.05 = ₹89,250	4	3,57,000
2016	89,250 x 1.05 = ₹93,713	3	2,81,139
2017	93,713 x 1.05 = ₹98,399	2	1,96,798
2018	98,399 x 1.05 = ₹1,03,319	1	1,03,319
Total	₹4,69,681	15	13,63,256

a. Average Profits (Simple/Weighted)	$4,69,681 \div 5 = ₹93,936$		$13,63,256 \div 15 = ₹90,884$
b. Number of Equity Share	20,000 shares		20,000 Shares
c. Projected Earnings per Share	₹4.70		₹4.54
d. Value per Share (on PE Multiple) = Co' EPS x Industry PE Ratio	$₹4.70 \times 9.22 \text{ times}$ = ₹43.33		$₹4.54 \times 9.22$ = ₹41.86

Note:

- Also, PAT for the year ending on the B/s date i.e 2013 can be taken as a Future Earning Capacity i.e at ₹85,000. Hence, EPS = ₹4.25 and Value per share = ₹4.25 x 9.22 times = **₹39.19**.
- Higher weightage is give to the near future years than far further future years.

4. Projected Earnings Capitalization Method

Particulars	Simple Average	Weighted Average
a. Projected Earnings (PAT) of the Company	₹93,936	₹90,884
b. Normal Rate of Return of the Industry = $1 \div \text{PE Ratio}$	$(1 \div 9.22) = 10.85\%$	$(1 \div 9.22) = 10.85\%$
c. Capitalized Value of Projected Earnings (a ÷ b)	₹8,65,770	₹8,37,641
d. Value per share = $(c \div 20,000 \text{ Shares})$	₹43.29	₹41.88

Note: The valuation under PE Multiple and Earnings Capitalization Method (at 10.85%) is effectively the same. The difference is due to rounding – off aspect in calculations.

5. Discounted Cash Flow Method

Year	PVF at 17.5%	Cash Flows	Present Value
2014	0.85	₹1,00,000	₹85,000
2015	0.72	₹1,20,000	₹86,400
2016	0.62	₹1,40,000	₹86,800
2017	0.52	₹10,000	₹5,200
2018	0.45	₹1,50,000	₹67,500
2019 onwards (See Note below)	0.45	$₹1,50,000 \div 10.85\% = ₹13,82,488$	₹6,22,120
Present Value of Future Cash Flows till perpetuity			₹9,53,020
Value per Share [₹9,53,020 ÷ 20,000 shares]			₹47.65

Note:

- Cash Flows of Year 2018 ₹1,50,000 are assumed to continue till perpetuity. Hence, it is divided by the Industry Normal Rate of Return, to estimate the cash flows till perpetuity. These are discounted to the present value, to ascertain the total discounted cash flows.
- Cash Flows of year 2017 is not in tune with the other years. This may be because of Capital Expenditure proposed during the year. In the absence of information of Capital Expenditure, no adjustment has been made.



6. Summary of Value per Share

Method	Value per Share	Remarks
1. Net Assets Method	₹48.15	Reports the Fair Values of assets available to Equity Shareholders. Provides basis for negotiating prices
2.Dividend – Yield Method	₹8.88	Suitable only for purchase of small lots and not for acquisition of controlling interest.
3. Earnings – Yield (PE Multiple)		
(a) On Simple Average	₹43.33	Recognizes market / industry expectations and the
(b) On Weighted Average	₹41.86	Company's future performance. However, weighted average
(c) On B/s Year Profits	₹39.19	Based calculations are more appropriate.
4. Earnings Capitalization Method		
(a) On Simple Average	₹43.29	Only a variant of the PE Multiple method. Weighted Average
(b) On Weighted Average	₹41.88	Based calculations are more appropriate.
5.Discounted Cash Flows	₹47.65	Most suited for acquisition of controlling interest.

Illustration 24

The Balance Sheet of Shyam Traders Ltd as on 31.12.2012 is as follow –

Liabilities	₹	Assets	₹
Share Capital (₹100 each)		Fixed Assets:	
1,500 6% Pref. Shares	1,50,000	Goodwill	1,50,000
4,500 Equity Shares	4,50,000	Freehold Properties	3,75,000
Profit & Loss Account	7,50,000	Plant & Machinery (Less Deprn)	1,50,000
5% Debentures	3,00,000	Quoted Investments (Returns 10% on cost)	3,00,000
Sundry Creditors	2,39,250	Stock	2,70,000
		Debtors (Net)	2,99,250
		Bank Balances	3,45,000
	18,89,250		18,89,250

Profits for the three years 2010,2011,2012 after charging the debenture interest but before providing for Preference Dividend, were ₹2,20,500, ₹3,22,500 and ₹2,40,000 respectively.

1. Preference Shares are payable on Liquidation.
2. The purchaser wants to acquire all the 4,500 Equity Shares.
3. The price for Equity Shares is to be based on the following assumptions –
 - (a) Normal return of 12% on Net Asset (at revised valuation) attributable to Equity Shares.
 - (b) Goodwill to be calculated at 4 times the adjusted average super profits of the 3 years referred above.

- (c) Debentures will be redeemed at a discount of 25% prior to the sale of the business; and in order to provide fund for this purpose, investments will be sold out.
- (d) Value of Freehold Property is agreed to be ascertained on the basis 8% return. The current rental value is ₹50,400.
- (e) A claim of ₹8,250 was omitted to be provided in the year 2012.
- (f) Market Value of Quoted Investments was ₹3,75,000.
- (g) Non-recurring profits are to be eliminated. 10% of the profits for 2011 referred to above arose from a transaction of non- recurring nature.
- (h) A Provision of 5% on Sundry Debtors was made in 2012 is no longer required (the provision when made was taken into account for purpose of Income Tax at 50%)

Prepare a valuation for the Company's Shares (from the point of view of the purchaser) after taking into account the revised values and valuation of goodwill based on 4 years purchase of super profits based on the average profits of the three years.

Solution:

1. Computation of Future Maintainable Equity Earnings

Particulars	2010	2011	2012
Profit After Tax	2,20,500	3,22,500	2,40,000
Less: Non- recurring Expenditure (10% x 3,22,500)	-	(32,250)	--
Claims unaccounted, now accounted	--	---	(8,250)
Add: Provision for Bad Debts not required (2,99,250 x 5/95)	---	---	15,750
Less: Tax Provision at 50% on the above (15,750 -8,250) x 50%	--	---	3,750
Adjusted Profits after Tax	2,20,500	2,90,250	2,43,750
Average Profits (2,20,500 +2,90,250+2,43,750)÷3			2,51,500
Add: Interest on Debentures (No Longer Payable) (₹3,00,000 x 5% x 50%) (after tax)			(7,500)
Less: Income from Investments (No Longer receivable) (₹3,00,000 x 10% x 50%) (after tax)			(15,000)
Future Maintainable Profits before Preference Dividend			2,44,000
Less: Preference Dividend			(9,000)
Future Maintainable Equity Earnings			2,35,000

Note:

- Sundry Debtors as per B/s reflects the net balance after deducting 5% provision. Since Net Debtors of ₹2,99,250 reflect 95% of the Total Debtors Amount, Provision = ₹2,99,250 x 5/95 = ₹15,750.
- Simple Average is taken due to fluctuating / oscillating trend of profits.

2. Computation of Capital Employed

Particulars	₹
Freehold Property (Capitalization of Rental Value of ₹50,400 at 8%)	6,30,000
Plant & Machinery	1,50,000
Stock	2,70,000
Sundry Debtors [₹2,99,250 ÷ (100% - Provision at 5%)	3,15,000



Bank [Balance 345 + Investment Sale 375 – Debenture Redemption 225]		4,95,000
Total Assets		18,60,000
Less: Outside Liabilities (excluding Equity Shareholders' Funds)		
Sundry Creditors [₹2,39,250 + Unaccounted Claim of ₹8,250]	2,47,500	
Preference Shareholders [Share Capital + Dividend Due]	1,59,000	
Additional Tax Liability due to unaccounted claim & provision w/back	3,750	4,10,250
Net Worth of Equity Share Holders on B/s date		14,49,750

Note:

- Since Normal Return is 12% on the Net Assets available to Equity Shares (given), Future Maintainable Equity Earnings should be compared with the Expected Equity Earnings. Hence, Net Worth of Equity Shareholders (i.e after deducting Preference Shareholders dues) is considered.
- Goodwill in the Balance Sheet should not be considered for computing net worth for Goodwill computation.
- Redemption value of debentures = face Value ₹3,00,000 – 25% Discount = ₹2,25,000

3.Computation of Super profits and Goodwill

Particulars	₹
Future Maintainable Equity Earnings	2,35,000
Less: Normal Earnings = Normal Return x Capital Employed =12% x 14,49,750	(1,73,970)
Super Profit i.e Excess Earnings available for Equity Shareholders	61,030
Goodwill at 4 years purchase of Super Profits = ₹61,030 x 4 years	2,44,120

Note: Alternatively, Average Capital Employed can be considered as Proxy for Future Capital Employed to determine normal earnings.

4. Valuation of Shares

Particulars	₹
a. Net Worth attributable to Equity Holders (calculated above)	14,49,750
b. Goodwill	2,44,120
c. Total Net Assets of Equity Shareholders	16,93,870
d. Number of Equity Shares	4,500 shares
e. Value per Equity Share	₹376.42

Illustration 25

The Balance Sheet of Govinda Ltd as at 31st March is given below-

Liabilities	₹	₹	Assets	₹	₹
Share Capital:			Fixed Assets:		
5,000 Equity Shares of ₹100		5,00,000	Land & Buildings at Cost		3,20,000
3,000 12% Preference Shares of ₹100		3,00,000	Plant & Machinery	9,40,000	
			(-) Acc. Depreciation	4,80,000	4,60,000

Reserves & Surplus:					
General Reserve		3,00,000	Investments:		
Profit & Loss A/c			6% Govt. Securities – at Cost		1,60,000
--- Opening Balance (beginning)	1,20,000		Current Assets:		
--- Current Year Profit	4,80,000		Book Debts		3,80,000
	6,00,000		Stock in Trade		4,50,000
--- Provision for Tax	(2,40,000)	3,60,000	Cash and Bank Balances		80,000
			Preliminary Expenses		60,000
Current Liabilities & provisions:					
Trade Creditors		2,10,000			
Provision for Taxation		2,40,000			
		19,10,000			19,10,000

The face value of the Government Securities is ₹2,00,000. The current Year profit reported in the Balance Sheet includes income from such Government Securities. Stock in Trade reported in Balance Sheet is taken at 90% of Market value.

The shares of the Company are not quoted on the Stock Exchange. A provision exists in the Articles of Association of the Company that in cases where any existing shareholder desires to transfer his holdings to another person, it should be done at a fair market value to be fixed by the Statutory Auditor of the Company. One of the shareholders desiring to transfer his holdings to X, an outsider, refers the matter of determination of the fair market value of shares to you, as the Statutory Auditor.

Indicate how you will proceed to determine such a value, based on the following additional information:

1. The Company's prospects in the near future appear good.
2. Land value is understated by ₹4,00,000. Buildings have suffered a further depreciation of ₹2,00,000.
3. Market Value of Plant and Machinery is ₹5,40,000.
4. Companies doing similar business as that of Govinda Ltd show a market return of 12% on Capital Employed.
5. Profits over the prior 3 years period have been increasing at the rate of ₹50,000 per annum.
6. It has always been the Company's practice to value stock at market prices.

Solution:

1. Computation of Future Maintainable Profits

Particulars	₹
Profit as per Profit & Loss Account	4,80,000
Less: Investment Income (₹2,00,000 x 6%)	(12,000)
Net Adjusted Profit Before Tax	4,68,000
Less: Tax Provision at 50% (See Note)	(2,34,000)
Adjusted Profit after Tax	2,34,000

**Note:**

- **Tax Rate** = Tax Provision as per books ÷ Profit as per books = ₹2,40,000 ÷ ₹4,80,000 = **50%**.
- It is assumed that 90% of Market Value is lower than cost of stock. Since the Company has been valuing its stock at market prices, it is assumed that no further adjustment is considered necessary in this case.

We are informed that the profits (assumed as PBT) of the last 3 years have been increasing at ₹50,000 per annum.

Presuming the trend of ₹50,000 increase in PBT to continue, profit after tax will increase by ₹25,000 [₹50,000 – 50%], and the expected profit of the next three years and their average will be –

Future Year	Expected PAT	Weights	Weight x PAT
Year 1	2,34,000 + 25,000 = 2,59,000	3	₹7,77,000
Year 2	2,59,000 + 25,000 = 2,84,000	2	₹5,68,000
Year 3	2,84,000 + 25,000 = 3,09,000	1	₹3,09,000
	Total	6	₹16,54,000
Weighted Average Profits = ₹16,54,000 ÷ 6			₹2,75,667
Less: Preference Dividend (₹3,00,000 x 12%)			(₹36,000)
Equity Earnings			₹2,39,667

2. Computation of Proxy Trading Capital Employed (based on Closing Capital Employed)

Particulars	₹	
Land & Buildings- Book Value	3,20,000	
Add: Increase in Value of Land	4,00,000	
Less: Decrease in Value of Building	(2,00,000)	5,20,000
Plant & Machinery		5,40,000
Book Debts		3,80,000
Stock in Trade (at Market Value) i.e. ₹4,50,000 x 100/90		5,00,000
Cash and Bank Balances		80,000
Total Assets		20,20,000
Less: External Liabilities		
Trade Creditors	2,10,000	
Provision for Taxation	2,40,000	(4,50,000)
Less: Preference Capital		(3,00,000)
Capital Employed as at 31st March (year-end)		12,70,000

Note: Stock is taken at Realizable Value i.e. Market Value. In the B/s, it has been taken at 90% only.

3. Computation of Goodwill

Particulars	₹
a. Capitalized Value of Future Maintainable Profits i.e ₹2,39,667 ÷ 12%	19,97,225
b. Capital Employed on Balance Sheet Date	12,70,000
c. Excess attributed to Goodwill (a-b)	7,27,225

4. Computation of value per Share on Net Assets Basis

Particulars	₹
a. Capital Employed on Balance Sheet date	12,70,000
b. Goodwill as calculated above	7,27,225
c. Non- Trade Investments at Cost	2,00,000
d. Net Assets available to Equity Shareholders (a+b+c)	21,97,225
e. Number of Equity Shares	5,000 Shares
f. Value per Equity Share based on Net Assets (d ÷ e)	₹439.45

Assuming Equity Shares are valued at Par if yielding 12% Return on Total Capital Employed, value per share is —

Particulars	₹
Future Maintainable Profit for Equity Shareholders (as computed above)	2,39,667
Add: Non- trade Income (after Tax) (2,00,000 x 6% x 50%)	6,000
Total Equity Earnings	2,45,667
Total Value Attributable to Equity Shareholders (computed above)	21,97,225
Actual Yield on Equity Capital Employed (245667 ÷ 2197225)	11.18%
Value per Share = Par Value x Actual Yield ÷ Expected Yield = ₹100 x 11.18% ÷ 12%	₹93.17

6. Summary of Value per Share under different methods

Particulars	₹
a. Value per Share under Net Assets method	439.45
b. Value per Share under Yield method	93.17
c. Fair Value per Share = (₹439.45 + ₹93.17) ÷ 2	266.31

Illustration 26

The Summarized Balance Sheet of Amway Private Ltd as on 31.03.2013 is as under-

Liabilities	₹	₹	Assets	₹	₹
Share Capital:			Fixed Assets: Goodwill		1,75,000
Equity Shares of ₹10 each		5,00,000	Leasehold Property	1,60,000	
8% Pref. Shares of ₹10 each fully paid		2,00,000	(-) Depreciation	70,000	90,000
Reserve & Surplus:			Plant & Machinery	2,50,000	
General Reserve		1,00,000	(-) Depreciation	25,000	2,25,000
Profit & Loss A/c		2,20,250	Investment at Cost		4,00,000
Current Liabilities:			Current Assets: Stock at Cost		82,500
Bank Loan		1,00,000	Sundry Debtors		40,500
Sundry Creditors		49,750	Balance at Bank		1,57,000
		11,70,000			11,70,000



A holder of 10,000 of the Equity Shares in the company has agreed to sell these shares at a value based on the above Balance Sheet, but subject to adjustment of the valuation of the following:

1. The leasehold property was acquired on 01.04.2003 and at the Balance Sheet date the lease has a further six years to run. The cost should be written off over the term of the lease by equal annual charges. To date ₹7,000 per annum had been written off.
2. In 2010-11, goods costing ₹6,000 were purchased and have been included since that date at cost in the Stock lists. The goods were valueless on the Balance Sheet date.
3. An expense Creditor ₹3,750 of the current year has been omitted from being recorded in the books.
4. A General Reserve of 10% on total Debtors, after specific provision for Doubtful Debts, has been made for the First time in the current year accounts.
5. Goodwill is to be valued at three years' purchase of the average Profits, after the above adjustments, of three years 2010-11; 2011-12; and 2012-13, such profits being those available for dividend for Equity shareholders.
6. The profits of the company as shown by the accounts before appropriations and before providing for preference dividends were as follows – 2010-11 ₹80,400; 2011-12 ₹92,900; 2012-13 ₹89,650.

You are required to compute the total consideration due to the Vending Shareholder.

Solution:

1. Future Maintainable Profits

Particulars	2010-11	2011-12	2012-13
Profits as given	80,400	92,900	89,650
Add: Lease Charges debited in P&L A/c	7,000	7,000	7,000
Less: Equal Lease Amortization ($1,60,000 \div 16$ Years)	(10,000)	(10,000)	(10,000)
Less: Obsolete and Valueless Closing Stock (assuming it lost value on B/S date)			(6,000)
Less: Unrecorded Expense			(3,750)
Add: General Reserve on Total Debtors ($40,500 \times 10\% \div 90\%$)			4,500
Adjusted Profits	77,400	89,900	81,400
Average Adjusted Trading Profits = $(77,400 + 89,900 + 81,400) \div 3$			82,900
Less: Preference Dividends (8% of ₹2,00,000)			(16,000)
Equity Earnings = Future Maintainable Earnings			66,900
Goodwill = $3 \times$ Average Profit ₹66,900			2,00,700

Notes:

1. In the absence of tax rates, tax effects are ignored on the above adjustments.
2. Loss in value of stock is assumed to have taken place during the last financial year.
3. General Reserve on Bad Debts has been reversed, assuming the same will not be provided in the future. Alternatively, if it is assumed that it will be continued in the future, the same may be added back to the Average Profits.

2. Capital Employed (based on Closing Balance Sheet)

Particulars	₹
Goodwill	2,00,700
Leasehold Property (1,60,000 Less Amortization for 10 years 10,000 x 10)	60,000
Plant and Machinery (at Balance Sheet value)	2,25,000
Investments at Cost (Assuming to be Trade Investments)	4,00,000
Stocks at Cost (82,500 – 6,000 Valueless stock)	76,500
Sundry Debtors (40,500 + Reversal of Reserve 4,500)	45,000
Balance at Bank	1,57,000
Sundry Creditors (49,750 + Expense Creditors 3,750)	(53,500)
Bank Loan	(1,00,000)
Preference Capital	(2,00,000)
Equity Capital Employed	8,10,700
No. of Equity Shares	50,000
Value per Share	₹16.214

Illustration 27

Following are the information of two companies for the year ended 31st March, 2011:

Particulars	Company A	Company B
Equity Shares of ₹ 10 each	8,00,000	10,00,000
10% Pref. Shares of ₹ 10 each	6,00,000	4,00,000
Profit after tax	3,00,000	3,00,000

Assume the Market expectation is 18% and 80% of the Profits are distributed.

- What is the rate you would pay to the Equity Shares of each Company ?
 - If you are buying a small lot.
 - If you are buying controlling interest shares.
- If you plan to Invest only in preference shares which company's preference shares would you prefer ?
- Would your rates be different for buying small tot, if the company 'A' retains 30% and company 'B' 10% of the profits ?

Solution:

(I) (a) Buying a small lot of equity shares: If the purpose of valuation is to provide data base to aid a decision of buying a small (non-controlling) position of the equity of the companies, dividend capitalisation method is most appropriate. Under this method, value of equity share is given by:

$$\frac{\text{Dividend per share}}{\text{Market capitalisation rate}} \times 100$$

$$\text{Company A: } ₹ \frac{2.4}{18} \times 100 = ₹ 13.33$$

$$\text{Company B: } ₹ \frac{2.08}{18} \times 100 = ₹ 11.56$$



(b) Buying controlling interest equity shares: If the purpose of valuation is to provide data base to aid a decision of buying controlling interest in the company, EPS capitalisation method is most appropriate. Under this method, value of equity is given by:

$$\frac{\text{Earning per share (EPS)}}{\text{Market capitalisation rate}} \times 100$$

$$\text{Company A: } ₹ \frac{3}{18} \times 100 = ₹ 16.67$$

$$\text{Company B: } ₹ \frac{2.6}{18} \times 100 = ₹ 14.44$$

(ii) Preference Dividend coverage ratios of both companies are to be compared to make such decision.

Preference dividend coverage ratio is given by:

$$\frac{\text{Profit after tax}}{\text{Preference Dividend}} \times 100$$

$$\text{Company A: } \frac{₹ 3,00,000}{₹ 60,000} = 5 \text{ times}$$

$$\text{Company B: } \frac{₹ 3,00,000}{₹ 40,000} = 7.5 \text{ times}$$

If we are planning to invest only in preference shares, we would prefer shares of B Company as there is more coverage for preference dividend.

(iii) Yes, the rates will be different for buying a small lot of equity shares, if the company 'A' retains 30% and company 'B' 10% of profits.

The new rates will be calculated as follows:

$$\text{Company A: } ₹ \frac{2.1}{18} \times 100 = ₹ 11.67$$

$$\text{Company B: } ₹ \frac{2.34}{18} \times 100 = ₹ 13.00$$

Working Notes:

1. Computation of earning per share and dividend per share (companies distribute 80% of profits)

	Company A	Company B
Profit before tax	3,00,000	3,00,000
Less: Preference dividend	<u>60,000</u>	<u>40,000</u>
Earnings available to equity shareholders (A)	2,40,000	2,60,000
Number of Equity Shares (B)	<u>80,000</u>	<u>1,00,000</u>
Earning per share (A/B)	3.0	2.60
Retained earnings 20%	48,000	52,000
Dividend declared 80% (C)	1,92,000	2,08,000
Dividend per share (C/B)	2.40	2.08

2. Computation of dividend per share (Company A retains 30% and Company B 10% of profits)

Earnings available for Equity Shareholders	2,40,000	2,60,000
Number of Equity Shares	80,000	1,00,000
Retained Earnings	72,000	26,000
Dividend Distribution	1,68,000	2,34,000
Dividend per share	2.10	2.34

Illustration 28

The Balance Sheet of Ganguram Industries Ltd as at 31st December 2013 was as under –

Liabilities	₹	Assets	₹
Equity Share Capital (₹10)		Buildings	2,00,000
₹10 paid up per share	3,00,000	Plant & Machinery	4,00,000
₹5 paid up per share	2,00,000	Sundry Debtors	2,10,000
9% Preference Share Capital (₹100)	1,00,000	Stock in Trade	2,50,000
Reserves	3,00,000	Cash and Bank	40,000
Sundry Creditors	2,00,000		
	11,00,000		11,00,000

Profit and Dividend in the last several years were as under:

Year	Profit	Equity Dividend
2011	₹2,20,000	12%
2012	₹2,50,000	15%
2013	₹3,20,000	18%

Land and Buildings are worth ₹4,00,000. Managerial remuneration is likely to go up by ₹20,000 p.a. Income-Tax may be provided at 50%. Equity Shares of Companies in the same industry with a dividend rate of 10% are quoted at par. Ignore Goodwill value depreciation adjustment for revaluation and the need of transfer to General Reserve.

Find the most appropriate value of an Equity Share assuming that-

1. Controlling interest is transferred;
2. Only a few shares are to be transferred.



Solution:

1. Computation of Future Maintainable Profits

Year	PBT	Weights	Product ₹
2011	₹2,20,000	1	2,20,000
2012	₹2,50,000	2	5,00,000
2013	₹3,20,000	3	9,60,000
Total		6	16,80,000
Weighted Average Profits (₹16,80,000 ÷ 6)			2,80,000
Less: Additional Managerial Remuneration payable			(20,000)
Net Adjusted Profits before Tax			2,60,000
Less: Tax Expense at 50%			(1,30,000)
Net Adjusted Profits after Tax, but before Preference Dividend			1,30,000
Less: Preference Dividend (₹1,00,000 x 9%)			(9,000)
Future Maintainable PAT available for Equity Shareholders			1,21,000

Notes:

- It is assumed that the Profits given in the Question are Profits before Tax.
- Since Profits show an increasing trend, weighted average is more appropriate. Hence, more weights are assigned to the profits of the most recent years.
- Instead of assigning weights, Linear Trend Equation may be formed and the future profits for some years (say 3-5 years) estimated on the basis of the equation, and average of such profits be taken for determining Profits available for Equity Shareholders.

2. Valuation of Shares under Earnings Capitalization Method

Particulars	₹
Future Maintainable Profits for Equity Shareholders	1,21,000
Capitalized Value of Equity (Maintainable Profit ÷ Normal Return) i.e. 1,21,000 ÷ 10%	12,10,000
Add: Notional Call on Partly Paid Shares (₹5 x 40,000 Shares)	2,00,000
Total Value of Equity	14,10,000
Total Number of Equity Shares	70,000 shares
a. Fully Paid Share = ₹3,00,000 ÷ ₹10 = 30,000 Shares;	
b. Partly Paid Shares = ₹2,00,000 ÷ ₹5 = 40,000 Shares	
Value per Fully Paid Share [Adjusted Equity Value ÷ Total No. of Shares]	₹20.14
Value per Partly Paid Share [₹20.14 - ₹5 unpaid]	₹15.14

Note:

1. Unpaid amount on partly paid-up shares is assumed to be called in the near future. In the absence of specific information, additional income on Notional Calls, is ignored.
2. Normal Rate Return is assumed to Post Tax Expectation.

3.Valuation of Shares under Net Asset Method

Particulars	₹
Buildings (Revalued Amount)	4,00,000
Plant & Machinery	4,00,000
Sundry Debtors	2,10,000
Stock in Trade	2,50,000
Cash and Bank	40,000
Total Assets	13,00,000
Less: External Liabilities - Sundry Creditors	2,00,000
Net Assets	11,00,000
Less: Preference Share Capital	1,00,000
Net Assets Attributable to Equity Shareholders	10,00,000
Add: Notional Call on Shares	2,00,000
Adjusted Net Assets Attributable to Equity Shareholders	12,00,000
Number of Equity Shares (Fully Paid + Partly Paid) as calculated above	70,000 Shares
Value per Fully Paid Share ($₹12,00,000 \div 70,000$)	₹17.14
Value per Partly Paid Share ($₹17.14 - \text{Notional Call of } ₹5$)	₹12.14

4. Summary of value per Share for Controlling Acquisition

Particulars	Fully Paid Share	Partly Paid Share
a. Earnings Capitalization Method	₹20.14	₹15.14
b. Net Assets Method	₹17.14	₹12.14
c. Fair Value (Average of the above)	$(20.14 + 17.14) \div 2 = \text{₹18.64}$	$(15.14 + 12.14) \div 2 = \text{₹13.64}$

5. Computation of Value per Share for Small Lot Acquisition

Year	Dividend Rate	Weights	Product
2011	12%	1	12%
2012	15%	2	30%
2013	18%	3	54%
Total		6	96%
Weighted Average Dividend Rate (96% ÷ 6)			16%
Value per Share for Small Lot Acquisition = (Paid Up Value per Share x Company's Dividend Rate) ÷ Market Dividend Rate			
For Fully Paid Up Share: ($₹10 \times 16\%$) ÷ 10%			₹16.00
For Partly Paid Up Share: ($₹5 \times 16\%$) ÷ 10%			₹8.00

Note:

When small shareholders acquire shares based on dividend expectation, shares are to be valued only on basis of paid up value of shares since, generally, **dividends are declared only on the paid up value of shares** and not on the notional full value of shares. Here, merely reducing the value of a fully paid share by unpaid amount is **not appropriate**. Students should carefully observe the distinction in valuation principles between majority acquisition and small lot buying.

**Illustration 29**

The following is the Balance Sheet of N Ltd. as on 31st March, 2011:

Balance Sheet

Liabilities	₹	Assets	₹
4,00,000 Equity shares of ₹ 10 each fully paid	40,00,000	Goodwill	4,00,000
13.5% Redeemable preference shares of ₹ 100 each fully paid	20,00,000	Building	24,00,000
General Reserve	16,00,000	Machinery	22,00,000
Profit and Loss Account	3,20,000	Furniture	10,00,000
Bank Loan (Secured against fixed assets)	12,00,000	Vehicles	18,00,000
Bills Payable	6,00,000	Investments	16,00,000
Creditors	31,00,000	Stock	11,00,000
		Debtors	18,00,000
		Bank Balance	3,20,000
		Preliminary Expenses	2,00,000
	1,28,20,000		1,28,20,000

Further information:

- Return on capital employed is 20% in similar businesses.
- Fixed assets are worth 30% more than book value. Stock is overvalued by ₹ 1,00,000, Debtors are to be reduced by ₹ 20,000. Trade investments, which constitute 10% of the total investments are to be valued at 10% below cost.
- Trade investments were purchased on 1.4.2010. 50% of non-Trade Investments were purchased on 1.4.2009 and the rest on 1.4.2008. Non-Trade Investments yielded 15% return on cost.
- In 2008-2009 new machinery costing ₹ 2,00,000 was purchased, but wrongly charged to revenue. This amount should be adjusted taking depreciation at 10% on reducing value method.
- In 2009-2010 furniture with a book value of ₹ 1,00,000 was sold for ₹ 60,000.
- For calculating goodwill two years purchase of super profits based on simple average profits of last four years are to be considered. Profits of last four years are as under: 2007-2008 ₹ 16,00,000, -2008-2009 ₹ 18,00,000, 2009-2010 ₹ 21,00,000, 2010-2011 ₹ 22,00,000.
- Additional depreciation provision at the rate of 10% on the additional value of Plant and Machinery alone may be considered for arriving at average profit.

Find out the intrinsic value of the equity share. Income-tax and Dividend tax are not to be considered.

Solution:**Calculation of intrinsic value of equity shares of N Ltd.****1. Calculation of Goodwill**

- Capital employed

Fixed Assets	₹	₹
Building	24,00,000	
Machinery (₹ 22,00,000 + ₹ 1,45,800)	23,45,000	
Furniture	10,00,000	

Vehicles	18,00,000	
	75,45,800	
Add: 30% increase	22,63,740	
	98,09,540	
Trade investments (₹ 16,00,000 x 10% x 90%)	1,44,000	
Debtors (₹ 18,00,000 - ₹ 20,000)	17,80,000	
Stock (₹ 11,00,000 - ₹ 1,00,000)	10,00,000	
Bank balance	3,20,000	1,30,53,540
Less: Outside liabilities		
Bank Loan	12,00,000	
Bills payable	6,00,000	
Creditors	31,00,000	49,00,000
Capital employed		81,53,540

(ii) Future maintainable profit

Calculation of average profit

	2007-08 ₹	2008-09 ₹	2009-10 ₹	2010-11 ₹
Profit given	16,00,000	18,00,000	21,00,000	22,00,000
Add: Capital expenditure of machinery charged to revenue	—	2,00,000	—	—
Loss on sale of furniture	—	—	40,000	—
	16,00,000	20,00,000	21,40,000	22,00,000
Less: Depreciation on machinery		20,000	18,000	16,200
Income from non-trade investments		1,08,000	2,16,000	2,16,000
Reduction in value of stock				1,00,000
Bad debts Adjusted profit				20,000
Adjusted profit	16,00,000	18,72,000	19,06,000	18,47,800

Total adjusted profit for four years (2007-2008 to 2010-2011) 72,25,800

Average profit (₹ 72,25,800/4) 18,06,450

Less: Depreciation at 10% on additional value of machinery

(22,00,000 + 1,45,800) x 30/100 i.e. ₹ 7.03,740 70,374

Adjusted average profit 17,36,076

(iii) Normal Profit

(20% on capital employed i.e. 20% on ₹ 81,53,540) = ₹16,30,708

(iv) Super profit

Expected profit - normal profit

(₹ 17,36,076 - ₹ 16,30,708) = ₹ 1,05,368

(v) Goodwill

2 years' purchase of super profit

₹ 1,05,368 x 2 = ₹ 2,10,736



2. Net assets available to equity shareholders

	₹	₹
Goodwill as calculated in 1(v) above		2,10,736
Sundry fixed assets		98,09,540
Trade and Non-trade investments		15,84,000
Debtors		17,80,000
Stock		10,00,000
Bank balance		<u>3,20,000</u>
		1,47,04,276
Less: Outside liabilities		
Bank loan	12,00,000	
Bills payable	6,00,000	
Creditors	<u>31,00,000</u>	49,00,000
Preference share capital		<u>20,00,000</u>
Net assets for equity shareholders		78,04,276

3. Valuation of equity shares

$$\begin{aligned}\text{Value of equity share} &= \frac{\text{Net assets available to equity shareholders}}{\text{Number of equity shares}} \\ &= \frac{\text{₹ } 78,04,276}{4,00,000} = \text{₹ } 19.51\end{aligned}$$

Note :

1. Depreciation on the overall increased value of assets (worth 30% more than book value) has not been considered. Depreciation on the additional value of only plant and machinery has been considered taking depreciation at 10% on reducing value method while calculating average adjusted profit.
2. Loss on sale of furniture has been taken as non-recurring or extraordinary item.
3. It has been assumed that preference dividend has been paid till date.

Illustration 30

The Capital Structure of M/s XYZ Ltd., on 31st March, 2011 was as follows:

	₹
Equity Capital	18,00,000
18,000 Shares of ₹100 each	
12% Preference Capital 5,000 Shares of ₹ 100 each	5,00,000
12% Secured Debentures	5,00,000
Reserves	5,00,000
Profit earned before Interest and Taxes during the year	7,20,000
Tax Rate	40%

Generally the return on equity shares of this type of Industry is 15%.

Subject to:

- (a) The profit after tax covers Fixed Interest and Fixed Dividends at least 4 times.
- (b) The Debt Equity ratio is at least 2;
- (c) Yield on shares is calculated at 60% of distributed profits and 10% of undistributed profits;

The Company has been paying regularly an Equity dividend of 15%.

The risk premium for Dividends is generally assumed at 1%.

Find out the value of Equity shares of the Company.

Solution:

Calculation of profit after tax (PAT)

		₹
Profit before interest & tax (PBIT)		7,20,000
Less: Debenture interest (₹ 5,00,000 × 12/100)		<u>60,000</u>
Profit before tax (PBT)		6,60,000
Loss: Tax @ 40%		<u>2,64,000</u>
Profit after tax (PAT)		3,96,000
Less: Preference dividend $\left(₹ 5,00,000 \times \frac{12}{100} \right)$	60,000	
Equity dividend $\left(₹ 18,00,000 \times \frac{15}{100} \right)$	<u>2,70,000</u>	<u>3,30,000</u>
Retained earnings (undistributed profit)		<u>66,000</u>

Calculation of Interest and Fixed Dividend Coverage

$$\begin{aligned}
 &= \frac{\text{PAT} + \text{Debenture interest}}{\text{Debenture interest} + \text{Preference dividend}} \\
 &= \frac{₹ 3,96,000 + 60,000}{₹ 60,000 + 60,000} \\
 &= \frac{₹ 4,56,000}{₹ 1,20,000} = 3.8 \text{ times}
 \end{aligned}$$

Calculation of Debt Equity Ratio

Debt Equity Ratio

$$\begin{aligned}
 &= \frac{\text{Debt (long term loans)}}{\text{Equity (shareholders' funds)}} \\
 &= \frac{\text{Debentures}}{\text{Preference share capital} + \text{Equity share capital} + \text{Reserves}} \\
 &= \frac{₹ 5,00,000}{₹ 5,00,000 + 18,00,000 + 5,00,000}
 \end{aligned}$$

$$\text{Debt Equity Ratio} = \frac{₹ 5,00,000}{₹ 28,00,000} = 0.179$$

The ratio is less than the prescribed ratio.



Calculation of Yield on Equity Shares

Yield on equity shares is calculated at 60% of distributed profits and 10% of undistributed profits:

60% of distributed profits (60% of ₹ 2,70,000)	1,62,000
10% of undistributed profits (10% of ₹ 66,000)	<u>6,600</u>
	<u>1,68,600</u>

$$\begin{aligned}\text{Yield on shares} &= \frac{\text{Yield on shares}}{\text{Equity share capital}} \times 100 \\ &= \frac{\text{₹ 1,68,600}}{\text{₹ 18,00,000}} \times 100 = 9.37\%\end{aligned}$$

Calculation of Expected Yield on Equity Shares

Normal return expected	15%
Add: Risk premium for low interest and fixed dividend coverage (3.8 < 4)	1%*
Risk for debt equity ratio not required	<u>Nil **</u>
	<u>16%</u>

Value of an Equity Share

$$\begin{aligned}&= \frac{\text{Actual yield}}{\text{Expected yield}} \times \text{Paid up value of share} \\ &= \frac{9.37}{16} \times 100 = \text{₹ 58.56}\end{aligned}$$

* When interest and fixed dividend coverage is lower than the prescribed norm, the riskiness of equity investors is high. They should claim additional risk premium over and above the normal rate of return. Hence, the additional risk premium of 1% has been added.

** The debt equity ratio is lower than the prescribed ratio, that means outside funds (Debts) are lower as compared to shareholders' funds. Therefore, the risk is less for equity shareholders. Therefore, no risk premium is required to be added in this case.

10.6 HUMAN RESOURCE ACCOUNTING

10.6.1 Introduction:

The past few decades have witnessed a global transition from manufacturing to service based economies. The fundamental difference between the two lies in the very nature of their assets. In the former, the physical assets like plant, machinery, material etc. are of utmost importance. In contrast, in the latter, knowledge and attitudes of the employees assume greater significance. For instance, in the case of an IT firm, the value of its physical assets is negligible when compared with the value of the knowledge and skills of its personnel. Similarly, in hospitals, academic institutions, consulting firms, etc., the total worth of the organisation depends mainly on the skills of its employees and the services they render. Hence, the success of these organizations is contingent on the quality of their Human Resource – its knowledge, skills, competence, motivation and understanding of the organisational culture.

In knowledge – driven economies, therefore, it is imperative that the humans be recognized as an integral part of the total worth of an organisation. However, in order to estimate and project the worth of the human capital, it is necessary that some method of quantifying the worth of the knowledge, motivation, skills, and contribution of the human element as well as that of the organisational processes, like recruitment, selection, training etc., which are used to build and support these human aspects, is developed. Human Resource Accounting (HRA) denotes just this process of quantification/ measurement of the Human Resource.

Human resource management activities include attraction, selection, retention, development and utilization. In the past, these activities were evaluated in behavioral and statistical terms. Behavioral measures were the reactions of various groups of what individuals have learned or of how their behaviors have changed on the job. Statistical Measures were ratios, percentages, measures of central tendency and variability, and measures of correlation.

Today, because of rising costs, there is a need to evaluate HR management activities in economic terms. This requires gathering information from Accounting, Finance, Economics and Behavioral Science.

10.6.2 Definition of Human Resource Accounting (HRA)

There are no generally accepted accounting procedures for employee valuation. The first major attempt at employee valuation was made by R.G. Barry Corporation of Columbus, Ohio in their 1971 annual report, to enable the company to report accurate estimates of the worth of the organization's human assets.

The American Accounting Association's Committee on Human Resource Accounting (1973) has defined *Human Resource Accounting* as "the process of identifying and measuring data about human resources and communicating this information to interested parties". HRA, thus, not only involves measurement of all the costs/investments associated with the recruitment, placement, training and development of employees, but also the quantification of the economic value of the people in an organisation.

Flamholtz (1971) too has offered a similar definition for HRA. They define HRA as "the measurement and reporting of the cost and value of people in organizational resources".

In India, the Companies Act, 1956 does not mandate furnishing of HRA related information in the financial statements of the companies. The Institute of Chartered Accountants of India too, has not brought out any definitive standard or measurement in the reporting of human resources costs. Some general qualitative pronouncements are made by the top management in major forums such as an annual general meeting on the importance of human resources, which have sounded more like platitudes and prosaic. However, some organizations in India such as Infosys, BHEL and ACC have furnished the value of their human resources and related information in their annual reports.



10.6.3 Benefits of HRA

According to Likert (1971), HRA serves the following purposes in an organisation:

- (i) It furnishes cost/value information for making management decisions about acquiring, allocating, developing, and maintaining human resources in order to attain cost-effectiveness;
- (ii) It allows management personnel to monitor effectively the use of human resources;
- (iii) It provides a sound and effective basis of human asset control, that is, whether the asset is appreciated, depleted or conserved;
- (iv) It helps in the development of management principles by classifying the financial consequences of various practices.

Basically, HRA is a management tool which is designed to assist senior management in understanding the long term cost and benefit implications of their HR decisions so that better business decisions can be taken. If such accounting is not done, then the management runs the risk of taking decisions that may improve profits in the short run but may also have severe repercussions in future. For example, very often organisations hire young people from outside on very high salaries because of an immediate business requirement. Later on, however, they find that the de-motivating impact of this move on the existing experienced staff has caused immense long – term harm by reducing their productivity and by creating salary distortions across the organisational structure.

HRA also provides the HR professionals and management with information for managing the human resources efficiently and effectively. Such information is essential for performing the critical HR functions of acquiring, developing, allocating, conserving, utilizing, evaluating and rewarding in a proper way. These functions are the key transformational processes that convert human resources from 'raw' inputs (in the form of individuals, groups and the total human organization) to outputs in the form of goods and services. HRA indicates whether these processes are adding value or enhancing unnecessary costs.

In addition to facilitating internal decision making processes, HRA also enables critical external decision makers, especially the investors in making realistic investment decisions. Investors make investment decisions based on the total worth of the organisation. HRA provides the investors with a more complete and accurate account of the organisations' total worth, and therefore, enables better investment decisions. For example, conventional financial statements treat HR investments as "expenditures. Consequently, their income statement projects expenditures to acquire, place and train human resources as expenses during the current year rather than capitalizing and amortizing them over their expected service life. The balance sheet, thus, becomes distorted as it inaccurately presents the "total Assets" as well as the "net income" and, thereby, the "rate of return" which is the ratio of net income to the total assets. HRA helps in removing this distortion.

Furthermore, in a business environment where corporate social responsibility is rapidly gaining ground, HRA reflects the extent to which organisation contributes to society's human capital by investing in its development.

Finally, in an era where performance is closely linked to rewards and, therefore, the performance of all groups/departments/functions needs to be quantified to the extent possible, HRA helps in measuring the performance of the HR function as such.

10.6.4 Cost Based Model:

Historical Cost Model: This model was first introduced by R. Likert at R.G. Barry Corporation in Columbus, Ohio (USA) in 1967. Under this model, The actual cost of recruiting, selecting, hiring, placing and developing the employees of an organisation are capitalized and amortize over the expected useful life of the asset concerned. The sum of are the cost as mentioned above for all the employees of the enterprise is taken to represent the total value of human resources. If the assets are liquidated permanently, losses are recorded and if the asset has longer life than estimated, revisions are made in

the amortized value. If an employee's leaves the firm before the expiry of expected service life of the employees the net asset value to that extent is charged to current revenue.

The model is simple and easy to understand and to be consistent with the matching principle. But it fails to provide reasonable value to human assets. It only capitalizes only recruiting training, development, placement and inducting cost but ignores the future expected costs to be incurred for their maintenance. Secondly estimation of the no of years over which the capitalized expenditure is to be and is likely to be largely subjective. It is difficult to calculate the rate at which total expenditure on human resources is to be amortized. Lastly value of human resource increases but through this treatment capital cost decreases through amortization.

10.6.4.1 The Replacement Cost Approach:

Value to an organisation of an individual's services is reflected by the amount that the organisation would have to pay to replace these services. This method consists of estimating the cost of replacing a firm's existing human resources; these costs will include costs of recruiting, selecting, hiring, training, placing and developing new compliance of the existing employee. Falmhotz has offered two different concepts of replacement cost individual and replacement cost refers to the cost that would have been incurred to replace an individual by a substitute who can provide the same kind of services as that of the individual replacement. On the other hand positional replacement cost represents cost of replacing the set services of any individual in a defined position in an organisation. The replacement cost approach incorporates the current value of companies' human resources. It takes into account fluctuation of the job market and general rise in price level. This method is regarded as a good surrogate for the economic value of the asset in the sense that market consideration is essential in reaching a final figure. But it is difficult to find replacement of the existing human resources in actual practice.

10.6.4.2 Opportunity Cost Approach:

This model proposed by J.S. Hekimian and C.H. Jones in 1967. These methods are used to value employees possessing certain skills and thus are rare in availability. Under this method it is assumed that opportunity cost as the best means to value HRs. According to this approach, the opportunity cost of an employee is determined by using comparative bidding method. Under this method the investment centre managers will be for rare (scarce) employees they need to recruit. In other words, employees not considered are not included in the human asset base of the organisation. This model provides for more optimal allocation of HR and sets a quantitative base for planning, developing and evaluating HRs of the organisation. However this approach adopts a discriminating attitude. Since it takes into account only scarce HRs.

Illustration 31

A company has a capital base of ₹ 1 crore and has earned profits to the tune of ₹ 11,00,000. The return on investment (ROI) of the particular industry to which the company belongs is 12.5%. If the company acquires by the company, it is expected that profits will increase by ₹ 250,000 over and above the target profit.

Determine the amount of maximum bid price for that particular executive and the maximum salary that could be offered to him.

Solution:

Capital base ₹ 100,00,000

Actual profit ₹ 11,00,000

Target profit ₹ 100,00,000 × 12.5% = ₹ 12,50,000

Expected profit on employing the particular executive = ₹ 12,50,000 + ₹ 250,000



Additional profit = expected profit – Actual profit
= ₹ 15,00,000 – ₹ 11,00,000
= Rs 4,00,000

Maximum bid price = Additional profit / rate of return on
= ₹ 400,000 / 12.5%
= ₹ 32,00,000

Maximum salary that can be offered = ₹ 32,00,000 x 12.5%
= ₹ 400,000

Maximum salary can be offered to that particular employee up to the amount of additional profit is ₹ 400,000

Value based model:

Present value of future earnings:

This model was introduced by Baruch Lev and Schwarz. According to the authors, valuations of HRs of homogenous group can be done by aggregating the present values of wages and salary payable to individual employees during the stay with the organisation. Measurement of HRs under this method involves (a) division of employee according to their age, grade of pay and designation (b) determination of average per year (c) calculating of total earnings based on the remaining tenure of the service life (d) discounting total earning on the basis of average rate of return.

This HRs can be valued on the basis of following formula:

$$V_x = \sum_{t=x}^T \frac{I(t)}{(1+R)^{T-x}}$$

Where V_x = The human capital value of a person 'x' years old.

T = Retirement Age

I(t) = The person's annual earning up to retirement.

R = Discount rate

Stochastic Rewards valuation model:

This model was proposed by Eric G Flamholtz in 1971 to measure the HR value to the organisation with the help of stochastic process. This model focuses on the measurement of a person's value to a specified organisation. It is recognized that a person renders value for an organisation as he occupies and plays different roles and renders services to the organisations. The movement of people from one organisation role (service state) to another over some specified period of time may be valued as stochastic process, depended up on the roles previously occupied and such movement can be estimated probabilistically. The expected service to be derived from an individual is ascertained by

$$E(R) = \sum_{i=1}^n R_i P(R_i)$$

R_i = Represent quantity of services expected to be derived in each state.

$P(R_i)$ = The probability that they will be obtained.

The major advantage of this model that it takes into account the probability of an individual's career movement and of his leaving the organisation prior to the retirement or death. However, it is very difficult to obtain reliable data pertaining to incomes of employee for various positions during different time periods.

Group basis valuation model:

This model is proposed by Jaggi and Law. This model recognised the fact that proper valuation of human resource is not possible unless the contributions of individuals as a group are taken into view. A group refers to homogeneous employees whether in the same investment centre or not. It might be difficult to predict on individual and expected service tenure in the organisation or at a particular level or position but not a group basis, it is easier to ascertain the percentage of people in a particular group likely either to leave the firm during each for the committee period or to be promoted to higher leaves. The model aims at calculating the present value of all existing employees in each grade or rank. The following methodology is followed to measure present value.

- Ascertain the number of employees in each rank.
- Estimate the probability that an employee will be in his grade within organisation or terminated/promoted in the next period.
- Ascertain the economic value of an employee in a specified grade during each period of time.
- The present value of existing employees in each rank/grade is obtained by multiplying the above three factors.

Limitations:

- The existing HR valuation models are not free from drawback. Thus no model can be traded universally as a suitable model yet.
- There are no clear guidance how to differentiate the cost and value of human resources. Like physical assets human assets can't be owned, retained or utilized at the sweet will and pressure of organisation.
- There is no consensus as yet among the account and finance professional regarding in what form and manner the human assets are to be valued and then shown in B-sheet.
- There is also a fear that employees and trade unions may not accept the idea valuing HR may lead to division of labours.

Case Study :-

Human Resources Valuation

Extracted from Infosys Annual Report, 2007

The dichotomy in accounting between human and non-human capital is fundamental. The latter is recognized as an asset and is, therefore, recorded in the books and reported in the financial statements, whereas the former is ignored by accountants. The definition of wealth as a source of income inevitably leads to the recognition of human capital as one of the several forms of wealth such as money, securities and physical capital.

We have used the Lev & Schwartz model to compute the value of human resources. The evaluation is based on the present value of future earnings of employees and on the following assumptions:

- Employee compensation includes all direct and indirect benefits earned both in India and abroad.
- The incremental earnings based on group/age have been considered.
- The future earnings have been discounted at the cost of capital of 14.97% (previous year – 12.96%).



in ₹ crore, unless stated otherwise

Employees (no.)	2007	2006
Software professionals	68,156	49,495
Support	4,085	3,220
Total	72,241	52,715
Value of human resources		
Software professionals	53,592	43,336
Support	3,860	3,301
Total	57,452	46,637
Total income	13,893	9,521
Total employee cost	7,112	4,801
Value-added	11,879	8,030
Net profits excluding exceptional items	3,861	2,479
Ratios		
Value of human resources per employee	0.80	0.88
Total income/human resources value (ratio)	0.24	0.20
Employee cost/human resources value (%)	12.4	10.3
Value-added/human resources value (ratio)	0.21	0.17
Return on human resources value (%)	6.7	5.3

Value-added	in ₹ Crore			
	2007	%	2006	%
Income	13,893		9,521	
Less: Operating expenses excluding personnel costs				
Software development expenses	1,187		812	
Selling and marketing expenses	371		231	
General and administration expenses	834		587	
	2,392		1,630	
Value-added from operations	11,501		7,891	
Other income (including exceptional items)	378		139	
Total value-added	11,879		8,030	
Distribution of value-added				
Human resources:				
Salaries and bonus	7,112	59.9	4,801	59.8
Providers of capital:				
Dividend	654	5.5	1,238	15.4
Minority interest	11	0.1	21	0.3
Interest	–	–	–	–
	665	5.6	1,259	15.7
Taxes:				

Income taxes	386	3.2	313	3.9
Tax on dividend	102	0.9	174	2.2
	488	4.1	487	6.1
Retained in business:				
Depreciation	514	4.3	437	5.4
Income retained in business	3,100	26.1	1,046	13.0
	3,614	30.4	1,483	18.4
Total	11,879	100.0	8,030	100.0

Note: The figures above are based on the consolidated Indian GAAP financial statements. Dividends for fiscal 2007 include one-time silver jubilee dividend of ₹ 827 crore. Income taxes for fiscal 2007 include tax reversal of ₹ 125 crore.

Illustration 32

From the following data in respect of an employer kindly calculate the total value of Human Capital under 'Lev and Schwarts' Model –

Distribution of Employees

Age Group	Unskilled		SEMI- SKILLED		Skilled	
	No	Average Annual Earnings	No	Average Annual Earnings	No	Average Annual Earnings
30-39	100	₹18,000	60	₹36,000	40	₹84,000
40-49	50	₹30,000	30	₹48,000	20	₹1,20,000
50-54	30	₹36,000	20	₹60,000	10	₹1,80,000

Retirement age is 55 years. Apply discount factor of 15%. In calculation of total value of Human factor the lowest value of each class should be taken Annuity factor @ 15%.

5 years	10 years	15 years	20 years	25 years
3.352	5.019	5.847	6.259	6.464

Solution:

VALUATION IN RESPECT OF UNSKILLED EMPLOYEES

1. Age Group 30-39: (assuming that all 100 employees are just 30 years old)

Particulars	Computation	Present Value
₹18,000 p.a for next 10 years	18,000 x 5.019	90,342
₹30,000 p.a from years 11 to 20	30,000 x (6.259 - 5.019)	37,200
₹36,000 p.a from years 21 to 25	36,000 x (6.464 - 6.259)	57,384
	Total	1,84,926

2. Age Group 40-49 : (assuming that all 50 employees are just 40 years old)

Particulars	Computation	Present Value
₹30,000 p.a for next 10 years	30,000 x 5.019	1,50,570
₹36,000 p.a from years 11 to 15	36,000 x (5.847 - 5.019)	29,808
	Total	1,80,378



3. Age Group 50-54 : (assuming that all 30 employees are just 50 years old)

Particulars	Computation	Present Value
₹36,000 p.a for next 5 years	$36,000 \times 3.352$	1,20,672

VALUATION IN RESPECT OF SEMI- SKILLED EMPLOYEES

1. Age Group 30-39: (assuming that all 60 employees are just 30 years old)

Particulars	Computation	Present Value
₹36,000 p.a for next 10 years	$36,000 \times 5.019$	1,80,684
₹48,000 p.a from years 11 to 20	$48,000 \times (6.259 - 5.019)$	59,520
₹60,000 p.a from years 21 to 25	$60,000 \times (6.464 - 6.259)$	12,300
	Total	2,52,504

2. Age Group 40-49 : (assuming that all 30 employees are just 40 years old)

Particulars	Computation	Present Value
₹48,000 p.a for next 10 years	$48,000 \times 5.019$	2,40,912
₹60,000 p.a from years 11 to 15	$60,000 \times (5.847 - 5.019)$	49,680
	Total	2,90,592

3.Age Group 50-54: (assuming that all 20 employees are just 50 years old)

Particulars	Computation	Present Value
₹60,000 p.a for next 5 years	$60,000 \times 3.352$	2,01,120

VALUATION IN RESPECT OF SKILLED EMPLOYEES

1. Age Group 30-39 : (assuming that all 40 employees are just 30 years old)

Particulars	Computation	Present Value
₹84,000 p.a for next 10 years	$84,000 \times 5.019$	4,21,596
₹1,20,000 p.a from years 11 to 20	$1,20,000 \times (6.259 - 5.019)$	1,48,800
₹1,80,000 p.a from years 21 to 25	$1,80,000 \times (6.464 - 6.259)$	36,900
	Total	6,07,296

2.Age Group 40-49: (assuming that all 20 employees are just 40 years old)

Particulars	Computation	Present Value
₹1,20,000 p.a for next 10 years	$1,20,000 \times 5.019$	6,02,280
₹1,80,000 p.a from years 11 to 15	$1,80,000 \times (5.847 - 5.019)$	1,49,040
	Total	7,51,320

3. Age Group 50-54 : (assuming that all 10 employees are just 50 years old)

Particulars	Computation	Present Value
₹1,80,000 p.a for next 5 years	$1,80,000 \times 3.352$	6,03,360

TOTAL VALUE OF HUMAN CAPITAL

	Unskilled		Semi-skilled		Skilled		Total	
Age	No.	PV of future earnings	No	PV of future earnings	No.	PV of future earnings	No	PV of future earnings
30-39	100	1,84,926 x 100 = 1,84,92,600	60	2,52,504 x 60 = 1,51,50,240	40	6,07,296 x 40 = 2,42,91,840	200	5,79,34,680
40-49	50	1,80,378 x 50 = 90,18,900	30	2,90,592 x 30 = 87,17,760	20	7,51,320 x 20 = 1,50,26,400	100	3,27,63,060
50-54	30	1,20,672 x 30 = 36,20,160	20	2,01,120 x 20 = 40,22,400	10	6,03,360 x 10 = 60,33,600	60	1,36,76,160
Total	180	3,11,31,660	110	2,78,90,400	70	4,53,51,840	360	10,43,73,900

Illustration 33

A company has a capital base of ₹3 crore and has earned profits of ₹33 Lakhs. Return on investment of the particular industry to which the company belongs is 12.5%. If the services of a particular executive are acquired by the company, it is expected that the profits will increase by ₹7.5 lakhs over and above the target profit. Determine the amount of maximum bid price for that particular executive and the maximum salary that could be offered to him.

Particulars	₹
Capital Base	3,00,00,000
Actual profit	33,00,000
Target profit (₹3Cr × 12.5%)	37,50,000

Solution:**1. Maximum Salary Payable:**

Particulars	₹ Lakhs
Capital Base	300.00
Target Profits (= Capital Base x 12.50%)	37.50
Add: Extra Profits due to induction of the Executive	7.50
Total Profits of the Company (anticipated after induction of the Executive)	45.00
Less: Current Profits	33.00
Incremental Profit	12.00

Maximum Salary = Incremental Profit due to introduction = ₹12.00 Lakhs per annum.

2. Maximum Bid Price:

= Value of Salary Payable in perpetuity

= Maximum Salary Payable ÷ Desired Rate of Return on Investment

= ₹12 Lakh ÷ 12.5% = ₹96 Lakhs.



10.7 VALUATION OF GOODWILL, PATENTS AND COPYRIGHTS

10.7.1 Intangible Assets

Intangible assets include a wide array of assets ranging from patents and trademarks to goodwill. The accounting standards vary across intangible assets.

In case of specifically identifiable intangibles, the cost associated with the obtaining of intangibles can be identified (i.e., patents, copyrights, trademarks, etc.).

10.7.2 Patents

A patent gives the holder the exclusive right to produce, use and sell a product or process without interference or infringement from others.

Cost of patent: If purchased from an inventor, the cost will include the purchase price plus any legal fees (to successfully protect the patent). In addition, any legal fees occur after the acquisition of a patent to successfully defend the right of the patent should also be capitalized. The cost of a patent should be amortized over the legal life or the useful life, whichever is shorter.

If a patent becomes worthless, the net value of the patent should be written off as expense (or loss).

If a patent is internally developed, no cost can be capitalized. All the research and development (R&D) costs should be expensed.

Patents and Trademarks are valued differently depending on whether they are generated internally or acquired. When patents and trademarks are generated from internal research, the costs incurred in developing the assets are expensed in that period, even though the asset might have a life of several accounting periods. Thus, the intangible asset is not valued in the balance sheet of the company. In contrast, when an asset is acquired from an external party, it is treated as an asset.

Intangible assets have to be amortized over their expected lives.

10.7.3 Copyrights

Copyright is a government granted right to authors, sculptors, painters, and other artists for their creations. A copyright is granted for the life of the creator plus 70 years. It gives the creator and heirs an exclusive right to reproduce and sell the artistic work or published work.

Cost of Copyright: If purchased, the cost includes the purchase price plus any legal fees. If developed by the owner (the creator), no cost can be assigned (capitalized).

Amortization is by Straight-line method or a unit-of-production method.

10.7.4 Trademarks & Trade Names

Trademarks and trade names refer to a word, a phrase, or a symbol that distinguishes a product or an enterprise from another (i.e., company names such as IBM, Microsoft, Intel, and XEROX).

Cost is similar to that of copyrights. The owner should register at the Patent Office for 10 years life. The registration can be renewed every 10 years for unlimited times.

Amortization is over the shorter of the useful or legal life, not to exceed 40 years.

10.7.5 Leaseholds

By signing a contract, the lessee acquires an exclusive right to use the property. Leasehold improvements denote the improvements made to the leased property.

10.7.6 Organization Costs

Organization costs refer to costs associated with the formation of a corporation including fees to underwriters (for stock issuance), legal fees, promotional expenditures, etc.

10.7.7 Franchise & License

A franchise is a contractual agreement under which the franchiser grants the franchisee the right to sell certain products or service or to use certain trade names or trademarks.

A license is a contractual agreement between a governmental body (i.e., city, state, etc.) and a private enterprise to use public property to provide services.

Costs should be capitalized.

Amortization is done over the shorter of the contractual life or the useful life, not to exceed 40 years.

10.7.8 Research and Development (R&D)

R&D related expenditures are expensed and disclosed, if they are incurred for internal use.

Costs of R&D performed under contracts are capitalized as inventory. Income from these contracts can be recognized based on percentage-of completion or complete contract method as discussed for the long-term construction contracts.

R&D expenditures include salaries of personnel involved in R&D, costs of materials used, equipments, facilities and intangibles used in R&D activities. If equipment has an alternative usage, only the depreciation expense will be included in the R&D expense.

10.7.9 Purchased R&D and Earnings Quality

When acquiring another company, the purchase price is allocated to tangible assets, intangibles (developed technology) and in-process R&D. The remaining will be the goodwill. The in-process R&D is expensed.

The more the purchase price is assigned to the in-process R&D, the lesser will be the amount assigned to goodwill.

This strategy can reduce future goodwill amortization expense and increase future earnings.

10.7.10 Computer Software Costs

If the software is to be sold, most of the costs need to be expensed. Costs include designing, coding, testing, documentation and preparation of training materials. All these costs should be expensed as R & D expenses.

Costs occurred after technological feasibility of the product is established (i.e., the costs of design to suit the needs of customers) should be capitalized as an intangible asset.

Costs occurred after the software is ready for general release and production: These costs should be product costs.

10.7.11 Goodwill – Goodwill Creation:

When a business is able to earn profits at a rate higher than that at which a similar business earns, the former business is said to possess goodwill. Goodwill is, therefore, an invisible asset by the possession of which a business can enjoy super earning. Since it is invisible the goodwill is called an in tangible asset. But since its existence can be felt through superior earning power it is a real asset.

There are several causes for which a business may have goodwill and some of them are:

Possession of a large number of profitable contracts ;

Suitable nature of the business ;

Exclusive franchise ;

Protected valuable patents and trademarks ;

Suitable location of the business ;



Ideal window dressing ;

Government patronage ;

Reputability, respectability and reliability of the proprietor or partners or trustees ;

Special ability and skill of the persons in management, etc.

In case of transfer of business, separation of the partners from the business due to retirement, death, etc, assessment of the value of the business for any reason, goodwill may have to be valued.

Valuation of Goodwill

There are various methods for valuation of goodwill of a business of which the following are of common use:

Few years' Purchase of Average Profits Method: Under this method goodwill is valued on the basis of an agreed number of years' purchase of the average maintainable profit. The word maintainable indicates several adjustments in respect of the factors which might have influenced abnormally the profits of the years over which the average is taken. If in any year there is an exceptional opportunity or an exceptional expense or absence of expense, the profit for the year has to be so adjusted as to get it free from such exceptional influences.

Sometimes instead of the simple average of the adjusted profits as discussed above, weighted average is taken into consideration. Weights are given to each years' profit on the consideration how each years' profit is likely to influence the future profit trend.

Super Profits Method: Under this method average super profit is ascertained. Goodwill is calculated at a few years' purchase of the super profit of the concern. The number of years to be taken for consideration depends upon the nature of the business, the steady or fluctuating nature of the profit and also the nature of goodwill.

First, ascertain the average capital employed during the year. For this purpose take the total of the closing real assets of the concern as revalued (excluding the non-trading assets and goodwill already appearing in the balance sheet unless such goodwill represented the payment to the vendor).

In order to find out the average capital employed it is necessary to deduct from the above the current liabilities and 50% of the profits for the year after tax. The profit should also be excluding non-trading income, if any. The average capital employed in this way excludes the long term loans, debentures and preference shares.

The idea of capital employed is not suitable for the purpose of valuation of goodwill of an individual company where valuation is to be done to the advantage of the equity shareholders. In this case, from the above total assets we deduct the current liabilities, long term loans, preference capital, etc, also 50% of the profit for the year after excluding non-trading income and after charging interest on long term loans and debentures, preference dividend, etc.

The average capital employed is the mean of the opening and closing capitals. As we have taken the closing net assets which include the profits for the year it is necessary to deduct 50% of the profit in order to get the capital at the middle of the year. If, however, the closing net assets are after the payment of dividend or after setting aside a portion of the profit to proposed dividend account, necessary adjustments must be done so that the average capital ascertained includes only 50% of the profit after tax.

Now we calculate the normal average annual trading profit after tax, but before charging interest on debentures and long term loans and also preference dividend. From this average profit reasonable managerial remuneration should also be deducted. The profit as obtained after the above adjustments is to be compared with the reasonable return on the average capital employed, calculated at the rate of return earned by similar businesses. If the former exceeds the latter the balance represents the super profit.

A few years' purchase of the super profit is taken as the value of goodwill.

Annuity Method: Under this method the basis is super profit. Let us take an example:

Suppose the super profit of a concern has been calculated at ₹50000 and it has been considered reasonable that 5 years' purchase of the super profit approximates the value of goodwill. The contention behind this is that, the purchaser of the business can expect to enjoy super profit of ₹50000 per year for the next 5 years. If this is the contention it is not reasonable that he should pay ₹ (50000×5) or ₹250000. He should pay an amount which will give him an annuity of ₹50000 over the next 5 years at the current rate of interest. This is what is known as the annuity method of valuation of goodwill. Once the super profit is ascertained, the present value and hence the value of goodwill can be ascertained by the following formula:-

$$V = a/i[1 - (1+i)^{-n}] \text{ , or,}$$

$$V = a/i[1 - 1/(1+i)^n]$$

Where,

V=the present value of the annuity or the value of goodwill in this case

a=the annuity or the annual super profit in this case

n=the number of years the annuity would be enjoyed

i=the rate of interest per rupee per year

Capitalization Method :

Capitalization of Average Profit : Under this method the average annual profit is to be ascertained after providing for reasonable management remuneration. This profit should be capitalized at the rate of reasonable return to find out the total value of business. Now the value of goodwill will be the total value of business minus its net assets. If, however, the net asset is greater there will be no goodwill, rather there is badwill.

Capitalization of Super Profit : Under this method the average super profit is capitalised at a certain rate of interest and this capitalized amount becomes the value of goodwill.

Issues in Valuation of Intangibles:

Certain issues relating to some of the intangibles are given below:

- (a) **Patents:** jurisdictional coverage, status of registrations, breadth of patent claims, alternatives to the patented invention, risks of infringement and invalidity, and the possibility of blocking patents.
- (b) **Trade Secrets:** the reasonableness and effectiveness of measures taken to ensure secrecy; the possibility that the secret could be legitimately discovered by competitors through independent research; and if potentially patentable, the potential benefits, costs and risk of patenting versus holding the trade secret as a trade secret.
- (c) **Copyrights:** whether the copyright is for the original work, or for a particular derivative of it.
- (d) **Trademarks:** Ability to be extended to related products or services without infringing on the trademarks of others, the nature and status of any registrations, the possibility of abandonment due to non-use, and the possibility that a mark might have become generic.



Illustration 34

Negotiation is going on for transfer of A Ltd. on the basis of Balance Sheet and the additional information as given below:

Balance Sheet of A Ltd.

As on 31st march 2010

Share capital (₹ 10 fully paid up share)	10,00,000	Goodwill	1,00,000
Reserve & Surplus	4,00,000	Land & Building	3,00,000
Sundry creditors	3,00,000	Plant & Machinery	8,00,000
		Investment	1,00,000
		Stock	2,00,000
		Debtors	1,50,000
		Cash & Bank	50,000
	17,00,000		17,00,000

Profit before tax for 2009-10 amounted to ₹ 6, 00,000 including ₹ 10,000 as interest on investment. However, an additional amount of ₹ 50,000 p.a. shall be required to be spent for smooth running of the business.

Market value of land & building and plant & machinery are estimated at ₹9,00,000 and ₹ 10,00,000 respectively. In order to match the above figures further depreciation to the extent of ₹ 40,000 should be taken into consideration. Income tax rate may be taken at 30%. Return on capital at the rate of 20% before tax may be considered as normal for this business for the present stage.

For the purpose of determining the rate of return, profit for this year after the aforesaid adjustments may be taken as expected average profit. Similarly, average trading capital employed is also to be considered on the basis of position in this year.

It has been agreed that a three years' purchase of supper profit shall be taken as the value of goodwill for the purpose of the deal.

You are requested to calculate the value of the goodwill for the company.

Solution:

Valuation of goodwill

Capital employed on 31 st march, 2010	(Amount in ₹)	
Land & Building		9,00,000
Plant & machinery		10,00,000
Stock		2,00,000
Debtors		1,50,000
Cash & bank		50,000
Less: Sundry creditors		3,00,000
		20,00,000
Average maintainable trading profit for the year ending 31 st march, 2010		
Net profit before tax		6,00,000
Less: Additional depreciation	40,000	
Less: additional recurring expenses	50,000	

Less: Non-operating income (interest on investment)	10,000	1,00,000
		5,00,000
Less: Provision for taxation @30% of ₹ 540000		1,62,000
		3,38,000
Average trading capital employed		
Closing capital employed		20,00,000
Less: 50% of average maintainable trading profit after tax		1,69,000
		18,31,000
Super Profit		
Average maintainable operating profit		3,38,000
Less: Normal profit 14% of capital employed ₹ 1831000		2,56,000
		81,660
Valuation of goodwill		
Super profits	81,660	
Goodwill at 3 years purchase of super profits	2,44,980	

Note:

1. It has been assumed that additional depreciation arising out of revaluation of assets is not deductible for calculating provision for taxation.
2. Since tax rate is 30% and normal pre-tax rate being 20% the after tax normal rate of return will be 14%.

Illustration 35

Capital employed by A Ltd. ₹ 1800000, future maintainable profit ₹ 350000, normal rate of return 10%, super profit can be maintained 5 years. Compute goodwill.

Solution:

Future maintainable profit	₹ 350000
Less: Maintainable normal profit (1800000 × 10/100)	180000
Super profit	170000

Goodwill = super profit × number of years for which super profit can be maintained

= ₹ 170000 × 5 = ₹ 850000.

Illustration 36

Q. Marico Ltd. acquired 100% of Sun Ltd. for ₹ 20,000 (lacs). As on the date of acquisition, the net assets of Marico Ltd. were:

(₹ in lacs)

Tangible fixed assets	500
Brand (valued by management)	120
Net current assets	380

Compute goodwill on acquisition under the following situation:

Ignore brand value.



Consider brand value.

Solution:

Alt I: If brand value is ignored

Purchase consideration	2000
Less: net assets acquired (500+380)	880
Goodwill	1120

Alt II: If brand value is considered

Purchase consideration	2000
Less: Net assets acquired	1000
Goodwill	1000

In first case above goodwill includes brand, in second case brand has been recognized separately.

In India no company has so far attempted to recognize brand separately from goodwill on acquisition. This is because of two reasons:

- (a) Difficulty in measuring brand ; and
- (b) Absence of statutory or regulatory requirement to recognize brand separately from goodwill.

But with the growing importance of brand both nationally and internationally, many multinational companies started recognizing brand separately .

Illustration 37

Given below is the Balance Sheet of Sandip Ltd as on 31.03.2013 (₹ Lakhs)

Liabilities	₹	Assets	₹
Share Capital	50.00	Sundry Fixed	72.00
Reserve	32.00	Non- Trade Investments	12.00
Profit and Loss Account	3.00	Stock	7.80
Sundry Creditors	8.20	Debtors	6.20
Proposed Dividend	10.00	Cash & Bank	5.20
Total	103.20	Total	103.20

Other Information:

1. Profit Before Tax and Other relevant information: (₹ Lakhs)

Year	Profit Before Tax	Provision for Gratuity required	Gratuity Paid	Loss of uninsured stock
2009	42.00	2.20	-	-
2010	39.00	2.30	1.67	0.62
2011	44.00	2.50	0.32	-
2012	42.00	2.60	1.42	-
2013	37.00	2.70	0.12	-

2. Past Tax rate is 51% while Expected Tax Rate is 45%.

3. The Company wants to switch over towards maintaining gratuity provision on actuarial calculation rather than accounting on payment basis. The Company's Non- Trade Investments fetched 11%.

Find out value of Goodwill. It may be assumed that Super Profit, if any, is maintainable for 5 years. 18% should be the appropriate discount factor. Normal Rate of Return may be taken as 15%.

Solution:

1. Computation of Future Maintainable Profits (₹ Lakhs)

Particulars	2009	2010	2011	2012	2013
Profit Before Tax	42.00	39.00	44.00	42.00	37.00
Less: Provision for Gratuity	(2.20)	(2.30)	(2.50)	(2.60)	(2.70)
Add: Gratuity Paid	—	1.67	0.32	1.42	0.12
Add: Abnormal Loss	—	0.62	—	—	—
Adjusted Profits	39.80	38.99	41.82	40.82	34.42
Simple Average Profit (See Note below) $(39.80 + 38.99 + 41.82 + 40.82 + 34.42) \div 5$					39.17
Less : Income from Non-Trade Investments at 11% of ₹12 Lakhs					(1.32)
Adjusted Profit After Tax = Future Maintainable PBT					37.85
Less : Tax Expense at 45%					(17.03)
Adjusted Profit After Tax = Future Maintainable PAT					20.82

Note: Since Profits show an oscillating trend, Simple Average Profit shall be more appropriate than Weighted Average or Trend Equation Methods.

2. Computation of Average Capital Employed

Particulars	₹ Lakhs	
Total of Assets as per Balance Sheet		103.20
Less: Non- Trade Investments and Sundry Creditors (12.00 + 8.20)		(20.20)
Closing Capital Employed		83.00
Less: 50% of Profit After Tax earned in 2013 as per Books		
PAT = PBT less Tax at 51% = 37.00 Less 51% thereon = ₹18.13 Lakhs	18.13	
50% of the above PAT for the year		(9.07)
Average Capital Employed		73.93

3. Computation of Goodwill (₹ Lakhs)

(a) Capitalization Method:

Expected Capital (Future Maintainable Profit ÷ NRR) = ₹20.82 Lakhs ÷ 15%	130.13
Less: Closing Capital Employed Less Proposed Dividend = 83.00 - 10.00	73.00
Goodwill using Capitalization Method	57.13

(b) Super Profit Method:

Future Maintainable Profit	20.82
Less: Normal Profit at 15% Average Capital Employed (15% of ₹73.93 Lakhs)	11.09
Super Profits	9.73
Goodwill at 5 years' purchase of Super Profits	48.65

Note: Alternatively Normal Profit can be computed based on Closing Capital Employed

**(c) Annuity Method:**

Super Profits	9.73
Annuity Factor for 5 years at 18%	3.127
Goodwill using Annuity Method	30.43

Note and Assumptions:

- Under Capitalization Method, Closing Capital is considered, whereas under Super Profit Method, Average Capital Employed is considered for calculating Normal Profits.
- Discount Rate and Normal Rate of Return given above are after tax rates.

Illustration 38

The following are the summarized Balance Sheets of two Companies, R Ltd and S Ltd as on 31.03.2012

Liabilities	R Ltd	S Ltd	Assets	R Ltd	S Ltd
Equity Shares of ₹10 each	15,00,000	10,00,000	Goodwill	2,00,000	1,00,000
Reserves	3,00,000	2,00,000	Net Tangible Block	17,00,000	14,00,000
10% Debentures	6,00,000	4,00,000	Current Assets	8,00,000	6,00,000
Creditors	3,00,000	5,00,000			
	27,00,000	21,00,000		27,00,000	21,00,000

Additional Information :

- Assets are to be revalued as follows –

Particulars	R Ltd	S Ltd
Revaluation of Tangible Block	21,00,000	12,00,000
Revaluation of Current Assets	10,00,000	4,00,000

- Average Annual Profits for three years before charging Debenture Interest = R Ltd ₹4,50,000; S Ltd ₹3,10,000.
- Goodwill is to be valued at three year's purchase of Average Super Profits for three years. Such average is to be calculated after adjustment of depreciation at 10% on the amount of increase/decrease on revaluation of fixed assets. In the case of S Ltd, claim of ₹10,000 which was omitted, is to be adjusted against its average profit. Income tax is to be ignored.
- Normal profit on Capital Employed is to be taken at 12%, capital employed being considered on the basis of net revalued amount of tangible assets.

Ascertain the value of Goodwill of R Ltd and S Ltd.

Solution:**1. Computation of Capital Employed**

Particulars	R Ltd	S Ltd
Revaluation of Tangible Block	21,00,000	12,00,000
Revaluation of Current Assets	10,00,000	4,00,000
Creditors	(3,00,000)	(5,00,000)
10% Debentures	(6,00,000)	(4,00,000)
Claim/ Expenses not recorded	-	(10,000)
Equity Capital Employed	22,00,000	6,90,000
Normal Profits (12% X Capital Employed)	2,64,000	82,800

Note: Equity Capital Employed and Equity Earnings are considered for purpose of determining Goodwill, since Goodwill is monetary value of residual business advantage, which includes, among many things, advantages of gearing as well.

2. Computation of Future Maintainable Profits

Particulars	R Ltd	S Ltd
Average Profits as Given	4,50,000	3,10,000
Less: Interest on Debentures $[6,00,000 \times 10\% / 4,00,000 \times 10\%]$	(60,000)	(40,000)
Less: Claim / Expenses not recorded	-	(10,000)
Less: Depreciation on Increase in Value of Fixed Assets $[(21L - 17L) \times 10\%]$	(40,000)	----
Add: Depreciation on Decrease in value of Fixed Assets $[(14L - 12L) \times 10\%]$	-	20,000
Equity Earnings = Future Maintainable Profits	3,50,000	2,80,000

3. Computation of Goodwill

Particulars	R Ltd	S Ltd
Future Maintainable Profits	3,50,000	2,80,000
Less: Normal Profits	(2,64,000)	(82,800)
Super Profits	86,000	1,97,200
Goodwill (Super Profits X 3 years)	2,58,000	5,91,600

Illustration 39

On the basis of the following information, calculate the value of goodwill of Gee Ltd. at three years' purchase of super profits, if any, earned by the company in the previous four completed accounting years.

Balance Sheet of Gee Ltd. as at 31st March, 2011

Liabilities	₹ in lakhs	Assets	₹ in lakhs
Share Capital:		Goodwill	310
Authorised	7,500	Land and Buildings	1,850
Issued and Subscribed		Machinery	3,760
5 crore equity shares of ₹ 10 each, fully paid up	5,000	Furniture and Fixtures	1,015
Capital Reserve	260	Patents and Trade Marks	32
General Reserve	2,543	9% Non-trading Investments	600
Surplus i.e. credit balance of Profit and Loss (appropriation) A/c	477	Stock	873
Trade Creditors	568	Debtors	614
Provision for Taxation (net)	22	Cash in hand and at Bank	546
Proposed Dividend for 2009-2010	750	Preliminary Expenses	20
	9,620		9,620

The profits before tax of the four years have been as follows:

Year ended 31st March	Profit before tax ₹ in lakhs
2007	3,190
2008	2,500
2009	3,108
2010	2,900



The rate of income tax for the accounting year 2006-07 was 40%. Thereafter it has been 38% for all the years so far. But for the accounting year 2010-2011 it will be 35%.

In the accounting year 2006-2007, the company earned an extraordinary income of ₹ 1 crore due to a special foreign contract. In August, 2007 there was an earthquake due to which the company lost property worth ₹ 50 lakhs and the insurance policy did not cover the loss due to earthquake or riots.

9% Non-trading investments appearing in the above mentioned Balance Sheet were purchased at par by the company on 1st April, 2008.

The normal rate of return for the industry in which the company is engaged is 20%. Also note that the company's shareholders, in their general meeting have passed a resolution sanctioning the directors an additional remuneration of ₹ 50 lakhs every year beginning from the accounting year 2010-2011.

Solution:

(1) Capital employed as on 31st March, 2011 Refer to 'Note')

		₹ in lakhs
Land and Buildings		1,850
Machinery		3,760
Furniture and Fixtures		1,015
Patents and Trade Marks		32
Stock		873
Debtors		614
Cash in hand and at Bank		546
		8,690
Less: Trade creditors	568	
Provision for taxation (net)	22	590
		8100

(2) Future maintainable profit

(₹ in lakhs)

	2006-2007	2007-2008	2008-2009	2009-2010
Profit before tax	3,190	2,500	3,108	2,900
Less: Extra-ordinary income due to foreign control	100	—	—	—
Add: Loss due to earthquake	—	50	—	—
Less: Income from non-trading investment	—	—	54	54
	3,190	2,550	3,054	2,846

As there is no trend, simple average profits will be considered for calculation of goodwill.

Total adjusted trading profits for the last four years = ₹ (3,090 + 2,550 + 3,054 + 2,846) = ₹ 11,540 lakhs

Average trading profit before tax = $\left(\frac{₹ 11,540 \text{ lakhs}}{4} \right)$	₹ in lakhs
Less: Additional remuneration to directors	2,885
Less: Income tax @ 35%(approx.)	50
	992 (Approx)
	<u>1,843</u>

3) Valuation of goodwill on super profits basis

Future maintainable profits	1,843
Less: Normal profits (20% of ₹ 8,100 lakhs)	<u>1,620</u>
Super Profits	<u>223</u>
Goodwill at 3 years' purchase of super profits = $3 \times ₹ 223 \text{ lakhs} = ₹ 669 \text{ lakhs}$	

Note:

In the above solution, goodwill has been calculated on the basis of closing capital employed (i.e. on 31st March, 2011). Goodwill should be calculated on the basis of 'average capital employed' and not 'actual capital employed' as no trend is being observed in the previous years' profits. The average capital employed cannot be calculated in the absence of details about profits for the year ended 31st March, 2011. Since the current year's profit has not been given in the question, goodwill has been calculated on the basis of capital employed as on 31st March, 2011.

Illustration 40

The following Balance Sheet of X Ltd. is given:

X Ltd.

Balance Sheet as on 31st March, 2011

Liabilities	₹	Assets	₹
5,000 shares of ₹ 100 each fully paid	50,00,000	Goodwill	4,00,000
Bank overdraft	18,60,000	Land and building at cost	32,00,000
		Plant and machinery at cost	28,00,000
Creditors	21,10,000	Stock	32,00,000
Provision for taxation	5,10,000	Debtors considered good	20,00,000
Profit and Loss Appropriation A/c	21,20,000		
	1,16,00,000		1,16,00,000

In 1992 when the company commenced operation the paid up capital was same. The Loss/Profit for each of the last 5 years was - years 2006-2007 - Loss (₹ 5,50,000); 2007-2008 ₹ 9,82,000; 2008-2009 ₹ 11,70,000; 2009-2010 ₹ 14,50,000; 2010-2011 ₹ 17,00,000;

Although income-tax has so far been paid @ 40% and the above profits have been arrived at on the basis of such tax rate, it has been decided that with effect from the year 2010-2011 the Income-tax rate of 45% should be taken into consideration. 10% dividend in 2007-2008 and 2008-2009 and 15% dividend in 2009-2010 and 2010-2011 have been paid. Market price of shares of the company on 31st March, 2011 is ₹ 125. With effect from 1st April, 2011 Managing Director's remuneration has been approved by the Government to be ₹ 8,00,000 in place of ₹ 6,00,000. The company has been able to secure a contract for supply of materials at advantageous prices. The advantage has been valued at ₹ 4,00,000 per annum for the next five years.

Ascertain goodwill at 3 year's purchase of super profit (for calculation of future maintainable profit weighted average is to be taken).

Solution:

(I) Future Maintainable Profit

Year	Profit (P) ₹	Weight (W)	Product (PW) ₹
2007-2008	9,82,000	1	9,82,000
2008-2009	11,70,000	2	23,40,000
2009-2010	14,50,000	3	43,50,000
2010-2011	17,00,000	4	68,00,000
		10	1,44,72,000



$$\text{Weighted average annual profit (after tax)} = \frac{\sum PW}{\sum W} = ₹ \frac{1,44,72,000}{10} = 14,47,200$$

Weighted average annual profit before tax $\left(₹ 14,47,200 \times \frac{100}{60} \right)$	24,12,000
Less: Increase in Managing Director's remuneration	<u>2,00,000</u>
	22,12,000
Add: Saving in cost of materials	<u>4,00,000</u>
	26,12,000
Less: Taxation @ 45%	<u>11,75,000</u>
Future maintainable profit	<u>14,36,600</u>

(ii) Average Capital Employed

	₹	₹
Assets:		
Land and Buildings		32,00,000
Plant and Machinery		28,00,000
Stock		32,00,000
Sundry Debtors		20,00,000
		<u>1,12,00,000</u>
Less: Outside liabilities:		
Bank overdraft	18,60,000	
Creditors	21,10,000	
Provision for taxation	5,10,000	44,80,000
Capital employed at the end of the year		67,20,000
Add: Dividend @ 15% paid during the year		7,50,000
		<u>74,70,000</u>
Less: Half of the profit (after tax) for the year i.e. ₹ 17,00,000 x ½		8,50,000
		<u>66,20,000</u>

(iii) Normal Profit

$$\text{Average dividend for the last 4 years} = \left(\frac{10 + 10 + 15 + 15}{4} \right) = 12.5\%$$

Market price of share = ₹ 125

$$\text{Normal rate of return} = \frac{12.5}{125} \times 100 = 10\%$$

Normal profit (10% of ₹ 66,20,000) = ₹ 6,62,000

(iv) Valuation of goodwill

	₹
Future maintainable profit	14,36,600
Less: Normal profit	6,62,000
Super profit	7,74,600
Goodwill at 3 years' purchase of super profits (₹ 7,74,600 x 3)	<u>23,23,800</u>

Illustration 41

Given below is the Balance Sheet as on 31st March of Khan Limited for the past three years. (Amount in ₹000's)

Liabilities	2010	2011	2012	Assets	2010	2011	2012
Share Capital	500	600	700	Sundry Fixed Assets:			
General Reserve	100	150	150	Gross Block	1,500	1,700	1,900
Profit & Loss Account	100	150	-	Less: Depreciation	400	500	650
12% Debentures	400	600	700	Net Block	1,100	1,200	1,250
Bank Overdraft	200	250	300	Inventory	250	450	500
Sundry Creditors	100	200	400	Sundry Debtors	200	350	400
Provision for Taxation	100	50	-	Cash	25	120	100
Proposed Dividend	75	120	-				
	1,575	2,120	2,250		1,575	2,120	2,250

- The Company is going to sell its losing division for ₹5,00,000. This division caused cash loss to the extent of ₹1,00,00 in 2011-12.
- It has planned to buy a running factory for ₹7,50,000. This new addition is expected to produce 20% return before charging depreciation and interest.
- Excess amount required of the acquisition of the new factory will be taken at 16%p.a. from an Industrial Bank.

The Company decided to calculate Goodwill considering the following –

1. The Company decided to calculate Goodwill on the basis of excess cash earnings for 5 years.
2. 10% Discount Rate shall be used.
3. Goodwill will be calculated by taking cash return on capital employed. For this purpose, Weighted Average Cash Return may be computed for the years 2010–2011, 2011–2012 and 2012–2013 where as Capital Employed on 31.03.2012 may be taken up with suitable changes for replacements.
4. The industry, to which the Company belongs, returns cash at 4% of the investment.

Present Value of ₹1 at 10% for 5 years is 3.7908. You are asked to Value its Goodwill.

Solution:**1. Computation of Cash Earnings for the past years (₹ 000's)**

Particulars	2010-11	2011-12
Retained Earnings (Closing Less Opening)	50	(150)
Add: Appropriation to General Reserve (Closing Less Opening)	50	-
Proposed Dividend	120	-
Current Year Profit / (Loss)	220	(150)
Add: Depreciation (Closing Accumulated Depreciation Less Opening)	100	150
Operating Profit Before Working Capital Changes	320	-
Adjustment for Working Capital Items:		
- Stock	(200)	(50)
- Sundry Debtors	(150)	(50)
- Creditors	100	200
- Tax	(50)	(50)
Cash Generated from Operating Activities	20	50



2. Computation of Projected Cash Earnings

Particulars	₹000's
Cash Earnings for Financial Year 2011-12	50
Add: Cash Loss pertaining to Division sold	100
Add: Cash earnings from New Division (₹7,50,000 x 20%)	150
Less : Interest on Loan from Industrial Bank (7,50,000 – 5,00,000) x 16%	(40)
Projected Cash Earnings	260

3. Computation of Average Maintainable Profits (₹000's)

Year	Cash Earnings	Weights	Product
2010-2011	20	1	20
2011-2012	50	2	100
2012-2013	260	3	780
Total		6	900
Weighted Average		900 ÷ 6	150

4. Computation of Capital Employed

Particulars	₹ 000's	₹ 000's
Total Assets as at 31.03.2012	2,250	
Less: Debentures	(700)	
Bank Overdraft	(300)	
Sundry Creditors	(400)	850
Sale of Old Division:		
Sale Consideration	500	
Less: Net Assets Transferred (assumed to be taken at Book Value)	(500)	Nil
Purchase of New Division:		
Cost of Purchase	750	
Less: Cash Outflow	(500)	
Bank Borrowings	(250)	Nil
Capital Employed on Replacement		850

5. Computation of Excess Cash Earning and Goodwill

Particulars	₹000's
Future Maintainable Cash Earnings	150
Less: Normal Rate of Cash Return at 4% of Capital Employed (₹850 X 4%)	34
Excess Cash Earnings (Future Maintainable Cash Earnings – NRR)	116
Goodwill = Excess Cash Earnings x Annuity Factor for 5 years at 10% = ₹1,16,000 x 3.7908 =	440

Illustration 42

Given – (a) Future maintainable Profit before Interest = ₹125 Lakhs; (b) Normal Rate of Return on Long Term Funds is 19% and on Equity Funds is 24%; (c) Long Term Funds of the Company is ₹320 Lakhs of which Equity Funds is ₹210 Lakhs; (d) Interest on Loan Fund is 18%. Find out leverage effect on Goodwill if tax rate = 30%.

Solution:

1. Long Term Loan Funds = Total Long term Funds Less Equity Funds = 320 – 210 = ₹110 Lakhs.

Interest + 18% thereon = ₹110 Lakhs x 18% = ₹19.80 Lakhs.

2. Computation of Future Maintainable Profit (₹ Lakhs)

Particulars	Owners Funds	Total Funds
Profit Before Interest	125.00	125.00
Less: Interest on Long Loans	19.80	N.A
Future maintainable Profit before Tax	105.20	125.00
Less: Tax Expense at 30%	31.56	37.50
Future Maintainable Profits after Tax	73.64	87.50

3. Computation of Goodwill under different approaches (₹ Lakhs)

Particulars	Owners Funds	Total Funds
(a) Future Maintainable Profits after Tax	73.64	87.50
(b) Normal Rate of Return	24%	19%
(c) Normal Capital Employed = (a÷b)	306.83	460.52
(d) Actual Capital Employed (given)	210.00	320.00
(e) Goodwill = (c – d)	96.83	140.52

Hence, Leverage Effect on Goodwill = ₹140.52 - ₹96.83 = ₹ **43.69 Lakhs**

Illustration 43

Super Cars Ltd., is engaged in the business of manufacture of electric Passenger Cars. The Company requires you to determine the value of its goodwill also showing the leverage effect on goodwill. Its Balance Sheet is as on 31.03.2013 is as under – (₹ Lakhs)

Liabilities	₹	Assets	₹	₹
Share Capital – Equity Shares of ₹10 each	1,500	Gross Fixed Assets	1,500	
General Reserve	500	Less: Depreciation till date	500	1,000
12% Term Loan from Bank	500	Investments:		
Creditors	210	Non- trade	300	
Provision for Tax	10	Trade	90	390
Proposed Dividend	140	Current Assets:		
		Overseas Debtors (1\$= INR 42)	420	
		Indian Debtors	400	820
		Stock in Trade		350
		Cash and Bank Balances		300
	2,860			2,860

Additional Information:

1. The closing exchange rate for the U.S. dollar was INR 48. Income from Non- trade Investments was a loss for the year ended 31.03.2013 owing to write down of cost of acquisition by 4%. There was no other transaction under Non-trade Investments during the year.



2. Current Year Depreciation changed on Historical Cost was ₹100 Lakhs. Current Cost of Fixed Assets is determined at ₹2,000 Lakhs.
3. While Current Cost of Closing Stock is ₹367 Lakhs, that of the Opening Stock was ₹200 lakhs against its Historical Cost of ₹148 Lakhs. The Market Value of Non- Trade Investments at the year end was ₹300 lakhs. The Overseas debtors made settlements in U.S.\$ only.
4. The Industry Average rate of return on current cost of capital employed is 12% on long term debt and 15% on equity. The opening balance in General reserve was ₹150 Lakhs. While prevailing tax rate is 30% such is expected to decline by 5%.
5. Using the above information you are required to arrive at value of the goodwill of the company under equity and long-term fund approached and also show the leverage effect on goodwill.

Solution:

1. Computation of Additional Depreciation Required

Particulars	₹ Lakhs
Calculation of Depreciation Rate:	
Book Value as on 31.03.2013	1,000
Add: Depreciation for 2012-13	100
Book Value as on 1.4.2012	1,100
Therefore, Depreciation Rate = $\text{Current Depreciation} \div \text{Opening bal.} = 100 \div 1,100$	9.09%
Calculation of Extra Depreciation on Sundry Fixed Assets:	
Current Cost of Sundry Fixed Assets as on 1.4.2012	2,000
Depreciation on Current Cost of Fixed Assets = $₹2,000 \times 9.09\%$	181.80
Less: Depreciation already provided in the books	(100.00)
Extra Depreciation to be provided	81.80

Note: It is assumed that the Company charges WDV method of depreciation. Alternatively, Depreciation Rate can be determined based on SLM i.e. on Gross Value. [$₹100/1500 = 6.67\%$]

2. Computation of Foreign Exchange Gain

Dollar Value of Debtors ($₹420.00 \text{ Lakhs} \div ₹42.00$)	₹10.00 Lakhs
Exchange Gain [$₹10.00 \text{ Lakhs} \times (₹48.00 - 42.00)$]	₹60 Lakhs
Adjustment in Provision for Tax [30% of ₹60.00 Lakhs] (Additional Provision)	₹18 Lakhs

3. Computation of Future Maintainable Profits

Particulars	₹ Lakhs	
Profits for the year 2012-13:		
Increase in Reserves [$₹500 \text{ Lakhs} - ₹150 \text{ Lakhs}$]	350.00	
Proposed Dividend	140.00	490.00
Add back: Tax [$(₹490.00 \text{ Lakhs} \times \text{Tax Rate of } 30\%) \div (100\% - \text{Tax Rate of } 30\%)$]		210.00
Profit Before tax		700.00
Add: Forex Gain on Foreign Currency Debtors (See WN 2)		60.00
Add: Loss from Non- Trade Investments ($₹300 \text{ Lakhs} \times 4/96$)		12.50

Less: Extra Depreciation Required (See WN 1)		(81.80)
Add: Adjustment for Current Cost of Closing Stock (₹367 - ₹350)		17.00
Less: Adjustment for Current Cost of Opening Stock (₹200 - ₹148)		(52.00)
Future Maintainable Profit Before Tax		655.70
Less: Future Tax Expense at 25% (₹655.70 x 25%)		(163.93)
Future maintainable Profit After Tax		491.77
Add: Interest on Long Term Loan (after considering tax) ₹500 x 12% x (100 – 25%)		45.00
Future Maintainable Profit After Tax Before Interest		536.77

Therefore, Future Maintainable Profit on: –

(a) Long Term Capital Employed (including Long term Loans) is **₹536.77 Lakhs**

(b) Net Worth (Shareholders Funds) is **₹491.77 Lakhs**

4. Computation of Capital Employed

Particulars	₹	₹
Fixed Assets (1,000 + Revaluation Gain 1,000 – Addl. Depreciation ₹81.80)		1,918.20
Investments Trade		90.00
Overseas Debtors (\$ 10.00 Lakhs x 48)		480.00
Indian Debtors		400.00
Stock in Trade at Current Cost		367.00
Cash and Bank Balances		300.00
Current Cost of Total Assets		3,555.20
Less: Outside Liabilities:		
Sundry Creditors	210.00	
Provision for Taxation [10.00 + Additional for Exchange Rate Difference 18.00]	28.00	
Proposed Dividend (See Note)	140.00	(378.00)
Capital Employed (Total Long Term Funds)		3,177.20
Less: 12% Term Loan		500.00
Equity Capital Employed		2,677.20

Note: Since the Proxy Capital Employed is based on Closing Balances, proposed dividend is treated as a liability. This is because, such funds will not stand invested in the business in the future, but distributed in the immediate future. Adjustments for Exchange Rate differences are assumed to be tax deductible.

5. Computation of Goodwill using different approaches

Particulars	Owners funds	Total Funds
a. Future Maintainable Profits	491.77	536.77
b. Normal Rate of Return	15%	12%
c. Capitalized Value of Future Maintainable Profits (a ÷ b)	3,278.47	4,473.08
d. Capital Employed	2,677.20	3,177.20
e. Goodwill (c-d)	601.27	1,295.88



6. Leverage Effect on Goodwill

- Goodwill computed using Equity Fund Concept (₹601.27 Lakhs), is low when compared to the Goodwill as computed using Total Long Term Funds Concept (₹1,295.88 Lakhs)
- Leverage Effect on Goodwill = ₹1,295.88 - ₹601.27 = ₹694.61

Illustration 44

The following is the extract from the Balance Sheets of Popular Ltd.:

Liabilities	As at 31.3.10 ₹ in lakhs	As at 31.3.11 ₹ in lakhs	Assets	As at 31.3.10 ₹ in lakhs	As at 31.3.11 ₹ in lakhs
Share capital	500	500	Fixed assets	550	650
General reserve	400	425	10% investment	250	250
Profit and Loss account	60	90	Stock	260	300
18% term loan	180	165	Debtors	170	110
Sundry creditors	35	45	Cash at bank	46	45
Provision for tax	11	13	Fictitious assets	10	8
Proposed dividend	100	125			
	1286	1363		1286	1363

Additional information:

- Replacement values of Fixed assets were ₹1,100 lakhs on 31.3.10 and ₹1,250 lakhs on 31.3.2011 respectively.
- Rate of depreciation adopted on Fixed assets was 5% p.a.
- 50% of the stock is to be valued at 120% of its book value,
- 50% of investments were trade investments.
- Debtors on 31st March, 2011 included foreign debtors of \$35,000 recorded in the books at ₹35 per U.S. Dollar. The closing exchange rate was \$1 = ₹39.
- Creditors on 31st March, 2011 included foreign creditors of \$60,000 recorded in the books at \$1 = ₹ 33. The closing exchange rate was \$1 = ₹39.
- Profits for the year 2010-11 included ₹60 lakhs of government subsidy which was not likely to recur.
- ₹125 lakhs of Research and Development expenditure was written off to the Profit and Loss Account in the current year. This expenditure was not likely to recur.
- Future maintainable profits (pre-tax) are likely to be higher by 10%.
- Tax rate during 2010-11 was 50%, effective future tax rate will be 40%.
- Normal rate of return expected is 15%.

One of the directors of the company Arvind, fears that the company does not enjoy a goodwill in the prevalent market circumstances.

Critically examine this and establish whether Popular Ltd. has or has not any goodwill.

If your answers were positive on the existence of goodwill, show the leverage effect it has on the company's result.

Industry average return was 12% on long-term funds and 15% on equity funds.

Solution:**1. Calculation of Capital employed (CE)**

	₹ in lakhs	
	As on 31.3.10	As on 31.3.11
Replacement Cost of Fixed Assets	1100.00	1250.00
Trade Investment (50%)	125.00	125.00
Current cost of stock	286.00	
$130 + 130 \times \frac{120}{100}$		330.00
$150 + 150 \times \frac{120}{100}$		
Debtors	170.00	111.40
Cash-at-Bank	46.00	45.00
Total (A)	1727.00	1861.41
Less: Outside Liabilities		
18% term loan	180.00	165.00
Sundry creditors	35.00	48.60
Provision for tax	11.00	13.00
Total (B)	226.00	226.60
Capital employed (A – B)	1501.00	1634.80

$$\begin{aligned} \text{Average Capital employed at current value} &= \frac{\text{CE as on 31.3.2010} + \text{CE as on 31.3.2011}}{2} \\ &= \frac{1501 + 1634.80}{2} = 1567.90 \text{ Lakhs}^* \end{aligned}$$

* Average capital employed can also be calculated in the following manner :

Closing capital employed as on 31.3.2011	₹ 1,634.80 lakhs
Less: ½ of actual post tax profit for 2010-2011	₹ 90.00 lakhs
Average capital employed	₹ 1,544.80 lakhs

2. Future Maintainable Profit

₹ in Lakhs

Increase in General Reserve	25
Increase in Profit and Loss Account	30
Proposed Dividends	125
Profit After Tax	180
Pre-Tax Profit = $\frac{180}{1-0.5}$	360
Less: Fictitious Assets written off (10-8)	2.00
Non-Trading investment income (10% of ₹125)	12.50
Subsidy	60.00
Exchange Loss on creditors [0.6 lakhs x (39-33)]	3.60



Additional Depredation on increase in value of Fixed Assets (current year) $(1250-650 = 600 \times \frac{5}{100})$ i.e.,	<u>30.00</u>	<u>108.10</u>
		251.90
Add: Exchange Gain on Debtors [0.35 lakhs x (39-35)]	1.40	
Research and development expenses written off	125.00	
Stock Adjustment (30-26)	<u>4.00</u>	<u>130.40</u>
		382.30
Add: Expected increase of 10%		<u>38.23</u>
Future Maintainable Profit before Tax		420.53
Less: Tax @ 40% (40% of ₹ 420.53)		<u>168.21</u>
Future Maintainable Profit		<u>252.32</u>

3) Valuation of Goodwill

₹ in lakhs

(i) According to Capitalisation of Future Maintainable Profit Method
Capitalised value of Future Maintainable Profit

$= \frac{256.28}{15} \times 100$	1682.13
Less: Average capital employed	<u>1567.90</u>
Value of Goodwill	<u>114.23</u>

Or

(ii) According to Capitalisation of Super Profit Method

Future Maintainable Profit	252.32
Less: Normal Profit @15% on average capital employed (1567.90 x 15%)	<u>235.19</u>
Super Profit	<u>17.13</u>

Capitalised value of super profit $\frac{17.13}{5} \times 100$ i.e., Goodwill	114.2

Goodwill exists, hence director's fear is not valid.

Leverage Effect on Goodwill

₹ in lakhs

Future Maintainable Profit on equity fund		252.32
Future Maintainable Profit on Long-term Trading Capital employed		
Future Maintainable Profit After Tax	252.32	
Add: Interest on Long-term Loan (Term Loan)	<u>14.85</u>	267.17
(After considering Tax) $165 \times 18\% = 29.7 \times \frac{50}{100}$		

Average capital employed (Equity approach)	1567.90
Add – 18% Term Loan (180+165)/2	<u>172.50</u>
Average capital employed (Long-term Fund approach)	<u>1740.40</u>

Value of Goodwill**(A) Equity Approach**

Capitalised value of Future Maintainable Profit = $\frac{252.32}{15} \times 100$	1682.13

Less: Average capital employed	<u>1567.90</u>

Value of Goodwill	<u>114.23</u>

(B) Long-Term Fund Approach

Capitalised value of Future Maintainable Profit = $\frac{267.17}{12} \times 100$	2226.42

Less: Average capital employed	<u>1740.40</u>

Value of Goodwill	<u>486.02</u>

Comments on Leverage effect of Goodwill:

Adverse Leverage effect on goodwill is 371.79 lakhs (i.e., ₹486.02-114.23). In other words, Leverage Ratio of Popular Ltd. is low as compared to industry for which its goodwill value has been reduced when calculated with reference to equity fund as compared to the value arrived at with reference to long term fund.

Working Notes:

₹ in lakhs

(1) Stock adjustment

(i) Excess current cost of dosing stock over its Historical cost (330 – 300)	30.00
(ii) Excess current cost of opening stock over its Historical cost (286-260)	<u>26.00</u>
(iii) Difference [(i – ii)]	<u>4.00</u>

(2) Debtors' adjustment

(i) Value of foreign exchange debtors at the dosing exchange rate (\$35,000 x 39)	13.65
(ii) Value of foreign exchange debtors at the original exchange rate (\$35,000x35)	<u>12.25</u>
(iii) Difference [(i – ii)]	<u>1.40</u>

(3) Creditors' adjustment

(i) Value of foreign exchange creditors at the dosing exchange rate (\$60,000 x 39)	23.40
(ii) Value of foreign exchange creditors at the original exchange rate (\$60,000 x 33)	<u>19.80</u>
(iii) Difference [(i – ii)]	<u>3.60</u>



10.8 VALUATION OF BRANDS

10.8.1 Brand

Brands are strategic assets. The key to survival of companies is their brands in the modern world of complex and competitive business environment. According to American Marketing association, brand means a name, term, sign, symbol or design or group of sellers and to differentiate them from those of competitors.

Corporate branding can be taken to mean strategic exercise by managerial decision making of creating, developing, maintaining and monitoring the identity, image and ownership of a product etc. Brand comprises an important item in that they greatly determine the corporate market value of a firm.

Brand achieves a significant value in commercial operation through the tangible and intangible elements. Brand is that intangible assets which is acquired from outside source while acquiring business or may also be nurtured internally by a company, which are known as home grown brands. By assigning a brand name to the product, the manufacturer distinguishes it from rival products and helps the customer to identify it while going in for it. Necessity of branding of products has increased enormously due to influence of various factors like growth of competition, increasing importance of advertising etc. A powerful brand creates lasting impact on the consumers and it is almost impossible to change his preference even if cheaper and alternative products are available in the market. Brands have major influence on takeover decisions as the premium paid on takeover is almost always in respect of the strong brand portfolio of the acquired company and of its long term effect on the profit of the acquiring company in the post –acquisition period.

10.8.2 Brands Asset

An asset is having following characteristics;

- (i) there must exist some specific right to future benefits or service potentials;
- (ii) rights over asset must accrue to specific individual or firm;
- (iii) there must be legally enforceable claim to the rights or services over the asset;
- (iv) asset must arise out of past transaction or event.

Based on above characteristics, brands are considered as an asset. The sole purpose of establishing brand names are to incur future benefit increased sale to loyal customers increased sale price of the brand itself or increased sale price of the brand itself.

The companies with valuable brand register those names and are legally entitled to sole ownership and use of them. Brands are created through marketing efforts over time. They are the result of several past transactions and events.

10.8.3 Objectives of corporate branding

Important objectives of corporate branding are as follows;

Corporate Identity: Brands help corporate houses to create and maintain identity for them in the market. This is chiefly facilitated by brand popularity and the eventual customer loyalty attached to the brands.

Total Quality Management (TQM): By building brand image, it is possible for a body corporate to adopt and practice TQM. Brands help in building lasting relationship between the brand owner and the brand user.

Customer Preference: Interaction between a specified group of products and services and a specified group of loyal customers creates a psychological lasting impression in the mind of those customers. Branding gives them advantage of status fulfilment.

Market Strength: By building strong brands, firms can enlarge and strengthen their market base. This would also facilitate programmes, designed to achieve maximum market share.

Market Segmentation: By creating strong brand values, companies classify market into more strategic areas on a homogeneous pattern of efficient operations. It enables firms to focus on target group of customers to meet competition.

10.8.4 Factors that have influence on brand valuation.

Mode of valuation of brands depends on type of brands; (i) acquired or (ii) self acquired. In general method of valuation of brands on one or more following variables;

Cost of acquisition of brand

Expenses incurred on nurturing a home grown brand

Earning power of the brand

Product life cycle

Separating brand from other less important value drivers

Intrinsic strength of the people and process handling brand

Impact of other new brands in the market

Intrinsic strength of the people and process handling the brand

Accuracy in projecting the super or extra earnings offered by a brand and the rate of discounting cash flows

Cost of withdrawing or rejecting the brand.

10.8.5 Value acquired brand

A purchased brand is one, which is acquired from other existing concerns. The acquiring company may acquire only the brand names. The value of acquired brands is given below:

Brand value=Price paid for acquisition.

On the other hand, a company may acquire an existing business concern along with its brands. It happens in case of mergers & acquisitions. The sum involved in these transactions provides an indication of the financial value of brands. In this case;

Brand value=Purchase consideration(x)-Net assets acquired(y).

Does excess price always represent brand value?(X-Y) represents the amount of purchased goodwill but acquiring company might have paid excess price for varied factors also. Those are;

Location of the factory;

Long term contracts with suppliers;

Better manufacturing technology etc.

Competitive force may make the acquirer to increase the bid price thereby increasing the amount of purchased goodwill. This inseparability of brand from other intangible assets makes it difficult to value brands.

10.8.6 Value self- generated brands – Different methods of self-generated brands

Important methods of valuation of self-generated brands are discussed below;

- (i) **Historical Cost Model:** Under historical cost model actual expenses incurred in creation, maintenance and growth of corporate brands are taken into consideration. The value of corporate brands is computed as follows:



Brand value=Brand Development Cost+ Brand marketing & distribution cost+ Brand promotion cost including advertising and other costs.

Historical cost model is applied for home-grown brands in most of the cases for which various costs like development costs, marketing costs, advertising and general communication costs etc. are incurred. However, the total advertisement costs cannot be regarded as incurred for brand. Further, several heavily advertised brands show hardly any value or presence. This is a simple method as it depends on actual cost but it fails to explain the impact of brand value on the profitability of the firm.

- (ii) Replacement Cost Model: Under replacement cost model brands are valued at the costs which would be required to recreate the existing brands. The method is based on the assumption that the existing brands can be recreated exactly by new brands. It is the opportunity cost of investment made for the replacement of the brand.
- (iii) Market Price Model: Probable value that a company would fetch by selling its brand is taken as the value of the brand. Brand value is given by ;

Brand Value=Net realisable value

As there is no readymade market for many brands, the value is only assumed one. Although the method determines the value from seller's point of view, the actual value is determined on the basis of expected benefit to be derived by the purchaser by purchasing the brand.

- (iv) Present Value Model:

According to present value model, the value of a brand is the sum total of present value of future estimated flow of brand revenues for the entire economic life of brand plus the residual attached to the brand. The model is also called Discounted Cash Flow model which has been wisely used by considering the year wise revenue attributable to the brand over a period of 5,8 or 10 years. The discounting rate is the weighted average cost of capital. The residual value is estimated on the basis of a perpetual income, assuming that such revenue is constant or increased at a constant rate.

$$\text{Brand value} = \frac{R_t}{(1+r)^t} + \frac{\text{Residual value}}{(1+r)^N}$$

Where, R_t = Anticipated revenue in year t, attributable to the brand

r = Discounting rate

Residual value beyond year N

Brands supported by strong customer loyalty, may be visualised as a kind of an annuity. Great care must be taken to estimate as much correctly as possible, the future cash flow likely to estimate from a strongly positioned specific brand. A realistic present value of a particular brand having strong loyalty of customers can be obtained from summation of discounted values of the expected future incomes from it.

DCF model for evaluating brand values has got three sources of failure; (i) anticipation of cash flow; (ii) choice of period and (iii) discounting rate.

Illustration 45

The following data is given to you regarding a company having a share in branded portion as well as unbranded portion;

Branded revenue	₹ 500 per unit
Unbranded revenue	₹ 120 per unit
Branded cost	₹350 per unit
Unbranded cost	₹100 per unit
Research & Development	₹20 per unit
Branded products	1 lakh unit
Unbranded Products	40,000 units
Tax rate is 39.55%; capitalization factor 18%	

Calculate the brand value.

Solution:

The net revenue from the branded product= (revenue-cost)XQuantity sold

$$= (\text{₹}500 - \text{₹}350) \times 100,000$$

$$= \text{₹}1,50,00,000$$

Net revenue from the unbranded product

$$= (\text{₹}120 - \text{₹}100) \times 40,000$$

$$= \text{₹}8,00,000.$$

PAT for branded product

$$= (1,50,00,000 - 28,00,000) \times (1 - 0.3955)$$

$$= (1,22,00,000) \times (.6045)$$

$$= \text{₹}73,74,900$$

Brand value=Returns/capitalization rate=₹73,74,900/.18

$$= \text{₹}409,71,666$$

10.8.7 Brand valuation needed – Steps in valuation of a brand

Brand valuation is needed for :

- (i) Accounting purpose
- (ii) Transactional purposes
- (iii) Brand management purposes

Various companies find brand valuation helpful for the followings:

- (i) Making decisions on business investments
- (ii) Measuring the return on brand investment based on brand value to arrive at an ROI that can be directly compared with other investments.
- (iii) Allocating marketing expenditures according to the benefit each business unit derives from the brand asset.
- (iv) Organizing and optimizing the use of different brands in the business
- (v) Managing a portfolio of brands across a variety of markets



- (vi) Assessing fair transfer prices for the use of brands in subsidiary companies
- (vii) Determining brand royalty rates for optimal exploitation of the brand asset through licensing the brand to third parties
- (viii) Capitalizing brand assets on the balance sheet according to US GAAP, IAS and much country specific accounting standards.

10.8.8 Steps in Valuation of Brand:

- (i) Market segmentation: Brands influence customer choice, but the influence varies depending on the market in which brand operates. For valuation we need to split brand's market into non-overlapping and homogeneous groups of consumers according to applicable criteria such as product or service, distribution channels, consumption patterns, purchase sophistication, geography existing and new customers and so on. The brand is valued in each segment and the sum of the segments constitutes the total value of the brand.
- (ii) Financial analysis: Identify and forecast revenue and earnings from intangibles generated by the brand for each of the distinct segments determined in step-1. Intangibles earnings are defined as brand revenue less operating costs, applicable taxes and a charge for the capital employed. The concept is similar to the economic profit.
- (iii) Demand analysis: Assess the role that the brand plays in driving demand for products and services in the markets in which it operates and determine what proportion of intangible earning is attributable to the brand measured by an indicator referred to as the "role of branding index". The role of branding index represents the percentage of intangible earnings that are generated by the brand. Brand earnings are calculated by multiplying the role of branding index by intangible earnings.
- (iv) Competitive benchmarking: Determine the competitive strengths and weaknesses of the brand to derive the specific brand discount rate that reflects the risk profile of its expected future earnings. This comprises extensive competitive benchmarking and a structured evaluation of the brand's market, stability, leadership position, growth trend, support geographic footprint and legal protect ability.
- (v) Brand value calculation: Brand value is the net present value (NPV) of the forecast brand earnings, discounted by the brand discount rate. The NPV calculation comprises both the forecast period and the period beyond, reflecting the ability of brands to continue generating future earnings.

This computation is useful for brand value modelling in a wide range of situations, viz.,

- Predicting the effect of marketing and investment strategies;
- Determining and assessing communication budgets;
- Calculating the return on brand investment;
- Assessing opportunities in new or unexpected markets and
- Tracking brand value management.

10.8.9 Ingredient Brand

An ingredient brand, as the name implies is an element of a product with an identifiable brand identity. The host product includes the ingredient product.

The element or the ingredient brand enhances the value of the product and mostly used as a label or icon on the main product. The idea is to convey to the customers that they are getting a quality, trustworthy product. Ingredient branding helps increase awareness and easily connects with wide-ranging consumers.

Difference between In Branding and Co-Branding

Ingredient Branding, also known as InBranding differs from CoBranding. In InBranding, a new product can exist individually from the ingredient brand, while in CoBranding, the two brands unite resulting in a unique product, which does not exist if either separates.

Examples of ingredient brands:

- Intel Inside branding of PCs (The Intel Inside program started in 1991)
- Microsoft Mediaroom – Microsoft's IPTV platform
- NutraSweet in soft drinks
- GE's Ecomagination
- Dolby noise reduction in stereos
- Honda Civic Sedan with XM Satellite radio
- Techron in Chevron gasoline
- Teflon in cookware
- Gore-Tex in outerwear and ski apparel
- Sainsbury with brand ambassador Jamie Oliver
- Smart phones with Android OS
- Siri-powered iPhone 4S
- 3M brand used in various products
- Swarovski with Play Bling as its authorized retail brand partner in China
- Vibram rubber soles in many leading shoe brands
- Chiquita banana in Beechnut baby foods
- Smucker's Jam – Kellogg's pop tarts

Case Study :-

Cafe Coffee Day – Brand Strategy in India

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Case Study Abstract

This case study covers the following issues:

- Examine and analyze Cafe Coffee Day's brand strategy in India, its success and future challenges

Introduction

"CCD today has become the largest youth aggregator, and from a marketing stand point, the success has come by focusing on the **3As: Accessibility, Affordability and Acceptability**."- Bidisha Nagaraj, the Marketing president of Cafe Coffee Day

"Although demographically, a typical consumer would be male or female between 15-29 years of age, belonging to middle or upper middle class, we call our consumers young or young at heart. We are about juke boxes, good and affordable coffee and food. The brand fit is with youth or the young at heart. So we often look out for brands that are aspirational in nature." – Sudipta Sen Gupta, Marketing head, Café Coffee Day.

CCD – an established brand image in India

Cafe Coffee Day (CCD) has an established brand image in India and **ranks No 2 in the Brand Equity's Most Trusted Brands 2008 survey** – in the food services category. Rival Barista is at No 5. CCD has been able to make a connection with the Indian consumers, predominantly among the youth. CCD is the market leader in India and was awarded the '**Exclusive Brand Retailer of the Year**' by ICICI Bank in its Retail Excellence Awards 2005 for the organized retail sector.

CCD's wide network – the anytime, anywhere cafe

CCD has been able to make its brand presence felt through the sheer number of stores. CCD has 620 cafes at present and it has ambitious plans to launch more than 900 cafes by the end of the current financial year. This means launching one store every other day which is not surprising from a company which launched a cafe (in 2005) in Vienna, the coffee capital of the world. CCD also has three cafes in Vienna, and two in Karachi, Pakistan. Lagging behind CCD in the Indian market, Barista has about 200 cafés, Java Green (around 75 cafés) and Mocha (around 25 cafés). The Indian organized sector has potential for around 5,000 cafés but fewer than 1,000 cafés exist currently.

Exhibit 1: Total number of stores/cafes of Café Coffee Day and its competitors

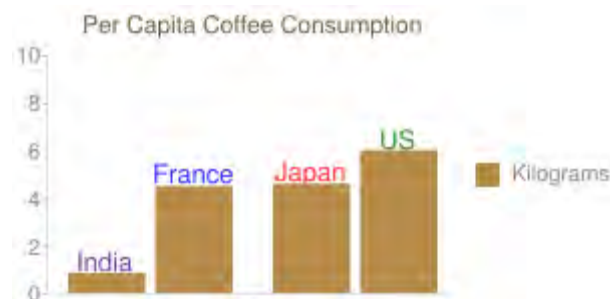
Case Study Keywords

Cafe Coffee Day, CCD, Amalgamated Bean Coffee Trading Company Ltd., ABCTCL, V G Siddhartha, Café Beat, Brand Equity's Most Trusted Brands 2008 survey, Bidisha Nagaraj – Marketing president, brand image, brand management, Exclusive Brand Retailer of the Year, Barista, Java Green, Mocha, company owned stores, national brand, south Indian retail chain, Chikmagalur, Co-branding, international brand consultant Landor, Silent brew masters – special employee program, a feeling of togetherness, Coffee Day Exports, Coffee Day Xpress, Coffee Day Take Away (coffee vending machines), Coffee Day Fresh 'n Ground (ground coffee retail outlets), Coffee Day FMCG (packaged filter coffee powder)

Case Updates/Snippets

- **CCD's vision:** To be the only office for dialogue over a cup of coffee

- **CCD's Expansion Strategy:** Cafe Coffee Day has around 821 outlets in 115 cities in India. CCD plans to take the total number of cafes to 1,000 by March 2010 and double it to 2,000 by 2014. (Update: By Jan 2012, CCD had approx 1,200 cafes and 900 Express outlets) In October 2009, CCD announced that it will increase its international presence from the current six outlets in Vienna and Pakistan to a total of 50 stores across Europe and Middle East in two years time.
- **International coffee chains in India** – Recent entrants in the Indian market include Gloria Jeans, Coffee Bean & Tea Leaf and Illy Café.
- **Operating Formats** – Café Coffee Day operates in both regular (Coffee Day Square) and premium formats (Lounge).
- **Highway Cafes:** In 2004, CCD began cafes on highways. By 2009, the total number of Café Coffee Day highway cafes rose to 30 owing to the overwhelming response it received from travellers.
- **CCD's new brand identity:** In October 2009, CCD unveiled a new brand logo, a Dialogue Box, to weave the concept of 'Power of Dialogue'. In accordance with this new brand identity, CCD planned to give all its existing outlets a new look by the end of 2009. Cafés would be redesigned to suit different environments such as book, music garden and cyber cafes suitable for corporate offices, university campus or neighborhood. The change plan included new smart menu, furniture design, among others.
- **Coffee consumption in India** is growing at 6% per annum compared to the global 2% plus. In India, the per capita consumption of coffee is around 85 grams while it is six kgs in the US.



- **Milk production in India** – India is the largest producer and consumer of milk in the world with 98% of milk being produced in rural India.
- **Coffee production in India** – India ranks sixth as a producer of coffee in the world accounting for 4.5% of the global coffee production. India has about 170,000 coffee farms cultivating around 900,000 acres of coffee trees.
- **CCD's International Expansion Strategy** – In June, 2010 Cafe Coffee Day chain acquired Emporio for ₹15 crore. Emporio is a Czech Republic-based café chain present at 11 locations. CCD plans to co-brand the chain as Café Coffee Day Emporio and later transition it to Café Coffee Day. CCD is also present in Vienna. The company wants to expand in the East European region, West Asia and the Asia-Pacific region.
- **Cafe Market in India** – Coffee retailers cover only 170 cities out of 3,000 in India (early 2011 reports). In 2008, according to Technopak Advisors, the Indian food services market – cafes, full-service restaurants, fast-food outlets/quick-service restaurants was estimated to be \$6 billion (₹26,000 crore) with organized players taking 13% of the market. (By 2014 this number is expected to increase up to 27 %). According to Technopak Advisors, the café market in India is estimated at \$150 million (₹ 678 crore) and growing at 40 per cent over the last five years.



- **Organized coffee market in India:** The organized coffee market in India is about ₹600 crores. This is approximately 20% of the total domestic coffee consumption (₹3,000 crores).
- **New Entrants in Indian Coffee Cafe market:** In early 2011, Hindustan Unilever, the FMCG giant planned to open a cafe outlet in Mumbai named 'Bru World Café' to popularize its in-house coffee brand Bru (HUL's only coffee brand sold only in India).
- **CCD to double its human resources count:** CCD has 6,500 employees (as per Feb 2011 figures) with each cafe requiring about 6 employees. CCD plans to double its employee count by 2013.
- **Lavazza – Espresso store in India:** In 2011, Lavazza, the Italian coffee brand opened its first signature coffee shop 'Lavazza Espresso' in New Delhi, India.
- **CoffeeDay Wakecup:** In January 2012, CCD launched its own brand of coffee maker called Coffee Day Wakecup targeting all coffee lovers. The product will be marketed at its 1125 cafes and 900 Express outlets. Competitor Lavazza had launched its own portable coffee machines (Lavazza Blue 850) already but targeted the premium segment with the price being higher than CCD's machines.
- In February 2012, Café Coffee Day announced plans to install interactive touchscreen tablets in 500 cafes across the country.

Illustration 46

RS Ltd furnishes the following information relating to the previous three years, and requests you to compute the value of the brand of the Company — [₹ in Lakhs]

Particulars	2011	2012	2013
Profits Before Interest and Tax	75.00	85.25	150.00
Loss on Sale of Assets	3.00	---	18.00
Non Operating Income	12.00	7.25	8.00

Inflation was 9% for 2012 and 15% for 2013. If the capitalization factor considering internal and external value drivers to the brand is 14, determine the brand value. Assume an all inclusive future tax rate of 35%.

Solution:

Particulars	2011	2012	2013
Profits Before Interest and Tax	75.00	85.25	150.00
Add: Loss on Sale of Assets	3.00	--	18.00
Less: Non Operating Income	(12.00)	(7.25)	(8.00)
Branded Earnings	66.00	78.00	160.00
Inflation Adjustment Factor	1.09 x 1.15 = 1.25	1.15	1.00
Inflation Adjusted Earnings as at 31.03.2013	82.50	89.70	160.00
Weights	1	2	3
Product	82.50	179.40	480.00
Weighted Average Earnings Before Tax [(82.50 + 179.40 + 480)/(1+2+3)]			123.65
Less: Taxes at 35%			(43.28)
Weighted Average Brand Earnings After Tax			80.37
Capitalization Factor			14
Brand Value			₹1125.18 Lakhs

Illustration 47

The following financial share data pertaining to TECHNNO LTD an IT company are made available to you :

Year ended March 31st	2010	2009	2008
EBIT (₹)	696.03	325.65	155.86
Non-branded Income (₹)	53.43	35.23	3.46
Inflation compound factor @ 8%	1.000	1.087	1.181
Remuneration of Capital	5% of average capital employed		
Average capital Employed (₹)	1112.00		
Corporate Tax Rate	35%		
Capitalization Factor	16%		

You are required to calculate the Brand Value for Techno Ltd.

Solution :

TECHNO LTD.**Computation of Brand Value**

(Amount in ₹ Crores)

Year ended March 31st	2010	2009	2008
EBIT (₹)	696.03	325.65	155.86
Less : Non-brand income (₹)	53.43	35.23	3.46
Adjusted Profits (₹)	642.60	290.42	152.40
Inflation Compound Factor @ 8%	1.000	1.087	1.181
Present Value of Profits for the brand (₹)	642.60	315.69	179.98
Weight age Factor	3	2	1
Weight age Profits (₹)	1927.80	631.38	179.98
Profits (₹)	456.53		
Remuneration of Capital (5% of Average capital employed)	55.60		
Brand Related	400.93		
Corporate tax @ 35%	140.33		
Brand Earning	260.60		
Capitalization Factor	16%		

Brand Value: (Return / Capitalization Rate)

$260.60 / 0.16 = ₹ 1628.75 \text{ Crore}$

**Illustration 48**

From the following information determine the Possible Value of Brand as per Potential Earning Model – (₹ Lakhs)

Particulars	CASE A	CASE B
(i) Profit Before Tax (PBT)	---	15.00
(ii) Income Tax	---	3.00
(iii) Profit After Tax (PAT)	₹2,700	---
(iv) Tangible Fixed Assets	₹10,000	20.00
(v) Identifiable Intangible other than Brand	₹1,500	10.00
(vi) Weighted Average Cost of Capital (%)	15%	---
(vii) Expected Normal Return on Tangible Assets Weighted Average Cost (15%) + Normal Spread 5%	20%	6.00
(viii) Appropriate Capitalization Factor for Intangibles	25%	25%

Solution:**CASE A**

Particulars	₹Lakhs	₹Lakhs
Profit After Tax	2,700	2,700
Less: Normal Return from Tangible Assets (₹10,000 Lakhs x 20%)	(2,000)	(2,000)
Less: Normal Return from Other intangible Assets (₹1,500 Lakhs x 25%)	(375)	(375)
Brand Earnings	325	325
Capitalization Factor = WACC	25%	15%
Therefore, Value of Brand	₹1,300 Lakhs	₹2,166.67 Lakhs

CASE B ---

Particulars	₹Lakhs
Profit Before Tax	15.00
Less: Income Tax	(3.00)
Profit After Tax	12.00
Less: Normal Return Tangible Assets	(6.00)
Less: Normal Return from Other Intangible Assets (₹10 Lakhs x 25%)	(2.50)
Brand Earnings	3.50
Capitalization factor	25%
Therefore, Value of Brand (₹3.50 Lakhs ÷ 25%)	₹14 Lakhs

Illustration 43

Sanju Ltd has hired a Marketing Consultancy Firm for doing market research and provide data relating to Tyre industry for the next 10 years. The following were the observations and projections made by the consultancy firm ---

1. The Tyre Industry in the target area i.e. Whole of India, is expected to grow at 5% p.a for the next 3 years, and thereafter at 7% p.a over the subsequent seven years.

2. The market size in terms of unencumbered basic sales of tyres was estimated at ₹8,000 Lakhs in the last year, dominated by medium and large players. This includes roughly 9.0% of fake brands and locally manufactured tyres. Market share of this segment is expected to increase by 0.5%.
3. Cheap Chinese imports accounts for 40% of the business (but 60% of the volume). This is expected to increase by 0.25% over the next decade.
4. The other large players account for roughly 35% of the business value, which is expected to go down by 0.5% over the next ten years, due to expansion of Sanju Ltd's product portfolio.
5. The Company is in the process of business re-engineering, which will start yielding results in 2 years time, and increase its profitability by 3% from its existing 12%.

If the appropriate discount rate is 15% what is the Brand Value of Sanju Ltd, under Market Oriented Approach?

Solution:

(a) Current Market share = 100 – Fake Brands 9% - Chinese Imports 40% - Other Domestic Brands 35% = 16%

(b) Increase or Decrease in Market Share: Chinese Imports 0.25% + Local Brands 0.5% - Other Players 0.5% = 0.25% increase other product's market share. Hence, market share is expected to fall by 0.25% every year over the decade, from the current levels of 16%. Therefore, next year it will be 15.75%, the year after 15.50% etc.

2. Brand Valuation under Market Approach

Year	Market Size (₹ Lakhs)	Market Share of Sanju Ltd.	Market Share ₹ Lakhs	Expected Profit (₹ Lakhs)	Discount Factor at 15%	Discounted Cash Flow
1	8,000.00 + 5% = 8,400.00	15.75%	1,323.00	@ 12% = 158.76	0.870	138.12
2	8,400.00 + 5% = 8,820.00	15.50%	1,367.10	@ 12% = 164.05	0.756	124.02
3	8,820.00 + 5% = 9,261.00	15.25%	1,412.30	@ 15% = 211.84	0.658	139.39
4	9,261.00 + 7% = 9,909.27	15.00%	1,486.39	@ 15% = 222.96	0.572	127.53
5	9,909.27 + 7% = 10,602.92	14.75%	1,563.93	@ 15% = 234.59	0.497	116.59
6	10,602.92 + 7% = 11,345.12	14.50%	1,645.04	@ 15% = 246.75	0.432	106.60
7	11,345.12 + 7% = 12,139.28	14.25%	1,729.85	@ 15% = 259.48	0.376	97.56
8	12,139.28 + 7% = 12,989.03	14.00%	1,818.46	@ 15% = 272.77	0.327	89.20
9	12,989.03 + 7% = 13,898.26	13.75%	1,911.01	@ 15% = 286.65	0.284	81.41
10	13,898.26 + 7% = 14,871.14	13.50%	2,007.60	@ 15% = 301.14	0.247	74.38
	Brand Value					1094.80

Brand Value of Sanju Ltd under Market Oriented Approach is ₹1094.80 Lakhs.



10.9 VALUATION OF REAL ESTATE

10.9.1 Value of real estate

The valuation models developed for financial assets are applicable for real assets as well. Real estate investments comprise the most significant component of real asset investments. For many years, analysts in real estate have used their own variants on valuation models to value real estate. Real estate is too different an asset class, they argue, to be valued with models developed to value publicly traded stocks.

A piece of land, including the air above it and the ground below it, and any buildings or structures on it. Real estate can include business and/or residential properties, and are generally sold either by a relator or directly by the individual who owns the property.

Real estate investments comprise the most significant component of real asset investments.

10.9.2 Distinguish between real and financial asset

Real estate and financial assets share several common characteristics - their value is determined by the cash flows they generate, the uncertainty associated with these cash flows and the expected growth in the cash flows. Other things remaining equal, the higher the level and growth in the cash flows and the lower the risk associated with the cash flows, the greater is the value of the asset.

There are also significant differences between the two classes of assets. There are many who argue that the risk and return models used to evaluate financial assets cannot be used to analyze real estate because of the differences in liquidity across the two markets and in the types of investors in each market. There are also differences in the nature of the cash flows generated by financial and real estate investments. In particular, real estate investments often have finite lives and have to be valued accordingly. Many financial assets, such as stocks, have infinite lives. These differences in asset lives manifest themselves in the value assigned to these assets at the end of the 'estimation period'. The terminal value of a stock, five or ten years hence, is generally much higher than the current value because of the expected growth in the cash flows and because these cash flows are expected to continue forever.

10.9.3 Forms of Ownership

A real estate investor can choose to own an asset directly or indirectly. If you buy a piece of real estate directly, the title is in your name. The advantage of direct ownership is that you have complete control over the asset. However, you are also solely responsible for any damage to the property, or for personal injuries that may occur on the property. Indirect ownership is more complicated.

A real estate investor who does not want direct ownership can choose among several alternatives. First, the investor can make a mortgage loan to someone else, with real estate as collateral for the loan. Second, the investor can buy a mortgage backed security. And third approach would be to form a real estate syndicate (A syndicate is usually formed by a real estate manager, who raises capital from individual investors) with partners. Some partners could be limited partners who merely invest money and take a share of any profits; some partners could be managers who also draw salaries. Still another approach is the real estate investment trust (REIT), an interesting form of indirect ownership.

Real Estate Investment Trusts: A real estate investment trust, or REIT, is a closed-end investment company that invests only in real estate. REITs are exempt from federal income tax if they do not violate any of the following conditions:

1. Keep 75 percent or more of their assets invested in real estate, mortgages, cash, or government securities
2. Derive 75 percent of their gross income from real estate

3. Distribute at least 90 percent of their income to shareholders (officially called beneficiaries)
4. Have at least 100 shareholders, no 5 of whom can control more than half the shares

REITs were granted tax exemption in order to eliminate double taxation (at both the corporate and the investor levels) and to encourage publicly held institutions to divert funds into real estate investing. Shares of REITs are generally marketable, especially those listed on national or regional stock exchanges. Share prices are determined in the open market and may be above or below the actual value of the real estate holdings. There are many types of REITs: some emphasize owning real estate, some concentrate on mortgage investing, and others make construction loans.

10.9.4 Types of real estate

Raw land: Undeveloped land may be purchased by an investor who hopes that its market price will rise in the coming years. If the investor is energetic and the location desirable, the land can be developed by subdividing it and installing roads and sewers and other amenities. Then parcels of the developed land can be sold.

Rental residences: Investors may purchase residential space to generate rental income. The owner or hired manager must collect rents, maintain the premises, and keep the premises rented.

Office buildings: Rental income from a commercial office building can be tax-sheltered. Keeping the building well maintained and rented to compatible tenants usually requires professional management.

Warehouses: A building that is to be leased as storage space does not require much active management with a responsible tenant that will sign a long-term lease.

Neighbourhood shopping centres: A profitable shopping centre can be a wonderful source of money so long as the neighbourhood remains attractive and competing shopping centres are scarce.

Travel accommodations: A hotel or motel located near a heavily traveled route can be profitable, but such an asset generally requires professional management.

Private residences: The single-family residence remains the most popular investment in the United States now as in India also. In fact, the psychic income associated with home ownership clouds the rational economic thinking of many prospective buyers.

10.9.5 Advantages of Real Estate Investing

Financial Leverage: Financial leverage can be defined as the use of borrowed money to buy an investment with a larger value than what the buyer could have afforded without any borrowed money. When an individual can invest borrowed money and earn a rate of return higher than the rate of interest payable on the loan, the financial leverage is profitable. Traditionally, real estate investors borrow from 60 to 80 percent of the value of the properties they acquire, which is a much higher leverage ratio (of loan to asset value) than is available on most other forms of investment.

Tax Shelter: Real estate investors benefit from tax laws that encourage real estate ownership. Rental property can be depreciated, and this depreciation is a tax deductible expense that will reduce taxes on the rental income.

Control: Real estate owners can control all physical aspects of their properties—the color their house is painted, how often the grass is cut, how soon leaking plumbing is repaired, and other factors, all of which may give them psychic income.

10.9.6 Disadvantages of Real Estate Investing

Structural Flaws: A home or building can have termites, sinking or shifting foundations, a leaky basement or roof, or other flaws. Furthermore, such flaws may be extremely difficult to detect and may involve difficult and costly repairs.

Change in Neighborhood Quality: Location has a tremendous impact on the value of a piece of real estate. If a famous actor moves into a home next door to a piece of real estate you own, the value of



your property might increase substantially overnight. If municipality in which your real estate is located buys the lot next to yours and uses it as a garbage dump, the value of your investment would plummet.

Liquidity: Real estate is an example of an asset that typically has low liquidity. If you were forced to sell your house in a hurry because you had to move to your job, for instance, you might have to sell it for only half what you paid for it if conditions are tight or the economy is depressed.

Financial Risk: Most real estate investors obtain mortgage loans to finance their purchases. Some mortgages have floating, or variable, interest rates. If market interest rises or falls, the interest on such a variable-rate mortgage, or VRM, rises or falls correspondingly. Since most of each monthly mortgage payment is interest expense, interest rates on a VRM can spell financial disaster for an investor.

The Landlord's Duties: Managing rental property is hard work. A landlord must manage the property rented, execute legally enforceable rental contracts, collect rent and with delinquent payments, stop violations of leases, keep peace between the tenants, and maintain the property in good condition.

Brokers Fees: Real estate agents typically receive different percent of the value of the transaction when a property is purchased. They collect the same commission rate when the property is sold.

10.9.7 Issues involved in measuring Risk for Real Assets in Asset Pricing Models

If it is accepted that the risk of a real asset is its market beta in the CAPM and its factor betas in the APM, there are several issues related to the measurement and use of these risk parameters that need to be examined. To provide some insight into the measurement problems associated with real assets, consider the standard approach to estimating betas in the capital asset pricing model for a publicly traded stock. First, the prices of the stock are collected from historical data, and returns are calculated on a periodic basis (daily, weekly or monthly). Second, these stock returns are regressed against returns on a stock index over the same period to obtain the beta. For non-traded real assets, these steps are not as straightforward.

1. Individual Assets: Prices and Risk Parameters

The betas of individual stocks can be estimated fairly simply because stock prices are available for extended time periods. The same cannot be said for individual real estate investments. A piece of property does not get bought and sold very frequently, though similar properties might. Consequently, price indices are available for classes of assets (Example: Downtown Manhattan Office Buildings) and risk parameters can be estimated for these classes.

Even when price indices are available for classes of real estate investments, questions remain about the comparability of assets within a class (Is one downtown building the same as any other? How does one control for differences in age and quality of construction? What about location?) and about the categorization itself (Office Buildings versus Residential Buildings; Single Family versus Multi Family Residences)?

There have been attempts to estimate market indices and risk parameters for classes of real estate investments. The obvious and imperfect solution to the non-trading problem in real estate is to construct indices of real estate investment trusts (REITs) and commingled real estate equity funds (CREFs), which are traded and have market prices. The reason this might not be satisfactory is because the properties owned by real estate investment trusts may not be representative of the real estate property market and the securitization of real estate may result in differences between real estate and REIT/CREF returns.

2. The Market Portfolio

In estimating the betas of stocks, we generally use a stock index as a proxy for the market portfolio. In theory, however, the market portfolio should include all assets in the economy, in proportion to their market values. This is of particular significance when the market portfolio is used to estimate the risk parameters of real estate investments. The use of a stock index as the market portfolio will result in the marginalization of real estate investments and the under estimation of risk for these assets.

3. Other Risk Factors

Diversifiable versus Non-Diversifiable Risk:

Risk and return models that assume that the marginal investor is well diversified is reasonable even though many investors in real estate choose not to be diversified. Part of the justification that offered was the presence of firms with diversified investors, such as real estate investment trusts and master limited partnerships, in the real estate market.

Lack of Liquidity:

The markets for many real estate investments are less liquid than markets for financial assets – transactions occur less frequently, transactions costs are higher and there are far fewer buyers and sellers. The less liquid an asset, it is argued, the more risky it is. The link between lack of liquidity and risk is much more difficult to quantify for several reasons. One is that it depends upon the time horizon of the investor. An investor who intends to hold long term will care less about liquidity than one who is uncertain about his or her time horizon or wants to trade short term. Another is that it is affected by the external economic conditions. For instance, real estate is much more liquid during economic booms, when prices are rising, than during recessions, when prices are depressed.

Exposure to Legal Changes:

The values of all investments are affected by changes in the tax law - changes in depreciation methods and changes in tax rates on ordinary income and capital gains. Real estate investments are particularly exposed to changes in the tax law, because they derive a significant portion of their value from depreciation and tend to be highly levered. Unlike manufacturing or service businesses which can move operations from one locale to another to take advantage of locational differences in tax rates and other legal restrictions, real estate is not mobile and is therefore much more exposed to changes in local laws.

Information Costs and Risk:

Real estate investments often require specific information about local conditions that is difficult (and costly) to obtain. The information is also likely to contain more noise. There are some who argue that this higher cost of acquiring information and the greater noise in this information should be built into the risk and discount rates used to value real estate. This argument is not restricted to real estate. It has been used as an explanation for the small stock premium - i.e., small stocks make higher returns than larger stocks, after adjusting for risk (using the CAPM). Small stocks, it is argued, generally have less information available on them than larger stocks and the information tends to be noisier.

Issues involved in Diversification in Real Estate – its Trends and Implications

In valuation of real estate are several risk factors estimation errors, legal and tax changes, volatility in specific real estate markets – that are often built into discount rates and valuations, the rationale for diversification becomes stronger. A real estate firm that is diversified across holdings in multiple locations will be able to diversify away some of this risk. If the firm attracts investors who are diversified into other asset classes, it diversifies away even more risk, thus reducing its exposure to risk and its cost of equity.

10.9.8 ESTIMATING CASH FLOWS

Cash Inflows:

The cash flows from a real estate investment generally take the form of rents and lease payments. In estimating rents for future years, but have to consider past trends in rents, demand and supply conditions for space provided by the property and general economic conditions.

Cash Outflows:

Expenses on real estate investments include items such as property taxes, insurance, repairs and maintenance and advertising - which are unrelated to occupancy and are fixed, as well as items such



as utility expenses, which are a function of occupancy and are variable. In addition, the following factors will affect projected expenses.

Reimbursability: Some expenses incurred in connection with a property by the owner may be reimbursed by the tenant, as part of a contractual agreement.

Expense Stops: Many office leases include provisions to protect the owner from increases in operating expenses beyond an agreed-upon level. Any increases beyond that level have to be paid by the tenant.

Expected Growth:

To estimate future cash flows, there is needed estimates of the expected growth rate in both rents/ leases and expenses. A key factor in estimating the growth rate is the expected inflation rate. In a stable real estate market, the expected growth in cash flows should be close to the expected inflation rate. In tight markets with low vacancy rates, it is possible for the expected growth rate in rents to be higher than the expected inflation rate at least until the market shortages disappear. The reverse is likely to be true in markets with high vacancy rates.

10.9.9 Terminal Value:

In all discounted cash flow valuation models, a key input is the estimate of terminal value, i.e., the value of the asset being valued at the end of the investment time horizon. There are three basic approaches that can be used to estimate the terminal value.

1. The current value of the property can be assumed to increase at the expected inflation rate to arrive at a terminal value. Thus, the terminal value of a property, worth ₹10 million now, in ten years will be ₹13.44 million, if the expected inflation rate is 3% (Terminal Value = ₹10 × 1.0310). The danger of this approach is that it starts off with the assumption that the current value of the asset is reasonable and then tries to assess the true value of the asset.
2. An alternative to this approach is to assume that the cash flows in the terminal year (the last year of the investment horizon) will continue to grow at a constant rate forever after that. If this assumption is made, the terminal value of the asset is: Terminal Value of Equity/Asset =

Expected CF_{n+1} / r – g. Where r is the discount rate (cost of equity if it is the terminal value of equity and cost of capital if it is the terminal value of the asset) and CF_{n+1} is the cash flow (cash flow to equity if terminal value is for equity and to firm if terminal value is total terminal value).

Thus, if the property described in the previous example had produced a net cash flow, prior to debt payments, of ₹1.2 million in year 10, this cash flow was expected to grow 3% a year forever after that and the cost of capital was 13%, the terminal value of the property can be written as follows:

$$= FCFF_{11} / WACC - g$$

$$\text{Terminal Value of Asset} = (1.2)(1.03) / 0.13 - 0.03 = ₹12.36 \text{ million}$$

3. A close variation on the infinite growth model is the 'capitalization rate' (cap rate) used by many real estate appraisers to value properties. In its most general form, the cap rate is the rate by which operating income is divided to get the value of the property. Property value = Capitalization rate / Operating income after taxes

Illustration 50

The building has a capacity of 528,357 square feet of rentable space. While 95% of this space is rented out for the next year, the occupancy rate is expected to climb 0.5% a year for the following four years to reach 97% of capacity in year 5. This is expected to be the occupancy rate in steady state. The average rent per square foot was ₹28.07 in the most recent year and is expected to grow 3% a year in perpetuity. Historically, there has been a credit loss, associated with tenants failing to make payments, of 2.5% of rental revenues. The building has a garage that generated ₹800,000 in income for

the most recent year. This income is also expected to grow 3% a year in perpetuity. Real estate taxes were ₹5.24 a square foot in the most recent year and are expected to grow 4% a year for the next 5 years and 3% a year thereafter. The land under the building is rented under a long-term lease and the ground rent in the most recent year was ₹1.5 million. This rent is expected to remain unchanged for the next 5 years and grow 3% a year thereafter. Other expenses, including insurance, maintenance and utilities, amounted to ₹6.50 a square foot in the most recent year and are expected to grow 3% a year in perpetuity. Approximately 10% of these expenses will be reimbursed by tenants each year (and thus will become a part of the revenues). The management fee for the most recent year was ₹300,000 and is expected to grow 3% a year in perpetuity.

The depreciation in the building is expected to be ₹2 million a year for the next 5 years. The capital maintenance and upgrade expenditures (including leasehold improvements for new tenants) last year amounted to ₹1.5 million and are expected to grow 3% a year for the next 5 years. Beyond year 5, depreciation is expected to increase 3% a year in perpetuity and capital maintenance expenditures will offset depreciation. The potential buyer of the building is a corporation that faces a marginal tax rate of 38% and expects to finance the building with a mix of 60% debt and 40% equity. Then debt will take the form of a long-term balloon payment loan with an interest rate of 6.50%.

Solution:

Step 1: Estimating a cost of capital

Trying to estimate a cost of equity. To make this estimate, we began with the unlevered beta of 0.62 of equity real estate investment trusts with office properties. It estimated a levered beta using the debt equity mix proposed for the building:

$$= \text{Unlevered beta} \left[1 + (1 - \text{tax rate}) \left(\frac{\text{Debt}}{\text{Equity}} \right) \right]$$

$$\begin{aligned} \text{Levered beta} &= 0.62 \left[1 + (1 - 0.38) \left(\frac{0.6}{0.4} \right) \right] \\ &= 1.20 \end{aligned}$$

To estimate the cost of equity, we used a riskfree rate of 5.4% and a risk premium of 4%:

$$\text{Cost of equity} = \text{Riskfree rate} + \text{Beta} \times \text{Risk Premium}$$

$$= 5.4\% + 1.20 (4\%) = 10.20\%$$

Using the interest rate on the debt as the pre-tax cost of debt, we estimated a cost of capital.

$$\text{Cost of capital} = 10.20\% (.40) + 6.5\% (1 - .38) (.60) = 6.49\%$$

Step 2: Estimating cash flows on the building

It used the operating information specified above to estimate the cash flows prior to debt payments on the building for the next 5 years. Since all of the items grow at 3% beyond year 5, it estimated a cash flow for year 6 as the terminal year. The terminal value of the building was calculated based on this cash flow, a perpetual growth rate of 3% and a cost of capital of 6.49%:

$$= \text{FCFF}_6 / \text{Cost of capital} - \text{Expected growth rate}$$

$$\text{Terminal value} = 4,079,682 / 0.0649 - 0.03$$

$$= ₹116,810,659$$



The present value of the expected cashflows for the next five years and the terminal value

	1	2	3	4	5
Cash flow to firm	₹ 3,617,845	₹ 3,761,185	₹ 3,909,538	₹ 4,063,068	₹ 4,221,946
Terminal value					₹ 1,16,810,659
Present value @ 6.49%	₹ 3,397,275	₹ 3,316,547	₹ 3,237,186	₹ 3,159,199	₹ 88,370,242

The sum of the present value of the cash flows is ₹101.48 million. This is the estimated value of the building.

10.9.10 Limitations of Discounted Cash flow method of valuation of real estate

There are many reasons given for why discounted cash flow valuation is not appropriate for real estate. First, it is argued the discount rates are difficult, if not impossible, to estimate for most real estate investments. In the discussion of this topic, second, it is argued that estimating cash flows for the time horizon is tedious and difficult to do, as is the estimation of the terminal value. Third, it is argued that discounted cash flow valuation does not reflect market conditions - that the market is strong or weak at the time of the valuation. The argument can be rejected at two levels. On one level, the cash flows should reflect the market conditions, since they will be higher (higher rents and lower vacancy rates) and grow faster in strong market conditions. On the other level, any additional value being assigned by the market beyond the cash flow levels can be considered to be 'overvaluation' and should not be built into the appraised value in the first place.

Illustration 51

Consider the purchase of a home of ₹ 150,000. The real estate agent who sells the home typically informs the potential home buyer where to apply for a mortgage loan. If a husband and wife are buying the house and both are gainfully employed, a mortgage loan for 80 percent of the home's value can usually be obtained. However, the home buyers must be able to make a 20 percent down payment. In other words, ₹30, 000 (20 percent of ₹150, 000) of cash equity is required to obtain the mortgage. If the home buyers are gainfully employed, have good credit records, and can make the required down payment, the bank will probably grant a ₹120,000 mortgage loan to be paid off over the next 30 years at 10 percent interest, in equal monthly instalments of ₹1053.

Solution:

Following shows a budget for this home purchase.

Budget for Purchase of a ₹150,000 Home with a ₹30,000 Down Payment

Monthly payments:	₹
Mortgage (b)	1053
Real estate taxes	180
Heat, lights, and water	160
Home insurance	40
Repairs and upkeep	120
Total monthly payments	1553
Monthly savings:	
Income tax reduction: (c)	354
Price appreciation (d)	250
Equity accumulation (e)	53
Total monthly savings	657

Excess of monthly payments over savings ($\text{₹}1,553 - \text{₹}657$) = ₹ 896 per month

(b) ₹120,000 mortgage at a fixed rate of 10% for 30 years.

(c) ₹1000 of the ₹1053 monthly mortgage payment is interest expense. This ₹1000 interest and the ₹180 real estate tax are both tax-deductible. If you are in the 30% income tax bracket, you save 30% of ₹1,000 + ₹180, or ₹354 per month in income taxes.

(d) Assume 2 percent per year price appreciation, or ₹3000 appreciation in the first year (or ₹250 per month).

(e) ₹636 of the ₹120,000 loan will be paid off in the first year, which represents ₹53 per month of equity accumulation (apart from the appreciation).

Above calculation indicates that if the price of the new home rises 2 percent per year, the home purchase will decrease its owner's wealth by ₹896 per month in the first year. Moreover, the home buyer should not forget that the capital gain of ₹3000 per year cannot be spent while the buyer continues to own the home. This accumulating capital will not be available until the home is sold, and the same is true of the equity accumulation.

The price appreciation and the equity accumulation associated with the home purchase are like savings programs from which no withdrawals are allowed. The ₹354 income tax savings is the only reduction in cash outflows that results from the home purchase. Therefore, the home buyers must be prepared to make cash payments of ₹1199 (that is, ₹1553 - ₹354) per month from their income. Considering the income and expense figures above, and the illiquidity of a home investment (6% sales commission to buy and 6% to sell), buying a home should be considered a long-term investment that restricts the investor's flexibility.

Develop a model for Real Estate Valuation

The APV methodology postulates that an asset has a value under perfect market conditions plus, possibly, an additional value resulting from market imperfections. Considering among market imperfections only the debt financing and using forecasted cash flows for a finite time horizon, the value of a property can be written as follows:

$$PV_0 = \sum_{t=1}^T \frac{FCF_t}{(1+k_u)^t} + \sum_{t=1}^T \frac{k_i \times t \times D_{t-1}}{(1+k_u)^t} + \frac{TV_T}{(1+k_u)^T}$$

where

PV_0 = value of the property at time $t=0$

FCF_t = free cash-to-property at time t ($t = 1$ to T)

D_t = value of debt at time t

TV_T = terminal value at time T

k_u = cost of capital for a fully equity-financed property

k_i = pre-tax cost of debt

t = tax rate

The advantage of equation (1) above the standard DCF formula with the average cost of capital as the discount rate is that it considers the debt financing effects separately and consequently resolves the circularity problem. Moreover, the free cash flows are discounted at a rate that can be obtained from pension funds, as such investors in many countries (including Switzerland) buy properties without any leverage. When institutional investors are tax-exempt, which is the case in Switzerland but in many other countries as well, the present value of the tax shield is zero and equation (1) reduces to:



$$PV_0 = \sum_{t=1}^T \frac{FCF_t}{(1+k_u)^t} + \frac{TV_T}{(1+k_u)^T} \dots\dots\dots 2$$

Equation (2) to compute the present value of a property. This requires that the behaviour of the parameters that enter into the formula be modelled: (1) the annual free cash flows during the forecasting period, (2) the terminal value at the end of the forecasting period and (3) the discount rate.

Free cash flows (FCF)

For tax-exempt investors, the free cash flow to property for year t can be written as:

$$FCF_t = (1-nt)PGI_t - C_t - CAPEX_t \dots\dots\dots 3$$

where

nt = vacancy rate in year t

PGI_t = potential gross income in year t

C_t = operating cash expenses in year t

$CAPEX_t$ = additional investment (ie capital expenses) in year t

Rents are the major source of cash inflows and they depend on future market conditions, the characteristics of the properties, but also on various legal constraints. The potential gross income (PGI) for the first year (Year 1) is assumed to be known for the various components of the property (apartments, underground garages, shops, etc.). We then assume that the growth of the PGI over time is normally distributed. The choice of the mean and the standard deviation of the growth rate are crucial. Growth will depend not only on macroeconomic factors such as expected GDP growth, expected inflation or demographic phenomena, but also on property-specific characteristics such as the quality or the age of building, but also the quality of location. The actual level of rents partly captures these variables, but we have to recognise that the appropriate future growth rate for a well located and well constructed new building might be quite different from the rate applicable to a low quality and poorly located old building. From a theoretical point of view, it would be better if various growth rates could be considered, but in practice these are very difficult to estimate. The growth rate of rents is one of the key drivers of property values and therefore its estimation should rely on a procedure that is as objective as possible.

The level of the cash inflow is also a function of a specific type of risk related to real estate investment, i.e. the vacancy rate (u). It is assumed that the latter is uniformly distributed between the historical minimum and maximum vacancy rates for similar properties. By multiplying the PGI by $(1-n)$, we obtain the rent or total rent, i.e. the amount of cash inflow that is expected from renting out the property. For the sake of simplicity, we omit to explicitly consider the rate of unpaid rent (i.e. tenants who do not pay their rent), which implies that the PGI is net of unpaid rent.

Cash outflows include operating expenses, property taxes, insurance, and utilities. These are largely fixed, ie they will occur whether the property is or is not fully occupied. The variable component of these expenses is largely dependent on the age of the building, such that we will model the uncertain part of these expenses as a function of both age and rent. Historical data and professional expertise can help determine the level of annual fixed expenses as a percentage of rents and be useful in creating a model to estimate variable expenses. If sufficient data were available, one could also model the level of operating expenses by including other independent variables, such as the building quality or the quality of recent improvements.

Additional investments have to be forecasted to maintain or to improve the quality of the properties, or in some cases to increase their size. The amounts taken into consideration should be those that are forecasted by the owner, preferably with the help of an architect who has received a clear mandate to estimate the future investments required to reach the goals set above. In some countries or cities, due to legal restrictions to rent increases, one difficulty will then be to model future cash flows which depend on such additional investments.

Terminal value

The terminal value should be a proxy for the market value of the property at the end of the forecasting period under normal market conditions.

$$TV_T = \frac{FCF_{T+1}}{k_u - \bar{g}} = \frac{\frac{(FCF_T + FCF_{T-1} + FCF_{T-2})}{3}(1 + \bar{g})}{k_u - \bar{g}} \dots\dots\dots 4$$

where

FCF_{T+1} = free cash flow of period T+1

k_u = discount rate

g = perpetual growth rate of the free cash flows

Discount rate

To forecast the expected return on real estate, it is assumed that the discount rate is time-varying and dependent on market interest rates.

$$i_r < k_u < k_s \dots\dots\dots 5$$

where

i_r = interest rate observed on the market

k_u = required rate of return for a fully equity-financed property

k_s = historical rate of return of the stock market

Then compute the discount rate, k_u , as the sum of the interest rate plus a risk premium that is required by investors. Thus:

$$i_r < (k_u = i_r + P) < k_s \dots\dots\dots 6$$

where P is the risk premium. The procedure used to set the interest rate and the risk premium is discussed next.

Interest rate model

The interest rate used should be highly correlated to the mortgage interest rate.

There exist various models to forecast interest rates and, in general, these have two components: the drift and the volatility. One of the most widely used model is that of Cox et al. (1985), thereafter CIR:

$$d_{rt} = a(b - r_t)dt + \sigma r_t dW_t \dots\dots\dots 7$$

where

d_{rt} = increment in the interest rate at time t

a = a non-negative constant (the mean-reversion speed)

b = a constant (the long-term equilibrium interest rate)

σ = the volatility of the interest rate

dW_t = the Wiener increment, $dW_t = W_{t+dt} - W_t$

The drift term implies that the interest rate normally will rise when it is below the long-term mean, and that it will normally fall when it is above the mean. The discrete approximation of the CIR model is as follows:

$$\Delta r = a(b - r) \Delta t + \sigma r \epsilon \Delta t$$

...8

where $e \rightarrow N(0,1)$.

In the CIR model, there exists a linear relationship between the long rates, $R(t,T)$, and the short rates, rt . This relationship is as follows:

$$R(t, T) = A(t, T) + B(t, T)rt \quad \dots 9$$

$$A(t, T) = \left[\frac{2\gamma e^{(\alpha+\gamma)(T-t)/2}}{(\gamma+\alpha)(e^{\gamma(T-t)}-1) + 2\gamma} \right]^{2\alpha b/\sigma^2} \quad \dots 10$$

$$B(t, T) = \frac{2(e^{\gamma(T-t)}-1)}{(\gamma+\alpha)(e^{\gamma(T-t)}-1) + 2\gamma} \quad \dots 11$$

rt = short-term interest rate at time t

$$\gamma = \sqrt{\alpha^2 + 2\alpha^2} \quad \dots 12$$

The premium

The risk premium, P , that investors require is assumed to vary between two boundaries and to be always positive. The size of this premium varies across countries and is also dependent on the characteristics of properties as proxied by selected hedonic attributes. This premium can therefore be divided into two parts:

$$P = p_1 + p_2 \quad \dots 13$$

The first component, p_1 , stems from the participation in the real estate market. The second component, p_2 , is a function of property characteristics such as the quality of location, and the quality and the age of the property. To compute the p_2 premium, can construct a linear rating system whose quality will depend on the set of qualitative data that are available. If hedonic characteristics are available, as is the case in this research, those can be used. The level of p_2 will most likely vary across regions. From a theoretical perspective, our approach is thus close in spirit to an Arbitrage Pricing Theory (APT) set up as we consider that several sources of risk are priced.

The following procedure is suggested when the hedonic characteristics concerning the quality of construction and that of location as well as the age of buildings are available. For the first two characteristics, the ratings are 1-excellent; 2-very good; 3-normal; 4-bad. For the age of the buildings, we use the following criteria: age between 0-5 years (assigned a grade of 1), age between 5-15 years (grade of 2), age between 15-40 years (grade of 3) and age greater than 40 years (grade of 4).

We then assume that the quality of the building and that of location are more valuable features for an investor than the age of the building, so that we assign a 40% weight to each of the first two characteristics and a weight of 20% to age. We assign 100 points for a grade of 1; 75 points for a grade of 2; 50 points for a grade of 3 and 25 points for a grade of 4. The total number of points (TP) is given by:

$$TP = w(\text{building quality}) * P(\text{building quality}) + w(\text{location}) * P(\text{location}) + w(\text{age}) * P(\text{age}) \dots 14$$

where w is the weight and P the number of points.

The value of p_2 is then calculated as:

$$p_2 = (100 - TP) / 100 \dots 15$$

To illustrate, consider a building of high quality (grade of 1), with an average quality location (grade of 3) and constructed 18 years ago (grade of 3). Therefore, $TP = 40\% * 100 + 40\% * 50 + 20\% * 25 = 65$ points. Then, the premium p_2 would be equal to $(100-65)/100 = 0.45\%$. In contrast, the p_2 premium for a luxurious new building with an excellent location will be zero. Although this system is somewhat arbitrary, it makes sense and is consistent with the hedonic approach.

10.10 VALUATION OF LIABILITIES

10.10.1 Valuation of liabilities

Liabilities may be defined as currently existing obligation which a business enterprise intends to meet at some time in future. Such obligations arise from legal or managerial considerations and impose restrictions on the use of assets by the enterprise for its own purposes. Accounting Board of USA defines liabilities as economic obligations of an enterprise that are recognised and measured in conformity with generally accepted accounting principles. Liabilities also include certain deferred credits that are not obligations but that are recognised and measured in conformity with generally accepted accounting principles.

Actual liabilities valuation can be done on the basis of true and fair financial position of the business entity. Valuation should be properly disclose, otherwise it can make disturb to show actual financial health of the company. More clearly under valuation or over valuation of liabilities may not only affect the operating result and financial position of the current period but will also affect these for the next accounting period.

10.10.2 Determinants of liabilities valuation

- (a) The obligation must, of course, exist at the present time. That is, it must arise out of some past transaction or event. It may arise from the acquisition of goods or services, from losses already sustained for which the firm is liable, or from the expectation of losses for which the firm has obligation itself.
- (b) Equitable obligations or duties should be included if they are based on the necessity of making future payment to maintain good business relationships or if they are in accordance with normal business practice.
- (c) There should be little or no discretion to avoid the future sacrifice. It is necessary that the amount of the obligation be known with certainty so long as a future sacrifice is probable.
- (d) There should be a determinable maturity value or the expectation that payment of an amount determined by reasonable estimation will be required at some specific time in the future, even through the exact timing is not known at present. The time of payment may be extended by the substitution of new liabilities, or the obligation may be terminated by their conversion into stockholder equities.
- (e) Normally, the payee would be known or be identifiable either specifically or as a group. However, so long as the payee will become identifiable by the settlement date, it is not necessary that the payer knows the identity of the payee or that the creditor professes the claim or has knowledge of it at the present time.

The Valuation of liabilities is part of the process of measuring both capital and income, and is important to such problems as capital maintenance and the ascertainment of a firm's financial position. According to Borton, the requirements for an accurate measure of the financial position and financial structure should determine the basis for liability valuation. Their valuation should be consistent with the valuation of assets and expenses. The need for consistency arises from the objectives of liability valuation, which are similar to those to asset valuation. Probably the most important of these objectives is the desire to record expenses and financial losses in the process of measuring income. However, the valuation of liabilities should also assist investors and creditors in understanding the financial position.

Liabilities may be valued (i) at their discounted net values in accordance with the manner of valuing assets in economics; (ii) in accordance with accounting conventions, they may be recorded at their historic value, that is, the valuation attached to the contractual basis by which they were created. There is no difference between the two methods of valuation as regards liabilities which are payable immediately and it is only as the maturity date of liabilities lengthens that the difference appears. While accounting conventions dictate that the valuation of liabilities should be based on the sum which is



payable, it is accounting practice to make a distinction between current and long-term liabilities. As regards current liabilities there is little difference between the discounted net value and the contractual value of liabilities. In this connection, current liabilities are defined as those which will mature during the course of accounting period. The gap between the two methods of valuation is significant as regards long term liabilities. Long term liabilities are valued on the basis of their historical value, that is, by reference to the contract from which they originated, and hence, during periods of inflation or where the interest payable is less than the current market rate of interest, the accounting valuation will certainly be overstated by comparison with the discounted net value.

10.10.3 Process of Liabilities Valuation

There is different process of valuation of liabilities those discussed below:

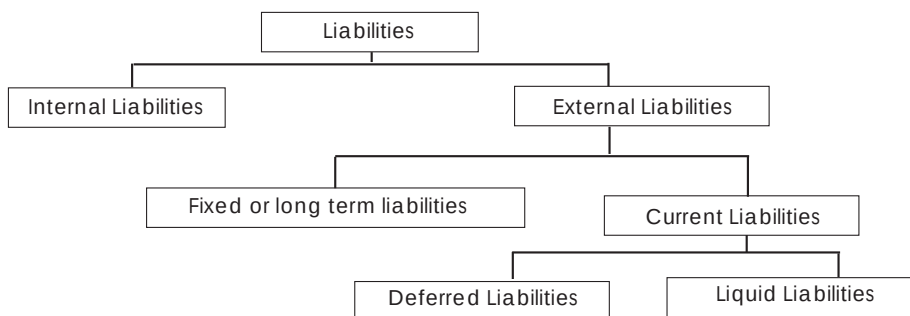
Historical Cost: The value of liabilities are recorded at the amount of proceeds received in exchange for the obligation, or in some situation, at the amount of cash or cash equivalents expected to be paid to satisfy the liabilities in the normal course of business.

Current Cost: Liabilities are carried at the undiscounted amount of cash or cash equivalents that would be required to settle the obligation currently.

Settlement Value: The undiscounted amounts of cash or cash equivalents expected to be required to settle the liabilities in the normal course of business.

Present Value: Liabilities are carried at the present value of the future cash flow that are expected to be required to settle the liabilities in the normal course of business.

Classification of Liabilities



Example of the above liabilities are as follows;

Internal Liabilities: Capital Reserve

External Liabilities: Debentures, Creditors, Bills Payable, Bank over draft etc.

Fixed or long term liabilities: Debentures, Loan or Mortgage

Current Liabilities: Creditors, Bills Payable, Bank over draft

Deferred Liabilities: The Liabilities which are payable after one month but within one year are called Deferred liabilities.

Liquid Liabilities: The liabilities which are payable within one month called liquid liabilities

10.10.4 Fair value of liabilities

It is suggested that a more precise definition of fair value of liabilities would be:

The fair value of a liability is the value at which the liability could be settled or transferred between willing but not anxious parties, where both parties possess all material information relevant to the valuation of the liability. Any transfer parties are peers, who have a similar operational status, creditworthiness, and market access, and transact similar business in the same marketplace; and where the fair value is determined on an 'as is' basis, ignoring special transferee or other restructure benefits that have not

actually been offered by an identifiable party. The condition of willing but not anxious parties would be taken to ameliorate short term 'irrational' market behaviour, notwithstanding the practical difficulties of actually quantifying the effect or value of such behaviour. It is noted that the settlement or transfer of liabilities is not inconsistent with the ongoing concept of the entity. The fair value of a liability is the value at which an ongoing entity would be indifferent between maintaining that particular liability and exchanging it for another equivalent liability or settling it with a payment. It is noted that the settlement or transfer of liabilities is not inconsistent with the ongoing concept of the entity. The fair value of a liability is the value at which an ongoing entity would be indifferent between maintaining that particular liability and exchanging it for another equivalent liability or settling it with a payment.

10.10.5 Contingent liability

A contingent Liabilities is not a actual liability. Instead, it is a potential liability that depends on a future event arising out of a past transaction. For example, a town Government may sue the company that setup new light, claiming that the electrical wiring is fault. The past transaction is the street light installation. The future event is the court case that will decide the suit. The light companies thus face a contingent liability, which may or may not become a actual obligation.

Sometime this liability has a definite amount. Discounting a note receivable creates a contingent that is, a potential liability for the endorser. If the marker of the note pays at maturity, the contingent liability ceases to exist. However if the maker defaults the payee, who sold the note, must pay its maturity value to the purchaser.

Another contingent liability of know amount arise from guaranteeing that another company will pay a note payable that the other company owes a third party, this practice is called consigning a note.

The line between contingent liabilities and real liabilities is heard to draw. The contingent liabilities appear in the body of the balance sheet of total liability, but with no amount. Generally an explanatory note accompanies a short presentation.

As a practical guide, the FASB says to record an actual liability if a) it is probable that the business has suffered a loss and b) it amount can be reasonable estimated. If both of these conditions are met, the FASB reasons that the obligation has passed from contingent to real, even if its amount must be estimated.

Disclose of contingent liability

For each class of contingent liability an entity should disclose at the balance sheet date a brief description of the nature of the contingent liability and, where practicable

- An estimate of its financial effect;
- An indication of the uncertainties relating to the amount or timing of any outflow; and
- The possibility of any reimbursement.

B) In extremely rare circumstances, when disclosure of any or all the above information is considered to be seriously prejudicial to the position of the entity in a dispute with other parties on the subject matter of the contingent liability, an entity need not disclose the information but should disclose the general nature of the dispute, together with the fact that, and reason why, the information has not been disclosed.

10.10.6 Bond – Types of bonds

A company needing millions of dollars may be unable to borrow so large an amount from a single lender. To gain access to more investor, the company may issue bonds. Each bond is, in effect, a long term note payable that bears interest. Bonds are debts to the company for the amounts borrowed from the investors.

TYPE OF BONDS

1. Registered Bond
2. Coupon Bonds
3. Term Bonds
4. Serial Bonds
5. Unsecured Bonds, called debentures are backed only by good faith of the borrower.



Bond Rating: A grade given to bonds that indicates their credit quality. Private independent rating services such as Standard & Poor's, Moody's and Fitch provide these evaluations of a bond issuer's financial strength, or it's the ability to pay a bond's principal and interest in a timely fashion.

In investment, the **bond credit rating** assesses the credit worthiness of a corporation's or government debt issues. It is analogous to credit ratings for individuals.

The credit rating is a financial indicator to potential investors of debt securities such as bonds. These are assigned by credit rating agencies such as Moody's, Standard & Poor's, and Fitch Ratings to have letter designations (such as AAA, B, CC) which represent the quality of a bond. Bond ratings below BBB-/Baa are considered to be not investment grade and are colloquially called junk bonds.

Moody's		S&P		Fitch		
Long-term	Short-term	Long-term	Short-term	Long-term	Short-term	
Aaa	P-1	AAA	A-1+	AAA	F1+	Prime
Aa1		AA+		AA+		High grade
Aa2		AA		AA		
Aa3		AA-		AA-		
A1		A+	A-1	A+	F1	Upper medium grade
A2	P-2	A		A		
A3		A-	A-2	A-	F2	Lower medium grade
Baa1		BBB+		BBB+		
Baa2	P-3	BBB	A-3	BBB	F3	
Baa3		BBB-		BBB-		
Ba1	Not prime	BB+	B	BB+	B	Non-investment grade speculative
Ba2		BB		BB		
Ba3		BB-		BB-		Highly speculative
B1		B+		B+		
B2		B		B		
B3		B-		B-		
Caa1		CCC+	C	CCC	C	Substantial risks
Caa2		CCC				Extremely speculative
Caa3		CCC-				Default imminent with little prospect for recovery
Ca		CC				
C		C				
C		D	/	DDD	/	In default

10.10.7 Credit rating agencies

Credit rating agencies registered as such with the SEC are "Nationally recognized statistical rating organizations". The following firms are currently registered as NRSROs: A.M. Best Company, Inc.; DBRS Ltd.; Egan-Jones Rating Company; Fitch, Inc.; Japan Credit Rating Agency, Ltd.; LACE Financial Corp.; Moody's Investors Service, Inc.; Rating and Investment Information, Inc.; and Standard & Poor's Ratings Services.

Under the Credit Rating Agency Reform Act, an NRSRO may be registered with respect to up to five classes of credit ratings: (1) financial institutions, brokers, or dealers; (2) insurance companies; (3) corporate issuers; (4) issuers of asset-backed securities; and (5) issuers of government securities, municipal securities, or securities issued by a foreign government.

S&P, Moody's, and Fitch dominate the market with approximately 90-95 percent of world market share.

Credit rating tiers

Moody's assigns bond credit ratings of Aaa, Aa, A, Baa, Ba, B, Caa, Ca, C, with WR and NR as withdrawn and not rated. Standard & Poor's and Fitch assign bond credit ratings of AAA, AA, A, BBB, BB, B, CCC, CC, C, D.

As of April 2011, there were 4 companies rated AAA by S&P:

Moody's	Standard & Poor's	Fitch	Credit worthiness
Aaa	AAA	AAA	An obligor has EXTREMELY STRONG capacity to meet its financial commitments.
Aa1	AA+	AA+	An obligor has VERY STRONG capacity to meet its financial commitments. It differs from the highest rated obligors only in small degree.
Aa2	AA	AA	
Aa3	AA-	AA-	
A1	A+	A+	An obligor has STRONG capacity to meet its financial commitments but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligors in higher-rated categories.
A2	A	A	
A3	A-	A-	
Baa1	BBB+	BBB+	An obligor has ADEQUATE capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitments.
Baa2	BBB	BBB	
Baa3	BBB-	BBB-	
Ba1	BB+	BB+	An obligor is LESS VULNERABLE in the near term than other lower-rated obligors. However, it faces major ongoing uncertainties and exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitments.
Ba2	BB	BB	
Ba3	BB-	BB-	
B1	B+	B+	An obligor is MORE VULNERABLE than the obligors rated 'BB', but the obligor currently has the capacity to meet its financial commitments. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitments.
B2	B	B	
B3	B-	B-	
Caa	CCC	CCC	An obligor is CURRENTLY VULNERABLE, and is dependent upon favourable business, financial, and economic conditions to meet its financial commitments.
Ca	CC	CC	An obligor is CURRENTLY HIGHLY-VULNERABLE.
	C	C	The obligor is CURRENTLY HIGHLY-VULNERABLE to nonpayment. May be used where a bankruptcy petition has been filed.
C	D	D	An obligor has failed to pay one or more of its financial obligations (rated or unrated) when it became due.
e, p	pr	Expected	Preliminary ratings may be assigned to obligations pending receipt of final documentation and legal opinions. The final rating may differ from the preliminary rating.



WR			Rating withdrawn for reasons including: debt maturity, calls, puts, conversions, etc., or business reasons (e.g. change in the size of a debt issue), or the issuer defaults.
unsolicited	unsolicited		This rating was initiated by the ratings agency and not requested by the issuer.
	SD	RD	This rating is assigned when the agency believes that the obligor has selectively defaulted on a specific issue or class of obligations but it will continue to meet its payment obligations on other issues or classes of obligations in a timely manner.
NR	NR	NR	No rating has been requested, or there is insufficient information on which to base a rating.

10.10.8 Investment grade

A bond is considered **investment grade** or **IG** if its credit rating is BBB- or higher by Standard & Poor's or Baa3 or higher by Moody's or BBB(low) or higher by DBRS. Generally they are bonds that are judged by the rating agency as likely enough to meet payment obligations that banks are allowed to invest in them.

Ratings play a critical role in determining how much companies and other entities that issue debt, including sovereign governments, have to pay to access credit markets, i.e., the amount of interest they pay on their issued debt. The threshold between investment-grade and speculative-grade ratings has important market implications for issuers' borrowing costs.

Bonds that are not rated as investment-grade bonds are known as **high yield** bonds or more derisively as junk bonds.

The risks associated with investment-grade bonds (or investment-grade corporate debt) are considered significantly higher than those associated with first-class government bonds. The difference between rates for first-class government bonds and investment-grade bonds is called investment-grade spread. The range of this spread is an indicator of the market's belief in the stability of the economy. The higher these investment-grade spreads (or risk premiums) are, the weaker the economy is considered.

Criticism

Until the early 1970s, bond credit ratings agencies were paid for their work by investors who wanted impartial information on the credit worthiness of securities issuers and their particular offerings. Starting in the early 1970s, the "Big Three" ratings agencies (S&P, Moody's, and Fitch) began to receive payment for their work by the securities issuers for whom they issue those ratings, which has led to charges that these ratings agencies can no longer always be impartial when issuing ratings for those securities issuers. Securities issuers have been accused of "shopping" for the best ratings from these three ratings agencies, in order to attract investors, until at least one of the agencies delivers favorable ratings. This arrangement has been cited as one of the primary causes of the subprime mortgage crisis (which began in 2007), when some securities, particularly mortgage backed securities (MBSs) and collateralized debt obligations (CDOs) rated highly by the credit ratings agencies, and thus heavily invested in by many organizations and individuals, were rapidly and vastly devalued due to defaults, and fear of defaults, on some of the individual components of those securities, such as home loans and credit card accounts.

Municipal Bonds

Municipal bonds are instruments issued by local, state, or federal governments in the United States. Until April-May 2010 Moody's and Fitch were rating municipal bonds on the separate naming/classification system which mirrored the tiers for corporate bonds. S&P abolished dual rating system in 2000.

Default rates

The historical default rate for municipal bonds is lower than that of corporate bonds. The Municipal Bond Fairness Act (HR 6308), introduced September 9, 2008, included the following table giving bond default rates up to 2007 for municipal versus corporate bonds by rating and rating agency.

Cumulative Historic Default Rates (in percent)

Rating categories	Moody's		S&P	
	Municipal	Corporate	Municipal	Corporate
Aaa/AAA	0.00	0.52	0.00	0.60
Aa/AA	0.06	0.52	0.00	1.50
A/A	0.03	1.29	0.23	2.91
Baa/BBB	0.13	4.64	0.32	10.29
Ba/BB	2.65	19.12	1.74	29.93
B/B	11.86	43.34	8.48	53.72
Caa-C/CCC-C	16.58	69.18	44.81	69.19
Investment Grade	0.07	2.09	0.20	4.14
Non-Invest Grade	4.29	31.37	7.37	42.35
All	0.10	9.70	0.29	12.98

A potential misuse of historic default statistics is to assume that historical average default rates represent the "probability of default" of debt in a particular rating category. However, [...] default rates can vary significantly from one year to the next and the observed rate for any given year can vary significantly from the average.

Standard & Poor's One-Year Global Corporate Default Rates By Refined Rating Category, 1981-2008

Year	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC to C
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.28	0	0
1982	0	0	0	0	0	0.33	0	0	0.68	0	0	2.86	7.04	2.22	2.33	7.41	21.43
1983	0	0	0	0	0	0	0	0	0	1.33	2.17	0	1.59	1.22	9.80	4.76	6.67
1984	0	0	0	0	0	0	0	0	1.40	0	0	1.64	1.49	2.13	3.51	7.69	25.00
1985	0	0	0	0	0	0	0	0	0	0	1.64	1.49	1.33	2.59	13.11	8.00	15.38
1986	0	0	0	0	0	0	0.78	0	0.78	0	1.82	1.18	1.12	4.65	12.16	16.67	23.08
1987	0	0	0	0	0	0	0	0	0	0	0	0	0.83	1.31	5.95	6.82	12.28
1988	0	0	0	0	0	0	0	0	0	0	0	0	2.33	1.98	4.50	9.80	20.37
1989	0	0	0	0	0	0	0	0.90	0.78	0	0	0	1.98	0.43	7.80	4.88	31.58
1990	0	0	0	0	0	0	0	0.76	0	1.10	2.78	3.06	4.46	4.87	12.26	22.58	31.25
1991	0	0	0	0	0	0	0	0.83	0.74	0	3.70	1.11	1.05	8.72	16.25	32.43	33.87
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0.72	14.93	20.83	30.19
1993	0	0	0	0	0	0	0	0	0	0	0	1.92	0	1.30	5.88	4.17	13.33
1994	0	0	0	0	0.45	0	0	0	0	0	0	0.86	0	1.83	6.58	3.23	16.67
1995	0	0	0	0	0	0	0	0	0	0.63	0	1.55	1.11	2.76	8.00	7.69	28.00
1996	0	0	0	0	0	0	0	0	0	0	0.86	0.65	0.55	2.33	3.74	3.92	4.17
1997	0	0	0	0	0	0	0	0.36	0.34	0	0	0	0.41	0.72	5.19	14.58	12.00
1998	0	0	0	0	0	0	0	0	0.54	0.70	1.29	1.06	0.72	2.57	7.47	9.46	42.86
1999	0	0	0	0.36	0	0.24	0.27	0	0.28	0.30	0.54	1.33	0.90	4.20	10.55	15.45	32.35
2000	0	0	0	0	0	0.24	0.56	0	0.26	0.88	0	0.80	2.29	5.60	10.66	11.50	34.12
2001	0	0	0	0	0.57	0.49	0	0.24	0.48	0.27	0.49	1.19	6.27	5.94	15.74	23.31	44.55
2002	0	0	0	0	0	0	0	1.11	0.65	1.31	1.50	1.74	4.62	3.69	9.63	19.53	44.12
2003	0	0	0	0	0	0	0	0	0.19	0.52	0.48	0.94	0.27	1.70	5.16	9.23	33.13



2004	0	0	0	0	0	0.23	0	0	0	0	0	0.64	0.76	0.46	2.68	2.82	15.11
2005	0	0	0	0	0	0	0	0	0.17	0	0.36	0	0.25	0.78	2.59	2.98	8.87
2006	0	0	0	0	0	0	0	0	0	0	0.36	0	0.48	0.54	0.78	1.58	13.08
2007	0	0	0	0	0	0	0	0	0	0	0	0.30	0.23	0.19	0	0.88	14.81
2008	0	0	0.43	0.40	0.31	0.21	0.58	0.18	0.59	0.71	1.14	0.63	0.63	2.97	3.29	7.02	26.53

Summary statistic	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC to C
Mean	0	0	0.02	0.03	0.05	0.06	0.08	0.16	0.28	0.28	0.68	0.89	1.53	2.44	7.28	9.97	22.67
Median	0	0	0	0	0	0	0	0	0.08	0	0.18	0.83	0.86	2.06	6.27	7.69	22.25
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum	0	0	0.43	0.40	0.57	0.49	0.78	1.11	1.40	1.33	3.70	3.06	7.04	8.72	16.25	32.43	44.55
Standard Deviation	0	0	0.08	0.10	0.14	0.13	0.20	0.32	0.36	0.43	0.96	0.84	1.83	2.02	4.51	7.82	11.93

Standard & Poor's One-Year Global Structured Finance Default Rates By Refined Rating Category, 1978-2008

Year	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC to C
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.25		0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.85	0	0
1995	0	0	0	0	0	0	0	0	0.43	0	0	0.98	0	0	0.95	0	52.63
1996	0	0	0	0	0	0.15	0	0	0	0	0	0.61	12.50		0	0	31.03
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.69
1998	0	0	0	0	0	1.04	0.91	0	0.19	0	0	1.03	0	0	2.34	0	22.58
1999	0	0	0	0	0	0	0.77	0	0	0.39	0	0	0	0	1.54	0	19.35
2000	0	0	0	0	0	0	0	0	0.11	0	0	0.61	0	0	2.19	0	5.26
2001	0.05	0	0	0	0	0.12	0	2.22	0	0.86	0.83	0.55	0.91	2.00	2.69	3.27	26.87
2002	0	0	0.06	0	0.27	0.14	0	1.77	0.19	0.70	1.26	2.03	1.12	2.50	3.60	23.24	27.03
2003	0	0	0	0	0.19	0.03	0.16	0.20	0.60	0.50	0.75	0.84	1.43	3.28	1.64	5.15	32.58
2004	0	0	0	0	0	0	0	0	0.16	0.17	0.50	0.81	0.29	0.79	2.23	3.56	13.79
2005	0	0	0	0	0	0	0	0	0.08	0.06	0.15	0.14	0.45	0.33	1.34	2.53	16.08
2006	0	0	0	0	0	0	0	0	0.06	0.20	0	0.33	0.36	0.26	0.36	1.42	19.18
2007	0.04	0.03	0.07	0.08	0	0.10	0.21	0.48	0.47	1.27	5.07	1.61	1.53	0.68	1.55	1.47	24.11
2008	0.53	0.35	0.57	1.15	1.15	0.87	1.42	2.27	1.26	3.45	5.60	4.21	5.07	8.53	12.84	10.28	56.92

Summary statistic	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC to C
Mean	0.02	0.01	0.02	0.05	0.06	0.08	0.14	0.37	0.16	0.38	3.56	0.81	1.24	1.22	2.18	2.83	16.73
Median	0	0	0	0	0	0	0	0	0	0	0	0.61	0	0.26	1.55	0	17.63
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum	0.53	0.35	0.57	1.15	1.15	1.04	1.42	2.27	1.26	3.45	57.14	4.21	12.50	8.53	12.84	23.24	56.92
Standard Deviation	0.09	0.07	0.10	0.23	0.23	0.24	0.35	0.76	0.29	0.78	12.39	1.02	2.90	2.20	2.93	5.59	16.60

10.10.9 Lease liability – Distinguish between operating lease & finance lease

Leasing is a contract between lessor (the owner of an asset) and lessee (the user) in which lessor provides right to use the asset to the lessee for an agreed period of time in return for periodic payment of rent. Thus, it is an alternative to the purchase of an asset out of own / borrowed fund.

Operating lease

This leases are generally short term or cancelable. Many apartment lease and most car rental agreements extended a year or less. These operating leases give the lessee the right to use the assets but provide the lessee with no continuing right to the assets. The lessor retains the usual risks and rewards of owning the leased asset.

To account for an operating lease, the lessee debits rent expenses and credited cash for the amount of the lease payment. The lessee's book do not report the leased asset or any lease liability (except perhaps a prepaid rent amount or a rent accrual at the end of the period).

Capital or financial lease

A capital lease is long and no cancellable. Accounting for a capital lease is much like accounting for purchases. The lessor removes the asset from her books. The lessee enters the asset into his accounts and records a lease liability at the beginning of the lease.

Distinguish between Equity and Liabilities

Assets are probable future economic benefit owned or controlled by the enterprise. Liabilities and equity are mutually exclusive claims to or interest in the enterprise's assets by entities other than the enterprise. In a business enterprise, equity or the ownership interest is a residual interest, remaining after liabilities, are deducted from assets and depending significantly on the profitability of the enterprise. Distributions to owners are discretionary, depending on its effect on owners after considering the needs of the enterprise and restrictions imposed by law, regulations, or agreement.

An enterprise is generally not obligated to transfer assets to owners except in the event of the enterprise's liquidations. In contract, liabilities, once incurred, involve nondiscretionary future sacrifices of assets that must be satisfied on demand, at a specified or determinable date, or on occurrence of a specified event, and they take precedence over ownership interests.

Although the line of distinction between equity and liabilities is clear in concept, it may be obscured in practice. Often, several kinds of securities issued by business enterprises seem to have characteristics of both liabilities and equity in varying degrees or because the names given some securities may not accurately describe their essential characteristics. For example, convertible debt has both liability and residual interest characteristics, which may create problems in accounting for them. Preference share also often has both debt and equity characteristics and some preference shares may effectively have maturity amounts and dates at which they must be redeemed for cash.

Illustration 52

(a) At April 30, 2009, XYZ company reported its 6 percent long term debt:

Current Liability (in part)	Millions
Portion of long term debt due within one year	₹ 14
Interest payable ($₹ 200 \times .06 \times 5/12$)	5
Long term debt and other liabilities (in part)	
Long term debt	186



The company pays interest on its long term debt on November 30, each year.

Show how XYZ Company would report its liabilities on the year ended balance sheet at April 30, 2010. Assume the current maturity of its long-term debt is ₹16 millions, and long term portion is ₹ 170 millions.

(b) What distinguishes a contingent liability from an actual liability?

Solution:

(a) XYZ company balance sheet at April 30, 2010

Current Liability (in part)	Millions
Portion of long term debt due within one year	₹16
Interest payable ($₹186 \times .06 \times 5/12$)	4.65
Long term debt and other liabilities (in part)	
Long term debt	₹170

(b) A contingent liability is a potential liability, which may or not become an actual liability.

Illustration 53

An Aircraft Company has outstanding an issue of 8 percent convertible bonds that mature in 2013. Suppose the bonds were dated Oct. 1, 1993, and pay interest each April 1 and Oct. 1.

Complete the following effective amortization table through Oct. 1, 1990

Bond data:

Maturity Value-₹100000

Contract interest rate-8%

Interest paid-4% semiannually, ₹4000($₹100000 \times .04$)

Market interest rate at time of issue-9% annually, 4.5% semiannually

Issue price-9%

Required Amortization Table

Solution:

Amortization Table

A	B	C	D	E	F
Semiannual interest date	Interest payment (4% of maturity value) ₹	Interest Expense (4.5% of preceding bond carrying value) ₹	Discount Amortization (B-A) ₹	Discount Account Balance (D-C) ₹	Bond Carrying Value (100000-D) ₹
10-1-93				9250	90750
4-1-94	4000	4084	84	9166	90834
10-1-95	4000	4088	88	9078	90922
4-1-96	4000	4091	91	8987	91013
10-1-96	4000	4096	96	8891	91109

Illustration 54

ABC Ltd. is faced with a decision to purchase or acquire on lease a mini car. The cost of mini car is ₹ 126,965. It has a life of 5 years. The mini car can be obtained on lease by paying equal lease rental annually. The leasing company desires a return of 10% on the gross value of the lease assets. ABC Ltd. can also obtain 100% finance from its regular banking channel. The rate of interest will be 15% p.a. and the loan will be paid in 5 equal annual installments, inclusive of interest. The effective tax rate of the company is 40%. For the purpose of taxation it is to be assuming that the amount will be written off over the period of 5 years on a straight line basis.

Advice ABC Ltd. which option should the company considers.

What should be the annual lease rental to be charged by the leasing company to match the loan option?

	10%	15%	9%
1	0.91	0.87	0.92
2	0.83	0.76	0.84
3	0.75	0.66	0.77
4	0.68	0.57	0.71
5	0.82	0.49	0.65

Solution:**Cost of mini car ₹ 1,26,965**

Assume lease rent is payable at beginning of each year for five years

So total present value of Re 1 = $1 + 1/(1+0.10) + 1/(1+0.10)^2 + 1/(1+0.10)^3 + 1/(1+0.10)^4 = 4.17$

Therefore annual lease result beginning of each year for five year = $126965 / 4.17 = ₹30447$

As there is no security deposit so initial cost is zero.

Period	Rent	Tax save on rent	Inflow
0	30447	–	-30447
1	30447	12179	-18268
2	30447	12179	-18268
3	30447	12179	-18268
4	30447	12179	-18268
5	–	12179	12179

Cost of debt = 15% (fully financed by debt)

Cost of debt after tax $[15\% (1 - 0.40)] = 0.09 = 9\% = \text{cost of capital.}$

NPV = $\underline{-30447} + \underline{-18268} + \dots + \underline{-18268} + \underline{12179}$

$$1 + \frac{1}{(1.09)} + \frac{1}{(1.09)^2} + \frac{1}{(1.09)^3} + \frac{1}{(1.09)^4} + \frac{1}{(1.09)^5}$$

$$= 30447 - (18268 \times 3.24) + (12179 \times 0.65) = 81,719$$



If mini car is purchased:

Cost of machine ₹ 1,26,965

Assume loan instalment including @15% interest p.a. is to be paid at beginning of the year.

So total present value of Re 1 @15% interest rate

$$1 + \frac{1}{(1+0.15)} + \frac{1}{(1+0.15)^2} + \frac{1}{(1+0.15)^3} + \frac{1}{(1+0.15)^4} = 3.86$$

$$\text{So loan "installment inclusive of interest"} = \frac{1,26,965}{3.86} = ₹ 32,892$$

Classification of interest and principal of loan payment Year

Year	Loan	Interest	Principal
Beginning of 1 st year	1,26,965		
Less-1st installment	<u>32,892</u>		
	94,073		
add-interest 1st year@ 15%	<u>14,111</u>		
	108,184		
less-installment of beginning of 2nd year	<u>32,892</u>	14,111	18,781
	75,292		
add-interest of 2nd year @ 15%	<u>11,294</u>		
	86,586		
less- installment of started of 3rd	<u>32,892</u>	11,294	21,598
	53,694		
add-interest of 3rd year	<u>8,054</u>		
	61,748		
less-installment 4th year	<u>32,892</u>	8,054	24,838
	28,856		
add-intrest of 4th year	<u>4,036</u>		
	32,892		
less-installment of 5th year	<u>32,892</u>	4,036	28,856
	Nil		

Year	1 Cash outflow for principal payment	2 Cash outflow for interest	Tax save on interest $3=2 \times 0.4$	4 Depreciation	5 Cash inflow in terms of tax save on depreciation	Inflow (3 + 5 - 1 - 2)
0	32,892	-	-	(126965 - 0)	-	(32892)
1	18,781	14,111	5,644	25,393	10,157	(17091)
2	21,598	11,294	4,518	25,393	10,157	(18218)
3	24,838	8,054	3,222	25,393	10,157	(19513)
4	28,856	4,036	1,614	25,393	10,157	(21121)
5	-	-	-	25,393	10,157	10157

$$\text{NPV} = -32892/1 + -17091/(1+0.09) + -18218/(1+0.09)^2 + -19513/(1+0.09)^3 + -21121/(1+0.09)^4 + 10157/(1+0.09)^5 - 0$$

$$= (-) 87335$$

As revenue in both the cases are same and hence ignored. As revenue is ignored so NPV in both the cases are negative. In case of lease negative NPV is lower so it is advisable to take the lease.

- (b) Assume lease rental at beginning of each year be ₹ X so that it matches with the loan option i.e., its NPV is equal to NPV of purchase option.

Year	Lease rent	Tax save on rent	Cash inflow
0	X	-	(x)
1	X	0.4x	(0.6x)
2	X	0.4x	(0.6x)
3	X	0.4x	(0.6x)
4	X	0.4x	(0.6x)
5	X	0.4x	0.4x

$$\text{NPV} = -x/1 + -0.6x/(1+0.09) + -0.6x/(1+0.09)^2 + -0.6x/(1+0.09)^3 + -0.6x/(1+0.09)^4 + 0.4x/(1+0.09)^5 - 0$$

$$= -x - (0.6 \times 3.124) + 0.4x \times 0.65 = -2.684x$$

By condition

$$-2.684x = -87335$$

breakeven lease rent $x = ₹ 32539$

Therefore, annual lease rent will be 32539, payable at beginning of each year for 5 years.



10.11 MM HYPOTHESIS

10.11.1 Modigliani and Miller (MM) Hypothesis

The most comprehensive argument in support of the irrelevance of dividends is provided by the MM hypothesis. Modigliani and Miller maintain that dividend policy has no effect on the share price of the firm and is, therefore, of no consequence. What matters, according to them, is the investment policy through which the firm can increase its earnings and thereby the value of the firm. Given the investment decision of the firm, the dividend decision-splitting the earnings into packages of retentions and dividends. 'Under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of shares.

Assumptions

The MM hypothesis of irrelevance of dividends is based on the following critical assumptions:

1. Perfect capital markets in which all investors are rational. Information is available to all free of cost, there are no transactions costs, securities are infinitely divisible, no investor is large enough to influence the market price of securities, there are no flotation costs.
2. There are no taxes. Alternatively, there are no differences in tax rates applicable to capital gains and dividends.
3. A firm has a given investment policy which does not change. The operational implication of this assumption is that financing of new investments out of retained earnings will not change the business risk complexion of the firm and, therefore, there would be no change in the required rate of return.
4. There is a perfect certainty by every investor as to future investments and profits of the firm. In other words, investors are able to forecast future prices and dividends with certainty. This assumption is dropped by MM later.

10.11.2 Crux of the Argument

The crux of the MM position on the irrelevance of dividend is the arbitrage argument. The arbitrage process, as already explained in the chapter dealing with leverage and valuation, involves a switching and balancing operation. In other words, arbitrage refers to entering simultaneously into two transactions which exactly balance or completely offset each other. The two transactions, here are the acts of paying out dividends and raising external funds-either through the sale of new shares or raising additional loans-to finance investment programmes. Assume that a firm has some investment opportunity. Given its investment decision, the firm has two alternatives: (i) it can retain its earnings to finance the investment programme; (ii) or distribute the earnings to the shareholders as dividend and raise an equal amount externally through the sale of new shares/bonds for the purpose. If the firm selects the second alternative, arbitrage process is involved, in that payment of dividends is associated with raising funds through other means of financing. The effect of dividend payment on shareholders' wealth will be exactly offset by the effect of raising additional share capital.

When dividends are paid to the shareholders, the market price of the shares will decrease. What is gained by the investors as a result of increased dividends will be neutralised completely by the reduction in the terminal value of the shares. The market price before and after the payment of dividend would be identical. The investors, according to Modigliani and Miller, would, therefore, be indifferent between dividend and retention of earnings. Since the shareholders are indifferent, the wealth would not be affected by current and future dividend decisions of the firm. It would depend entirely upon the expected future earnings of the firm.

There would be no difference to the validity of the MM premise, if external funds are raised in the form of debt instead of equity capital. This is because of their indifference between debt and equity with

respect to leverage. The cost of capital is independent of leverage and the real cost of debt is the same as the real cost of equity.

The proposition that investors are indifferent between dividend and retained earnings implies that the dividend decision is irrelevant. The arbitrage process also implies that the total market value plus current dividends of two firms which are alike, in all respects except D/P ratio will be identical. The individual shareholder can retain and invest his own earnings as well as the firm would.

With dividends being irrelevant, a firm's cost of capital would be independent of its D/P ratio.

Finally, the arbitrage process will ensure that under conditions of *uncertainty* also the dividend policy would be irrelevant. When two firms are similar in respect of business risk, prospective future earnings and investment policies, the market price of their shares must be the same. This, MM argue, is because of the rational behaviour of investors who are assumed to prefer more wealth to less wealth. Differences in current and future dividend policies cannot affect the market value of the two firms as the present value of prospective dividends plus terminal value is the same.

Proof

MM provide the proof in support of their argument in the following manner.

Step 1 : The market price of a share in the beginning of the period is equal to the present value of dividends paid at the end of the period plus the market price of share at the end of the period. Symbolically,

$$P_0 = \frac{1}{(1+k_e)}(D_1 + P_1) \quad (1)$$

where P_0 = Prevailing market price of a share

k_e = Cost of equity capital

D_1 = Dividend to be received at the end of period 1

P_1 = Market price of a share at the end of period 1

Step 2 : Assuming no external financing, the total capitalised value of the firm would be simply the number of shares (n) times the price of each share (P_0). Thus,

$$nP_0 = \frac{1}{(1+k_e)}(nD_1 + nP_1) \quad (2)$$

Step 3 : If the firm's internal sources of financing its investment opportunities fall short of the funds required, and Δn is the number of new shares issued at the end of year 1 at price of P_1 , Eq. 2 can be written as:

$$nP_0 = \frac{1}{(1+k_e)}[(nD_1 + (n + \Delta n)P_1 - \Delta nP_1)] \quad (3)$$

where n = Number of shares outstanding at the beginning of the period

Δn = Change in the number of shares outstanding during the period/Additional shares issued

Equation 3 implies that the total value of the firm is the capitalised value of the dividends to be received during the period plus the value of the number of shares outstanding at the end of the period, considering new shares, less the value of the new shares. Thus, in effect, Eq. 13.3 is equivalent to Eq. 2.



Step 4 : If the firm were to finance all investment proposals, the total amount raised through new shares issued would be given in Eq. 4.

$$\Delta nP_1 = I - (E - nD_1)$$

$$\Delta nP_1 = I - E + nD_1 \quad (4)$$

where ΔnP_1 = Amount obtained from the sale of new shares of finance capital budget. I = Total amount/requirement of capital budget

E = Earnings of the firm during the period

nD_1 = Total dividends paid

$(E - nD_1)$ = Retained earnings

According to Equation 4, whatever investment needs (I) are not financed by retained earnings, must be financed through the sale of additional equity shares.

Step 5 : If we substitute Eq. 4 into Eq. 3 we derive Eq. 5.

$$nP_0 = \frac{1}{(1+k_e)} [(nD_1 + (n + \Delta n)P_1 - (I - E + nD_1))] \quad (5)$$

Solving Eq. 3 we have

$$nP_0 = \frac{nD_1 + (n + \Delta n)P_1 - I - E + nD_1}{(1+k_e)}$$

There is a positive nD_1 and negative nD_1 . Therefore, nD_1 cancels. We then have

$$nP_0 = \frac{(n + \Delta n)P_1 - I - E}{(1+k_e)} \quad (6)$$

Step 6 – Conclusion : Since dividends (D) are not found in Eq. 6, Modigliani and Miller conclude that dividends do not count and that dividend policy has no effect on the share price.

MM's approach to irrelevance of dividend to valuation is illustrated below.

Illustration 55

A company belongs to a risk class for which the approximate capitalisation rate is 10 per cent. It currently has outstanding 25,000 shares selling at ₹ 100 each. The firm is contemplating the declaration of a dividend of ₹ 5 per share at the end of the current financial year. It expects to have a net income of ₹ 2,50,000 and has a proposal for making new investments of ₹ 5,00,000. Show that under the MM assumptions, the payment of dividend does not affect the value of the firm.

Solution:

(i) Price per share at the end of year 1, $P_0 = \frac{1}{(1+k_e)} (D_1 + P_1)$

$$₹ 100 = \frac{1}{1.10} (₹ 5 + P_1)$$

$$110 = ₹ 5 + P_1$$

$$105 = P_1$$

(ii) Amount required to be raised from the issue of new shares,

$$\begin{aligned} \Delta n P_1 &= (E - n D_1) \quad (4) \\ &= ₹ 5,00,000 - (₹ 2,50,000 - ₹ 1,25,000) = ₹ 3,75,000 \end{aligned}$$

(iii) Number of additional shares to be issued, $\Delta n = \frac{₹ 3,75,000}{₹ 105} = \frac{75,000}{21}$ shares

(iv) Value of the firm $n P_0 = \frac{(n - \Delta n) P_1 - 1 + E}{(1 + k_e)} = \left[\frac{25,000}{1} + \frac{75,000}{21} \right]$

$$= (₹ 105) - ₹ 5,00,000$$

$$+ ₹ 2,50,000 = \frac{₹ 27,50,000}{1.10} = ₹ 25,00,000$$

Existing relevant accounting standards for business valuation

Capital intermediation through stock market has superseded the volume of intermediation by banks across the world during the last two decades. India is not an exception too. As growing number of businesses have become multinational, different stakeholders of the business across the border require a single set of high quality and acceptable accounting standards that makes financial statements comparable and relevant. With this end in view, in April 2001, the International Accounting Standards Board (IASB) was founded to undertake the responsibilities of the International Accounting Standards Committee (IASC) established in 1973. Many of the standards forming part of IFRS are known by the older name of International Accounting Standards (IAS). IAS was issued between 1973 and 2001 by the Board of the International Accounting Standards Committee (IASC). In their first board meeting IASB has adopted all (i) IASs published by IASC and (ii) its interpretations by Standard Interpretation Committee (SIC); responsible for issuing authoritative interpretations to each IAS. The IASB has continued to develop standards calling the new standards IFRS. Full conception of IFRS comprised of (i) all IASs that are in practice, (ii) interpretations to those IASs by Standard Interpretation Committee (SIC), (iii) 9 IFRS that have yet been released and (iv) interpretation to those standards by International Financial Reporting Interpretations Committee (IFRIC). From June 2009 we have two sets of IFRSs. Full IFRS and IFRS for Small & Medium Enterprises (IFRS for SMEs). This mini IFRS reduces the volume of full IFRS by 85% and will be useful for 95% business houses all over the world. Countries that have not adopted full IFRS may adopt IFRS for SMEs. IFRS for SME has been propounded mainly on the cost-benefit ground and has made no compromise on recognition and measurement criteria but has offered relaxation on disclosure aspects. IFRS is a principle based standard.

IASB is made up of fifteen members representing nine countries, including China, Japan, Australia, and the U.S. It is sponsored by a variety of financial institutions, companies, banks, and accounting firms.



In 2002, a year after their establishment, the IASB got united with the Financial Accounting Standards Board (FASB) to combine their knowledge and develop a set of high-quality accounting standards that would be compatible with all countries in order to successfully carry out international business affairs and their accounting. This set of global accounting standards is referred to as the International Financial Reporting Standards (IFRS).

In India, IFRS was supposed to be introduced from 1st April, 2011 with Sensex and Nifty companies. However, it has been found that huge legislative changes are imperative in the field of Companies Law, Income tax Act & Rules, Securities & Exchange Board of India (Rules and Regulations), Foreign Exchange Management Act (FEMA) and other allied areas. IFRS give emphasis on fair value measurement practices about which sufficient numbers of Indian accountants are not yet fully equipped. As a result, Ministry of Company Affairs (MCA) in their meeting dated 22nd January, 2010 has decided not to adopt IFRS in its original form from 1st April, but to adopt it in a phased manner with the introduction of Ind.AS (Indian version of IFRS). Till date 35 Ind.AS has yet been released.

Corporate India looks forward to a clear roadmap for shifting to International Financial Reporting Standards (IFRS) for accounting. The convergence of the Indian Accounting Standards, currently used by domestic companies and IFRS is one of the major issues concerning India Inc. As this would lead to a revaluation of their assets and liabilities and in several cases the new accounting norms will also result in change in income recognition norms. In accordance with India's commitment to converge with IFRS, the Ministry of Corporate Affairs (MCA) issued a press release on February 25, 2011 notifying thirty five Indian Accounting Standards converged with IFRS (Referred to as Ind AS).

In IFRS, financial and non-financial liabilities are measured to reflect present obligation. IFRS allows application of cost model for property, plant and equipment, intangible assets and investment property but cost is monitored through appropriate depreciation and / or amortization policy, annual review of useful life and residual value and elimination finance charge and / or income from cost.

(i) Accounting Standards in India (ii) Overview of constitution of ASB and procedural steps of framing accounting standards.

Accounting Standards are written policy documents issued by expert accounting body or by government or other regulatory covering the aspects of recognition, measurement, presentation and disclosure of accounting transactions in the financial statements. The accounting standards reduce the accounting alternatives in the preparation of financial statements within the bounds of rationality, thereby ensuring comparability of financial statements of different enterprises. The accounting standards deal with issues of (i) recognition of events and transactions in the financial statements; (ii) measurement of these transactions and events; (iii) presentation of these transactions and events in the financial statements in a manner that is meaningful and understandable to the reader and (iv) the disclosure requirement which should be there to enable the public at large and the stakeholders and the potential investors in particular, to get an insight into what these financial statements are trying to reflect and thereby helping them to take informed business decisions.

Accounting standards (i) make accounts comparable and (ii) provide a set of standard (a) accounting policies, (b) valuation norms and (c) disclosure requirements. With this end in view, Accounting Standard Board (ASB) was constituted in 1977. ASB constituted by the council of the ICAI had due representation from industry, associations, banks, company law authority taxation authorities and the C&AG. ASB now has representatives from financial institutions, SEBI, office of the C&AG, Management institutes and Universities. The preliminary draft of accounting standards are prepared by the study group of the ASB and are sent to FICCI, ASSOCHAM, CLB, ICWAI, ICSI, CBDT etc. After taking into consideration their views, the draft of the standards is issued as an Exposure Draft (ED) for comments by members of ICAI and public at large. The comments on the ED are considered by ASB and a final draft of the standard is submitted to the Council of the ICAI for its approval and only after getting its approval, it comes out as 'Standard'. ASB has been able to frame 32 Accounting Standards (AS). We will discuss just three of them. These are AS 2: Valuation of Inventories; AS 28: Impairment of Assets and AS 30: Financial Instrument: Recognition & Measurement.

Valuation of inventories

Inventories should be valued at lower of cost and net realisable value. Cost of goods is the summation of (a) Cost of Purchase; (b) Cost of Conversion; (c) Other cost necessary to bring the inventory in present location and condition.

Example 56

X Ltd. Purchased 1,10,000 MT for ₹ 100 each. MT of raw material and introduced in the production process to get 85,000 MT as output. Normal wastage is 5%. In the process, company incurred the following expenses:

Direct labour	₹10,00,000
Direct Variable overhead	₹1,00,000
Direct Fixed overhead (including interest ₹36,785)	₹1,00,000

Of the above 80,000 MT was sold during the year and remaining 5000 MT remained in closing stock. Due to fall in demand in market, the selling price for the finished goods on the closing day was estimated to be ₹ 145 per MT. Calculate the value of closing stock.

Solution:

Computation of Cost of Closing stock

Cost of purchase (1,10,000 × 100)	₹110,00,000
Direct labour	₹10,00,000
Variable overhead	₹1,00,000
Fixed overhead [(₹1,00,000 - 36,785) × 85,000] / 1,04,500	₹51,419
Cost of production	1,21,51,419
Cost of Closing stock (1,21,51,419 / 85,000)	₹143 (approx)
Net Realisable value	₹145

Since net realisable value is less than cost, closing stock will be valued at ₹ 143. Therefore closing stock is ₹ 5,000 × 143 = ₹ 7,15,000.

Net Realisable value

Net realisable value is the estimated selling price in the ordinary course of business less than the estimated cost of completion and the estimated costs necessary to make the sale. While estimating the NRV, the purpose of holding the stock should be taken into consideration. If the sales contracts are for less than the inventory quantities held, the net realisable value of the excess inventory is based on general selling price. Contingent losses on firm sales contracts in excess of inventory quantities held and contingent losses on firm purchases are dealt with in accordance with the principles enunciated in AS4, Contingencies and Events occurring after the Balance Sheet date.

Let's assume, a concern has 15,000 a unit in stock of which 9,000 is to be delivered for ₹ 50 each as per contract with one of the customer. Cost of stock is ₹55 and NRV is estimated to be ₹ 65. In this case 9,000 is to be valued @ ₹ 50 each and rest 6,000 will be valued @ ₹55 each.



Illustration 57

Following information is obtained from P Ltd.

Opening Stock	Finished goods	1,000 Kg	₹ 25,000
	Raw material	1,100 Kg	₹ 11,000
Purchases		10,000Kg	₹1,00,000
Labour			₹ 76,500
Overheads (fixed)			₹75,000
Sales		10,000Kg	₹ 2,80,000
Closing Stock	Raw materials	900 Kg	
	Finished goods	1200 Kg	

The expected production for the year was ₹15,000 Kg of the finished product. Due to fall in market demand, the sales price for the finished goods was ₹ 20 per Kg. and the replacement cost for the material was ₹ 9.50 per Kg on the closing day. You are required to calculate the closing stock as on that date. Compute closing stock as on that date.

Solution:

Computation of cost of closing stock

Cost of purchase (₹)	1,02,000
Direct labour (₹)	76,500
Fixed overhead (75,000 × 10,200)/15,000	₹51,000
Cost of production	₹ 2,29,500
Cost of closing stock per unit (2,29,500/10,200)	₹ 22.50
Net Realisable Value per unit	₹ 20.00

Since net realisable value is less than cost, closing stock will be valued at ₹ 20.

As NRV of the finished goods is less than its cost, relevant raw materials will be valued at replacement cost i.e ₹ 9.50

Therefore, value of closing stock: Finished goods (1200 × 20) or	₹ 24,000
(+) Raw Material (900 × 9.50) or	₹ 8550
Total :	₹ 32,550

Impairment of asset – Provision of AS 28 in respect of impairment of asset

Impairment means loss in the value of an asset. AS 28 comes into effect in respect of the accounting period commencing on or after 1st April, 2011. AS 28 is applicable for all business entities whose securities are either already listed or in the process of listing on a recognised stock exchanges in India. This standard is also applicable for all commercial, industrial and business reporting enterprises whose turnover for the accounting period exceeds ₹ 50 crores.

Purpose of this standard is to ensure that the assets of an enterprise are carried at an amount not exceeding their recoverable amount. An enterprise is required to assess at each balance sheet whether there is an indication that an enterprise may be impaired. If such an indication exists, the enterprise is required to estimate the recoverable amount and the impairment loss, if any should be recognised in the Profit & Loss account.

Recoverable amount

Recoverable amount is the higher of an asset's net selling price and its value in use.

Recoverable amount for an asset is defined by the statement as the higher of the net selling price or

value of use whichever is higher. If there is no reason to believe that an asset's value in use materially exceeds its net selling price, the assets recoverable amount may be taken to be its net selling price.

Value in use is the present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life.

In order to estimate the value in use of an asset, one should follow following steps;

- (a) Estimating the future cash inflows and outflows arising from continuing use of the asset and from its ultimate disposal; and
- (b) applying the appropriate discount rate to these future cash flows.

Illustration 58

XYZ Ltd. Gives the following estimates of cash flows relating to fixed asset on 31-12-2012. The discount rate is 10%. Cash flows expected to generate for the next 5 years are,

2013: ₹4000; 2014: ₹6000; 2015: ₹ 6000; 2016: ₹8,000 & 2017: ₹4,000 (₹ are all in lakhs.)

Residual value at the end of 2017	₹ 1000 lakhs
Fixed assets purchased on 01.01.2010	₹ 40,000 lakhs
Useful life	8 yrs
Net selling price as on 31-12-2012	₹ 20,000 lakhs.

Calculate on 31-12-2012

Carrying amount at the end of 2012

Value in use as on 31-12-2012

Recoverable amount as on 31-12-2012

Impairment loss to be recognised for the year ended 31-12-2012

Revised carrying amount

Depreciation charge for 2013.

Solution:

Year	Cash flows (₹ in lakhs)	PVIRF @10%	DCF (₹ in lakhs)
2013	4,000	.909	3636
2014	6,000	.826	4956
2015	6,000	.751	4506
2016	8,000	.683	5464
2017	4,000	.620	2480
			21,042

Value in use = ₹ 21,042 lakhs.

Computation of carrying amount:

Original cost ₹ 20,000 lakhs

Depreciation for 3 years $[(40,000 - 1,000) \times 3/8] = ₹ 14,625$

Carrying amount on 31-12-2012: $[₹ 40,000 - 14,625]$ or ₹ 25,375

Recoverable amount ₹ 20,000 lakhs

Revised carrying amount ₹ 25,375 - 5375) or ₹ 20,000 lakhs.

Depreciation charges for 2013: $[20,000 - 1,000]/5$ or ₹ 3,800.



Illustration 59

PQR Ltd. is having a Machine carrying amount of which is ₹ 100 lakhs as on 31.3.2010. Its balance useful life is 5 years and residual value at the end of 5 years is ₹ 5 lakhs. Estimated future cash flows from the Machine for the next 5 years are;

Year	Estimated cash flows (₹ in lakhs)
2011	52
2012	34
2013	32
2014	28
2015	32

Compute "Value in use" for plant if the discount rate is 15% and also compute the recoverable amount if net selling price of the machine as on 31.12.2010 is ₹ 55 lakhs.

Solution:

Present Value of future cash flow

Yr	Future cash flows	Discount @ 15%	DCF
2011	52	.870	45.24
2012	34	.756	25.704
2013	32	.658	21.056
2014	28	.572	16.016
2015	32	.497	15.904
Total:			123.92

Present Value of residual price on 31.03.2015: ₹5 × .497 = ₹ 2.485 (₹ in lakhs)

Present value of estimated cash flow by use of an asset and residual value, which is called "Value in use"

Value in use is (₹ 123.92 + ₹2.485) = ₹ 126.405 lakhs.

Introduction of accounting standard that deals with measurement (valuation) of financial instrument

Accounting standard 30 deals with valuation or measurement of financial instruments. This accounting standard is applicable from 01.04.2011 for all commercial, industrial and business entities except Small and Medium –sized Enterprises.

SMEs are business entities

1. whose equity or debt securities are neither listed nor in the process of listing with any stock exchanges.
2. Which is not carrying on bank or insurance business
3. Whose turnover does not exceed 50 crore in the immediately preceding accounting year.
4. It does not have borrowings in excess of rupees 10 crores at any time during the immediately preceding accounting year.
5. Which is not holding or subsidiary of an entity which is not a small and medium sized entity.

The amortised cost of a financial asset or financial liability is the amount at which financial asset or financial liability is measured at initial recognition minus principal repayments, plus or minus the cumulative amortization using the effective interest method of any difference between the initial amount and the maturity amount and minus any reduction (directly or through the use of an allowance account) for impairment or uncollectibility. The effective interest method is a method of calculating the amortised cost of a financial asset or a financial liability (or group of financial assets or financial liabilities) and of allocating the interest income or interest expense over the relevant period.

The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instruments or when appropriate a shorter period to the net carrying amount of the financial asset or financial liability. Like measurement, sometimes required to remove previously recognised financial asset or financial liability from an entity's balance sheet. AS 30 required that financial instruments are to be measured at fair value. Fair value is the amount for which asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm lengths transaction.

Categories of Financial Instruments are covered under AS 30

Four categories of financial instruments are covered under AS 30. They are

(i) Held for Trading; (ii) Held to maturity; (iii) Loans & Receivables and (iv) Available for sale.

A financial asset or financial liability is classified as **held for trading** if it is

- (i) acquired or incurred principally for the purpose of selling or repurchasing it in near term; or
- (ii) part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent pattern of short-term profit taking;
- (iii) a derivative (except for a derivative that is a financial guarantee contract or a effective hedging instrument).

Held- to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturity that an entity has positive intention and ability to hold to maturity other than;

- (a) those that the entity upon initial recognition designates as at fair value through profit & loss;
- (b) those that meet the definition of loans and receivables; and those that the entity designates as available for sale.

Loans and receivables are non-derivative financial assets with determinable payments that are not quoted in an active market, other than; (a) those that the entity intends to sell immediately or in near term, which should be classified as held for trading and (b) those that entity upon initial recognition designates as available for sale; or those for which the holder may not recover substantially all of its initial investment, other than because of credit deterioration, which should be classified as available for sale.

Available-for-sale financial assets are those non-derivative financial assets that are designated as available for sale or are not classified as

1. Loans and receivables
2. Held to maturity investments or
3. Financial assets at fair value through profit and loss.

Embedded Derivatives

An embedded derivative is a component of a hybrid (combined) instrument that also includes a non-derivative host contract- with the effect that some of the cash flows of the combined instrument vary in a way similar to a standalone derivative. An embedded derivative causes some or all of the cash flows that otherwise would be required by the contract to be modified according to a specified interest rate, financial instrument price, foreign exchange rate, index of prices or rates, credit rating or credit index or other variable provided in the case of a non-financial variable that the variable is not specific to a party to the contract.

A derivative that is attached to a financial instrument but is contractually transferrable independently but is contractually transferable independently or has a different counterparty from that instrument is not an embedded derivative, but a separate financial instrument.



If a lease contract contains a provision that increase each year by 20%. This not an example of an embedded derivative because lease rental does not depend on any underlying basis. On the other hand let's suppose," A Ltd. makes an agreement with B Ltd. To sell coal over a period of two years. Price of the coal will depend on electricity price."This is an example of embedded derivative because cash flow of the contract or settlement price is dependent on underlying electricity price.

Illustration 60

On February 1,2010 X Ltd. enters into a contract with Y Ltd to receive the fair value of 1000 X Ltd.'s own equity shares outstanding as of 31.01.2011 in exchange for payment of ₹ 1,04,000 in cash i.e., ₹ 104 per share on 31.01.2011. The contract will be settled in net cash

- (i) Fair value of forward on 01.02.2010: Nil
- (ii) Fair value of forward on 31.12 2010: ₹ 6,300
- (iii) Fair value of forward as on 31.01.2010: ₹ 2,000.

Give journal entries on the basis that net amount settled in cash.

Solution:

01.02.2010

No entry is required because fair value of derivatives is zero and no cash is paid or received.

31.12.2010

Debit forward asset and credit 'gain' by ₹6,300

31.01.2011

Loss account to be debited and forward asset to be credited by ₹ 4,300

31.01.2011

Debit cash and credit forward asset by ₹ 2,000

Illustration 61

PQR Ltd. Is a subsidiary of XYZ Ltd.It holds 9% ₹ 100 5 yr debentures of M Ltd. And designated them as held to maturity as per AS 30:"Financial Instruments: Recognition and Measurement".

Can PQR Ltd designate this financial asset as hedging instrument for managing currency risk?

Solution:

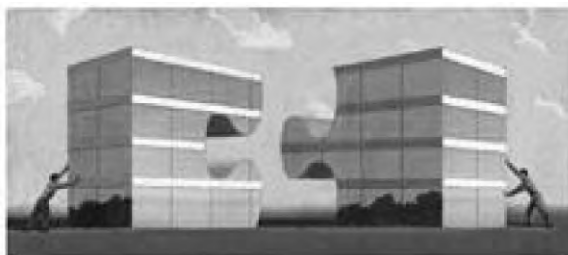
AS 30 states that for hedge accounting purposes only instrument that involve a party external to the reporting entity can be designated as hedging instrument. Therefore debenture issued by the parent company cannot be designated as hedging instrument for the purpose of consolidated financial statements of the group. However, it can be designated as hedging instrument for separate financial statement of PQR Ltd.

CASE STUDY

Case Study No 1:-

Mother and Child Reunion: Will the T&T/SBC Merger Build or Destroy Value?

Published: March 30, 2005 in [Knowledge@Wharton](#)



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SBC Communications, a so-called Baby Bell, has acquired venerable Ma Bell AT&T for \$16 billion in a move that reunites the two companies after a court-mandated breakup decades ago. SBC's CEO, Edward E. Whitacre Jr., has been waxing eloquent about the synergies that will flow from the deal, saying in press releases that the combination will be "a huge step forward in our efforts to build a company that will lead an American communications revolution in the 21st century." Experts at Wharton and elsewhere, however, say the merger is likely to produce considerable static. The key question, they say, is: Could SBC really take AT&T, fix its problems and revolutionize telecommunications?

Wharton professor [Gerald Faulhaber](#), who was the chief economist at the Federal Communications Commission from 2000 to 2001, has his doubts. "I think this deal has a great potential to destroy value," he says. "What is SBC going to bring to the table? At \$16 billion, there's a lot of downside to this merger."

While it is too early to predict whether SBC will be able to create a company that in Whitacre's words will "renew America's leadership in communications technology," the questions that need to be addressed are clear, say Wharton professors. Will SBC get regulatory approval for the merger? Will SBC be able to keep AT&T's corporate customers, a crucial factor in SBC's desire for the merger? What will SBC do with the AT&T brand? Will consumers suffer? And is SBC willing to forge ahead with new technologies such as voice over Internet Protocol (VoIP)? How will SBC compete with cable firms such as Comcast, other regional Bell operating companies like Verizon, and upstarts such as Vonage?

It may take a year or more for answers to those questions to emerge. SBC expects the AT&T deal to close in the first half of 2006 after the U.S. Justice Department, the Federal Communications Commission, state public utility commissions and foreign authorities give their approvals. Consulting firm Gartner, however, says "the deal has at least a 70% chance of approval, though the June 2006 target date is optimistic." [Kevin Werbach](#), a Wharton professor of legal studies, says a lot could happen between now and then. "That's a long time," says Werbach. "This process could mean a 12- to 24-month period of stasis."

In the meantime, on February 1 SBC outlined its plan to meet its cost-cutting targets. In a presentation given to Wall Street analysts after the merger was announced, SBC executives outlined plans to cut 13,000 jobs, or 12% of their combined 163,000 work force. Many of those cuts are likely to occur through attrition. The annual savings are seen at \$200 million to \$600 million by the second half of 2006, reaching \$2.4 billion to \$2.9 billion by 2009, according to the companies' executives. SBC says that just collapsing

redundant sales, network and customer care costs in the two companies' enterprise businesses would save \$1.5 billion a year.

Faulhaber admits that SBC is known to be tough on costs, but the merger's long-term success doesn't necessarily depend on the company being lean and mean. The bulked-up SBC will have to find a way to grow. For 2004, SBC sales were up 0.7% to \$40.8 billion. AT&T's sales declined 11.6% to \$30.5 billion in 2004. Traditional telecommunication players like SBC are losing customers to cable firms as consumers move to VoIP and wireless companies. "This will be the year of VoIP implementation," says Faulhaber. "Half of the U.S. will soon have broadband, and voice is the killer app."

In Search of Corporate Customers

Despite his concerns about the merger, Faulhaber admits that SBC does acquire AT&T's extensive list of corporate customers. "AT&T has an enormous presence in the corporate world," he says. "None of the regional Bells have that traction." Werbach says AT&T also gives SBC a national infrastructure to acquire corporate customers and build its revenue base. AT&T's network crisscrosses the entire country while SBC's has gaps in territories dominated by other regional operators such as Verizon, BellSouth and Qwest Communications.

In addition, SBC acquires AT&T's long distance customer base, which could be used to market other services. To be sure, long distance is a dying business, but AT&T still is a major player despite its recent focus on corporate customers.

Another key -- yet underappreciated -- asset in the deal is AT&T CEO David Dorman. Werbach notes that Dorman, who will become SBC's president after the deal is closed, is likely to be the heir apparent to Whitacre. Dorman was chief executive of PointCast, a dot-com era firm that pushed content to the desktop, and is a veteran of Sprint and Pacific Bell, which was acquired by SBC. "Dorman is willing to shake things up and try new technologies," says Werbach. "He's a bit of a revolutionary."

Other key executives include AT&T's widely respected chief technology officer, Hossein Eslambolchi.

Brand New Questions

Perhaps the most unquantifiable asset in the merger is the AT&T brand. By adopting the AT&T moniker, SBC could craft an identity as a national player. SBC, however, has been silent on how it intends to use the brand.

Marketing professor David Reibstein says SBC will have to decide whether it wants to keep the AT&T brand, adopt it over SBC's, try multiple brands or create a new identity altogether. "What is the AT&T brand really worth? That's the big question," he says. Reibstein explains that AT&T's brand value is murky right now. On the positive side, it is a well-known brand that has global recognition. The negatives, however, are clear. AT&T has been in decline for years with its most recent retreat coming in July 2004. AT&T said at that time that it would stop promoting consumer local and long distance services to focus on corporate customers. Simultaneously, AT&T declared it would focus on its own VoIP service, which it dubs CallVantage.

Reibstein believes SBC might opt to create a new name. This strategy worked well for Accenture, which dropped its Andersen Consulting moniker before parent Arthur Andersen went out of business following the Enron scandal. Bell Atlantic completed acquisitions of Nynex and GTE in 1997 and 2000, respectively, and became Verizon. "Sometimes it's easier to create a new name and change your positioning than to keep the old name," says Reibstein, adding that SBC could "keep both brands, and it could work out."

While Werbach notes AT&T has some attractive assets, others fear that the company also has problems that could undermine the merger's synergies. The biggest challenge is that most of AT&T's businesses -- with the exception of its corporate network services -- are struggling, according to Faulhaber. If that is true, it suggests that SBC may have overpaid for AT&T. "AT&T has a strong brand, but it does come with baggage," he says. "Its business is dying."



Wharton professors note that it is also unclear how much AT&T's business will continue to erode as SBC waits for regulatory approval. During the next year, AT&T's long-distance business could continue to deteriorate and corporate customers could look to rivals such as MCI and Sprint because of concerns about the SBC deal. Meanwhile, a delay in approval from regulators is not out of the question. Although approval of the deal is likely, the merger "is no slam dunk," says Faulhaber. The merger will likely be viewed as though Ma Bell is being put back together. It's possible that SBC and Verizon will eventually operate a duopoly.

The consensus view is that regulatory approval for SBC's acquisition of AT&T could be delayed. "We think that the deal will involve a rather lengthy approval process on a rapidly declining asset, with some divestiture requirements," says Merrill Lynch analyst James Moynihan in a research note.

Regarding the antitrust factor, two areas deserve close observation. One is long distance services, which both AT&T and SBC offer. Consumers could see prices rise as the industry goes through a consolidation after the merger. Moynihan, however, says the merger's effect on consumer long distance rates is "a moot point." The reason, he argues, is that SBC was likely to take AT&T's market share anyway.

Faulhaber points out that a thornier issue for regulators will be SBC's plans for VoIP. AT&T, which offers the CallVantage VoIP service, may face pressure to shut it down after the acquisition, because it competes directly with SBC's offerings. Regulators should be concerned that SBC might squash CallVantage in order to eliminate a future rival. "Do we really want to shut that off?" asks Faulhaber.

Werbach explains that VoIP on its own may not stop the merger. "VoIP is so tiny now, it won't be a regulatory hurdle," says Werbach. He does worry, though, that SBC's purchase of AT&T could give it and Verizon free reign over regulatory matters in Washington D.C. AT&T was one of the few companies that could oppose Verizon and SBC in Washington. In Werbach's view, the only competition the regional Bell operating companies may now face is from the cable firms.

Although the future regulatory landscape is hardly a reason to kill a deal, analysts believe SBC's purchase of AT&T will mean significant changes in the industry. "The regulatory environment has really boiled down to a showdown between AT&T vs. SBC and Verizon," says Bank of America analyst David Barden. "AT&T by and large lost this battle but fought hard. At the conclusion of the SBC/AT&T merger, these two forces will act in concert, on many issues."

Assuming SBC gets approval from all the regulatory agencies, the next challenge will be keeping AT&T's corporate account managers happy. Faulhaber says the SBC and AT&T cultures could clash and spark an exodus of corporate account managers. Faulhaber likens the risks to what might happen at IBM if its account representatives left the company's services division en masse. "What happens to the national account managers is key. AT&T has people who are seasoned, and customers look to them," he says. "These employees are at the core of AT&T's success. If you don't have them, what will happen? This is a trust business."

Given the risks, SBC's best bet may be to leverage back-office and shared services such as human resources, and otherwise leave AT&T untouched. "The big question is whether SBC will leverage AT&T," he says. "The best thing may be to just leave AT&T alone, but that's not the sign of a good merger."

Telecom's Future

Whether SBC's acquisition of AT&T works out remains to be seen, but the merger announcement has already accelerated consolidation in the telecommunications industry. Days after the SBC/AT&T deal was announced, the *Wall Street Journal* reported that MCI was in talks to be acquired by Qwest Communications, a regional telecommunications company. Verizon was also reportedly in the mix and may bid. "The starting gun for another round of consolidation has gone off, and MCI and Sprint may be looking for dance partners," says Werbach.

Faulhaber agrees, but warns that not all acquisition targets are created equal. Neither MCI nor Sprint can match AT&T in the corporate market, and both have flagging long distance businesses. He favors Verizon's recent strategy, which has focused on growing its business organically through efforts such as

delivering fiber optic lines directly to homes. And even if all the regional telecom players consolidate, they still have to keep customers from ditching their phone lines. Sprint has refashioned itself primarily as a wireless carrier by consolidating its Sprint PCS unit and buying Nextel.

Werbach says wireless is clearly the future, and SBC could have boxed itself into a corner with its purchase of AT&T. The reason: SBC owns wireless carrier Cingular as a joint venture with BellSouth. To jumpstart growth, SBC would ideally gain total control of Cingular. But now that SBC has acquired AT&T, consolidating Cingular by buying BellSouth is highly unlikely because regulators would shoot the deal down over competition concerns. Nevertheless, SBC will have to address the question of Cingular's ownership sooner or later. "That ownership structure will have to be resolved," says Werbach.

When singer Paul Simon famously sang about the Mother and Child Reunion in 1972, the first line of his lyrics was, "No, I would not give you false hope." That, in a nutshell, could also be the watchword for the SBC/AT&T merger.

Case Study No 2:-

'Getting the Models Right': How to Value Hard-to-Price Assets

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What are things worth?

The answer seems simple enough. Just look around the marketplace to see what similar items are selling for. But what if your house has a pool, while the one that sold next door doesn't? Unless you are dealing with an item with exact duplicates that are bought and sold every day, like stock in a publicly traded company, it's hard to know just what your item is worth.



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It's a devilish problem in the business world, where companies need to account for the fast-changing values of complex financial instruments -- from insurance policies to employee stock options to exotic derivatives -- for which there is no ready sales history. Yet accounting standards are tightening, requiring that businesses justify valuations rather than simply use their best guess or original purchase price, as they did in the past. So firms are turning to ever more complicated financial models that attempt to deduce values using an array of indicators.

"What you're trying to figure out is: What if you had to sell [an asset] in the market? What would somebody be willing to pay?" said Wharton finance professor [Richard J. Herring](#). "People are trading on the basis of these [models], but it is difficult, because they are extremely complex, and regulators are worried that they can be pretty easily manipulated."

This dilemma was the topic of the Tenth Annual Wharton/Oliver Wyman Institute Risk Roundtable held May 31-June 1 and sponsored by [The Wharton Financial Institutions Center](#) and Oliver Wyman Institute. The Roundtable was hosted by Herring, the Center's co-director.

International and U.S. accounting bodies are strengthening rules on how to place "fair value" on hard-to-price assets. Last September, for example, the Financial Accounting Standards Board (FASB) in the U.S. adopted Statement 157 which requires that, whenever possible, companies rely on market data rather than their own internal assumptions to value assets.

But some critics argue that computerized valuation models rely on assumptions so uncertain that the results should merely be noted in financial statements rather than included in tallies of assets and liabilities, as FASB requires. The new rules take effect with financial statements for fiscal years beginning after November 15, 2007. "Fair values are unverifiable.... Any model is an opinion embodying many judgments," said critic Mark Carey, finance project manager for the Federal Reserve Board, during



remarks at the conference.

While conceding that the Fed had “lost the battle” to minimize use of fair value accounting, he warned that allowing firms to set up their own valuation models, rather than relying on standardized ones, invites trouble. “The problem is fraud,” he noted. “The reason the Fed is concerned about this is because we are worried about the state of a world in which a firm wants to conceal its insolvency. That’s fairly easy to do in a fair value system.”

Insuring Against Catastrophe

Insurance is one field that is using more elaborate models to calculate risks, set policy prices and figure the current value of policies issued in the past, according to panelist Jay Fishman, chairman and CEO of The Travelers Companies. “Catastrophe modeling,” for example, forecasts the likelihood of earthquakes, terrorism and other events that result in claims.

In his presentation, “Insuring against Catastrophes: The Central Role of Models,” Fishman noted that insurers previously assessed catastrophe risks by analyzing past events. Typically, they figured average hurricane losses on a statewide basis, not accounting for greater damage in coastal areas and failing to properly estimate the greater damage an unusually large hurricane could cause. Before Hurricane Andrew struck the U.S. in 1992, the most damaging hurricane was Hugo in 1989. Hugo cost insurers \$6.8 billion, while Andrew cost them \$22 billion and left a dozen insurers insolvent.

New catastrophe models are far more complex, Fishman said, because they add data on likely storm paths predicted by scientists; the types of construction, ages and heights of buildings along those paths; the value of insurance issued; policy limits; deductibles, and other factors bearing on losses. In addition, insurers now consider changes in the frequency of big storms caused by factors like rising sea temperatures from global warming.

With guidance from these more sophisticated models, Travelers has raised deductibles for wind damage, tightened its coverage for business interruption and changed premiums to reflect a better understanding of risk, according to Fishman, who adds, however, that models have limits. They are not good, for example, at accounting for long cycles in weather patterns, nor can they forecast claims when events are bigger than expected. Hurricane Katrina, for example, caused more damage inland than the models had forecast, he said.

Softening the Jolts

Similar shortcomings are found in models used in other industries, causing debate about how models should be constructed. Financial institutions have trouble, for example, tracking daily changes in values of credit default swaps, collateralized mortgage obligations, over-the-counter options, thinly traded bonds and other securities for which there is no liquid, transparent market.

It’s not uncommon, said Herring, for a large financial institution to have 2000 valuation models for different instruments. And the penalties for getting the results wrong can be severe, as investors learned in the Enron and Long-Term Capital Management debacles, or with the recent financial restatements by Fannie Mae.

The problem has recently been highlighted by the fallout from the subprime mortgage lending binge of the past few years. These loans typically were bundled together and sold to investors as a form of bond. Now, rising interest rates increase the likelihood that some homeowners will fall behind on their payments, undermining the bonds’ values. But the models cannot account for these factors very well because subprime mortgages are so new that there is little historical data. Amidst this uncertainty, financial institutions are hustling to protect themselves, and consumers may find it harder to get loans as a result. Better modeling could soften these jolts.

Though valuation models must be customized for every instrument, they should share some underlying principles, said Thomas J. Linsmeier, a FASB member, noting that the goal of Statement 157 is to arrive at a price that would be received if the asset were sold in an “orderly transaction” -- in other words, not in a crisis or “fire sale.”

Many financial assets are so highly customized that there are no comparable sales. Even when there

are, many sales are private transactions that do not produce data for others to use as examples, he said. In these cases, the asset's owner should try to determine what should be considered the "principal market" in which the asset would be bought and sold, so that data from smaller, less representative markets can be screened out to reduce confusion. "For many financial instruments there are many, many markets in which you might exchange those items...", he noted. "If there is a principal market, let's use that ... rather than using all possible markets."

When there is no data on sales of comparable assets, firms should turn to market prices for similar assets, Linsmeier suggested. When that is not available either, firms must rely on their own internal estimates. But those should be based on the same assumptions an outside buyer would use, rather than on the firm's own assumptions, which might be biased to make its accounts look better, he said, adding that, generally, any data obtained from the marketplace is preferred over internal company estimates.

Biases and Stock Options

The problem of internal firm biases influencing accounting is illustrated by the recent debate over whether companies should count stock options issued to executives and other employees as an expense.

While economists generally agreed that options are a cost of business that should be counted as an expense, many business groups opposed the move, noted Chester Spatt, chief economist at the Securities and Exchange Commission. Expensing opponents argued it was not possible to accurately value options years before they could be exercised, because their future value would depend on the company's stock price at the time.

"It seems surprising that companies that apparently don't understand the cost of a compensation tool would be inclined to use it to such an extent," Spatt said, suggesting that companies do, in fact, know the value of their options grants but don't want to reveal the cost to shareholders who might think executives are overpaid. Proper accounting would discourage companies from issuing too many options, he noted.

Markets have long used modeling to place present values on assets whose future values will fluctuate with market conditions, Spatt added. Traders, for example, use models to value collateralized mortgage obligations whose future value will depend on changing interest rates and homeowners' default rates.

Though modeling has been around for many years and appears to be getting better, even those who design models concede they have flaws. "I think there is a lot more need for research and discussion of approaches for measuring model risk," said panelist Darryll Hendricks, managing director and global head of quantitative risk control for UBS Investment Bank. Oftentimes, assumptions used in models turn out wrong, he pointed out. A common model input for valuing stock options, for example, is the expected price volatility of the stock. But future volatility may be very different from the past patterns used in the assumption.

To make its models as good as possible, a firm should have a controlled, disciplined way of field testing them before introduction, and it should continually evaluate a model during the period it is used, Hendricks said. UBS discusses its models' performance during monthly meetings among the traders who use them.

While modeling will continue to be controversial, Herring thinks it will keep getting better. He predicts firms will increasingly share data on their proprietary models, and he thinks model users will gradually adopt better standards for validating their models -- making sure, for example, that evaluations are done by disinterested outsiders rather than the model designers themselves.

Advances in computing power and financial analysis have led to a mushrooming of new financial products in recent years, and should also help to improve the modeling used to measure those products' values, Herring noted. "All of this has made it possible to produce these new products and models. But it also means a lot more is riding on getting the models right."

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Case Study No 3:-

Brand Valuation

A Chapter from *Brands and Branding* An Economist Book

Jan Lindemann, Managing Director Global Brand Valuation

The brand is a special intangible that in many businesses is the most important asset. This is because of the economic impact that brands have.

"If this business were split up, I would give you the land and bricks and mortar, and I would take the brands and trademarks, and I would fare better than you."

— John Stuart, Chairman of Quaker (ca. 1900)

In the last quarter of the 20th century there was a dramatic shift in the understanding of the creation of shareholder value. For most of the century, tangible assets were regarded as the main source of business value. These included manufacturing assets, land and buildings or financial assets such as receivables and investments. They would be valued at cost or outstanding value as shown in the balance sheet. The market was aware of intangibles, but their specific value remained unclear and was not specifically quantified. Even today, the evaluation of profitability and performance of businesses focuses on indicators such as return on investment, assets or equity that exclude intangibles from the denominator. Measures of price relatives (for example, price-to-book ratio) also exclude the value of intangible assets as these are absent from accounting book values.

This does not mean that management failed to recognize the importance of intangibles. Brands, technology, patents and employees were always at the heart of corporate success, but rarely explicitly valued. Their value was subsumed in the overall asset value. Major brand owners like The Coca-Cola Company, Procter & Gamble, Unilever and Nestlé were aware of the importance of their brands, as indicated by their creation of brand managers, but on the stock market, investors focused their value assessment on the exploitation of tangible assets.

Evidence of brand value

The increasing recognition of the value of intangibles came with the continuous increase in the gap between companies' book values and their stock market valuations, as well as sharp increases in premiums above the stock market value that were paid in mergers and acquisitions in the late 1980s.

Today it is possible to argue that, in general, the majority of business value is derived from intangibles. Management attention to these assets has certainly increased substantially.

The brand is a special intangible that in many businesses is the most important asset. This is because of the economic impact that brands have. They influence the choices of customers, employees, investors and government authorities. In a world of abundant choices, such influence is crucial for commercial success and creation of shareholder value. Even non-profit organizations have started embracing the brand as a key asset for obtaining donations, sponsorships and volunteers.

Some brands have also demonstrated an astonishing durability. The world's most valuable brand,¹ Coca-Cola, is more than 118 years old; and the majority of the world's most valuable brands have been around for more than 60 years. This compares with an estimated average life span for a corporation of 25 years or so.² Many brands have survived a string of different corporate owners.

Several studies have tried to estimate the contribution that brands make to shareholder value. A study by Interbrand in association with JP Morgan (see Table 2.1) concluded that on average brands account for more than one-third of shareholder value. The study reveals that brands create significant value either as consumer or corporate brands or as a combination of both.

Table 2.1 The contribution of brands to shareholder value

Company	2002 brand value (\$bn)	Brand contribution to market capitalization of parent company (%)	2001 brand value (\$bn)
Coca-Cola	69.6	51	69.0
Microsoft	64.1	21	65.1
IBM	51.2	39	52.8
GE	41.3	14	42.4
Intel	30.9	22	34.7
Nokia	30.0	51	35.0
Disney	29.3	68	32.6
McDonald's	26.4	71	25.3
Marlboro	24.2	20	22.1
Mercedes-Benz	21.0	47	21.7

Source: *Business Week*, Interbrand/JP Morgan league table, 2002+

Table 2.1 shows how big the economic contribution made by brands to companies can be. The McDonald's brand accounts for more than 70 percent of shareholder value. The Coca-Cola brand alone accounts for 51 percent of the stock market value of the Coca-Cola Company. This is despite the fact that the company owns a large port-folio of other drinks brands such as Sprite and Fanta.

Studies by academics from Harvard and the University of South Carolina³ and by Interbrand⁴ of the companies featured in the "Best Global Brands" league table indicate that companies with strong brands outperform the market in respect of several indices. It has also been shown that a port-folio weighted by the brand values of the Best Global Brands performs significantly better than Morgan Stanley's global MSCI index and the American-focused S&P 500 index.

Today, leading companies focus their management efforts on intangible assets. For example, the Ford Motor Company has reduced its physical asset base in favor of investing in intangible assets. In the past few years, it has spent well over \$12 billion to acquire prestigious brand names such as Jaguar, Aston Martin, Volvo and Land Rover. Samsung, a leading electronics group, invests heavily in its intangibles, spending about 7.5 percent of annual revenues on R&D and another 5 percent on communications.⁵ In packaged consumer goods, companies spend up to 10 percent of annual revenues on marketing support. As John Akasie wrote in an article in *Forbes* magazine:⁶

"It's about brands and brand building and consumer relationships... Decapitalized, brand owning companies can earn huge returns on their capital and grow faster, unencumbered by factories and masses of manual workers. Those are the things that the stock market rewards with high price/earnings ratio.

Brands on the balance sheet

The wave of brand acquisitions in the late 1980s resulted in large amounts of goodwill that most accounting standards could not deal with in an economically sensible way. Transactions that sparked the debate about accounting for goodwill on the balance sheet included Nestlé's purchase of Rowntree, United Biscuits' acquisition and later divestiture of Keebler, Grand Metropolitan acquiring Pillsbury and Danone buying Nabisco's European businesses.

Accounting practice for so-called goodwill did not deal with the increasing importance of intangible assets, with the result that companies were penalized for making what they believed to be value-enhancing acquisitions. They either had to suffer massive amortization charges on their profit and loss accounts (income statements), or they had to write off the amount to reserves and in many cases ended up with a lower asset base than before the acquisition.



In countries such as the UK, France, Australia and New Zealand it was, and still is, possible to recognize the value of acquired brands as identifiable intangible assets and to put these on the balance sheet of the acquiring company. This helped to resolve the problem of goodwill. Then the recognition of brands as intangible assets made use of a grey area of accounting, at least in the UK and France, whereby companies were not encouraged to include brands on the balance sheet but nor were they prevented from doing so. In the mid-1980s, Reckitt & Colman, a UK-based company, put a value on its balance sheet for the Airwick brand that it had recently bought; Grand Metropolitan did the same with the Smirnoff brand, which it had acquired as part of Heublein. At the same time, some newspaper groups put the value of their acquired mastheads on their balance sheets.

By the late 1980s, the recognition of the value of acquired brands on the balance sheet prompted a similar recognition of internally generated brands as valuable financial assets within a company. In 1988, Rank Hovis McDougall (RHM), a leading UK food conglomerate, played heavily on the power of its brands to successfully defend a hostile takeover bid by Goodman Fielder Wattie (GFW). RHM's defence strategy involved carrying out an exercise that demonstrated the value of RHM's brand portfolio. This was the first independent brand valuation establishing that it was possible to value brands not only when they had been acquired, but also when they had been created by the company itself. After successfully fending off the GFW bid, RHM included in its 1988 financial accounts the value of both the internally generated and acquired brands under intangible assets on the balance sheet.

In 1989, the London Stock Exchange endorsed the concept of brand valuation as used by RHM by allowing the inclusion of intangible assets in the class tests for shareholder approvals during takeovers. This proved to be the impetus for a wave of major branded-goods companies to recognize the value of brands as intangible assets on their balance sheets. In the UK, these included Cadbury Schweppes, Grand Metropolitan (when it acquired Pillsbury for \$5 billion), Guinness, Ladbroke's (when it acquired Hilton) and United Biscuits (including the Smith's brand).

Today, many companies including LVMH, L'Oréal, Gucci, Prada and PPR have recognized acquired brands on their balance sheet. Some companies have used the balance-sheet recognition of their brands as an investor-relations tool by providing historic brand values and using brand value as a financial performance indicator.

In terms of accounting standards, the UK, Australia and New Zealand have been leading the way by allowing acquired brands to appear on the balance sheet and providing detailed guidelines on how to deal with acquired goodwill. In 1999, the UK Accounting Standards Board introduced FRS 10 and 11 on the treatment of acquired goodwill on the balance sheet. The International Accounting Standards Board followed suit with IAS 38. And in spring 2002, the US Accounting Standards Board introduced FASB 141 and 142, abandoning pooling accounting and laying out detailed rules about recognizing acquired goodwill on the balance sheet. There are indications that most accounting standards, including international and UK standards, will eventually convert to the US model. This is because most international companies that wish to raise funds in the US capital markets or have operations in the United States will be required to adhere to US Generally Accepted Accounting Principles (GAAP).

The principal stipulations of all these accounting standards are that acquired goodwill needs to be capitalized on the balance sheet and amortized according to its useful life. However, intangible assets such as brands that can claim infinite life do not have to be subjected to amortization. Instead, companies need to perform annual impairment tests. If the value is the same or higher than the initial valuation, the asset value on the balance sheet remains the same. If the impairment value is lower, the asset needs to be written down to the lower value. Recommended valuation methods are discounted cash flow (DCF) and market value approaches. The valuations need to be performed on the business unit (or subsidiary) that generates the revenues and profit.

The accounting treatment of goodwill upon acquisition is an important step in improving the financial reporting of intangibles such as brands. It is still insufficient, as only acquired goodwill is recognized and the detail of the reporting is reduced to a minor footnote in the accounts. This leads to the distortion that the McDonald's brand does not appear on the company's balance sheet, even though it is

estimated to account for about 70 percent of the firm's stock market value (see Table 2.1), yet the Burger King brand is recognized on the balance sheet. There is also still a problem with the quality of brand valuations for balance-sheet recognition. Although some companies use a brand-specific valuation approach, others use less sophisticated valuation techniques that often produce questionable values. The debate about bringing financial reporting more in line with the reality of long-term corporate value is likely to continue, but if there is greater consistency in brand-valuation approaches and greater reporting of brand values, corporate asset values will become much more transparent.

The social value of brands

The economic value of brands to their owners is now widely accepted, but their social value is less clear. Do brands create value for anyone other than their owners, and is the value they create at the expense of society at large?⁷ The ubiquity of global mega-brands has made branding the focus of discontent for many people around the world. They see a direct link between brands and such issues as the exploitation of workers in developing countries and the homogenization of cultures. Furthermore, brands are accused of stifling competition and tarnishing the virtues of the capitalist system by encouraging monopoly and limiting consumer choice. The opposing argument is that brands create substantial social as well as economic value as a result of increased competition, improved product performance and the pressure on brand owners to behave in socially responsible ways.

Competition on the basis of performance as well as price, which is the nature of brand competition, fosters product development and improvement. And there is evidence that companies that promote their brands more heavily than others in their categories do also tend to be the more innovative in their categories. A study by PIMS Europe for the European Brands Association⁸ revealed that less-branded businesses launch fewer products, invest significantly less in development and have fewer product advantages than their branded counterparts. Almost half of the "non-branded" sample spent nothing on product R&D compared with less than a quarter of the "branded" sample. And while 26 percent of non-branded producers never introduced significant new products, this figure was far lower at 7 percent for the branded set.

The need to keep brands relevant promotes increased investments in R&D, which in turn leads to a continuous process of product improvement and development. Brand owners are accountable for both the quality and the performance of their branded products and services and for their ethical practices. Given the direct link between brand value and both sales and share price, the potential costs of behaving unethically far outweigh any benefits, and outweigh the monitoring costs associated with an ethical business. A number of high-profile brands have been accused of unethical practices. Interestingly, among these are some of the brands that have been pioneering the use of voluntary codes of conduct and internal monitoring systems. This is not to say that these brands have successfully eradicated unethical business practices, but at least they are demonstrating the will to deal with the problem.

The more honest companies are in admitting the gap they have to bridge in terms of ethical behavior, the more credible they will seem. Nike, a company once criticized for the employment practices of some of its suppliers in developing countries, now posts results of external audits and interviews with factory workers at www.nikebiz.com. The concern of multi-national companies is understandable, considering that a 5 percent drop in sales could result in a loss of brand value exceeding \$1 billion. It is clearly in their economic interests to behave ethically.

Approaches to brand valuation

Financial values have to some extent always been attached to brands and to other intangible assets, but it was only in the late 1980s that valuation approaches were established that could fairly claim to understand and assess the specific value of brands. The idea of putting a separate value on brands is now widely accepted. For those concerned with accounting, transfer pricing and licensing agreements, mergers and acquisitions and value-based management, brand valuation plays a key role in business today.



Unlike other assets such as stocks, bonds, com-modities and real estate, there is no active market in brands that would provide comparable values.

So to arrive at an authoritative and valid approach, a number of brand evaluation models have been developed. Most have fallen into two categories:

- research-based brand equity evaluations, and
- purely financially driven approaches

Research-based approaches

There are numerous brand equity models that use consumer research to assess the relative performance of brands. These do not put a financial value on brands; instead, they measure consumer behavior and attitudes that have an impact on the economic performance of brands. Although the sophistication and complexity of such models vary, they all try to explain, interpret and measure consumers' perceptions that influence purchase behavior. They include a wide range of perceptive measures such as different levels of awareness (unaided, aided, top of mind), knowledge, familiarity, relevance, specific image attributes, purchase consideration, preference, satisfaction and recommendation. Some models add behavioral measures such as market share and relative price.

Through different stages and depths of statistical modeling, these measures are arranged either in hierarchic order, to provide hurdles that lead from awareness to preference and purchase, or relative to their impact on overall consumer perception, to provide an overall brand equity score or measure. A change in one or a combination of indicators is expected to influence consumers' purchasing behavior, which in turn will affect the financial value of the brand in question. However, these approaches do not differentiate between the effects of other influential factors such as R&D and design and the brand. They therefore do not provide a clear link between the specific marketing indicators and the financial performance of the brand. A brand can perform strongly according to these indicators but still fail to create financial and shareholder value.

The understanding, interpretation and measurement of brand equity indicators are crucial for assessing the financial value of brands. After all, they are key measures of consumers' purchasing behavior upon which the success of the brand depends. However, unless they are integrated into an economic model, they are insufficient for assessing the economic value of brands.

Financially driven approaches

Cost-based approaches define the value of a brand as the aggregation of all historic costs incurred or replacement costs required in bringing the brand to its current state: that is, the sum of the development costs, marketing costs, advertising and other communication costs, and so on. These approaches fail because there is no direct correlation between the financial investment made and the value added by a brand. Financial investment is an important component in building brand value, provided it is effectively targeted. If it isn't, it may not make a bean of difference. The investment needs to go beyond the obvious advertising and promotion and include R&D, employee training, packaging and product design, retail design, and so on.

Comparables. Another approach is to arrive at a value for a brand on the basis of something comparable. But comparability is difficult in the case of brands as by definition they should be differentiated and thus not comparable. Furthermore, the value creation of brands in the same category can be very different, even if most other aspects of the underlying business such as target groups, advertising spend, price promotions and distribution channel are similar or identical. Comparables can provide an interesting cross-check, however, even though they should never be relied on solely for valuing brands.

Premium price. In the premium price method, the value is calculated as the net present value of future price premiums that a branded product would command over an unbranded or generic equivalent. However, the primary purpose of many brands is not necessarily to obtain a price premium but rather

to secure the highest level of future demand. The value generation of these brands lies in securing future volumes rather than securing a premium price. This is true for many durable and non-durable consumer goods categories.

This method is flawed because there are rarely generic equivalents to which the premium price of a branded product can be compared. Today, almost everything is branded, and in some cases store brands can be as strong as producer brands charging the same or similar prices. The price difference between a brand and competing products can be an indicator of its strength, but it does not represent the only and most important value contribution a brand makes to the underlying business.

Economic use. Approaches that are driven exclusively by brand equity measures or financial measures lack either the financial or the marketing component to provide a complete and robust assessment of the economic value of brands. The economic use approach, which was developed in 1988, combines brand equity and financial measures, and has become the most widely recognized and accepted methodology for brand valuation. It has been used in more than 3,500 brand valuations worldwide. The economic use approach is based on fundamental marketing and financial principles:

- The marketing principle relates to the commercial function that brands perform within businesses. First, brands help to generate customer demand. Customers can be individual consumers as well as corporate consumers depending on the nature of the business and the purchase situation. Customer demand translates into revenues through purchase volume, price and frequency. Second, brands secure customer demand for the long term through repurchase and loyalty.
- The financial principle relates to the net present value of future expected earnings, a concept widely used in business. The brand's future earnings are identified and then discounted to a net present value using a discount rate that reflects the risk of those earnings being realized.

To capture the complex value creation of a brand, take the following five steps:

- 1. Market segmentation.** Brands influence customer choice, but the influence varies depending on the market in which the brand operates. Split the brand's markets into non-overlapping and homogeneous groups of consumers according to applicable criteria such as product or service, distribution channels, consumption patterns, purchase sophistication, geography, existing and new customers, and so on. The brand is valued in each segment and the sum of the segment valuations constitutes the total value of the brand.
- 2. Financial analysis.** Identify and forecast revenues and earnings from intangibles generated by the brand for each of the distinct segments determined in Step 1. Intangible earnings are defined as brand revenue less operating costs, applicable taxes and a charge for the capital employed. The concept is similar to the notion of economic profit.
- 3. Demand analysis.** Assess the role that the brand plays in driving demand for products and services in the markets in which it operates, and determine what proportion of intangible earnings is attributable to the brand measured by an indicator referred to as the "role of branding index." This is done by first identifying the various drivers of demand for the branded business, then determining the degree to which each driver is directly influenced by the brand. The role of branding index represents the percentage of intangible earnings that are generated by the brand. Brand earnings are calculated by multiplying the role of branding index by intangible earnings.
- 4. Competitive benchmarking.** Determine the competitive strengths and weaknesses of the brand to derive the specific brand discount rate that reflects the risk profile of its expected future earnings (this is measured by an indicator referred to as the "brand strength score"). This comprises extensive competitive benchmarking and a structured evaluation of the brand's market, stability, leadership position, growth trend, support, geographic footprint and legal protectability.
- 5. Brand value calculation.** Brand value is the net present value (NPV) of the forecast brand earnings, discounted by the brand discount rate. The NPV calculation comprises both the forecast period and the period beyond, reflecting the ability of brands to continue generating future earnings. An



example of a hypothetical valuation of a brand in one market segment is shown in Table 2.2. This calculation is useful for brand value modeling in a wide range of situations, such as:

- predicting the effect of marketing and investment strategies;
- determining and assessing communication budgets;
- calculating the return on brand investment;
- assessing opportunities in new or underexploited markets; and
- tracking brand value management.

Table 2.2 Sample brand value calculation

	Year 1	Year 2	Year 3	Year 4	Year 5
Market (Units)	250,000,000	258,750,000	267,806,250	277,179,469	286,880,750
Market growth rate		4%	4%	4%	4%
Market share (Volume)	15%	17%	19%	21%	20%
Volume	37,500,000	43,987,500	50,883,188	58,207,688	57,376,150
Price (\$)	10	10	10	11	11
Price change		3%	2%	2%	2%
Branded Revenues	375,000,000	450,871,875	531,983,725	621,341,172	625,326,631
Cost of sales	150,000,000	180,348,750	212,793,490	248,536,469	250,130,653
Gross margin	225,000,000	270,523,125	319,190,235	372,804,703	375,195,979
Marketing costs	67,500,000	81,156,938	95,757,071	111,841,411	112,558,794
Depreciation	2,812,500	3,381,539	3,989,878	4,660,059	4,689,950
Other overheads	18,750,000	22,543,594	26,599,186	31,067,059	31,266,332
Central cost allocation	3,750,000	4,508,719	5,319,837	6,213,412	6,253,266
EBITA (Earnings Before Interest, Tax and Amortization)	132,187,500	158,932,336	187,524,263	219,022,763	220,427,638
Applicable taxes 35%	46,265,625	55,626,318	65,633,492	76,657,967	77,149,673
NOPAT (Net Operating Profit After Tax)	85,921,875	103,306,018	121,890,771	142,364,796	143,277,964
Capital Employed	131,250,000	157,805,156	186,194,304	217,469,410	218,864,321
Working capital	112,500,000	135,261,563	159,595,118	186,402,351	187,597,989
Net PPE	18,750,000	22,543,594	26,599,186	31,067,059	31,266,332
Capital Charge 8%	10,500,000	12,624,413	14,895,544	17,397,553	17,509,146
Intangible Earnings	75,421,875	90,681,606	106,995,227	124,967,243	125,768,819

Role of Branding Index 79%					
Brand Earnings	59,583,281	71,638,469	84,526,229	98,724,122	99,357,367
Brand Strength Score 66					
Brand Discount Rate 7.4%					
Discounted Brand Earnings	55,477,916	62,106,597	68,230,515	74,200,384	69,531,031
NPV (Net Present Value) of Discounted Brand Earnings (Years 1–5)	329,546,442				
Long-term growth rate 2.5%					
NPV of Terminal					
Brand Value (beyond Year 5)	1,454,475,639				
BRAND VALUE	1,784,022,082				

Applications

The range of applications for brand valuation has widened considerably since its creation in 1988, and it is now used in most strategic marketing and financial decisions. There are two main categories of applications:

- Strategic brand management, where brand valuation focuses mainly on internal audiences by providing tools and processes to manage and increase the economic value of brands.
- Financial transactions, where brand valuation helps in a variety of brand-related transactions with external parties.

Strategic brand management

Recognition of the economic value of brands has increased the demand for effective management of the brand asset. In the pursuit of increasing share-holder value, companies are keen to establish procedures for the management of brands that are aligned with those for other business assets, as well as for the company as a whole. As traditional purely research-based measurements proved insufficient for understanding and managing the economic value of brands, companies have adopted brand valuation as a brand management tool. Brand valuation helps them establish value-based systems for brand management. Economic value creation becomes the focus of brand management and all brand-related investment decisions. Companies as diverse as American Express, IBM, Samsung Electronics, Accenture, United Way of America, BP, Fujitsu and Duke Energy have used brand valuation to help them refocus their businesses on their brands and to create an economic rationale for branding decisions and investments. Many companies have made brand value creation part of the remuneration criteria for senior marketing executives.

These companies find brand valuation helpful for the following:

- Making decisions on business investments. By making the brand asset comparable to other intangible and tangible company assets, resource allocation between the different asset types can follow the same economic criteria and rationale, for example, capital allocation and return requirements.
- Measuring the return on brand investments based on brand value to arrive at an ROI that can be



directly compared with other investments. Brand management and marketing service providers can be measured against clearly identified performance targets related to the value of the brand asset.

- Making decisions on brand investments. By prioritizing them by brand, customer segment, geographic market, product or service, distribution channel, and so on, brand investments can be assessed for cost and impact and judged on which will produce the highest returns.
- Making decisions on licensing the brand to sub-sidiary companies. Under a license the subsidiaries will be accountable for the brand's management and use, and an asset that has to be paid for will be managed more rigorously than one that is free.
- Turning the marketing department from a cost center into a profit center by connecting brand investments and brand returns (royalties from the use of the brand by subsidiaries). The relationship between investments in and returns from the brand becomes transparent and manageable. Remuneration and career development of marketing staff can be linked to and measured by brand value development.
- Allocating marketing expenditures according to the benefit each business unit derives from the brand asset.
- Organizing and optimizing the use of different brands in the business (for example, corporate, product and subsidiary brands) according to their respective economic value contribution.
- Assessing co-branding initiatives according to their economic benefits and risks to the value of the company's brand.
- Deciding the appropriate branding after a merger according to a clear economic rationale.
- Managing brand migration more successfully as a result of a better understanding of the value of different brands, and therefore of what can be lost or gained if brand migration occurs.
- Establishing brand value scorecards based on the understanding of the drivers of brand value that provide focused and actionable measures for optimal brand performance.
- Managing a portfolio of brands across a variety of markets. Brand performance and brand investments can be assessed on an equally comparable basis to enhance the overall return from the brand portfolio.
- Communicating where appropriate the economic value creation of the brand to the capital markets in order to support share prices and obtain funding.

Financial transactions

The financial uses of brand valuation include the following:

- Assessing fair transfer prices for the use of brands in subsidiary companies. Brand royalties can be repatriated as income to corporate headquarters in a tax-effective way. Brands can be licensed to international subsidiaries and, in the United States, to subsidiaries in different states.
- Determining brand royalty rates for optimal exploitation of the brand asset through licensing the brand to third parties.
- Capitalizing brand assets on the balance sheet according to US GAAP, IAS and many country-specific accounting standards. Brand valuation is used for both the initial valuation and the periodical impairment tests for the derived values.
- Determining a price for brand assets in mergers and acquisitions as well as clearly identifying the value that brands add to a transaction.

- Determining the contribution of brands to joint ventures to establish profit sharing, investment requirements and shareholding in the venture.
- Using brands for securitization of debt facilities in which the rights for the economic exploitations of brands are used as collateral.

Conclusion

As global competition becomes tougher and many competitive advantages, such as technology, become more short-lived, the brand's contribution to shareholder value will increase. The brand is one of the few assets that can provide long-term competitive advantage.

Despite the commercial importance of brands, the management of them still lags behind that of their tangible counterparts. Even though measurement has become the mantra of modern management, it is astonishing how few agreed systems and processes exist to manage the brand asset. When it comes to managing and measuring factory output the choice of measures is staggering, as are the investments in sophisticated computer systems that measure and analyze every detail of the manufacturing process. The same is true for financial controlling. But, strangely, this cannot be said for the management of the brand asset. Although many brand measures are available, few can link the brand to long-term financial value creation. Nor has investment in brand management reached a level or sophistication comparable with other controlling measures. As the importance of intangibles to companies increases, managers will want to install more value-based brand management systems that can align the management of the brand asset with that of other corporate assets.

There is a similar lack of detail about the contribution of brands in the financial reporting of company results. Investments in and returns from tangible assets are reported at sophisticated and detailed levels, but this is not true for intangible assets. For example, Coca-Cola's balance sheet, income statement and cash flow calculation tell us about working capital, net fixed assets and financial investments, but little about the performance of the most important company asset, the Coca-Cola brand. The same is true for most other brand-owning companies. Current accounting regulations are deficient in their treatment of intangible assets. The increasing value placed on intangibles through mergers and acquisitions over the past two decades has forced accounting standards to acknowledge and deal with intangible assets on the balance sheet. However, the standards deal only with the bare minimum accounting for acquired intangibles, formerly known as goodwill. As a bizarre consequence, the value of acquired brands is included in companies' balance sheets but the value of internally generated brands remains unaccounted for.

Overall, there is an increasing need for brand valuation from both a management and transactional point of view. With the development of the economic use approach, there is at last a standard that can be used for brand valuation. This may well become the most important brand management tool in the future.

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The Economist book *Brands and Branding* was launched in February 2004. It is widely available at book-sellers in-store and on-line. Contents of *Brands and Branding*:

Part1: The Case for Brands	Part2: Best Practice in Branding	Part 3: The Future for Brands
What is a Brand? Tom Blackett, Interbrand	Brand Positioning and Brand Creation Anne Bahr Thompson, Interbrand	Globalisation and Brands Sameena Ahmed, The Economist
The Financial Value of Brands Jan Lindemann, Interbrand	Brand Experience Shaun Smith, consultant	An Alternative Perspective on Brands Deborah Doane, New Economics Foundation
The Social Value of Brands Steve Hilton, Good Business	Visual and Verbal Identity Tony Allen and John Simmons, Interbrand	Branding in South-East Asia Kim Faulkner, Interbrand
What Makes Brands Great Chuck Brymer, Interbrand	Brand Communications Paul Feldwick, BMP	Branding Places and Nations Simon Anholt, Placebrands
	The Public Relations Perspective on Branding Deborah Bowker, Burson-Marsteller	The Future of Brands Rita Clifton, Interbrand
	Brand Protection Allan Poulter, Field Fisher Waterhouse	

Founded in 1974, Interbrand serves the world with over 30 offices in over 20 countries. Working in close partnership with our clients we combine the rigorous strategy and analysis of brand consulting with world-class design and creativity.

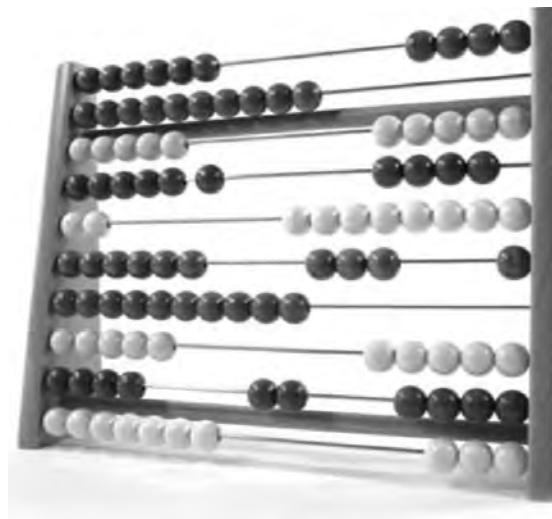
We offer a range of services including research, strategy, naming and verbal identity, corporate identity, package design, retail design, internal brand communications, corporate reporting, digital branding tools, and brand valuation.

We enable our clients to achieve greater success by helping them to create and manage brand value.

Case Study No 4:-

Brand Related Services – Brand Valuation

The key to unlock the benefits from your brand assets.



Interbrand's approach is based on the three economic functions of a brand: 1) to create cost synergies, 2) to generate demand for the products and services and 3) to secure future demand and thus reduce operative and financial risks. The three economic functions of a brand are assessed in the three analyses.

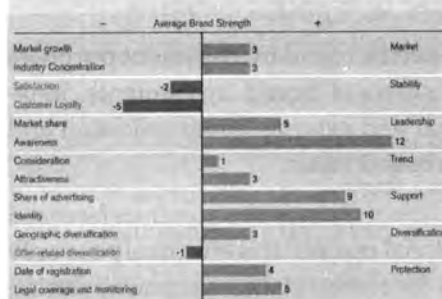
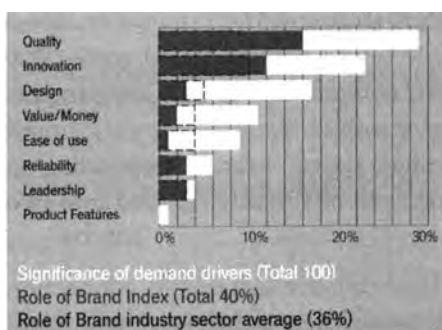


The example above shows a typical segmentation that differentiates the significance of the brand between relevant customer groups in different markets.

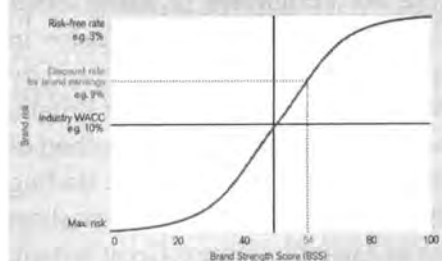
The value of a brand lies in its economic benefit – brand value is therefore defined as the net present value of future earnings generated by the brand alone. Interbrand's approach is based on the following three economic functions: 1) the brand's function to create cost synergies, 2) the brand's function to generate demand for the products and services, and 3) the brand's function to secure future demand and thus reduce operative and financial risks. The method employed to evaluate brands comprises five steps: segmentation, financial analysis, demand analysis, brand strength analysis, and, finally, the calculation of the net present value of brand earnings.

Segmentation: Consumers' purchasing behavior and attitudes towards brands differ from one market sector to another, depending largely on product-, market- and distribution-related factors. For this reason, the value of a brand can only be determined precisely through the separate assessment of individual segments that represent a homogenous customer group. Apart from this, brand management can only obtain the insights it needs to increase the brand's value systematically if the brand has been evaluated in all its segments.

Financial Analysis: Interbrand's brand valuation begins with an assessment of the company's value and then determines the value contributed by the brand. The first step towards isolating brand earnings from other forms of income is to determine the Economic Value Added (EVA) which tells whether a company is able to generate returns that exceed the costs of capital employed. As both value creation and its counterpart, risk, lie in the future, the analysis is based on a five-year forecast of future revenues generated in the brand segment being assessed.



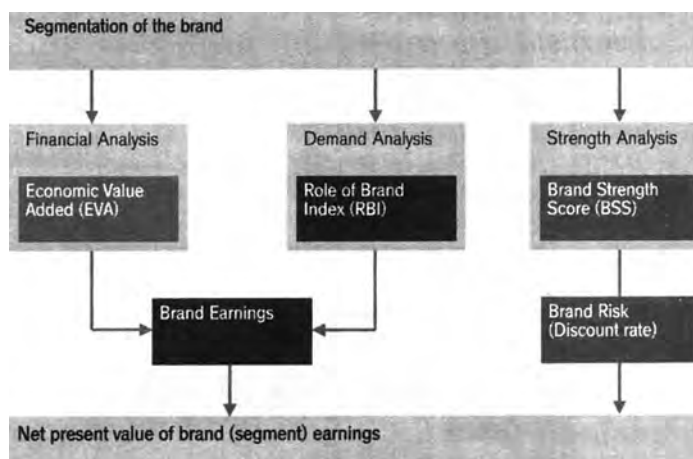
Performance of the strength attributes in comparison with the industry average (Brand Strength Score 54%)



The Brand Strength Score, which measures the competitive strength of the brand, is transformed into a discount rate on the basis of the S-curve. The Industry WACC (cost of equity in the financial service industry), which ideally comprises the same competitors assessed in the Brand Strength Analysis, is used as the benchmark for the company's overall risk.

Demand Analysis: In this step, Interbrand analyzes the brand's value chain and identifies the position of the brand in the minds of customers. To determine the brand's share of EVA, Interbrand examines what factors influence demand and motivate customers to purchase. These factors are weighted in terms of their bearing on demand and for each, the contributions of the specific associations with the brand are statistically calculated. The sum of these brand contributions on the demand drivers is expressed as the Role of Brand Index (RBI) which, multiplied with the EVA, yields the brand earnings.

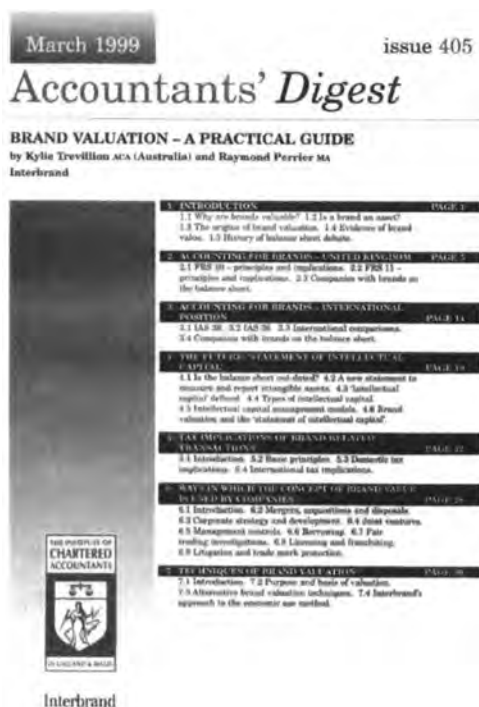
Brand Strength Analysis: The stronger a brand, the lower is its risk, and thus the more certain are future brand earnings. Interbrand assesses this risk by analyzing the strength of a brand compared with its competitors on the basis of seven factors (i.e. market, stability, brand leadership, trend, brand support, diversification, and protection). In fact, a broad range of measured attributes explains the seven factors and facilitates an all-round diagnosis of a brand's competitive position. This step results in the Brand Strength Score (BSS).



Net Present Value Calculation: The economic value of future brand earnings is inversely correlated with the brand's estimated risk and this risk is directly linked to brand strength. The transformation of brand strength into brand risk (or into discount rate,) is completed using an S-curve. The procedure reflects the dynamism of the market, where brands at the extreme ends of the scale react differently from brands in the middle range as regards changes in their strength. The strongest brands are discounted with the risk-free rate of the total market while average-strength brands are discounted with the industry WACC (cost of equity in the financial service industry). Discounting the forecast period (present value) and the calculation of an annuity (terminal value) results in the total value of the brand.

Since this procedure focuses on value creation, it is independent of potential and probable changes in organizational structure. The total value of the brand is calculated as the sum of its segment values (sum-of-the-parts).

	Year 2003	2004	2005	2006	2007	2008	2009	2010
Branded revenue	440	480	500	520	550	580	620	650
Operating costs	(357)	(390)	(407)	(423)	(447)	(472)	(503)	(528)
EBIT	83	90	94	97	103	108	117	122
Tax 26%	(22)	(24)	(25)	(26)	(27)	(29)	(31)	(32)
NOPAT	61	66	69	71	76	79	86	90
Operating assets	110	120	130	130	140	150	160	160
WACC 10%	(11)	(12)	(13)	(13)	(14)	(15)	(16)	(16)
Economic Value Added (EVA)	50	54	56	58	62	64	70	74
RBI 40% (Brand earnings)				23	25	26	28	29
Discount rate 9%								
Discount factor				1.09	1.19	1.30	1.41	1.54
Discounted earnings				21	21	20	20	19
Value until the year 2010				101				
Terminal value (growth = 2%)				277				
Net present value of the brand segment				378				



The Interbrand method has been used worldwide in numerous value-related purposes for brand management, balance sheet capitalizations, licensing, litigation, asset-backed securitization, business combinations, brand migrations, etc.

A systematic approach to brand valuation was jointly developed by Interbrand and the London Business School in 1988. The method was partially revised in 1993. Since then, Interbrand has evaluated some 3500 brands for nearly 400 companies. These assessments comprise corporate and product brands, complex brand systems, and simple "homogeneous" brands. Depending on their purpose, evaluations can be broadly divided into two categories:

1. Evaluations for financial transactions in connection with mergers & acquisitions, internal licensing and fiscal issues, as well as reporting or financing questions.
2. Evaluations for specific brand management purposes with a view to optimization of brand investments, long-term controlling, internal and external communication and sustainable increases in brand value.

The Interbrand model is one of the most frequently referenced methods in the international market. It is effectively the only method that has gained consistent global acceptance during the past ten years: valuations based on the Interbrand method have been used by, among others, the US Internal Revenue Service and the tax authorities of many other countries, by the Monopolies and Mergers Commission in Great Britain, by the European Antitrust Committee, and by judicial courts in the USA, Germany, Austria, Great Britain, Ireland, France, and Hong Kong. The Interbrand method of brand valuation has been assessed by all the world's leading auditing firms in conjunction with numerous balance sheet projects. In countries such as Australia, France, Great Britain, and New Zealand, the capitalization of acquired brands has been permissible for years.

The Interbrand method is based on formulae and procedures considered standard in general business management as well as in financial and marketing theory. The method is therefore absolutely transparent. Since input data are generally obtained through primary studies, the brand values derived from them are objective and highly reliable. Moreover, the economic functions of the brand are also included entirely and individually as part of the analyses described above and are thus expressed as part of the company's value. Brand valuation thus blends in seamlessly with conventional corporate strategic thinking and procedures. As a result, the integration of value-oriented brand management into value-oriented corporate management is effortless.

Interbrand is a member of various national bodies whose central concerns include the regulative, normative and communicative promotion of brand value. In Germany, we play a significant role in the activities of the DIN (Deutsches Institut für Normung e. V.) and the Brand Valuation Forum (a work group set up by Germany's GEM), which focuses specifically on communicative functions. Our involvement on these boards is coordinated within the Interbrand network and creates a foundation on which the standardization and reporting of companies with regard to brand value can be based.

Case Study No 5:-

GROWTH IN FCFE VERSUS GROWTH IN FCFF

- Leverage generally increases the growth rate in the FCFE, relative to the growth rate in the FCFF.
- The growth rate in earnings per share is defined to be:

$$g_{EPS} = b (ROC + D/E (ROC - i (1-t)))$$

where,

g_{EPS} = Growth rate in Earnings per share b = Retention ratio = $1 - \text{Payout ratio}$

ROC = Return on Assets = $(\text{Net Income} + \text{Interest Expense} (1-t)) / (\text{BV of Debt} + \text{BV of Equity})$

D/E = Debt/ Equity

i = Interest Expense/ Book Value of Debt

- The growth rate in EBIT will be a function of only the retention ratio and the return on assets and will generally be lower: $g_{EBIT} = b (ROC)$

Illustration : Growth rate in FCFE and FCFF: Home Depot Inc.

Home Depot Inc. had earnings per share in 1992 of \$0.82, and had registered growth in earnings per share of 45% in the prior five years. The firm had return on assets of 12.82 %, a pre-tax interest rate of 7.7%, a debt-equity ratio of 36.59% and a retention ratio 91% of 91% in 1992 (The tax rate was 36%). Assuming that these levels will be sustained in the future, the growth rates in FCFE and FCFF will be as follows:

$$\begin{aligned} \text{Expected growth rate in FCFE} &= b (ROC + D/E (ROC - i (1-t))) \\ &= 0.91 (12.82\% + 0.3659 (12.82\% - 7.7\% (1-0.36))) \\ &= 14.29\% \end{aligned}$$

$$\begin{aligned} \text{Expected Growth rate in FCFF} &= b (ROC) \\ &= 0.91 * 12.82\% = 11.67\% \end{aligned}$$

The growth rate in free cashflows to equity is greater than the growth rate in the free cashflow to the firm because of the leverage effect.

FCFF STABLE GROWTH FIRM

The Model

A firm with free cashflows to the firm growing at a stable growth rate can be valued using the following model:

$$\text{Value of firm} = \text{FCFF}_1 / (\text{WACC} - g_n)$$

where,

FCFF_1 = Expected FCFF next year

WACC = Weighted average cost of capital

g_n = Growth rate in the FCFF (forever)

The Caveats

- the growth rate used in the model has to be reasonable, relative to the nominal growth rate in the economy.
- the relationship between capital expenditures and depreciation has to be consistent with assumptions of stable growth.

Illustration : Valuing the Food Product Division at RJR Nabisco

A Rationale for using the Stable FCFF Model

- The division is in steady state; It is a large player in a stable market with strong competition. It cannot be expected to sustain high growth for any length of time.
- The division does not carry its own debt (though its parent company, RJR Nabisco, carries plenty). Thus, only the FCFF can be computed for the division.
- The entire division is up for sale, not just RJR's equity stake in the division.

Background Information

- In 1995, the food products division had revenues of \$ 7 billion on which it earned \$1.5 billion before interest and taxes.
- The division had capital expenditures of \$660 million and depreciation of \$550 million in 1994.
- The working capital as a percent of revenues has averaged 5% between 1993 and 1994. (Working capital increased \$350 million in 1994)
- The beta of comparable firms in the food products business is 1.05 and the average debt ratio at these firms is 23.67%. (The cost of debt at the largest of these firms is approximately 8.50%).
- The tax rate is assumed to be 36%.
- The cash flows to the firm are expected to grow 5% a year in the long term.

Valuing the Division

- The estimated free cash flows to the firm (division) are as follows:-

	Current	Next Year
EBIT (1-t)	\$ 960.00	\$ 1,008.00
- (Cap Ex - Depreciation)	\$ 110.00	\$ 115.50
- Change in Working Capital	\$ 150.00	\$ 17.50
= FCFF	\$ 700.00	\$ 875.00

- The cost of capital is computed, based upon comparable firms (in the food products business)



- Beta (based upon comparable firms) = 1.05
- Cost of Equity (based upon comparable firms) = $7.5\% + 1.05 (5.50\%) = 13.275\%$
- Pre-tax Cost of Debt = 8.50%; After-tax cost of debt = $8.50\% (1 - 0.36) = 5.44\%$
- Debt Ratio (based upon comparable firms) = 23.67%
- Cost of Capital (based upon comparable firms) = $13.275\% (0.7633) + 5.44\% (0.2367) = 11.42\%$
- The value of the division, using this cost of capital and an expected growth rate of 5%, were estimated as follows –

$$\text{Value of Food Products Division} = \$875 / (.1142 - .05) = \$13.629 \text{ billion}$$

Case Study No 6:-

Valuation of Intellectual Property

Caroline Woodward

Princewaterhouse Coopers, London

How much is the Coca-Cola brand or trademark worth? US\$50 billion? US\$100 billion? In August 2002, in an article in BusinessWeek, Interbrand included it in their table of 'The World's 10 Most Valuable Brands' at a value of US\$69.6 billion. How would you check whether you agreed with their assessment?

Despite the fact that intellectual property is frequently bought and sold, the valuation of intellectual property generally attracts a degree of scepticism. This arises principally because there is doubt as to whether the value can be measured reliably. This doubt has certainly held back the recognition of the value of acquired intellectual property in companies' financial statements, particularly when the property has been acquired along with the business that owns it. In such cases, purchasers are often reluctant to place a value in the balance sheet on the intangible assets acquired and prefer to describe the excess of the purchase price over the tangible assets' value as goodwill. Such a view is common in the United Kingdom where the Accounting Standards Board has formally expressed its doubt that intangible assets can be properly valued.

There are many, widely used methods of valuing intellectual property – some of which are more robust than others. Unfortunately, there is a lack of global consensus as to which methods are preferred and this in turn leads to a lack of confidence in the area. However, there are signs of an improvement in that the various accounting standard setters around the world are beginning to indicate what they believe to be acceptable methods of valuation for financial statement purposes. It is to be hoped that this will lead to wider acceptance of these methods as 'best practice' for all purposes.

Valuation methods

Most intangible assets generate premium returns for the business that owns them, either through an increase in revenues or through a reduction in costs. All valuation methods focus on capturing the value of these premium returns. The principal methods of valuation which are deemed to be acceptable to value intellectual property for financial statement purposes are as follows:

- Excess operating profits or premium profits method.
- Premium pricing method.
- Cost savings method.
- Royalty savings method.
- Market approach.
- Cost approach.

Each of these methods, together with their limitations, is discussed briefly below.

Excess operating profits method

The excess operating profits method determines the value of the intellectual property by capitalising the additional profits generated by the business owning the property over and above those generated by similar businesses, which do not have the benefit of the property. There are various ways in which the excess profits may be calculated, for example by reference to a margin differential or comparing the return on capital employed earned by the business owning the property with that earned by companies without such benefit. The calculated excess operating profits expected to be earned over the life of the asset in question are then discounted to the present day to arrive at a value for the asset.

It is important, if using this method, to ensure that the excess profits identified are specifically attributable to the intangible asset in question and not to some other factor such as an efficient production facility or distribution network that relates to the business as a whole.

A further drawback of this method is that the business with which you seek to compare the subject's margins or return on assets is likely to have some intangible assets of its own which are increasing its own margins and return on assets. It may even have a more efficient production facility. These factors will mask to a certain extent, the apparent excess profits that the subject business is earning and should be taken into account in the valuation.

Common methodologies for valuing frequently encountered intangible assets					
Asset	Valuation method				
	Excess operating profits	Cost savings	Royalty savings	Market approach	Cost approach
Brands	X		X	X	
Customer lists				X	X
Patents	X	X	X		X
Know how	X	X	X	X	X
Franchises				X	X

Premium pricing method

The premium pricing method is a variation on the excess profits method and is often used to value brands in the consumer products sector where it is common for a branded product to be more expensive than an unbranded equivalent. The value of this additional revenue projected over the life of the brand, net of the marketing and other brand support costs incurred to achieve this revenue, and discounted to the present day provide a value for the brand.

A drawback of this method is that it is very difficult these days to find a truly unbranded product. In the food sector, where stores often sell both branded and their 'own label' products, the store's own brand itself has a certain value.

Cost savings method

The cost savings method is fairly self-explanatory and values the asset by calculating the present value of the cost savings that the business expects to make as a result of owning the asset. This is usually as a result of an efficient process or secret technology.

Whilst a business can usually calculate the costs it has saved since it introduced the new process, it can be more difficult to estimate whether a third party would save more or less costs if they introduced the same technology to their own business.

Royalty savings method

The royalty saving method is based on the principle that, if the business did not own the asset, it would have to in-license it in order to earn the returns that it is earning. Alternatively the business could out-

license the asset if it did not wish to use it. The value of the asset is calculated based on the present value of the royalty stream that the business is saving by owning the asset.

Whilst this method is popular, its major drawback is that details of royalty rates are rarely made public. Determining an appropriate royalty rate is therefore a key part of a valuation using this approach. An appropriate rate can however be estimated by considering the effective premium profits that are earned by exploiting the asset in question and remembering that each party to a licensing agreement needs to earn a commercial return on their investment.

Market approach

The market approach values the asset based on comparison with sales of similar assets. This is by far the preferred approach of the accounting standard setters. The transaction price, as a ratio of an asset attribute such as sales, is used to derive a market multiple. This market multiple is then applied to the attribute of the asset being valued to indicate the value of the subject asset. As many multiples as possible should be derived eg sales, EBITDA, EBIT. In an ideal world this is the best method as a true 'market value' is available.

In practice, however, the world is not ideal and it can be difficult to find sufficiently detailed publicly available information on sales of similar assets. Nonetheless, this method can usually be applied as a cross check to other methods of valuation using industry rules of thumb and the like.

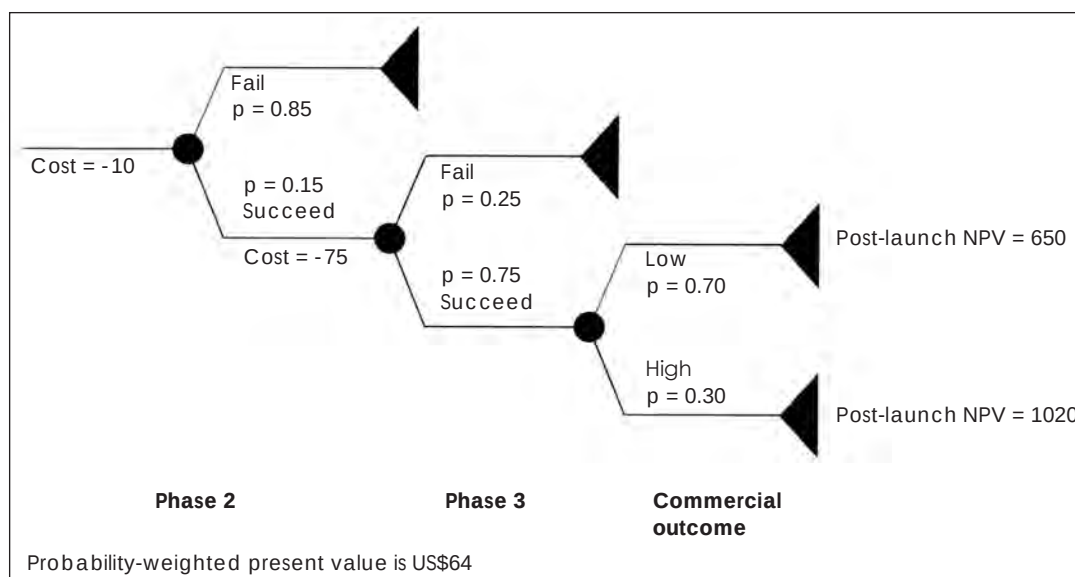
Cost approach

The cost approach values an intangible asset by accumulating the costs that would currently be required to replace the asset. The premise of the cost approach is that an investor would pay no more to purchase the asset than would be paid to reproduce the asset.

Whilst this approach is suitable for some assets, particularly those which are not directly generating income, care should be exercised in choosing this approach as cost is not always a reliable guide to value – think of the vast amounts of money spent on pharmaceutical research projects which come to nothing.

Choosing the appropriate valuation method

Best practice when valuing any asset is to use as many methods as possible to make the conclusion on value robust. However, some of the above methods are more suitable for certain assets than others and there is always the practical limitation of what information is available.



Perhaps the most important guide to your choice of valuation method is to consider how the asset creates value for its owner. Does it generate additional revenues? If so, then a method based on revenues is probably most appropriate. Does it save costs? If so, then a method based on costs saved is probably best. Does it give a competitive advantage without directly generating additional revenues or saving costs? In this case a method based on replacement costs is likely to be the answer.

Dealing with risk

One of the reasons that many people are sceptical about placing a value on intellectual property is that there is usually a greater risk associated with the potential revenues from the exploitation of an intangible asset than from a tangible asset. How can these risks be dealt with in the valuation so that it is reasonable, robust and reliable enough for financial statement purposes?

One way of recognising a normal level of risk that the projected future cash flows will not be achieved is through the discount rate applied to those projections. A typical company operates with a portfolio of assets which each carry different risks although the overall cost of these assets to the company should be no more than its weighted average cost of capital. At the low end are cash and bank balances which are low risk and therefore might be deemed to cost the company only the risk free rate, whilst at the high end is goodwill which is highly risky as it is difficult to explain what benefit this brings to the business and therefore probably 'costs' the company a premium over its cost of capital. The various intangible assets in between carry different levels of risk, for example a well-established brand in the food sector is probably fairly secure and therefore relatively low risk whilst customer relationships in the more volatile mobile telephone industry are less secure and therefore more risky.

Another way to deal with the uncertainty that the future cash flows will not materialise, particularly where there is a higher than usual level of risk, is to use expected cash flows rather than the simple discounted cash flow approach. In the expected cash flow approach, the principal risks associated with the future cash flows are identified and dealt with using a probability approach and option techniques. Thus, for example, estimating the probability of certain events occurring can factor in the impact of the total market being larger or smaller than expected or the impact of competition. This makes the valuation more robust. These techniques have particular relevance in evaluating portfolios of products or applications under development in the pharmaceutical industry. An example of this technique is shown above.

Indeed this latter approach is now considered best practice in the US, particularly in those industries where the risks are generally higher than average such as the pharmaceutical and technology sectors. Earlier this year the American Institute of Certified Public Accountants issued a Practice Aid, which stipulates the approach to be adopted when valuing in-process R&D in these sectors. This Practice Aid is now being treated as best practice for all intangible asset valuations in all sectors.

The Practice Aid states that, whilst valuations of in-process R&D may still be carried out using traditional discounted cash flow techniques; the preferred approach is to use expected cash flows arrived at using decision analysis techniques and probability analysis. The resulting cash flows may then be discounted at a rate close to the cost of capital as the risks are deemed to have been dealt with in the probability analysis. If however the valuer chooses to use traditional techniques, those cash flows are to be discounted at much higher rates, ranging from 30% to 70% to allow for the fact that the risks have not been appropriately considered. Clearly the use of such a high discount rate is only an approximation of the risks involved and should not be relied upon to provide a robust valuation conclusion.

So, can intellectual property be reliably measured?

The answer is yes, provided that the appropriate methodology is selected and properly applied. Oh, and the best way to value the Coca-Cola brand is to use the excess profits method and the royalty savings method and to crosscheck the results using the market approach.

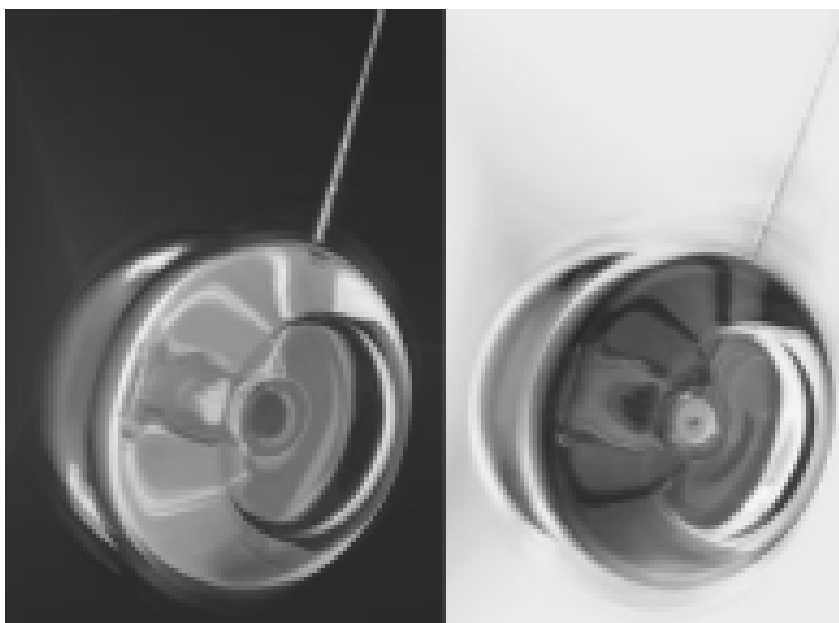
Case Study No 7:-

Valuing cyclical companies

Marco de Heer and Timothy M. Koller

Cyclical stocks such as airlines and steel can appear to defy valuation. But an approach based on probability will help managers and investors draw up a reasonable estimate.

Companies in industries prone to significant swings in profitability present special difficulties for managers and investors trying to understand how they should be valued. In extreme cases, companies in these so-called cyclical industries—airline travel, chemicals, paper, and steel, for example—challenge the fundamental principles of valuation, particularly when their shares behave in ways that appear unrelated to the discounted value of their underlying cash flows.



ANTHONY MARSLAND

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Tim Koller is a principal in McKinsey's Amsterdam office. This article is adapted from Tom Copeland,

Timothy Koller, and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, third edition, New York: John Wiley & Sons, to be published in the United States in summer 2000. Copyright © 2000 McKinsey & Company. All rights reserved.

¹ See Driek Desmet, Tracy Francis, Alice Hu, Timothy M. Koller, and George A. Riedel, "Valuing dot-coms," *The McKinsey Quarterly*, 2000 Number 1, pp. 148–57.

We believe, however, that cyclical operations can be valued using a modified discounted-cash-flow (DCF) method similar to an approach used to value high-growth Internet start-ups.¹ First, though, we will explore the underlying relationships between the cash flows and share prices of cyclical companies, as well as the role securities analysts may well play in distorting market expectations of performance.

When theory and reality conflict

Suppose that you are using the DCF approach to value a cyclical company and have perfect foresight about its industry cycle. Would you expect the value of the company to fluctuate along with its earnings? The answer is no; the DCF value would exhibit much lower volatility than earnings or cash

flow because DCF analysis reduces expected future cash flows to a single value. No individual year should have a major impact on the DCF value because high cash flows cancel out low ones. Only the long-term trend matters.

EXHIBIT 1

The long-term view: Free cash flow and DCF volatility

1 Free cash flow pattern, Company A, \$ million

Period, years	0	1	2	3	4	5	6	7	8	9	10
After-tax operating profit	10	9	6	3	0	-2	3	18	7	6	10
Net investment	3	3	2	2	1	3	5	3	3	3	3
Free cash flow	7	6	4	1	-1	-5	-2	15	4	3	7

Cash flows valued from any one year forward

2 DCF value

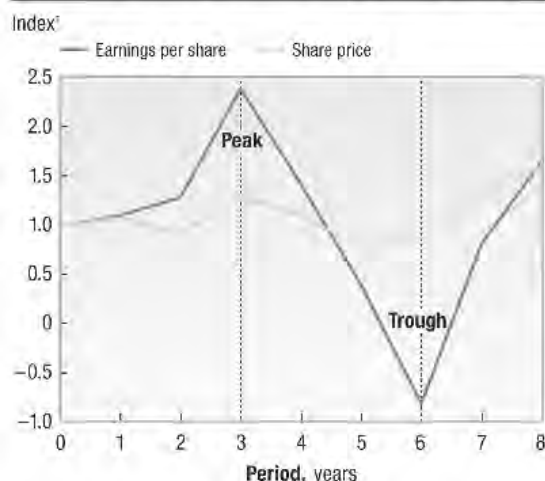
	34	33	27	28	30	35	40	33	33	34	31

3 Free cash flow and DCF value patterns, index



EXHIBIT 2

Instability rules: Cyclical in the real world



¹Composite index of 15 companies, each with a four-year cycle.

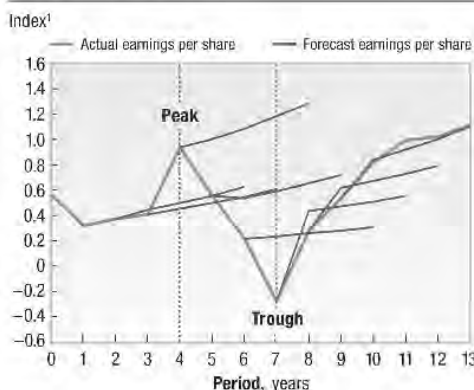
Company A, for example, has a business cycle of ten years and a highly volatile cash flow pattern that ranges from positive to negative (Exhibit 1, part 1). These cash flows can then be valued on the basis of the forecast from any one year forward. Discounting the free cash flows at 10 percent produces the DCF values in Exhibit 1, part 2. Exhibit 1, part 3, which brings together the cash flows and the DCF value (indexed for comparability), shows that the DCF value is far less volatile than the underlying cash flow. Indeed, there is almost no volatility in the DCF value, because no single year's performance affects it significantly.

In the real world, of course, the share prices of cyclical companies are less stable. Exhibit 2 shows the earnings and share values (indexed) for 15 companies with four year cycles. The share prices are more volatile than the DCF approach would predict—suggesting that theory and reality conflict.

Are earnings forecasts the culprit?

EXHIBIT 3

Fact versus fiction



¹Composite index of 15 companies, each with a four-year cycle.

How can theory and reality be reconciled? On the assumption that the market values of companies are linked to consensus earnings forecasts, we examined these forecasts for clues.

What we found was surprising: consensus earnings forecasts appeared to ignore cyclical in the real world entirely by almost always showing an upward trend, regardless of whether a company was at the peak or the trough of a cycle. Apparently, the DCF model is consistent with the facts, but the earnings and cash flow projections of the market are not (assuming that the market followed the analysts' consensus).

This conclusion was based on an analysis of 36 cyclical companies in the United States between 1985 and 1997. We divided these companies into groups with similar cycles (three, four, or five years from peak to trough, for example) and calculated indexed average earnings and consensus

earnings forecasts for each. We then compared actual earnings with forecast earnings over the course of the cycle.²

Exhibit 3 plots the actual and forecast consensus earnings for 15 of the companies, in the primary-metals or transportation equipment manufacturing industries.

All have four-year cycles. As the exhibit shows, the consensus forecasts don't predict the earnings cycle at all. In fact, except for the next-year forecasts in the years at the bottom of the trough, earnings per share are forecast to follow an upward path, with no variation. The forecasts don't acknowledge even the existence of a cycle.³

Academic research has shown that earnings forecasts have a generally positive bias. Sometimes this is attributed to the pressures faced by equity analysts at investment banks.⁴

Analysts might fear that a company subjected to negative commentary would cut off their access, for example, or that a pessimistic forecast about a company that is a client of the bank they work for could damage relations between the two. In light of these worries, it is reasonable to conclude that analysts as a group are unable or unwilling to predict the business cycle for these companies.

The market is smarter

Business cycles, and particularly their inflection points, are hard for anyone to predict. It is not surprising, then, that the market fails to get its predictions exactly right. But we would be disappointed if it failed entirely at the task, as the consensus earnings forecasts do. This takes us back to the question of how the market ought to behave. Should it be able to predict the cycle and thus avoid fluctuations in share prices?

That might be asking too much; at any point, a company or industry could break out of its cycle and move to a new one that was higher or lower (Exhibit 4). Suppose, for example, that you are valuing a company that is apparently at a peak in its earnings cycle. On the basis of past cycles, you would expect the industry to turn down soon, but there might be signs that it was about to break out of the old cycle.

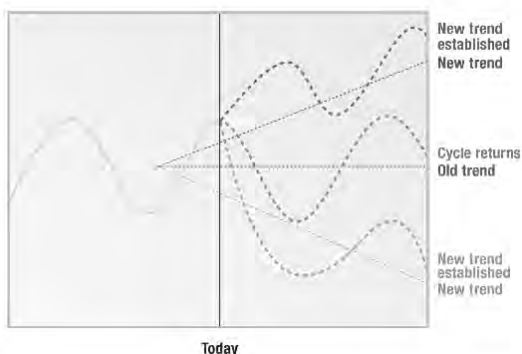
²Note that we had already adjusted downwardly the normal positive bias of analysts' forecasts to focus solely on the issue of cyclicity. See V. K. Chopra, "Why so much error in analysts' earnings forecasts?" *Financial Analysts' Journal*, November–December 1998, pp. 35–42.

³Similar results were found for companies with three- and five-year cycles.

⁴See M. R. Clayman and R. A. Schwartz, "Falling in love again—analysts' estimates and reality," *Financial Analysts' Journal*, September–October 1994, pp. 66–8; J. Francis and D. Philbrick, "Analysts' decisions as products of a multi-task environment," *Journal of Accounting Research*, Autumn 1993, Volume 31, Number 2, pp. 216–30; K. Schipper, "Commentary on analysts' forecasts," *Accounting Horizons*, December 1991, pp. 105–21; and B. Trueman, "On the incentives for security analysts to revise their earnings forecasts," *Contemporary Accounting Research*, Volume 7, Number 1, pp. 203–22.

EXHIBIT 4

When the cycle changes



In this situation, a reasonable valuation procedure might be to build two scenarios and weight their values. Under the first scenario, you assume, with a 50 percent probability, that the cycle will repeat the past and that the industry will turn down in the next year or so. Under the second, you assume, also with a 50 percent probability, that the industry will break out of the cycle and follow a new long-term trend based on current improved performance. The weighted average of these two values is the company's value. We found evidence that this is in fact the way the market looks at problems of this sort.

We valued the four-year cyclical companies in three ways:

1. With perfect foresight about the upcoming cycle
2. With zero foresight, assuming that current performance represents a point on a new long-term trend (essentially the consensus earnings forecast)
3. With 50 percent perfect foresight and 50 percent zero foresight

Exhibit 5 summarizes the results. As they show, the market follows the path of neither perfect foresight nor zero foresight but, rather, a middle path, closer to 50-50. It could be argued that this is the right place for the market to be.

How to value cyclical companies: A cookbook

No one can predict an industry's cycle precisely, and any single forecast of performance has to be wrong.

But managers and investors can benefit by explicitly following the probabilistic approach to valuing cyclical companies that is outlined above. This approach avoids the traps of a single forecast and makes it possible to explore a wider range of outcomes and their implications.

The following method of valuing cyclical companies involves creating two scenarios (though it is of course possible to create more than two). This approach provides an estimate

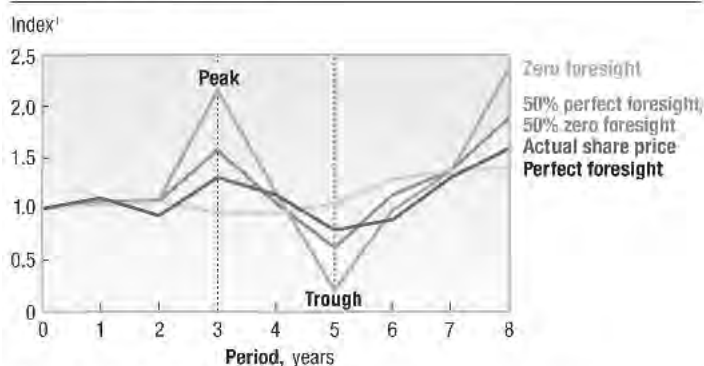
of a company's value and scenarios—an estimate that puts boundaries on the valuation. Managers can use the boundaries to think about how they should modify their strategies and possible ways of responding to signals that one scenario was more likely to materialize than another.

1. Construct and value the “normal-cycle” scenario using information about past cycles. Pay particular attention to the long-term trend line of operating profits, cash flow, and return on invested capital because this will affect the valuation. Make sure the continuing value is based on a “normalized” level of profits—that is, on the company's long-term cash flow trend line.
2. Construct and value a “new trend-line scenario” based on recent performance. Again, focus most on the long-term trend line because it will have the greatest impact on value. Don't worry too much about modeling future cyclical, although it will be important for financial solvency.
3. Develop an economic rationale for each scenario, considering factors such as growth in demand, technological changes that will affect the balance of supply and demand, and the entry or exit of companies into the industry.
4. Assign probabilities to the scenarios and calculate their weighted value, basing it on your analysis of the likelihood of the events leading to each of them.

Can managers do anything to reduce cyclical, or to exploit it? They do, after all, have detailed information about their markets and might thus be expected to do a better job than the stock market at predicting the cycle and reacting appropriately. In our experience, however, managers do exactly the opposite and exacerbate the problem. Cyclical companies often commit themselves to big capital-spending projects just when prices are high and the cycle is hitting its peak. They then proceed

EXHIBIT 5

The market is smarter



¹ Composite index of 15 companies, each with a four-year cycle.



to retrench when prices are low. Some develop forecasts that are quite similar to those issuing from equity analysts: upward sloping, regardless of where in the cycle the company is. In so doing, these companies send the wrong signals to the stock market.

Rather than spreading confusion, managers should learn to exploit their superior knowledge. They could first improve the timing of capital expenditures and then follow up with a strategy of issuing shares at the peak of the cycle and repurchasing them at the trough. The most aggressive managers could take this one step further and adopt a trading approach, acquiring assets at the bottom of the cycle and selling them at the top. In this way, a typical company in a cyclical industry could more than double its returns.

Again, however, theory is at odds with reality. In the real world, companies are reluctant to take the contrarian view. It is hard for a CEO to persuade a company's board and backers to expand when the outlook is gloomy and to retrench when the future looks good and competitors are building. Instead, companies are quite more likely to act in lockstep with others in their industries and to perpetuate cyclicity. So while it might indeed be possible for a company to break out of the business cycle, it is a rare CEO who can make this happen. M_Q

What are your Employees worth?

June 03, 2005

The Lev & Schwartz (L&S) model for calculating the value of human resources has suddenly become the buzzword in HR circles, courtesy the Infosys annual report for 2004-05.

The software major has opted for the L&S model and valued its 36,570 employees at ₹ 28,334 crore (₹283.34 billion) -- up from ₹ 21,139 crore (₹ 211.39 billion) for 25,634 employees in the previous year.

While Infosys has been grabbing the headlines for this, valuation of human assets isn't unique for Indian companies. The process was started long ago by, believe it or not, public sector companies like Steel Authority of India and Bharat Heavy Electricals Ltd.

The trend caught on with the emergence of knowledge-based industries where human capital is widely considered to be the critical component that forms the basis for other forms of capital.

In an industry where attrition rates are still very high, HR valuation helps the companies know the value they would forego when they are about to lose a person.

Satyam's annual report, for instance, includes intangibles like brand and human resource valuation (based on the L&S model), which account for over 80 per cent of the company assets.

Broadly, there are two approaches to human capital valuation -- cost-based and economic approach. The cost-based approach is further classified into three -- historical cost, replacement cost and opportunity cost. The L&S model along with other methods like Likert, Flamboltz and Jaggi is part of the economic approach.

Though there is little clarity on which of the various human capital valuation models is effective, the L&S model seems to have an edge over others in India.

HR consultants say it gives an opportunity to benchmark the efficiency of their human resources as quite a few Indian companies have adopted this system. Second, the valuation is less subjective as it makes limited assumptions.

So what is the L&S model?

Developed in 1971, it is based on the likely future earnings of an employee till his retirement. L&S advocated the estimation of future earnings during the remaining life of the employee and then arriving at the present value by discounting the estimated earnings at the employee's cost of capital.

Software companies say HR valuation helps companies make investor-friendly disclosures to make them fully aware of the company's human assets. The investors can also assess the return on human

capital, which is in essence the return they are getting from people who are managing their wealth/investment.

There is also no doubt that the HR departments must develop metrics that assess how various programmes and initiatives influence the way individuals or groups operate -- for instance, how much better a particular task is performed, or how much more productive a given workforce is as a result of a specifically targeted programme.

Though there is a broad consensus that identifying and measuring the value of human capital can be a process worth investing in, its acceptance hasn't yet spread much beyond the software industry.

The reason is that most companies still find valuation of intangibles like human resources a cumbersome process. They have a point as HR valuations will be a fruitless exercise unless the performance metrics are carefully assessed by people who are trained to do the job. A half-baked HR valuation process can only be counter-productive.

Also, while most companies recognise that human resources is a key asset and the HR function a strategic partner in their growth, in practice, human resources has difficulty justifying value and continues to be viewed as a cost and the HR function a corporate expense.

What is more worrying is the feeling among a large section of Indian corporates that HR valuations are nothing but public relations gimmicks.

They would do well to answer this question posed by HR consultancy firm, Hewitt: "Your most valuable assets walk out of your office every evening. What would make them come back the next morning?"

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Case Study No 8:-

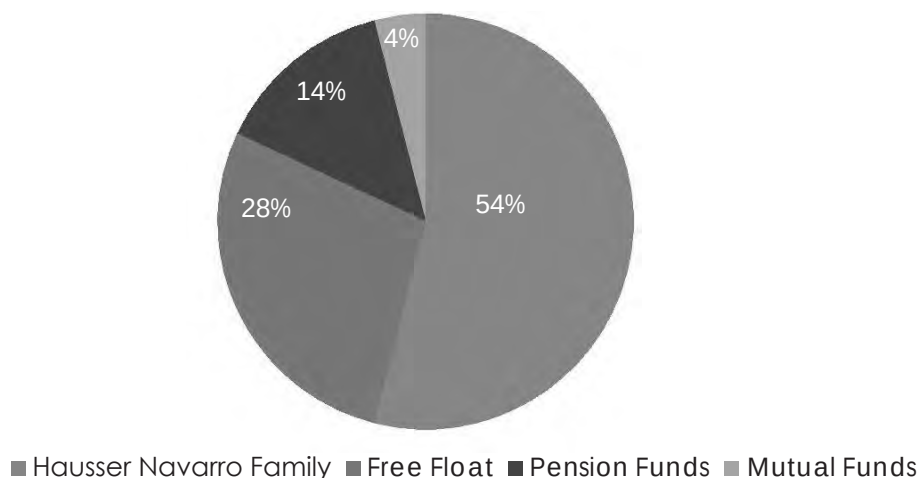
Case Study - Sonda, IT Services in Latin America

Company Overview

Founded in 1974 in Chile and present in 9 Latin American countries, Sonda is the leading local provider of technology in LATAM in terms of revenues. The firm offers IT services, software applications, and hardware platforms to large companies (client base 5,000). Since 2006, when the company went public (USD 215 M), it has acquired 10 firms (USD 450 M –

EV/Sales 0.68x vs Sonda's 1.6x), EBITDA has been growing at a CAGR of 15.8%, and new contracts have tripled.

Exhibit 31 Sonda's ownership structure



As previously mentioned since 2006 Sonda's shares are listed in the Chilean Stock Exchange after having raised USD 215 M in equity. The Navarro Haeussler family (53.6%) controls the firm. In addition, it is also held by pension funds (14.1%) and international mutual funds (4% - Aberdeen, FTIF Sicav, Santander, Ishares). The current Free Float represents 218 million of shares and USD 594 Bn (28%).

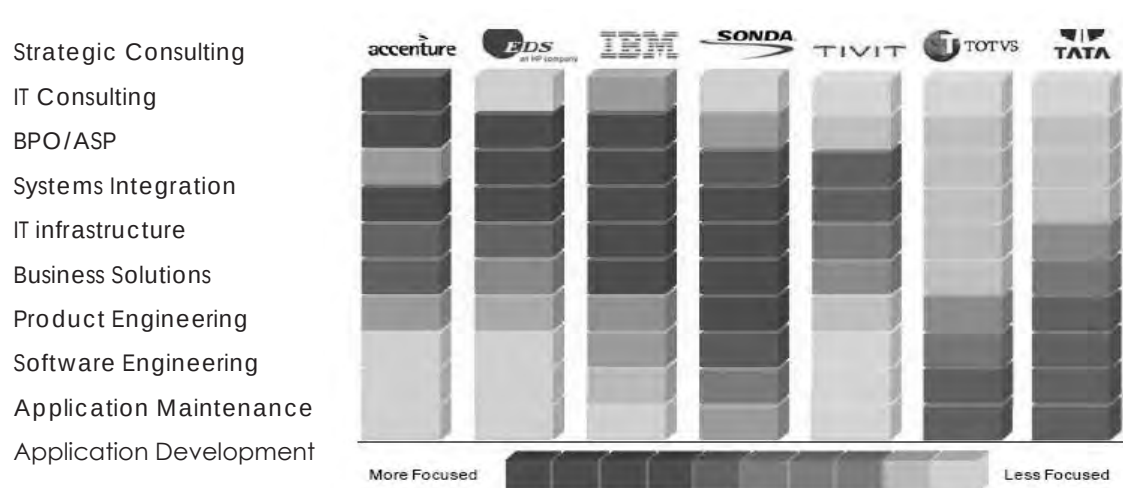
Latin American IT Market

The Latin American IT industry (USD 83 Bn/year – CAGR 10% 2011-15) characterizes for being a highly competitive and fragmented sector with relatively strong barriers to entry (long-term contracts). Since IT investments are costly, time consuming, difficult in terms of adaptation (learning curve) and require firms to share critical knowledge regarding industrial processes, strategies and operations with its IT provider, once a company has successfully installed its IT Infrastructure it is very unlikely it will change its provider (short-mid-term) as this would mean a new similar investment in time, efficiency and money.

Within the IT services industry Sonda's competitors can be classified into 3 different groups:

1) Small firms highly specialized in a niche without scale or regional footprint, 2) International tier 1 players, such as IBM, HP, and Accenture, who offer highly standardized worldwide solutions to large companies, and 3) Asian and Indian firms with a relatively weak local presence.

Exhibit 32 Principal IT companies in Latin America



Regional Footprint

Chile is Sonda's primary market, generating 42% of new contracts and contributing to 41% and 74% of Revenues and EBITDA growth respectively in 2011. With a 22% market share (IBM 16%), Sonda is the leading IT provider and it is well positioned to capture the expected annual growth in IT spending (CAGR12-15 12.6%). Sonda's main clients in Chile include regional retailers (Cencosud, Walmart, Carrefour), financial institutions (Santander, BBVA, Banco de Chile), and global manufacturers (Bayer, Unilever, Nestle).

The Brazilian market is Sonda's second earner generator and is expected to grow at a CAGR 12-15 of 13.8%. The firm entered into this market in 2003 and since then it has acquired and successfully integrated into its operations 7 IT firms (USD 300 M) and captured highly integrated IT contracts with large Brazilian corporations, such as: Petrobras, Embraer, Bradesco, Oi, and Tim among others. As of Dec/11, Sonda held 3% of the total Market Share (IBM 8%).

In 2004 Sonda entered into the Mexican market through the acquisition of three local IT firms which brought expertise of the local market and a solid client base (Telmex, Banamex, Grupo Mexico, and PWC) and currently it holds a 3% of the Market Share. Even though IT spending is expected to grow at a CAGR 12-15 of 9.2%, it is significant to mention that the Mexican operations do not represent a very important growth driver since the IT industry in Mexico is a very competitive market, mainly dominated by tier 1 firms (IBM, and HP).

Business Model

Sonda has a vertical and integrated business model which enables it to resell and install own/third-party software/hardware, maintains its clients IT infrastructure, and implement ERP solutions in a regional scale for large companies. Even though Sonda's prices are in line with the competition, its highly diversified portfolio along with its ability to package tailor-made & interconnected services, rather than sell standardized and separated products makes its vertical structure attractive to its clients and its business model hard to replicate. In addition, most of Sonda's contracts range from 3-6 years and involve interconnected IT products (even stronger barriers to entry).

(1) Platforms: Through this business line Sonda resells physical infrastructure (Hardware - storage equipment, switches, routers, PC, printers etc.) through several partnership and exclusive agreements with the industry's principal vendors (Oracle, IBM, Cisco, Sap, Intel, and HP). Even though this is a low-margin business, it is used as a platform to cross-sell IT services by creating needs for technical support and increasing client base.

(2) IT Services - Core Business: After the installation of the IT equipment, the next step is the necessary support and maintenance of the network. This is when the IT services division, with healthier margins and faster growth rates, comes in by offering I) IT outsourcing, II) Infrastructure support & Data Storage, and III) IT Consulting.

Since Sonda's clients core business is very rarely maintaining a High Tech digital network, most of the times they decide to outsource this activity to Sonda in order to avoid business disruptions and maximize the potential of their IT infrastructure. Additionally, the company offers infrastructure support services (Hardware and Software) such as, storage of proprietary data and cloud computing services (1st local player). Even though Cloud Computing only accounts for 5%-6% of total revenues, the firm is a regional leader and it is well positioned to capture the growth opportunities of a market that is "expected to triple in the next five years"

(IDC). Nevertheless, demand for cloud computing in Latin America should remain relatively low (in the short term) as the region is still working on virtualizing servers, automating datacenters and increasing broadband penetration (key prerequisite for successful cloud computing). Lastly, Sonda's knowledge of its clients platforms and IT departments allows it to offer IT consulting services (Help Desks services).

(3) Applications: This business unit focuses on supporting and enhancing clients' businesses by implementing Sonda's ERP solutions, in Chile, and third-party software solutions (SAP, and Oracle), abroad, whether for general purposes or for an specific industry. In addition, Sonda recently announced an exclusive agreement with SAP (BusinessOne) that aims to market SAP/SONDA ERP solutions to Mid-caps with much lower licenses and implementations costs. However much this division does not represent a significant top-line growth driver, a successful partnership with SAP could increase Sonda's profitability.

International Expansion into neighboring geographies via M&A

Sonda is a pure Latin American player with presence in most important Latin American geographies and detailed knowledge about different sectors, specific niches, and large Latin American Corporations. The capacity to offer highly customized and integrated solutions has been the result of Sonda's international expansion outside its home country Chile. During the previous 20 years the firm has acquired and successfully integrated over 30 Latin American SM&E's with the purpose of gaining scale, acquiring knowledge (technology), and above all consolidating a fragmented sector in which regional scale is a competitive advantage.

As mentioned before, after an era of high flows of FDI into Latin America, the empirical evidence has shown that the amount of Latin American corporations expanding into foreign countries has been rapidly increasing, creating large and regional corporations with operations in different sectors such as Power & Energy, Consumer Staples, Utilities, Mining, Telecommunications, and Building Materials among others. The increase in the amount of Cross-Border M&A deals has led to the creation of the “Global Latinas” (Casanova 2009).

Under this economic scenario, Sonda’s strategy is a clear example of a company focused on offering to its clients the possibility to not only improve its diverse process by introducing technology but also to help its clients when going abroad by providing regional and tailor made services for each geography (cultural difference understanding) with the aim of facilitating the integration process.

In 1984 Sonda started its international expansion into Peru, basically driven by the geographic proximity not only in terms of distance but also in terms of culture. Later on, the firm decided to increase its regional footprint in the region by acquiring small local IT players in Argentina - 1986, Ecuador – 1990, Uruguay – 1994, Colombia – 2000, Brazil – 2002, Costa Rica – 2003, and in Mexico – 1994 (Goldman Sachs Initiation Report).

Exhibit 34 List of Sonda’s last 5 years acquisitions

Sonda’s Acquisition Strategy

Date	Company	Country	EV USD M	Annual	Annual	EV/Sales Ownership	
				Revenues CLP M	Revenues USD M		
June-07	Procwork	Brazil	118,0	72 950,5	151,8	0,8	100%
March-08	Red Colombia	Colombia	11,6	12 975,4	27,0	0,4	100%
April-10	Telsinc	Brazil	38,0	29 795,3	62,0	0,6	100%
April-10	Softteam	Brazil	8,5	4 325,1	9,0	0,9	100%
June-10	Kaizen	Brazil	6,7	7 208,6	15,0	0,4	100%
September-10	NexitiraOne	Mexico	27,0	14 176,8	29,5	0,9	100%
November-10	Ceitech	Argentina	6,7	7 208,6	15,0	0,4	100%
		Chile					
September-11	Quintec	Colombia Argentina	117,4	88 472,9	184,1	0,6	99%
		Peru					
March-12	Pars	Brazil	55,0	37 003,9	77,0	0,7	100%
May-12	Elucid	Brazil	64,0	31 275,2	65,1	1,0	100%
TOTAL			452,9	305 392,3	635,5	0,7	

In Exhibit 35 it is possible to visualize the latest acquisitions. Through this aggressive expansion plan Sonda has been able to diversify its revenue’s generation in terms of geography, sectors and amount of clients. Even though Chile is still the main generator of revenues, Brazil has been rapidly increasing its significance, and according to the guidance delivered by Sonda’s management team they are expecting Brazil to become Sonda’s first earnings generator in 2013 as a result of the expected materialization of the existing growth drivers in the region and specifically in Brazil. In this sense, the firm announced a (August 2012) USD 700 M CAPEX for 2013-15 (USD 500 M for inorganic growth in Brazil & Colombia) with the aim of consolidating its regional footprint. Company guidance suggests the

financial resources for this plan will come from internal generation, and an equity issuance of USD 312 M expected for 2H12 - 1H13 in Brazil through the form of a BDR. This is a perfect example of a regional company that is not only capturing revenues in the region but also diversifying its financial resources. The main drivers of the potential equity issuance in the Bovespa are the following: 1) increasing the firm's visibility, 2) using these new shares as acquisition currency in order to finance future acquisitions in the region, and 3) entering into a market with greater liquidity, with the purpose of ensuring future liquidity needs.

Exhibit 35 International presence of Sonda in Latin America - Revenues

Mexico 12%

Rest of Latin

Brazil 34%

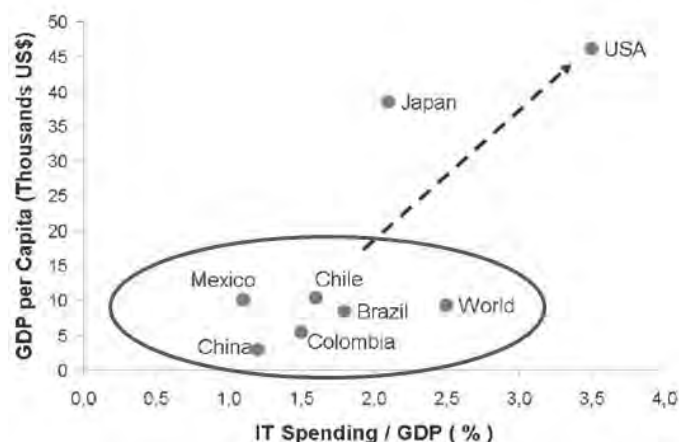
America 12%

Chile 43%



With respect to the upcoming growth drivers of Sonda and the reasons why the company has decided to deepen its exposure in foreign countries, this study focuses on the following factors: 1) Under penetrated markets & Low spending, and 2) Brazilian spending in IT. First of all, and as the Latin American economies continue to consolidate its solid growth in per capita income, large companies, and governments have started to intensify their investments in IT **whether to increase their competitiveness (Oil & Gas, Mining, Retail) or to meet legal obligations (Financial Sector, Telecoms – stronger regulation)**. That said, according to the IDC Investments in IT are expected to grow 2.1 times faster (CAGR 10% - IDC) in Latin America than in the rest of the world from 2012 to 2015. Additionally the region continues to be an underpenetrated market in terms of IT investments as a percentage of GDP (1.5% Latin America vs. 2.5% World).

Exhibit 36 IT Market - Global spending per country vs. GDP size





Furthermore, Brazil is the other axis of growth for the firm. Brazil is the largest IT market in the region, with an annual spending of approximately USD 50 Bn, and an expected annual growth rate of 13.8% over the 2012-15 period. This attractive growth potential is mainly based on the following axis: 1) World-class events: World Cup 2014, Olympic Games 2016, 2) Lack of IT infrastructure and low broadband penetration of Brazil, and 3) stronger legislation, forcing firms in the financial and telecom sectors to reinforce its IT infrastructure.

Risks involving the future international expansion via M&A

Regarding the expansion plan via M&A transactions the more significant risks are the following: 1) Sonda might become a victim of its expansion plan by overpaying for inorganic growth and increasing its risk profile (higher leverage). 2) Difficulties on successfully executing the investment plan for the 2013-15 (lack of potential targets).

On the other hand, 3) increasing competition from new players (Asian IT firms) and from existing ones (IBM, Accenture, HP, and Infosys) could lead to higher pressure on margins. Moreover, 4) the lack of highly qualified human resources in the region might impact the firm in terms of both profitability (higher labor costs) and could limit growth opportunities (constraints in terms of capacity). Lastly, the firm is highly exposed to a 5) foreign exchange risk (57% of Revenues are abroad) regarding the reported figures (CHL Peso).

Conclusion

All in all Sonda is good example of what the local corporations and the M&A activity in the Latin America has been experiencing during the last 20 years. Sonda started in 1970s as privately owned company exclusively providing IT services to Chilean clients and financing its operations through financial debt and equity capital coming from the reinvestment of earnings. During the 1980s, in line with the 4th worldwide global merger Sonda started to expand its operations in Latin America via Cross-Border Mergers & Acquisitions. In this sense, it is significant to mention that this firm started its process to become a “global latina”

(Casanova (2009)) one decade before the Latin American “Blue Chips”. As mentioned in a previous section this firms started to consolidate a regional exposure as a results of the

“Bubble Burst” and its effect on the developed world companies who pushed them to sell a portion of its strategic assets in Latin American to local buyers at attractive valuations. The fact that Sonda already had a regional presence when the large Latin American corporations started to perform CB-M&A transaction was a key growth driver for the firm, first mover advantage, since it enabled it to offer services and products adapted to every geography to this new type of client who was starting to experience the challenges of implementing the same business model in a different cultural environment.

Cas Study No 9:-

CASE STUDY OF CMC LIMITED

CMC Limited is a leading IT solutions company and a subsidiary of Tata Consultancy Services Limited (TCS LTD), one of the world's leading information technology consulting, services and business process outsourcing organizations. It is a part of the Tata Group, India's best-known business conglomerate. With 18 offices, 150 service locations, 520 non-resident locations and over 5,551 employees worldwide, it provide a wide spectrum of unique Information Technology solutions and services to a clientele of premier organizations in the government and private sectors.

Since its incorporation in 1975, CMC has an enviable record of successfully building IT solutions for massive and complex infrastructure and market projects. It took up the challenge to serve all installations left by IBM, when IBM decided to wind up its operations in India in 1978, and took over the maintenance of over 800 IBM installations spread across the country.

It also maintained computers supported by scores of other foreign manufacturers. While maintenance activities progresses apace, encouraged and enthused it has spread its attention to other areas of computer support.

While hardware maintenance continues to play a major role, its activities have advanced in many new directions. It is one of the leading System Integrators in the country with the multi-faceted expertise in Information Technology. It also continually updated expertise in real-time, on-line systems, process control, transaction processing, image processing, data communications, networking, parallel architectures, etc. It is the totality of expertise that has enabled it to develop a variety of superior IT products and to execute a number of complex and challenging projects, not only in India, but also in Europe, America, Africa, the Middle East, and South East Asia.

In the light of the growth of the communications sector and its importance to the liberalized economy, CMC revamped its communication network - INDONET, in terms of new protocols, communication equipment as well as host systems. Besides the need of highly specialized software engineering skills has triggered increased thrust on education and training activities. In order to focus on above mentioned business areas, It has formed the following five Strategic Business Units (SBUs) :

Customer Services: The major activities in customer services business unit include hardware / software support, environmental engineering, total networking solution including structured cabling, equipment supply and facilities management.

Systems Integration: The services offered under systems integration are systems consultancy, systems study, software design, development & implementation, Software maintenance and Turnkey projects.

International Operation: The international operation at the CMC is a thrust area for the company. Other areas being handled by the International Business Unit include off-shore & on-site projects, professional services and IT solutions in niche areas like ports cargo, banking & finance, fingerprint identification systems, automation of stock exchanges, insurance, etc.

INDONET: The services that are offered presently by the Indonet Services SBU of the CMC are: E-mail / E-mail fax services, File transfer (FTP), Database service, creation of websites / home pages using INTERNET technologies.

Education & Training: CMC offers a wide range of education & training services both in India and abroad. The courses are for customers as per their specific requirements. Education & Training SBU mission is to provide quality IT education and to reach wider sections of the society. CMC has started franchising some select education and training programmes.

CMC's strength lies in both innovation and process. It provides innovative and effective solutions that meet all its customers' needs. Its competitive edge comes from linking innovation with its technology competencies and understanding of industry and service verticals. It has combined its domain knowledge and technology competencies to engineer innovative solutions, which exactly match the unique requirements of its customers.

CMC'S Vision

To be a vibrant organization where openness, trust, teamwork, simplicity and innovation are valued and promoted. I To operate globally and bring the benefit of IT to improve productivity of its customers and quality of their products and services.

CMC'S Mission

To provide comprehensive and cost-effective IT solutions and services to organizations and institutions in India and rest of the world.

To constantly endeavour to delight its customers through excellence in service industry and achieve to complement internal efforts towards expansion and growth.

To renew market opportunities and worldwide recognition.



To improve price performance and market share, maintenance will continue to be a key business area.

To enter into new business alliances technology trends to focus on niche areas and direct its R&D efforts towards cost-effective and timely products and packaged solutions to meet customer requirements.

SAP – LAP Analysis

Rapid changes in technology make it imperative for IT companies to keep pace with the latest developments worldwide, and to develop new applications with the aim of enabling clients to improve their business. At CMC, finding newer and better ways of delivering value to our customers is a way of life.

Prevailing Situation

The existing situation at CMC has been observed as under Leads in computer maintenance in the country.

Ranks number two in domestic software development in the country.

Organizational flexibility is quite high.

International business keeps on showing significant growth over the previous years.

Caters to the IT requirements of customers from wide variety of fields.

Provides support to customers with multiple vendor system installations.

Supports equipment of more than 40 international manufacturers for the past two decades.

Globalization of CMC's products and services is thrust area.

Main Actors' Capabilities

Managers at CMC are very creative. Innovation is the very essence of success as well as of survival. The management believes that the successful exploitation of new ideas, incorporates new technologies, design and best practices. It is the key process that enables companies to compete effectively in the global environment. Innovation is a catalyst that can create and sustain wealth. However, it is only a catalyst; without process and other ingredients, even revolutionary innovations cannot create or sustain anything. The actor (management) puts the emphasis on the following strengths:

Core Competence

Core competence of the organization is not yet established but would revolve around following: Large IT projects management and solutions conceptualization, and deploying and developing IT service strategies. CMC is able to develop a variety of superior IT products and execute a number of complex and challenging projects in India as well as abroad. Concept of core competence has not been properly communicated to people in the organization. Top management encourages development of core competence by trying to retain key people. It operates to bring benefit of information technology to its customers and improve quality of its products and services.

Exports are a critical area for the healthy growth of CMC and receive priority in resource allocation and competence building. The capabilities exhibited by the management to develop core competencies include things like managing people under adverse environmental conditions. It is an organization where teamwork and innovation are valued and promoted.

In-house R&D

CMC has a sound R&D centre at Hyderabad. It has emerged as a champion in new technologies which include: distribution automation, Internet, off-line signature verification, networking areas – spanning satellite, microwave, digital radio, fiber optics, VHF / UHF communication, etc. R&D centre undertakes research in select niche areas in the frontiers of technology with a view to provide the cutting edge to the CMC. It forms an integral part of the company's medium and long – term strategy. R&D also develops special hardware and software products, which form the building blocks for the turnkey solutions offered by CMC in various application areas in core sections.

Focus of the R&D efforts of the organization has been in technology areas based on market needs identified by the strategic business units with emphasis on short to medium term projects. The R&D center consolidated its technology development activities and continued its effective role in development of unique solutions on a proactive basis.

Strategic Flexibility

The individual flexibility of the managers and of the system allows adding capability in the organizational system. Managers are creative in developing and deploying IT services, and flexible enough to tailor their use of such services as per the requirements of the customers. The management works closely with the Tata Council of Community Initiatives (TCCI) to initiate programmes for development, education and healthcare. It has set up a core committee for corporate social responsibility to spearhead its efforts to integrate corporate sustainability concerns into the company's values, culture, operations and business decisions, with requisite flexibility at all levels of the organization.

Processes

Various strategic processes in the company are drawn up through a participative process of involving functional and business units. The processes emerge from the analysis of market, emerging business and existing competencies. Strategy formulation is based on processes that provide additional value to the customer, improve productivity, strengthen management processes and globalize the business.

Process of Globalization

Professionals in the organization play very important role in the process of globalization. Services are provided to customers around the globe, e.g., Korea, Hong Kong, Mauritius, Switzerland, Netherlands, and UK, etc. It enables the organization to improve significantly performance by enhancing business presence in number of countries. There has always been always a continuous effort directed towards the joint ventures and subsidiaries to increase the market share.

Processes leading to generate Competitive Advantage

A competitive advantage exists when the firm is able to deliver the same benefits as competitors but at a lower cost (cost advantage), or deliver benefits that exceed those of competing products (differentiation advantage). Thus, a competitive advantage enables the firm to create superior value for its customers and superior profits for itself.

At the CMC, synergy is a very key cultural attribute for organizational success. The Personnel Development Group of the organization directs its efforts to meet the organizational goal of becoming globally competitive.

Reuse of resources, better deployment of people and the reuse of existing software helps in overall cost reduction, thus contributes towards generation of competitive advantage. Differentiation of products is created by giving more semi-customizable solutions and services. In IT industry constant differentiation is only way to be able to give customer value. Consistency and time factor also provides a cutting edge to the organization.

Technology Absorption, Assimilation & Implementation Process

Role of the technology management function in an organization is understand value of certain technology for the organization. Continuous development of technology is valuable as long as there is a value for the customer and therefore the technology management function in an organization should be able to indicate when to invest on technology development and when to withdraw.

The CMC through its R&D division pro-actively develops technology for CMC's business needs. It also uses available state-of-the-art technology in conceptualizing solutions. The technologies developed by in-house R&D are extensively used for providing solutions to its customers. Work done at the R&D center forms core of most of the solutions provided by various SBU's and hence are directly responsible for improved productivity. As there is no arrangement for technology transfer from other countries, the only technology that needs to be absorbed is the one developed in-house.



Many new technologies developed at R&D centre have been used in projects in India and overseas. Technology assimilation is aided by customer consciousness as in IT industry the customer or the end user is driving the technology changes. Combination of a wide spectrum of information technology skills, industry knowledge and infrastructure strengths has enabled the CMC to execute a number of significant projects in different economic sectors. They range from complex feasibility studies, hardware installations and support to the design and implementation of total turnkey solutions. R&D centre develops special hardware and software products, which form building blocks for turnkey solutions offered by the CMC in various application areas in core sectors. Focus of R&D efforts has been in technology areas selected based on market needs identified by medium term projects.

Processes leading towards Core Competence Development

An organization's resources and capabilities together form its distinctive core competencies. These competencies enable innovation, efficiency, quality, and customer responsiveness, all of which can be leveraged to create a cost advantage or a differentiation advantage. In order to develop a competitive advantage the firm must have resources and capabilities that are superior to those of its competitors. Without this superiority, the competitors simply could replicate what the organization was doing and any advantage quickly would disappear.

At the CMC, there are two main processes that lead towards the core competence development, i.e., development of skills, and development of in-house technology. A concerted effort is made to develop and upgrade the available managerial skills in the organization. Several training programmes such as management development, Communication Skills Development, etc. are being conducted. Various organizational processes that help in developing the organizational core competence are training, retention, and recruitment. The competence at the level of technology is attributed to its in-house R&D initiatives.

Learning Issues

The CMC has built, managed and supported IT systems and end-to-end solutions across the value chain. More than three-fourths of its clients reward its reliability, creativity, and unique ability to handle anything, from small and medium installations to very large and extremely complex systems, by constantly extending and deepening their partnerships with them. It has achieved this by perfecting deployment and delivery of customized, high quality, high-value IT services and products. Its computerized reservations, ticketing and accounting systems for the Indian Railways, scheduling and timetabling system for the London Underground, and online securities trading system for the Bombay Stock Exchange, are outstanding success stories of the 1980s and 1990s.

Learning issues in the organization are outlined in Table 1. The key issues related to the situation and processes are: environmental assessment, capacity utilization, cost advantage, customer value, time factor, and, globalization, coordinated actions of all the functions, in-house technology development, and organizational processes.

Table 1 Learning Issues in case of CMC Limited

Area	Issues
Key issues related to situation	Environment assessment, capacity utilization, cost advantage, time factor.
Key issues related to processes	In-house technology development, globalization, organizational processes.
Core competence	i. Large IT projects management and solution conceptualization, ii. Deploying and developing IT service strategies.
Processes leading towards core competence development	Training, retention of key people, and recruitment.

Product differentiation	Constant differentiation is the only way to achieve competitive advantage and is created by giving semi-customizable solutions and services.
Customer consciousness	Improved customer consciousness acts as a driving force for technology changes.
Coordinated actions	Synergy is a very key cultural attribute for organizational success.
Economies-of-scale and scope	Economies-of-scale provide a cost advantage while economies of scope gives the benefit of product differentiation. Economy of scale is generated by reuse of resources and the existing software products. Economies of Scope is created by providing semi customizable products.
Capacity utilization	Enables to achieve competitive advantage by cost reduction and better deployment of HR.
Time factor	Consistency and time factor enables the CMC to be ahead of the competition.
Indigenization and technology absorption	In-house technology development helps the organization to excel in the market as the focus has been in technology areas selected based on the customer needs identified by SBUs. There is no arrangement for technology absorption.
Capabilities of management	Managing people under adverse conditions.
Organizational learning	It helps to retain and improve competitiveness in uncertain technological and market circumstances. It enables to have a close interchange between customer needs and organizational capabilities for achieving competitive advantage. Training and development aids in creating a learning culture in the organization.

Core Competence

The CMC has constantly endeavored to delight its customers through excellence in service delivery and achieve worldwide recognition. Core competence of the organization lies in “large IT project management and solution conceptualization” and “deploying and developing IT service strategies”. Although there is very little understanding about the core competence but the efforts are on to identify the potentials to develop competencies by focusing on specific desirables and sticking to them for a few years. Processes of core competence development involves too much of time and cost, thus top management needs to have a lot of patience. The CMC caters to customer requirements in area of information technology and provides a cutting edge in India and abroad. The competence of the organization resides in persons and processes; the technology leadership is a by-product of this competence. Since the CMC is a service-oriented organization, people are its strength that enables it to achieve worldwide recognition. The major guidelines for hiring the key people are the cultural fit and skill set in the organization.

Collective learning of the organization, although difficult to measure, may be helpful for developing core competence at the CMC. The rates at which organizations learn increasingly determine its prospects for survival. As the CMC is involved in customer's project management teams, there is a close interchange between what customer needs (customization) and the required configurations of organizational capabilities, that enables it to be ahead of the competition.

Core competencies that have been identified at the CMC meet all the three tests (Table 2) that a skill or a capability of an organization has to qualify for being considered as a core competence. CMC's know-how in IT project management and, development and deploying IT services creates value for customer by delivering benefits of IT in the form of services and products. The company is able to create competitor differentiation by giving more semi-customizable solutions and services. The core competence at the CMC is extendable as it can form the basis for entry into new product markets. Since the capabilities in the organization are competitively unique, and have a superior and higher level of competence than others in the industry, they qualify as core competencies of the organization. The core competence acts as a source of competitive advantage in that it is competitively unique and makes a contribution to customer value.

Table 2 Tests of Core Competence for CMC Limited

Tests	Conformance to Tests of Core Competence
Customer value	Delight customers through excellence in service and delivery.
Competitor differentiation	Project management teams provide customized solutions to customers
Extendibility	Execute significant projects in different sectors.

Strategy Formulation with Core Competence

An organization is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential player. The existing strategy formulation pattern of the CMC is through a process of strategic planning. A participative approach is adopted in which all functional and business unit heads' are involved. A rigorous market analysis is carried out to find the exact needs of the customers. In IT industry constant differentiation gives value to the customer, which is provided by the core competence of the organization.

The core competence of the organization enables it to improve productivity, strengthen management processes and globalize the business. The strategy formulation is linked with the organizational core competence, e.g., due to the growth of the communication sector; CMC revamped its communication network (INDONET) by developing new communication network. Since the company has core competence in both Solution Conceptualization and Developing and Deploying IT services, the strategy is formulated based on this competence that enables CMC to decide what the customer needs and, how that need can be satisfied by developing the solutions and delivering them effectively.

Action

In order to operate globally and bring the benefit of information technology to customers, CMC needs to take certain actions to strengthen its area of IT project management and solutions conceptualization. I The key leverage points have to be found out, e.g., exports, appropriate business alliances, keeping updated technical infrastructure, joint ventures and subsidiaries to increase market reach. I There is a greater need to involve people at all levels to meet the organizational goal of becoming a globally competitive company. The empowerment given to the people would encourage the staff members and improve overall productivity. I Competencies need to be building on a pro-active basis. It should form a team with a clear focus on core competence development and then empower and enable it with resources. Since core competence cannot be developed overnight, top management need to be patient and give the team sufficient time for the competence development.

In IT Industry it is difficult to have a sustainable competitive advantage, (sustenance is only in the short terms, may be less than three years), so there is a need to focus on core competencies to be ahead of the competition.

CMC needs to formulate the strategies keeping in view its competencies so that it is able to conduct business more effectively and ensure growth and reasonable returns to the stakeholders.

Performance

The key performance indicators are EVA (Economic Value Added)

Growth

Growth in intelligent capital

The performance of the processes will be affected by the interaction of the contributing variables.

CMC develops and deploys its own IT services to customers which in turn will effect the key performance indicators.

CMC can be ahead of competition by keeping innovative and challenging mindset.

CONCLUSION

Companies need to learn to manage tomorrow's opportunities as competently as they manage today's businesses. The discovery of new competitive space is helped when a company has a class of technology generalists that can move from one discipline to another. Due to fierce global competition, senior management must understand not only the technologies but also the competencies and motives of competitors. Building successful alliances requires identifying core competencies of both the partners and developing strong interpersonal skills and values needed to manage them. If an organization's capabilities are scarce, defensible, or hard to imitate, these can form the basis for competitive sustenance and surplus profits. Technology is an important parameter for corporate growth and performance. Process of successful technology acquisition requires special skills, competencies, knowledge, and experience. It is a managerial responsibility and should be done with tact, patience, will and efficiency in best interest of better organizational performance. Technology addresses application of science and engineering knowledge to the solution of problems.

A sustainable competitive advantage comes from the organizational learning and core competencies, i.e., how constantly an organization can improve its technology acquisition and deployment capabilities. The transaction of technical knowledge into useful things or processes involves knowledge that is non-technical. Such knowledge is used to deliver products and services, e.g., managing people and facilities, assuring that products or services are consistent with customer desires, etc. A Successful management of technology requires capacity to orchestrate and integrate functional and specialist groups for the implementation of innovations, continuous testing of appropriateness of existing markets and competencies for exploitation of technological opportunities. Failure to improve internal systems and processes leaves an opportunity for competitors to move ahead with technology-based strategies and create a foundation of competitive advantage. A strategy that stresses technology is not necessarily the best, but if a company decides to exploit technology as a competitive weapon, it had better to do more than merely investing in R&D. The successful pursuit of the technology based opportunities for competitive advantage are not the result of a single set of decisions or a single product being introduced at a single moment of time, but of numerous product releases and many decisions. There is a requirement for continuous learning in order to exhibit the strategic consistency. The technology management provides a means to use new technology to create competitive advantage.



Case Study No 10:-

1. AN OVERVIEW OF TATA TEA LIMITED

TATA Tea was set up in 1964 as a joint venture with a UK based James Finlay and Company to develop value added tea. From a mere share of 3% in the mid 70's to become India's second largest tea producer, Tata tea has come a long way. (www.tatatea.com)

The operations of Tata tea and its subsidiaries focus on branded product offerings in tea but with a significant presence in plantation activity in India and Sri Lanka. The Tata tea brand leads market share in terms of value and volume in India and has been accorded the 'super brand' recognition in the country.

Tata tea also has 100% export oriented unit manufacturing instant tea in the state of Kerela, which is the largest such facility outside the United States.

2. AN OVERVIEW OF TETLEY

In 1837, two brothers, Edwards and Joseph Tetley started to sell tea and became so famous that they set up as tea merchants. In 1856, in partnership with Joseph Ackland, they set up "Joseph Tetley and Co., wholesale tea dealers".

Tea was rationed during World War II, it was not until 1953, just after rationing finished, that Tetley launched the tea bag to the UK and it was an immediate success. The rest, as

they say, is history. The tea bag had captured the public's imagination and desire for convenience. Within 10 years it revolutionized how Britons drank their tea and the old fashioned tea pot had given way to making tea in a cup using a tea bag.

1974 Tetley Tea Company was bought by J Lyons who merged it with the Lyons tea business to form Lyons Tetley. 1978 Allied Breweries acquired J Lyons' Businesses then as Allied Domecq sold them in the 1990s. The Tetley Group was created in July 1995, when a group of investors bought what was then the world-wide beverage business from Allied Domecq. On 10th March 2000, The Tetley Group was sold to Tata Tea Limited, one of the world's largest integrated tea businesses.¹

3. THE HISTORY OF TATA TEA'S MERGER AND ACQUISITION DEALS

Earlier, after a pitched battle among the MNC's in the domestic arena, not many Indian tea manufacturing companies thought of going global. Devour competitors and destroy competition - the mantra that the global conglomerates had been chanting so far, had not gone well with the Indian counterparts.

But fortunately, that doesn't remain the prerogative anymore. The war-averse domestic companies are shedding their inhibitions. The roles, have undoubtedly changed. And, after fighting in out in the global commodities arena, it is time now for a global teacup.

Taking a plunge in the global tea war in the year 2000 was India's corporate tea giant Tata Tea. Though it was not an easy decision to make, that to when the competitor was no less than a stature of Unilever, a global food and beverage behemoth, but the Tata Tea had little choice - shape up or be swapped. It chose the former. And, what else could have been a better vehicle than Tetley for Tata tea to take on the might of global tea giants like Lever and Hillsdown².

But that has not come to it easily. After a long drawn out battle first with Schroder Ventures, followed by a bitter retreat in 1995, and then with Sara Lee, Tata tea finally tasted victory on March 10, 2000 when it bought Tetley for a staggering INR2,135 crore (305 million sterling). Such a deal had never been heard or seen before in the Indian Corporate world. What makes this deal special is the fact that it is the first ever LBO (Leveraged Buy Out) by any Indian company. In fact, this also happened to be the largest ever cross-border acquisition by an Indian company.

But more than the temptation was the urgency to perform, which caused a storm in Tata Tea's cup. Glaring in the face were, and still are, the factors such as fall in exports to Russia, growing competition in the domestic market, and above all the emergence of competitors from Sri Lanka and Kenya, which the tea major could have afforded to overlook at the cost of its own peril. Surely the deal could have not come at a better time than this.

The buy-out which Tata tea masterminded, would pitchfork it to a position where it can rub shoulders with global behemoths like Unilever and Lawrie. The deal gives Tata Tea an instant access to Tetley's worldwide operations, including new territories and product

categories for both Tata Tea and Tetley. The combined turnover of Tata Tea was estimated to be worth INR2800-2900 crore and would put it at the second position in the global arena.

4. BLENDING WITH PERFECTION

With a reserve of just over around INR400 crore in the year 1999-2000, it could not have been possible for Tata Tea to go for such a gigantic acquisition on its own. Or, even bringing such a colossal debt upon its own books could have meant putting enormous pressure on the bottom line. So it went for Leveraged Buyout.

The deal was structured in such a way that although Tata tea retains full control over the venture, the debt portion of the deal does not affect its balance sheet. The deal was tied up through a leveraged buyout based on Tetley's assets so that Tata Tea's gearing is not impaired as a result of it.

Tata Tea created a Special Purpose Vehicle (SPV) - christened as Tata Tea (Great Britain) - to acquire all the properties of Tetley. The idea of the SPV essentially was to ensure that Tata Tea's balance sheet does not suffer additional funding costs, while at the same time, allowing it to benefit from the acquisition of the international brand. The SPV had then capitalized at 70 million pounds out of which Tata Tea had contributed 60 million pounds, which included 45 million pounds raised through its GDR issue. The US subsidiary of the company, Tata Tea Inc., had contributed the balance 10 million pounds. The SPV had leveraged the 70mn pounds equity 3.36 times to raise a debt of 235mn pounds to finance the deal.

The entire debt amount of 235 mn pounds comprised of 4 tranches whose tenor varied from 7 to 9.5 years, with a coupon of around 11%, 424 basis points over the LIBOR. Of that, the Netherlands-based Rabobank had provided 215 mn pounds while venture capital funds Mezzanine and Schrodgers each contributed 10mn pounds.

The debt was divided into four tranches, namely - A, B, C and D. While A, B, C were senior term loans, tranche D was a revolving loan that takes the form of recurring advances and letters of credit. Of the four tranches, the money from tranches A and B was meant for funding the acquisition, while tranches C and D were meant for capital expenditure and working capital requirements respectively.

Tranche A was a 110 million pounds loan scheduled to retire in 2007 this year through semi-annual installments. Tranche B was a 25 mn pounds loan which is also maturing this year in 2007 and would be paid back in two equal installments at the end of 7.5 years and 8 years respectively. Tranche C was a 10 million pound loan, maturing in 2008 and would also be paid in two equal installments at the end of 7.5 and 8 years respectively. Tranche D was a 20 million pound loan which was made available through advances, letters of credit, overdrafts and is due to retire also this year.

The debt was raised against Tetley's brands and physical assets. The valuation of the deal was done on the basis of future cash flows that the brand was expected to generate in the foreign market as well as the synergy and benefits that Tata Tea was expected to receive.

Though the actual cost of the Tetley takeover comes through 271 million pounds, Tata tea spent 9 million pounds on legal, banking and advisory services and another 25 million pounds for Tetley's working capital requirements and additional funding plans, thereby swelling the total acquisition cost to 305 million pounds. Since entire securitization was based on Tetley's operations, Tata Tea's exposure was limited to the equity component only that was 70 million pounds only.

5. THE CHALLENGES

The challenges before the Indian tea companies were manifold in the last decade. And it is not an exaggeration to say that their honeymoon with Russia was over then; the vigor seemed to be out of the cup for most of them.

Rising competition from African nations such as Kenya and Malawi, where production of tea is new and expanding, posed potential threats to tea exporters from India. Progressive dismantling of quantitative restrictions had put the margins further under pressure. Adding to the woes was the fact that the Indian tea exports to Russia had been continuously declining. In fact the exports to Russia fell drastically over the last decade.

In 1999, the exports were around 87 million Kg, which was almost half of 160 million Kg exported in 1989. The overall export also fell substantially. During the last fiscal itself, the exports saw much volatility. The total exports fell of tea fell from 27,839 ton recorded in August 1999 to 9,766 ton in February 2000.

The litany of woes of the tea players also stems from the fact that the traditional user markets like the UK and Ireland where Tea consumption, historically, had been very high, however, actually has been showing a decline in the tea consumption. As per the rough estimate, The UK and the Ireland accounted for one-third of the world's tea consumption in 1955. However their share in tea consumption currently is around 5% only. Though, the popularity of tea has been growing rapidly in developing countries like China, India, Pakistan and the Middle-Eastern countries, the worrying factor is that the traditional savior of Indian Tea companies, Russia, is no more an assured market for it⁵. The Tea consumption which grew rapidly in the erstwhile USSR in the eighties has actually declined after its disintegration. In developed countries such as USA, Canada and Japan also the consumption is quiet stagnant.

In recent years, the tea prices have falling worldwide because of an oversupply in production. While world market prices in real terms have declined the cost of production, on the other hand, has increased steadily thereby putting pressure on the producer's margins. Moreover, big buyers like Russia, Iran and Iraq have become inactive due to political reasons. Above all, the fact that Sri Lanka is selling tea to Russia at far lower prices than India, has also been causing major concerns⁶.

It has to be mentioned that tea prices show a great variation due to enormous diversity of quality and unlike coffee, there is no single world market for tea, and prices are subject to strong fluctuations. Though, given India's major share in the world tea production (around 30% of world tea production in 1995), it might be expected that this would give the country a key position in establishing tea prices, but this is not the case. And, although the quality and quantity of the Indian tea crop has some effect on tea prices, the impact is limited. The fact is that what is of far importance is the economic relationships and the power of transitional companies.

And these apart, the premium that Indian tea commanded in the past has also been gradually eroded through the quality of improved African teas. Which means, to ward of the challenge from African countries like Kenya and Malawi, marketing campaigns have to be built up quiet aggressively and that could be easier said than done. All these, no doubt, have caused much storm in the teacup of domestic tea majors including biggies like Tata Tea and HLL.

6. FLAVOUR OF SYNERGIES

In the backdrop of the difficult domestic scenario and dwindling exports to Russia it was not difficult to conclude what prompted Tata Tea to go for an acquisition, that too at such a mammoth scale. As far as the scale of acquisition is concerned it could be said that nothing less than this kind of acquisition could have been meaningful for the company.

That is because the domestic market comparatively growing at a better rate than the other developed markets, 3% versus 1%, and rival HLL having benefits of access of access to parent Unilever's latest technology in product innovation, development and packaging, it could have been a difficult task for Tata Tea to go on its own to develop such technologies and to face the competition. With the threats of imports from rival companies looming large, its woes could have aggravated even further.

The major driving force behind Tata Tea- Tetley deal was the fact that Tetley fitted perfectly into Tata Tea's globalization drive and could be a perfect launch vehicle to achieve greater synergies in the global arena. This seems understandable because of the three major factors:

- The acquisition brought with it a greater market penetration.
- This helped Tata Tea's operating efficiency, as Tetley's operating margins were superior in comparison to Tata Tea, 20% vs 14% in 1999-2000.
- The acquisition would have resulted in instant expansion of product lines of Tata Tea- Tetley combine.

The synergies that would have accrued to the combine entity as a result of the deal were supposed to be quite significant. On the one hand, while Tata Tea was supposed to get access to Tetley's strong brands and its worldwide distribution network and about INR1900 crore of sales, on the other hand, Tetley was supposed to benefit from Tata Tea's competencies in managing plantations and processing units. Tata Tea though didn't have expertise in blending and branding. It was here that the acquisition was coming handy to Tata Tea, as Tetley had proven expertise in the area of product innovation and in sourcing tea from auction houses and which also was a major blending and packaging company and owns a host of well-known international brands which the latter can leverage.

Tea is usually exported at a relatively early stage in the production chain and blending and packing, the most lucrative part of the tea trade, is mostly done by the tea companies in the buyer country. The large profits therefore don't accrue to the tea producing countries. The big money is made abroad. In Europe, 30% to 50% of the consumer price of tea goes to blending, packaging, materials and promotion.

It was there that the acquisition would help Tata Tea to take advantage of the existing scenario by virtue of Tetley's proven skills in blending and branding, not to mention exotic packaging, which too fetches higher premiums. Also, many producers try to sell processed tea bags or repacked consumer units, but the export of ready-for-use tea is often hampered by poor market information and the absence of funds for expensive marketing strategies.

It could be rightly said then that the deal was supposed to bring together the two companies, one of which was the largest integrated tea company (Tata Tea) in the world, while the other world's largest brand (Tetley). Together they make a world-class integrated outfit. But the rival Unilever was not far behind either. In fact, it became even more aggressive after the Tata Tea- Tetley deal came through. The Unilever through its Indian outfit HLL acquired Rossell Industry's tea gardens, and stepped up efforts to vertically integrate its operation by acquiring some more tea garden in India and African nations like Kenya, Uganda and Mozambique.

The deal was supposed to facilitate downstream segment also. Tata Tea has over 60 tea gardens in India and Sri Lanka, besides its own blending and packaging units. Tetley on the other hand, buys tea from the major auction markets of the world and processes them to be sold under its own brands like Earl Grey, English Breakfast and Traditional Afternoon - in the US, Canada UK and Australia. Both the companies were supposed to streamline their downstream operations quite efficiently thereby cutting the costs. Tetley plans to give special thrust to the US market, which has been fast emerging as a growing tea market, with consumers shifting from coffee to tea due to health reasons. This in turn was thought to help Tata Tea to push greater volumes in the instant tea segment, where it had so far struggled to get a strong foothold.

In the domestic market, on the branding and packaging front, there has been a major strategic shift towards brand consolidation. In fact, with increase in the value added segments over the years, the share of this segment has risen quite significantly. The value additions, through changes in the product forms, branding, consumer awareness and delivery systems, which has been part of the winning tool in the international markets was bound to be replicated in the Indian markets too. And it was there that the Tata Tea - Tetley combine's wider product portfolio downstream would complement the upstream synergies. As while, Tata Tea catered primarily to the lower end of the market segment, Tetley had presence in the premium segment. Apart from that, adding to Tata Tea's brand strengths in



developing packaged tea was Tetley's well-entrenched presence across a wider range of categories such as decaffeinated, herbal, lemon tea, and tea bags, etc.

As far as other major benefits from the deal were concerned, the domestic company can benefit from the standardized management practices including quality performance norms and consumer focus of Tetley, the world leader in tea bags. This was supposed to be more so when new products are envisaged for the Indian markets. On the other hand, Tata Tea's strong R&D base and expertise in tea cultivation and manufacturing was immensely helpful to Tetley.

Post-acquisition, the decision was that the two organizations work under a unified global strategy. The combine strengths were thought to be helpful to create opportunities to expand sales in both the existing and new markets and realize synergies. Apart from that, the two companies' breadth of experience and vertical integration was equipping them to compete anywhere in the world and that assumed importance in the context of WTO, which would terminate tea import curbs under its predetermined timeframe⁹.

The joint buying power and commercially relevant use of tea produced by Tata Tea was also supposed to facilitate cost control. Also among the other immediate priorities was the strategy to increase tea bag sales in East Europe and to improve upon the currently token presence of Tetley in the packet tea segment. On the product size, Tetley proposed to promote the draw size string bags in a bigger way, because of the higher margins and planned to replace all the round tea bags cartons with an innovative soft-pack format then.

Another area that Tata Tea was eyeing was the private label tea business in the UK. Tetley which holds sway over the market, with 6 out of every 10 retailers sourcing tea from it to sell under their own brand names, was a perfect launch vehicle to push greater volumes into that highly lucrative segment, more so when its exports to the Russian markets had been on a continuous decline. The key reason why the private label was lucrative was that there were no marketing costs attached to it. That meant, by sourcing tea directly from its 26,000, hectares of gardens, or from the auction markets, Tata Tea would be able to boost its margins. Surely the deal could not have come at a more opportune time than that one for Tata Tea.

The acquisition impact on Tata Tea's presence in the global tea trade aside, Tata-Tetley Ltd., the already existing joint venture between the two companies, was seen aligned with the group's international operations. Equally significant was the domestic company's plan to open an instant tea factory in South India, which was improved for the instant tea shipments to the US, where Tetley had a major presence. Tata tea hoped to garner greater market share and stave off the competition, riding on Tetley's strength.

Acting swiftly, Tata Tea initiated a comprehensive operation restructuring of the world's second-largest tea company, in a bid to move a step closer to unseating Unilever Plc. The restructuring took forms of the broader plan to venture out into new market in East Europe, Russia, the CIS and West Asia through both the joint venture and franchise route. The move was critical to increasing the UK based transitional earnings potential as Tata Tea had leveraged the company's future cash flows to fund the 271 million pound acquisition.

As part of the recast plan, Tetley, which had the world's single largest tea brand, was shifting its focus from black tea to higher value added products like green tea, flavored tea and herbal tea.

7. GLOBAL SCENARIO

The tea industry worldwide in the last decade was going through a phase of transition. And, over the past few years many new development have taken place. The spate of mergers and acquisitions, in the tea industry, had touched the Indian shore in a big way. And it was the awakening call that got a prompt response and witnessed the coming of the world's two tea giants, Tata Tea and Tetley, together. Surely, there was a flavor of uneasiness in everyone's cup of tea. The following factors could throw a light on some of the reasons for this uneasiness and that concerned one and all in the tea industry worldwide.

(1) Growing Disparities

Developing countries in South Asia and East Africa account for 85% of the world tea production and exports. India and Sri Lanka are dominant in both. Developed countries account for about 62% of the world tea imports. The larger tea imports include the UK, The US, the Netherlands, Australia, Canada, Japan, South Africa, Ireland and Russia.

India and China rank as the largest and second largest in tea production as well as consumption. They export about a quarter of their production and have about 30% of share in global trade. Kenya Indonesia and Sri Lanka produce 25% of the world tea but control 50% of the global trade. They export around 85% of their production.

During the last four decades Kenya has increased tea production by tea production by 25 times. China tea production has witnessed a CAGR of 4.6%. On the other hand, the production growth has been relatively much slower in India and Sri Lanka at 2.3% p.a. and 0.9% p.a. respectively during the same period. The area under cultivation, during the last four decades has gone up by 33% in India whereas in Kenya, it got multiplies the times during the same period.

Tea production is concentrated in a few countries due to suitable climate, soil and availability of cheap labor. India is placed poorly as far as labor cost and crop-productivity is concerned. The stringent labor laws have also caused much hardship to the domestic companies. Whereas countries like Sri Lanka and Kenya are not only having not-so-stringent labor laws, but also enjoy superior crop-yield and cheaper labor¹². The UK is the second largest importer of tea after the Russian federation. In 1995, the UK imported around 1.36 lakh tons of tea, around 135 of total tea imports. This is more than that imported by the rest of Europe. Which means that any changes in the UK market would, therefore, have a direct impact on producers? But this traditionally staid market is currently undergoing considerable change. The demand of tea has been slowly but steadily been falling as customers have been switching to coffee and especially to soft drinks. Nevertheless, tea is still the most preferred and number one drink there and the world tea major's have been fighting hard to maintain market share and stimulate the demand. Total demand for tea was estimated at 2.7 bn kg in 1998, which is growing at about 2% p.a.

(2) Competing For The Global Tea Cup

The world over, there has been a discernible trend towards consolidation of the existing tea plantation in the hands of a few large corporates, stemming from the compulsions of production and economies of scale. This had been in the form of estates and companies being bought over by larger estates to have a larger corpus of tea. Most tea companies had been sharply redefining their scales of production costs and are being looked at more closely. And this trend is expected to continue in future too, in the wake of increased competitiveness which would compel companies to go for a complete reorganization of production parameters be its machinery, leaf handling, plucking standards, and configuration in drying technology, etc.

Even today, the tea industry worldwide is highly concentrated in the hands of a very few firms like Unilever, Hillsdown Holdings, Lawrie Group, James Finlay, The Cooperative Wholesale Society, Tata Tea, etc. And above all, the concentration of the industry is such that the top three firms have a 60% share of the market of the UK, 9% in France, 67% in Germany and 66% in Italy.

These companies enjoy tremendous bargaining power over the others in terms of pricing. This could be gauged from the fact that though the prices of tea is largely determined by supply and demand, large tea companies such as Unilever and Tetley have tremendous influence on supply and demand and thus on the price fixing process.

As far as market concentration is concerned, this too is extremely high and around 90% of the western trade is in the hands of seven transnational's and almost 70% of the world tea production is sold by transnational's. The market power is a major determinant at tea auctions. With their buying policy, these companies strongly influence both price movement and the demand for certain qualities of tea. While on one hand, their ownership of both plantations and processing factories give them the



advantage of horizontal integration, on the other hand, they also have the vertical integration as they control transportation companies, shipping agencies and so on. This concentration of power, with companies sometimes controlling the entire production process from tea shrub to tea bag, offers ample scope for manipulation.

Transnational giants can afford such auctions thanks to their high degree of flexibility, their buffer stocks and their speculative auctions.

(3) Demand Pattern

Shifts in the consumption of demand for tea in the developed importing countries have had unfavorable effects on aggregate export earnings from tea. The increasing use of tea bags and soluble instant tea effectively reduces the quantity of tea needed per cup and also raises the demand for plain cheaper tea at the expense of that of high quality. Tea bags, alone, account for about 10% of the volume of world production. Factors that seem to have stimulated consumption of instant tea include its ease of use as a cold drink and growing prevalence of vending machines. It is these changes in the consumption patterns of tea that contribute to the decline in tea prices.

(4) Changing Faces Of Tea

Tea has undergone a shift in its image in many markets. There has been a shift in the production form from hot to cold, from the conservative to the flavored, from sheer cup page to convenience. And, it is the transnational tea companies that have cashed in on this trend.

Tea bags, the most common form of value-addition, dominate the world market. Almost 75% of the UK tea drinking population prefers tea bags, tagged, round and pyramid shaped bags for a convenient brew. Tetley remains the market leader in tea bags right from its inception way back in the 40's.¹⁴

Significant innovations have been introduced in the instant tea segment also. It has been most preferred form tea drink in the US, so far. Recently, the European markets have also evinced interest in instant tea.

Product innovations have continued with introduction of iced tea, specialty tea, and gourmet tea in the ready-to-drink market. In the US, this category has grown by leaps and bounds. Flavored tea is also fast catching up the fancy of both tea drinkers and makers as well, in the western markets.

(5) Gatt (WTO) Impact on World Tea Economy

In the last decade there has been a lot of hue and cry over the WTO impact, especially in the domestic market. But the domestic industry's fear about one of the major implications of GATT Treaty (which was in the form of reduction in import tariffs) does not seem to have much substance. It was to be mentioned there that WTO required member nations to reduce import duty by 24% from the existing rates, by 2005. Among the importing nations, Pakistan and Egypt have high import duty of 45%. The developed nations (UK, USA) already have nil duty and therefore, require a special license. The impact on Indian domestic industry would have been negligible. Tariff reduction was likely to cause higher imports by Pakistan, Iran, Iraq and Egypt. India and other exporting countries were supposed to benefit from free trade and lower trade barriers. According to a rough estimate done in 1999, the consumption was supposed to grow at 3.3 % p.a. in the developing nations and at 1% p.a. in the developed nations, till the year 2005. Developing countries share in the world consumption was estimated to rise from 63% to 72%.

8. FINANCIAL ANALYSIS OF TATA-TEA PRE-ACQUISITION

An analysis of Tata Tea's financials for the last five years ending March 31, 1999 suggests that there had been a significant improvement in the pre-tax income from operation. It increased from INR1180.60 million in FY '98 to INR1578.10 mn in FY' 99. The pre-tax income in 1998 itself grew tremendously by 74% over previous years figure's of INR.4854 crores. Though other income has been showing a decline over the last four years, it increased marginally in 1998-99.

Net sales and net profit registered at CAGR of 20.8 % and 21.4% over the last five year period ending

March 31, 1999. On a y-to-y basis, net sales declined 2.5% in the FY'99, due to discontinuation of company's international coffee trading business. The continuing business recorded 22% y-o-y growth in sales in FY'99.

Return on net worth (RONW) had been showing a healthy improvement on y-o-y basis. It grew to 30.82% in 1999, as against 28.53% recorded in 1998. It showed a huge jump in 1998 as against 18.55% registered in 1997. Return on capital employed (ROCE) too has improved gradually over the period, indicating efficient utilization of funds and improved productivity. It grew to 37.60% in 1999 from 35.07% registered in 1998.

Both Operating Profit Margin (OPM) and Net Profit Margin (NPM) rose significantly to 26.71% and 14.55% in 1999 from 22.05% and 11.62% respectively in 1998. PBDIT margin excluding other income jumped from 18.9% in FY'98 to 23.8% in FY'99, despite rise in packing, advertising as well as employee cost, mainly on account of lower raw material, cultivation and manufacturing costs.

Although Cash Flow, as a percent of gross sales, declined substantially to 18.86 % in 1999 from 25.07% in 1998, it clearly showed considerable improvement over a low of 6.47% recorded in 1997.

Value sales of tea, both loose as well as poly packs, registered a growth of 23% on y-o-y basis, whereas volume declined by 2.4% on y-o-y basis, indicating higher realizations. Both the gross profit margins and the net profit margins have risen significantly over the years. The gross profit margin grew to 26% in 1999 from 23% in 1998. The net profit margin, at the same time, rose to 13.6% from 11.6%, during the said period.

The tax outgo has been showing a continuous increase during the last few years. And, in fact, recorded almost 100% jump in 1997-98 when it rose to INR.420mn as against INR. 240mn in 1996-97. In 1998-99, the total tax outgo was to the tune of INR 560mn. The cash profit recorded similar growth between FY'96 and FY'99. It grew to INR.14, 643mn in 1998-99 from INR. 558.2mn in 1995-96.

The inventories recorded a significant jump in 1999 to INR.487.2mn from INR.205.3mn in 1996. Sundry debtors have shown a declining trend in the year 1998-99. It fell to INR 11.8mn in 1999 from INR 356.9mn in 1998. Sundry creditors too have shown a similar trend during the period. the decrease in sundry creditors was to the tune of INR 256.7mn as against INR 92.7mn in 1998.

Fixed asset increased to the tune of INR 503.6mn in 1999 compared to an increase of INR 432.9mn in 1998. Investments were to the tune of INR 532.8mn in 1999. Loan and advances declined to the tune of INR 380.8mn in 1999.

Raw material cost fell to INR 232.18 crore in 1999 from INR 286.96 crore in 1998 on account of lower purchase of finished goods. It declined quite substantially to INR 35.40 crore in 1999 as against INR 131.93 crore in 1998.

Gross working capital cycle increased from 176 days in 1998b to 185 days in 1999. However, net working capital cycle fell to 126 days in 1999, as against 132 days in 1998, as a result of rise in creditors' days, which grew to 59 days in 1999 from 44 days in 1998: reflecting company's ability to avail credits for a good number of days from its creditors. Also, fall in debtors days to 35 in 1999 to 43 in 1998 meant efficient management of receivables. as a result of rise in creditors' days, net working capital requirements fell to INR 197.50 crore in 1999 as compared to INR 227.82 crore in 1998.

Short-term liquidity got affected, although marginally, as cash-to-current liability ratio fell slightly to 0.26 in 1999 from 0.28 in 1998. Quick ratio similarly showed a marginal decline to 0.51 in 1999 from 0.53 in 1998. Current ratio fell to 1.53 in 1999 from 1.72 in 1998.

The excise duties saw a steep rise to INR32.96 crore in 1999 from INR6.72 crore in 1998. The sales and advertising costs too rose significantly to INR102.16 crore in 1999 from INR70.58 crore in 1998. Of this, advertising expenses, alone, increased sharply from 5.1% of net sales in FY'98 to 8.7% of net sales in



FY'99. The distribution cost on the other hand actually declined, albeit marginally, to INR17.10 crore in 1999 from INR17.71 crore in the previous year.

Interest cost declined by 24% on the y-o-y basis in FY'99, with the prepayment of the part of the foreign currency loan from ICICI bank and repayments of NCDs. This was result of the company's short-term debt portfolio. Keeping in view of the remaining tenure of this loan and the depreciation in the value of rupee vis-à-vis US dollar, the restructuring of the loans could work out to be effective. As a consequence of decline in debt position, interest coverage ratio rose to 7.13 in 1999 from 5.60 in 1998, indicating improved debt-servicing ability.

Though, the debt-to-equity ratio declined from 0.8 in 1998 to 0.5 in 1999, as a result of prepayment of FOREX loan from ICICI, with the issuance of 75.98 lakh Global Depository Receipts (GDRs) to part finance the acquisition of Tetley, it would rise, albeit marginally. Depreciation has increased over the years with the company incurring capital expenditure on modernization of its facilities and acquisition of plantations. In 1999 itself the depreciation rose to INR17.67 crore to INR14.66 crore in 1998.

The company distributed dividends to the tune of INR53.49 crore in 1999, up from INR49.11 crore distributed in 1998. Cash profits were to the tune of INR146.43 crore in 1999 as against INR116.83 crore in 1998. Total reserve and surplus at the end of the financial year 1999 was a comfortable 399 crore. The effective tax rate has been around 32-33% in the year 1998 and 1999.

(Data source: annual reports of Tata-tea from the financial year 1995-96 to financial year 1999-2000).

9. LEVERAGED BUY-OUT

An LBO is defined as the acquisition, financed largely by borrowing, of all the stocks, or assets, of the hitherto public company by a small group of investors. In an LBO, debt financing typically represents 50% or more of the purchase price. The debt is secured by the assets of the acquired firm and is usually amortized over a period of less than ten years. As funds are generated by operations or from the sales of the assets of the acquired firm the debt to be paid off is scheduled. The sale of the assets occurs when the investor group is motivated to take control in part because of what it considers unwise or ill-fitting acquisitions by the firms in the past.

There may be limited equity participation on the part of outside investors such as pension funds and insurance companies often with the provision that the equity interest would be repurchased after pre-determined period to provide a specified yield.

Following completion of the buy-out, the company is usually run as a privately held corporation rather than a public corporation, at least for some years, after which resale of firm at a profit is anticipated.

LBO is implemented for the following:

To generate additional cash flow from interest tax shields. Reduce capital expenditures.

Sale of assets.

Studies have shown that high leveraged, concentrated equity ownership by managers and monitoring by the LBO sponsor firm creates an organization form whose incentive structure leads to value maximization.

In particular, increasing the proportion of equity owned by managers can provide increased incentives for managers to create shareholder wealth. In addition, substantial debt service obligations can force managers to use particular care in seeking investment opportunities.

Finally, non-management insiders typically own a significant proportion of outstanding equity and exercise considerable control over managers through the board of directors. Thus they enhance monitoring within the organizations. Other studies have documented an improvement in the operating performance as the change in the organizational incentives.

Case Study No 11:-**Valuation of Equity Shares According to Guidelines Issued by the Erstwhile Controller of Capital Issues****Facts**

A private company G India Pvt. Ltd., New Delhi is a joint venture company having 85% stake of non residents. It has been incurring losses. To fund the operations, it has allotted further 200,000 equity shares of ₹ 10 each keeping the ratio of foreign and Indian shareholders as intact.

The Company has approached us for carrying out a valuation of Equity Share of the Company for the purpose of compliance with regulations of the Reserve Bank of India for issue of shares to non residents.

Methodology adopted

According to FEMA guidelines, for Issue of shares and convertible debentures to persons resident outside India under the FDI Scheme, Valuation of shares is to be done by a Chartered Accountant in accordance with the guidelines issued by the erstwhile Controller of Capital Issues.

G India Private Limited**Table 1: Computation of Value of An Equity Share as per Net Assets Valuation Method**

		Amount As at 31.3.07 (Audited) ₹/lacs
A. Fixed Assets		
Gross Block	2,177.46	
Less : Accumulated Depreciation	571.65	
Net Block	1,605.81	
Capital Advances	15.50	1,621.31

	Current Assets, Loans & Advances		
B.	Inventories		0.25
C.	Sundry Debtors		205.13
D.	Cash & Bank Balances		63.56
E.	Loans & Advances		29.80
F.	Total Assets (A to E)		1,920.05
G.	Preference Share Capital		-
H.	Secured Loans		-
I.	Unsecured Loans		813.61
J.	Current Liabilities & Provisions		182.92
K.	Deferred Tax Liability		17.29
L.	Share Application Money		175.68
M.	Contingent Liabilities		-
N.	Net Assets [F-(G+H+I+J+K+L+M)]		730.55



	Represented By :		
	Equity Share Capital	184,624,000.00	1,846.24
	Free Reserves		-
	Less : Debit Balance in Profit & Loss a/c (Being Losses)	111,569,280.00	1,115.69
	Less : Miscellaneous Expenditure not written off		-
O.	Net Worth		730.55
P.	Add : Fresh Capital issue (face Value)		200.00
Q.	Total No. of Equity Shares including Fresh		930.55
R.	Issue (Face value ₹ 100/- per share) Exising Equity shares as on 31.3.2007 Fresh Issue of Equity shares on 31.3.2008	1,846,240 <u>200,000</u>	2,046,240
S.	Net asset Value per Share (₹/ Share)		45.48

Table 2: Computation of Value of An Equity Share as per Profit Earning Capacity Value Method

	Amount Year ended 2006-07 (Audited) ₹/lacs	Amount Year ended 2005-06 (Audited) ₹/lacs	Amount Year ended 2004-05 (Audited) ₹/lacs
Revenue			
Sales	1,382.29	1,135.65	1056.07
Other income	7.30	6.68	19.93
Increase\ (Decrease) in Stock	0.22	(0.29)	(2.24)
Total	1,389.81	1,142.04	1,073.76
Less Costs			
Cost of Sales	17.94	126.35	96.12
Personnel Costs	896.58	813.64	679.22
Administrative Costs	358.56	363.46	423.08
Interest & Financial Charges	9.05	2.37	2.13
Total	1,282.13	1,305.82	1,200.55
Earnings/(Losses) before Depreciation, Write offs & Taxes	107.68	(163.78)	(126.79)
Less : Depreciation	156.47	143.60	150.84
Less : Preliminary Expenditure written off	0.00	0.13	0.13
Losses before Taxes	(48.79)	(307.51)	(277.76)
Average Profit/(Loss) before tax - Simple Average		(211.35)	

Less : Provision for Fringe Benefit Tax & Deferred tax		5.65	
Profits/(Losses) after Taxes		(216.99)	
Add : Contribution to profit by fresh issue, if any		0.00	
Total Profits/(Losses) after Taxes		(216.99)	
Average Profit/(Loss) before tax			
No. of Equity Shares including Fresh Shares (₹10/- per share)		2,046,240	
Earnings/(Loss) per share (EPS)	Negative Value	(10.60)	
Profit Earning Capacity Value @ 17.5% Capitalisation Rate (As the Company has suffered losses in all the three years, PEC Value will have to be regarded as Nil in this case)		Nil	

Underlying Facts And Assumptions:

The rate of 17.5% has been taken for capitalising the profits of the Company to arrive at the value of shares of the Company. This rate of capitalisation is the rate generally employed to value the business of a intermediate company as prescribed by the erstwhile Controller of Capital issues (CCI). Since the Company is engaged in Software Development, this rate has been considered appropriate. CCI had prescribed a rate of 15% & 20 % for manufacturing companies and trading companies respectively.

Table 3 : Computation of the Fair Value of An Equity Share

	Method of Valuation	Value of Share ₹
1	Net Assets Value Method	45.48
2	Profit Earning Capacity Value Method	Nil
	Average	22.74
	Less : Discounting by 15% to account for	
	restricted mobility (being unlisted share)	3.41
	Fair Value	19.33

Conclusion:

The fair value of the shares of the Company is computed by taking simple average of the share values derived by the NAV and PECV methods. As the Company has suffered losses in all the three years, PEC value will have to be regarded as Nil in this case. According to the CCI guidelines, where PEC value is Nil or negligible, the fair value should be limited to half of the Net Assets Value.

The value arrived at as aforesaid has been further discounted by 15% to take account of the restricted mobility the share (being share of an unlisted company). On the basis of the computation of the share value of the Company, the fair value of an equity share works out at ₹ **19.33** (Refer Table 3).

Case Study No 12:-**Valuation of Equity Shares According to FEMA Guidelines**

M/s K Electro-Chemicals Private Limited, New Delhi, India is a joint venture between M/s S GmbH, Germany and Indian promoters holding 49% and 51% respectively, of the total paid up equity share capital of the JV Company. The business of the Company is manufacturing, development and



marketing of electroplating and special /other chemicals for cleaning, pretreatment, finishing and post-treatment and other related applications.

The Company has been incurring losses since the joint venture was done for many years as the technology for manufacture of pre treatment chemicals offered by the foreign collaborator did not succeed in Indian market, resulting into low turnover and low profits.

M/s S GmbH has offered to sell its entire 49% equity share holding in the Company comprising of 147,000 equity shares to the Indian promoters.

The Company has approached us for carrying out a valuation of Equity Share of the Company in connection with the aforesaid proposal of disinvestment of equity shares by foreign investors.

A.	Value of Equity Share based on EPS linked to Price Earning Multiple	₹
	Earning per share (EPS) 1.98 (as per latest audited financial statements for the year ended 31.3.2008)	
	Average P/E Multiple of BSE National (BSE 100) Index for November, 08	13.41
	Discounted P/E Multiple at 40%	8.05
	PEC Price per Share (₹/ Share)-	19.93
B.	Value of Equity Share based on NAV linked to Book Value Multiple	
	Net Asset Value (NAV) (as per latest audited financial statements for the year ended 31.3.2008)	20.88
	Average Price to Book Value Multiple (P/B) Multiple- for Nov,08	2.31
	Discounted P/B Multiple at 40%	1.39
	Price per Share baesd on P/B Multiple (₹/ Share)	28.94
C.	Higher of A & B	28.94

Case Study No 13:-

Valuation of Equity Shares According to SEBI Guidelines SEBI (Substantial Acquisition of Shares and Takeover) Regulations, 1997.

Background of the Offer

BEIL of UK has entered into a Share Purchase Agreement [Offshore SPA 1] on February 14, 2005 with Unocal International Corporation, USA [hereinafter referred to as the "Indirect Seller"], a 100% subsidiary of Union Oil Company of California, to acquire the entire equity share capital of UBL, UK which owns and holds 1,52,81,633 equity shares of ₹ 10/- each representing 26.01% in the paid up equity share capital of Hindustan Oil Exploration Company Ltd, the target company (HOEC) for cash at a negotiated acquisition price of US\$ 26,010,000 [₹ 13,71,57,200] [Exchange Rate: 1 US\$ = ₹ 43.72 on February 14, 2005. Source: rbi.org.in]. The acquisition is an unconditional and absolute transfer of shares by a foreign shareholder to a foreign shareholder outside India at the holding company level and these shares are already registered in the name of BEIL in the records of UBL.

BEIL, pursuant to the provisions of Regulation 10 and 12, made an Open Offer to acquire 1,17,48,990 Equity Shares representing 20.00% of the paid up equity share capital of HOEC at a price of ₹ 92.41 per fully paid up equity share ("Offer Price").

Equity shares of HOEC were listed on BSE and NSE where they were frequently traded and at DSE, CSE and MSE where they were infrequently traded.

Justification of Offer Price :

Parameters as per Regulation 20(4)	Price per share – At NSE	Price per share – At BSE
The negotiated price paid by the acquirer to Unocal International Corporation for the indirect acquisition of shares held by UBL in HOEC as per Offshore SPA 1 dated February 14, 2005.	₹ 74.41*	₹ 74.41*
The price paid by the Acquirer Company and PAC for acquisitions, if any, including by way of allotment in a public or rights or preferential issue, during the 26 week period prior to the date of Public Announcement	Not Applicable	Not Applicable
Average of the weekly high and low of the closing prices of HOEC during the 26 weeks preceding the date of PA	₹ 83.27	₹ 83.21
Average of the daily high and low prices of HOEC during the 2 weeks preceding the date of PA	₹ 92.41	₹ 92.05

* US \$ 1.70 per share of HOEC (Exchange Rate: 1 US \$ = ₹43.72 on February 14, 2005)

Parameters as per Regulation 20(5)	Price per Equity Share of ₹10/- each of HOEC
The negotiated price paid by the acquirer to Unocal International Corporation for the indirect acquisition of shares held by UBL in HOEC as per Offshore SPA 1 dated February 14, 2005.	₹ 74.41*
The price paid by the Acquirer Company and PAC for acquisitions, if any, including by way of allotment in a public or rights or preferential issue, during the 26 week period prior to the date of Public Announcement	Not Applicable
Other parameters based on the audited financial results for the year ended on March 31, 2004	1. Book Value per share ₹ 29.94 2. Return on Networth 12.58% 3. Earning Per Share ₹ 3.77 4. Offer P/E [Price Earning Ratio] ₹ 24.51 5. P/E multiple for the Industry category, i.e., "Oil Drilling/Allied Services" is 11.8 [Source: "Capital Market" dated January 31, 2005 to February 13, 2005] 6. Fair Value of the share keeping in view Supreme Court decision in HLL case ₹ 54.06
Other parameters based on the unaudited financial results for the 9 months period ended on December 31, 2004	Book Value per share ₹ 36.92 Return on Networth 18.91% Earning Per Share ₹ 6.98
	Offer P/E [Price Earning Ratio] 13.24 P/E multiple for the Industry category, i.e., "Oil Drilling / Allied Services" is 11.8 [Source: "Capital Market" dated January 31, 2005 to February 13, 2005] Fair Value of the share keeping in view Supreme Court decision in HLL case ₹ 54.06



Share price arrived at as per Regulation No. 20(5) of SEBI (Substantial Acquisition of Shares and Takeovers) Regulations in light of Supreme Court Judgment on Hindustan Lever case keeping in view the guidelines of erstwhile Controller of Capital Issues.

Net Asset Value [Nav]

Latest audited Balance Sheet available as on the valuation date is for the 12 months period ended on March 31, 2004 and forms the basis for estimating the NAV of the Company.

NAV of the Company per share is ₹ 29.94 as on March 31, 2004 and ₹ 36.92 as on December 31, 2004 [Annualized based on unaudited published financial results for the 9 months period ended on December 31, 2004.]

Market Based Value

The average of daily high and low prices of the shares of HOEC on National Stock Exchange [NSE] for the 2 weeks period ended on February 14, 2005 is ₹ 92.41.

The average of daily high and low prices of the shares of HOEC on Bombay Stock Exchange [BSE] for the 2 weeks period ended on February 14, 2005 is ₹ 92.05.

The average of weekly high and low of the closing prices of the shares of HOEC on NSE for the 26 weeks period ended on February 14, 2005 is ₹ 83.27.

The average of weekly high and low of the closing prices of the shares of HOEC on BSE for the 26 weeks period ended on February 14, 2005 is ₹ 83.21.

Source for share price and volume data: NSE web site and BSE website.

Note: Based on the information available, Equity Shares of HOEC are deemed to be frequently traded on BSE and NSE whereas Equity Shares are deemed to be infrequently traded on the Stock Exchanges at Delhi, Calcutta and Madras.

Profit Earning Capacity Value [PECV]

We have considered the last 3 years' audited financial results for the period [12 months period ended on March 31, 2002, March 31, 2003 and March 31, 2004] for assessing the profits.

It is noticed that average of NAV and PECV is less than 2 weeks average market price on NSE by more than 20% and hence PECV has been re worked at 11.5% capitalization rate with regard to 3 years' average net profit after tax as stipulated in CCI Guidelines under the head "Fair Value".

Value of the Equity Share of HOEC based on profit earning capacity would be ₹ 24.28.

Share Valuation on Applying the Principles laid down by Supreme Court in the Judgment on Hindustan Lever Case.

Considering Supreme Court decision in HLL Employees Union vs. Hindustan Lever Ltd (1995), 83 Com case 30, wherein the Hon'ble Court opined that Fair Value for a listed company could be assessed based on the following weightages:

Net Asset Value	1
Market Based Value	2
Earning Based Value	2

Considering above:

Estimated Fair Value of Equity Share of HOEC is ₹ 50.40 as on March 31, 2004 and ₹ 51.79 as on December 31, 2004 [Annualized] whereas Estimated Fair Value of Equity Share of HOEC based on re worked PECV is ₹ 52.66 as on March 31, 2004 and ₹ 54.06 as on December 31, 2004 [Annualized].

Accordingly, Fair Value of Equity Share of HOEC as per Regulation No. 20(5) of SEBI Takeover Regulations is ₹ 54.06 being the highest of above.

Fair value of the shares of HOEC for the purpose of open offer as per Regulation No. 20(5) of SEBI [Substantial Acquisition of Shares and Takeovers] Regulations, 1997 and subsequent amendments thereto is ₹ 54.06 per share.

Justification for offer price

As per the parameters set out in Regulation 20(4) of SEBI Takeover Regulations, applicable for companies whose shares are frequently traded, the minimum offer price works out to ₹ 92.41 as illustrated above and the open offer price of ₹ 92.41 is the highest of the parameters as specified in Regulation 20(4) of SEBI Takeover Regulations.

As per the parameters set out in Regulation 20(5) of SEBI Takeover Regulations, applicable for companies whose shares are infrequently traded, the minimum offer price works out to ₹ 54.06 as illustrated above and the open offer price of ₹ 92.41 is the highest of the parameters as specified in Regulation 20(5) of SEBI Takeover Regulations.

Case Study No 14:-

Valuation of Equity Shares/ FCDs/ PCDs In their Preferential Issue According to SEBI Guidelines SEBI (DIP) Guidelines, 2000.

NAME OF THE COMPANY

Pricing of Securities to be issued on Preferential Basis as per SEBI (DIP) Guidelines

Average Price of Weekly High & Low of the Closing Prices quoted on the Stock Exchange during the last six months preceding the relevant date (12-Dec-2007)

Alternative I

Weeks	From	To	Closing High	Closing Low	Average
1.	13-Jun-07	19-Jun-07	86.95	85.65	86.3
2.	20-Jun-07	26-Jun-07	92.15	87	89.575
3.	27-Jun-07	03-Jul-07	92	90.4	91.2
4.	04-Jul-07	10-Jul-07	92.25	91.75	92
5.	11-Jul-07	17-Jul-07	102.7	92.6	97.65
6.	18-Jul-07	24-Jul-07	100.25	90.5	95.375
7.	25-Jul-07	31-Jul-07	88.8	86.65	87.725
8.	01-Aug-07	07-Aug-07	89.4	86.65	88.025
9.	08-Aug-07	14-Aug-07	89.75	86.7	88.225
10.	15-Aug-07	21-Aug-07	86.35	85.05	85.7
11.	22-Aug-07	28-Aug-07	86	83	84.5
12.	29-Aug-07	04-Sept-07	88	85.85	86.925
13.	05-Sept-07	11-Sept-07	90.25	87.25	88.75
14.	12-Sept-07	18-Sept-07	92.4	89	90.7
15.	19-Sept-07	25-Sept-07	94.4	91.6	93
16.	26-Sept-07	02-Oct-07	91.1	88.45	89.775
17.	03-Oct-07	09-Oct-07	90.15	85.85	88
18.	10-Oct-07	16-Oct-07	86.45	84.6	85.525



19.	17-Oct-07	23-Oct-07	85.55	82.9	84.225
20.	24-Oct-07	30-Oct-07	90.55	85.45	88
21.	31-Oct-07	06-Nov-07	110.3	92.1	101.2
22.	07-Nov-07	13-Nov-07	105.25	101.5	103.375
23.	14-Nov-07	20-Nov-07	111.05	105.35	108.2
24.	21-Nov-07	27-Nov-07	109.25	102.45	105.85
25.	28-Nov-07	04-Dec-07	106.55	102.85	104.7
26.	05-Dec-07	11-Dec-07	111.1	104.7	107.9
	Average Price				92.78

Average Price of Weekly High & Low of the Closing Prices quoted on the National Stock Exchange during the last two weeks preceding the relevant date (12-Dec-07)

Alternative II

Weeks	From	To	Closing High	Closing Low	Average
1.	28-Nov-07	04-Dec-07	106.55	102.85	104.7
2.	05-Dec-07	11-Dec-07	111.1	104.7	107.9
	Average Price				106.3

Date of EGM/AGM	11-Jan-07
Relevant Date (30 days prior to EGM/AGM)	12-Dec-07
26 Weeks High Low Average Closing Prices	92.78
2 Weeks High Low Average Closing Prices	106.3
Applicable Minimum Price	106.3

Case Study No 15:-

REVENUES FROM COLLECTIVE RIGHTS LICENSING

Introduction

Music right holders have three main sources of return from the exploitation of their works:

- 1) Direct sales to individuals through retailers (record shops, supermarkets and online sellers)
- 2) Revenues derived from live music performances
- 3) Licensing of rights to commercial users; these users – record companies, broadcasters or public performance outlets - require the music product as an input into their final products.

Licensing of rights to commercial users is usually exercised through collecting societies. Collecting societies act as a one-stop-shop between the myriads of rights holders (authors, composers, publishers, record companies, singers, players) and the users of rights. There are several different types of music collecting societies. Some of them act on behalf of authors and publishers, others on behalf of performers and/or phonogram producers - in some countries there are joint collecting societies standing for performers and record producers at the same time.

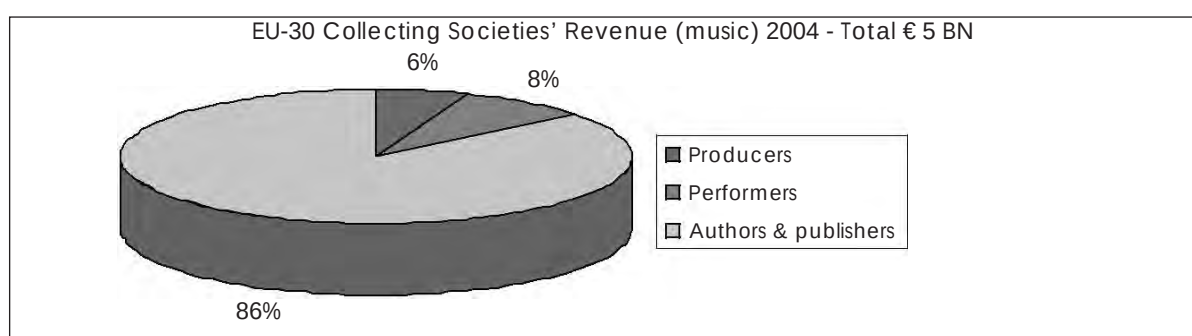
Collecting societies in figures

Collected revenue

In Europe there are more than 60 music collecting societies that collected € 5 billion in revenues in 2004 - the numbers breakdown as follows: authors' and publishers' societies collected € 4.4 billion (86% of the total); records producers' societies collected € 293 million (6%) and performers' societies € 350 million (8%).

The following figure presents the breakdown of the revenues collected by music collecting societies on behalf of authors, composers, publishers, performers and record companies in Europe in 2004:

Figure: EU30 Collecting societies' revenues (music 2004)

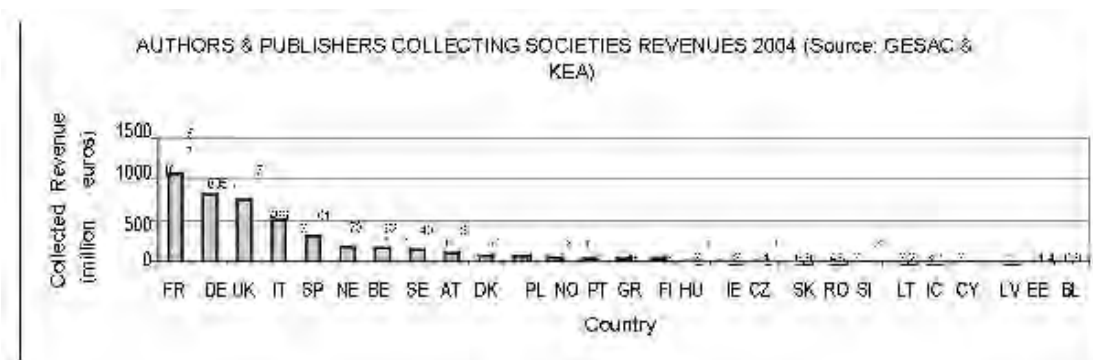


Source: KEA

(a) Copyright

The following graph presents the revenues collected by authors' and publishers' collecting societies across Europe, except for Malta (where rights are administered by an agency of the UK Society MCPS-PRS), Luxembourg (where rights are administered by a branch of the French society SACEM) and Liechtenstein (revenues for Liechtenstein authors are collected by the Swiss collecting society SUISA). It should be noted that some authors' collecting societies manage not only music rights but also other categories of rights such as audiovisual works, as is the case of SGAE in Spain, and any authors' rights (visual, audiovisual and musical) - this is the case of the following societies: SABAM (Belgium), SIAE (Italy), EAU (Estonia), AKA/LAA (Latvia), ARTISJUS (Hungary), LATGA-A (Lithuania), ZAIKS (Poland) and SPA (Portugal).

Figure: Authors and publishers collecting societies' revenues 2004



AUTHORS & PUBLISHERS COLLECTING SOCIETIES REVENUES 2004 (Source: GESAC & KEA)

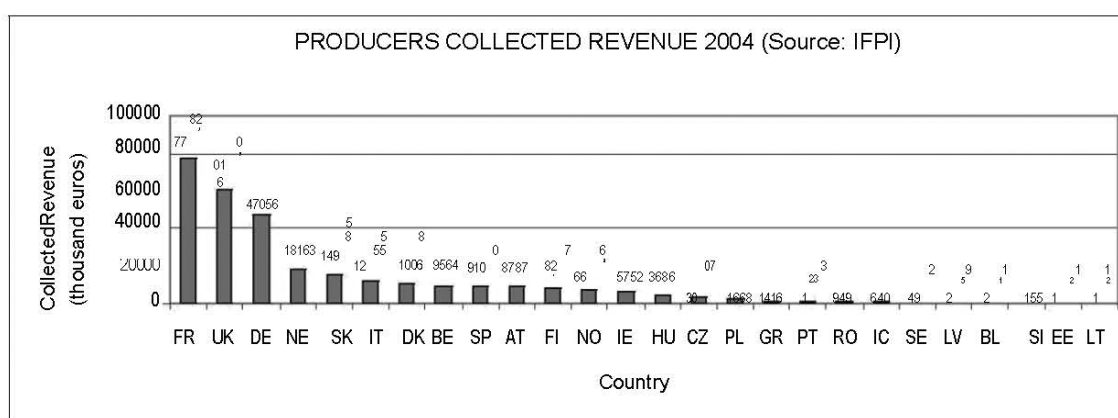
(b) Related Rights

Related rights are the rights administered by collecting societies representing record producers and music performers. In some cases a single society administers both types of rights.

For these joint collecting societies, revenue collected on behalf of producers is presented in the “producers’ graph” below, whereas the revenue collected for performers is in the “performers’ graph” below.

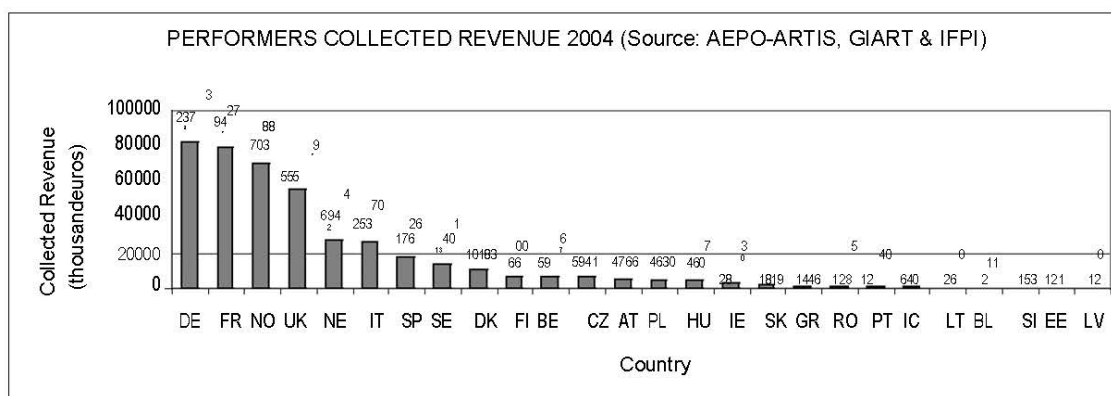
The Graph below gathers economic information for phonogram producers in all the examined countries except for Malta, Luxembourg, Cyprus, and Liechtenstein.

Figure: Producers collected revenues 2004

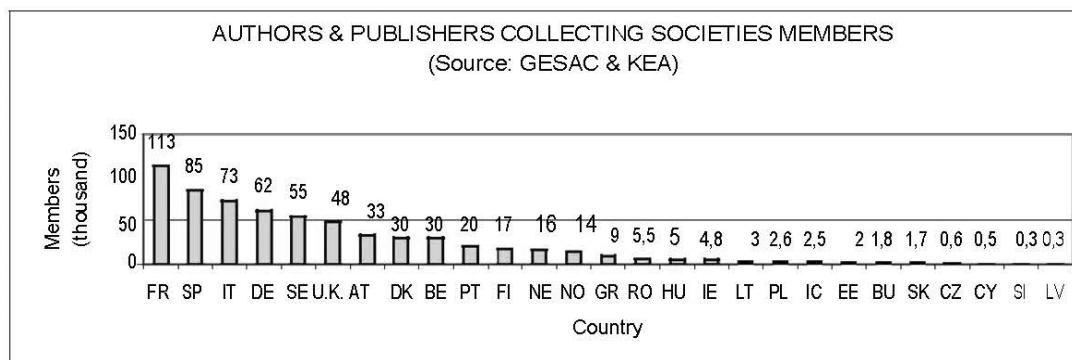


The performers’ graph below presents the revenue collected in all the examined countries except Malta, Luxembourg and Cyprus. It should be noted that some performers collecting societies represent also audiovisual performers as it is the case for the French society ADAMI & SPEDIDAM, Belgium’s URADEX, Lithuania’s AGATA, Netherlands’s NORMA, Poland’s STOART, Slovakia’s INTERGAM and OZIS and Sweden’s SAMI.

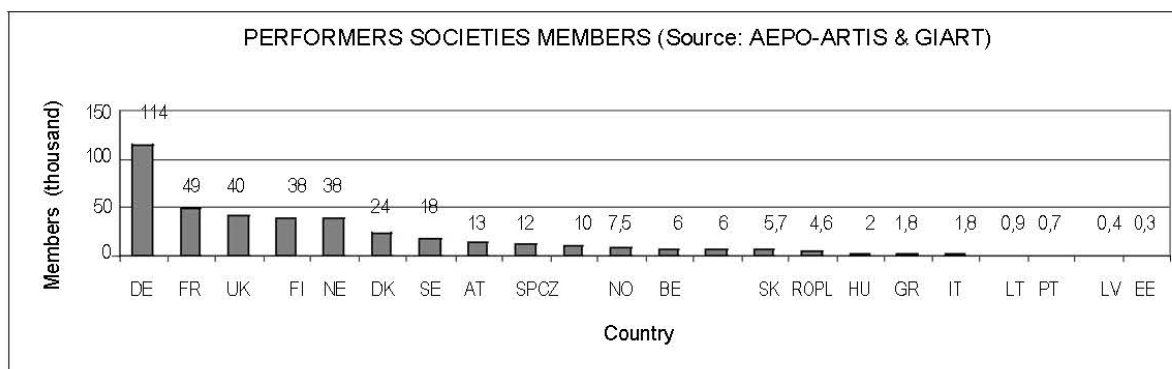
Figure: Performers collected revenues 2004



The total number of members affiliated to European authors and publishers collecting societies (Malta, Luxembourg and Liechtenstein aside), is 635,000:

Figure: Authors and publishers collecting societies members

The number of performers affiliated to a collecting society in the EU, Norway and Romania is 394,000; this figure also includes audiovisual performers, since it is not possible to differentiate music and audiovisual performers in their membership.

Figure: Performers societies members

Conclusion

The licensing of rights is an important economic activity and it is also an essential tool to enforce copyright - the only asset companies and individuals creating works of art have. Collecting societies play a main role as intermediaries between the general public and creators, since otherwise a composer or an artist would not be able to receive a fair compensation from the public uses made of his work.

From an economic point of view, collective management of music rights is a significant source of revenues for artists, publishers and producers. Societies in Europe collected more than 4.35 billion Euro in 2004 on behalf of authors/composers and music publishers. This is almost three times what is collected by societies in the USA and more than five times the amount collected in Japan²². Collective rights management was born in Europe at the end of the 19th century and still represents a source of competitive advantage for European creators in comparison with artists established in territories where the practice of collective management is less developed.



Case Study No 16:-

Valuation of royalty revenues

Introduction

Miss Spinster and Miss Gondolier wrote many primary and secondary school level books, textbooks and plays as joint authors, for which they received royalty revenues. With only a few exceptions, the works were retellings of classic stories in the public domain such as Robin Hood and his Merry Men, or King Arthur and the Knights of the Round Table or simplified versions of William Shakespeare's plays.

The client, a firm of solicitors, represented the estate of Miss Spinster. They required a valuation of the expected royalty stream as of the date of her death, the valuation date, for the purposes of probate and the assessment of inheritance tax.

The scope of the valuation analysis includes:

- Analysis of revenue data
- Investigation into circumstances that might limit projected earnings through interview
- Preparation of a short report outlining calculations and recommendations of value, the methodologies employed and the assumptions utilised in arriving at the valuation opinion.

Legal guidance

The statutory valuation provisions for inheritance tax are contained in Inheritance Tax Act 1984 s 160 which provides that: '...the value at any time of any property shall for the purposes of this Act be the price which the property might reasonably be expected to fetch if sold in the open market at that time...'

The provisions of the statute do not provide a definition of the meaning of 'open market', except that it must be assumed that in the market there is available, to any prospective purchaser of the asset, the information which a prudent prospective purchaser might reasonably require if he were proposing to purchase from a willing vendor by private treaty (private contract or sale) and at arm's-length. The statute also dictates that the price shall not be assumed to be reduced on the grounds that the whole property is to be placed on the market at one and the same time.

The statutory basis of valuation is supported in one of the leading cases on share valuation for taxation purposes, namely, in *Re Lynall Deceased, Lynall and Another v IRC* (1971) 47 TC 375 in which Plowman J stated: 'It is common ground that the shares must be valued on the basis of a hypothetical sale on 21 May 1962 in a hypothetical open market between a hypothetical willing vendor (who would not necessarily be a director) and a hypothetical willing purchaser on the hypothesis that no one is excluded from buying and that the purchaser would be registered as the holder of his shares but would then hold them subject to the articles of association of the company, including the restrictions on transfer.'

It is also worth noting the words of Sankey J who, in the case of *the Earl of Ellesmere v IRC* [1918] 2 KB 735, commented that in his view the price which the asset would fetch on a sale in the open market must be 'the best possible price that is obtainable'.

Referred to as open market value, this statutory basis is commonly adopted in the valuation of intangible assets and is expected by the Her Majesty's Revenue, Customs and Excise (HMRC) in the UK. This is the basis used in this case.

Information used in the valuation

Although there is enough information to provide a reasonable valuation opinion, as sometimes happens, not a great deal of information is available. The following information is used in the valuation analysis:

- Data concerning royalty rates and royalty revenues for Miss Spinster for the five years prior to the valuation date from publishers of her works
- Several assertions of fact from the client and from the publishers concerning the prospects of future revenue from other sources (such as library lending rights) and which publications remained in print as of the time of the valuation.

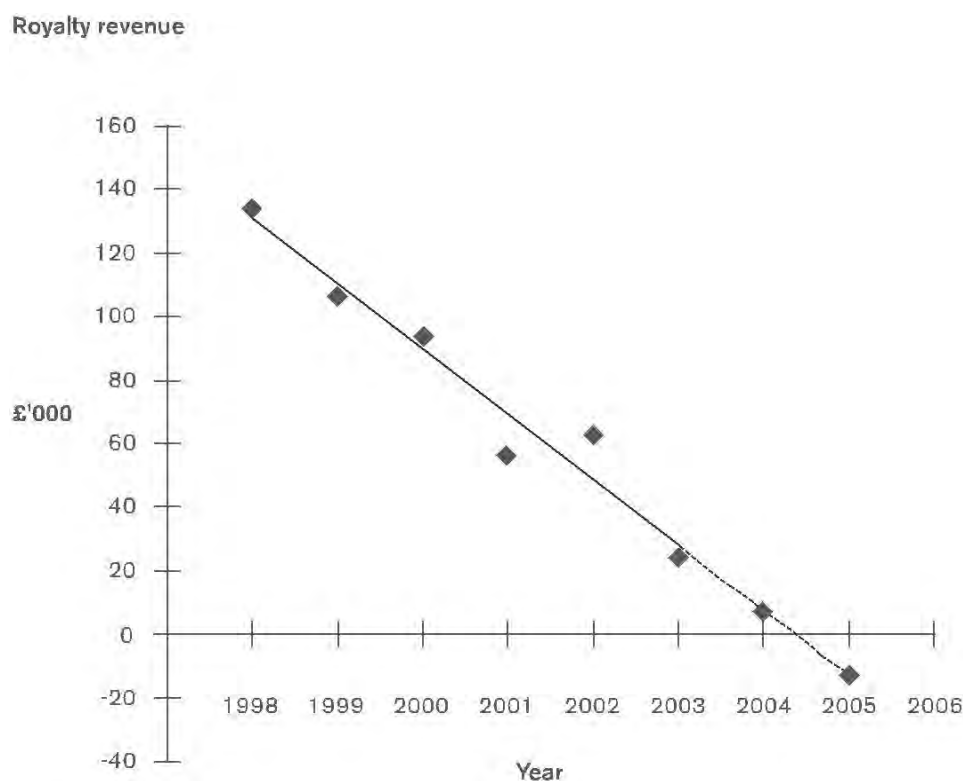
Valuation approach chosen

An earnings approach with respect to the royalty revenues is taken. A model of how royalties may be received in the future is confirmed with the client and used as the basis of valuation.

The total revenue data set is estimated very well by a linear regression as indicated by a coefficient of determination of 0.98 (definition is found in Appendix 1).

Extrapolation beyond the data is supported since the fit is so good and assumptions about the underlying revenue stream seem sound and unchanging: only books in print or those in the library have any prospects of giving royalty revenue; those out of print will remain out of print; and no more books will be written and all of the royalty deals are known.

Also, the regression only confirms what is evident to an observer of the data, as shown in the graph below.



The model predicts the last two points. Of course royalty revenue cannot be negative, but predicted points have been included in order to assess the trend. Positive values represent sound estimates of forecast expected earnings. It is apparent that revenues will continue to decline. Predicting the revenue from the valuation year and the following shows that about £24 000 should be expected in the year of the valuation, negligible revenue should be expected in the year following the valuation and no revenue should be expected in the year following that.



The client accounted for the dip and then rise in revenues in the two years preceding the valuation year by attributing them to the delay in the settling of the estate of the author's collaborator. This implies an even better fit would be likely without that exceptional occurrence.

The use of the open market value concept of value arises from tax law and must be used in these circumstances.

A reasonable assumption is that royalty revenues should be expected only on existing stock. The facts supported this assumption, as follows:

- Dignified Publishers, the publisher responsible for the majority of the revenues, had no plans to reprint the works that they published by the author
- Prudent Publishers, the second largest contributor of revenues, did not foresee that existing stock will reach the minimum stock amount that would trigger a reprinting
- Sovereign Publishers, the third largest contributor of revenues did not print any of the author's textbooks anymore
- The author produced no work for any publisher in the 12 months prior to her death
- No revenue had been received from library lending rights.

Predicted revenues from all publishers are summed and it is assumed that this will be the only remaining earnings. A 5% discount is applied for inflation and for forces that would decrease the probability of receiving forecasted revenue. These forces include:

- Changing fashions in education
- Pressure on publishers to produce new material
- The low barrier to entry for authors of educational materials, in particular for books and plays that retell 'classic' public domain stories.

Opinion

The model gives an upper limit on the value of the royalty revenues of £30 000. The facts showed that the remaining stock could not provide future royalties of more than £20 000, and discussion with the client showed that this value was likely to be achieved. This is reported as the opinion of value for the royalty revenue stream from the author's body of work.

Conclusions

This case is a small one and the purpose for which the valuation is required is well defined with ample precedent. The requirements for a small tax valuation such as this one are for a short report, explaining the results and the approach taken, but not going into detail concerning the analysis.

The use of the open market value concept of value arises from tax law and must be used in these circumstances.

An income based approach is used because, if the data is available, this provides a clear and compelling basis of valuation. The data has been extended a couple of years into the future in a manner that is statistically justified by the assumptions supporting the model.

No broad market research is required, nor are publicly quoted comparable companies or transactions involving rights to revenue streams examined. The products generating the revenue stream are subject to a simple market investigation that shows model, data and facts are in clear accord.

The model showed that only declining, negligible earnings are expected and indicated a maximum expected earnings.

In discounting the expected earnings, factors such as the expected inflation rate are taken into account. Reasonable assumptions about specific risks to the earnings are also made. This enables us to refine the opinion of value.

CASE STUDY NO 17:-

Valuation of a brand and workforce

Introduction

The objective of the engagement in this case is to provide calculations of value for certain intangible assets acquired by Cornwell (the 'acquirer') in Pet Food Brands Limited (the 'target') as a result of a merger between the acquirer and Proper Parent Limited (the 'parent'). The target is a wholly owned subsidiary of the parent at the date of the valuation.

The opinion is prepared to assist the acquirer's management in its allocation, for USA compliance in financial statement reporting purposes, of the total merger price among the assets acquired from the parent.

In acquiring the target as part of its purchase of the parent the acquirer acquires the following:

- The brand name of the target
- The workforce of the target. These are the assets to be valued.

The scope of the valuation analysis is broader than in the first case study. It includes:

- Analysis of company-specific financial and qualitative data
- Consideration of industry and general economic conditions
- Analysis of certain identified intangible assets
- Preparation of a report outlining calculations and recommendations of value, the methodologies employed and the assumptions utilised.

Legal guidance

At the time of publication valuation for USA accounting purposes of the allocation of purchased intangible assets has to be carried out under the terms of the USA Financial Accounting Standards Board statement number 141 which is concerned with business combinations. Fair market value is defined as the price expressed in terms of cash or cash equivalents at which the intangible assets would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller acting at arm's-length and in an open unrestricted market, where neither is under compulsion to buy or sell and where both have reasonable knowledge of the relevant facts.

The valuer should ensure that he or she is familiar with the particular auditor's expectations when valuing in this context. The valuer in this case study was directed to the American Society of Appraisers (ASA) Business Valuation Committee definition for fair market value.

Information used in the valuation

The parent made the following information available for use in forming a valuation opinion:

- A copy of the statutory audited accounts for the target for the financial year ending December prior to the year of the acquisition agreement, which included comparative figures for the previous year
- A copy of the statutory audited accounts for the target for the fiscal year of the acquisition agreement
- Management figures for the period to the valuation date
- Management forecasts to the end of the fiscal year from the date of the report and the budget for the next year together with management's explanations thereof.

This provides about three years of statements of financial performance. Although more financial history is always preferable, this is all that was available.



In addition to the above information, research into the state of the market is conducted and the administrative director and finance director of the parent are consulted.

The target

The target is a pet food company specialising in complete dry foods for pets. It is firmly situated in the premium end of the market.

The target is based in Pleasant Vale in Happy Valley and has about 35 employees. It should be noted that the target does not manufacture the pet food itself but has this done externally under license. The company itself is therefore focused mainly on the sales and marketing of its products.

The brand started from scratch about ten years prior to the date of valuation. The target's philosophy is that its products should contain pure, natural products. This hypoallergenic and natural approach gives it a market not only with animals with any sort of allergy related problem but also attracts consumers who share the target's ecological approach.

The target only sells in pet superstores, pet shops, garden centres and through vets and breeders. They do not sell through normal supermarkets as they believe only select specialised suppliers listed have the requisite skill and knowledge that a Pet Food Brands customer requires.

The target is one of the major players in the specialised market for premium dry pet food. It has recently launched new dog food and cat food products and is planning the launch of further new cat food products the following year.

The target is planning a launch in Europe in the two years following the valuation date, but due to an agreement with the parent and acquirer this has been put off for one year. The absence of this initiative is a major factor in decreased expectations for overall exports, the target also markets and sells Proper Parent products as they are very much in the same marketplace. Proper Parent is pre-eminent in Europe and the target is the better-known name in the UK at the time of the valuation.

After consultation with the client, it does not appear at the time of the valuation that the need to support the Proper Parent products has had any adverse effect on the target. Based purely on Pet Food Brands' figures turnover has continued to increase year-on-year. With the reported recent employment of a new sales representative the increase is deemed likely to continue.

The marketplace

According to the market survey company Euromonitor, the pet food and accessories market in the United Kingdom grew by 1.8% in the two years prior to the date of valuation.

The consumer giants such as Nestle, Mars and Procter and Gamble who had become a major market force following their acquisition of Iams for £1.8 billion three years before the valuation date, then dominated the UK market. These three companies accounted for 40% of the total UK market in the year prior to the valuation date.

The total market is forecast to increase by 8.5% in current terms over the four years after the date of valuation.

The Pet Food Manufacturers Association's breakdown of the pet food market for the year of the valuation shows dog and cat food sales at £1.5 billion of which dog food accounts for 53% and cat food 47%.

As noted in the paragraph above the target specialises in premium dry pet food. At the time of the valuation, in monetary terms dry pet food for dogs account for 45% of the total market (excluding treats), dry mixer 7% and moist dog food 48%. The figures for cat food are 21% dry and 79% moist.

It is particularly noticeable at the time of the valuation that the mixer and moist dog food categories are in decline with moist dog food sales falling £88 million or 20% since six years prior to the valuation date. In the same period, dry dog food sales have increased by £92 million or 45%. On the other hand,

moist cat foods have only really started to decline in the two years before the valuation date. During this period, the sales of dry cat food have increased by £44 million or 46%.

Of the dry pet food market at least 11% is attributable to premium brands such as the subject brand and many analysts believe that it is likely to be this area that will show the most significant growth. It is noticeable, for example, that the acquirer's top of the line product has a 9% market share (rounded) in the year of the valuation. It therefore appears that people at this time are willing to pay premium prices for their pet food. David Lang, a food analyst with Investec Henderson Crosthwaite, noted two years before the valuation that 'the big breakthrough came from the acquirer which played on people's aspirations with [a prominent premium brand] ... and persuaded pet owners to treat their mongrels as champions'.

The target's sales are therefore likely to increase as the premium dry dog food market grows. The launch of the cat food product also puts it in a strong position as regards to that growing market.

The strength of the market over the two years prior to the valuation date is evidenced by two major acquisitions. The first was on an EBIT multiple of between 19 and 20. The second, Cornwell's acquisition of Proper Parent, was also on an EBIT multiple of 19 and a P/E of 43.1.

Results

Below is a summary of the audited figures extending three years to the year of the valuation date and that also forecasts two full years going forward. The valuation date is at the end of July of the valuation year and the target files its accounts in December.

These can only be described as very strong margins and past performance would indicate that the forecast margins are achievable. The slight decline in the year preceding the valuation date took place during the acquisition of the target by Proper Parent and was therefore considered slightly exceptional.

	VY-3	VY-2	VY-1	VY (F)	VY+1 (F)
	£'000	£'000	£'000	£'000	£'000
Turnover	7 030	8 380	10 740	12 640	15 020
Gross profit	3 200	3 890	5 270	6 130	7 210
Operating profit	820	660	1 920 ¹	1 960	2 500
Profit before tax	800	640	1 020	-	-

¹After adding back one-off earn out payments

The following statistics are obtained from the table above:

	VY-3	VY-2	VY-1	VY (F)	VY+1 (F)
Gross profit margin	46%	46%	49%	49%	48%
Operating margin	12%	8%	18%	16%	17%
Profit before tax margin	11%	8%	10%	-	-

- Indicates data unavailable

The table above also produces the following annual growth figures, both historical and forecast:

	VY-2	VY-1	VY	VY+1
Turnover	19%	28%	18%	19%
Gross profit	22%	35%	17%	18%
Operating profit	-19%	190%	2.3%	28%
Profit before tax	-20%	60%	-	-



- Indicates data unavailable

These can only be described as very strong margins and past performance would indicate that the forecast margins are achievable.

Although the target is forecasting strong growth in the VY and the year after, from a turnover and gross profit perspective it is nothing that they had not achieved previously.

The strengthening market in dry pet food products also indicates that the target should be able to increase its turnover and profits in line with its forecasts.

In the current year up to the date of the report, the company has achieved a turnover of £8 million, that is, about 60% of the annual forecast of £13 million (values rounded). As there is a third of the year left and these are reported to be three of the best selling months, seasonally, there is no reason to suppose that this year's budget would not be achieved.

Assets to be valued

As noted previously the target does not manufacture its own products and therefore has little in the way of tangible assets. The brand name of the target and the workforce of the target are to be valued.

The most important is the brand name as it is this that will be the main driver of the sales being achieved by the target. It is clear from the company's advertising literature and internet site that the emphasis is placed on the target's name. This is not surprising as, especially at the top end of the market, pet food is sold on its brand name. One has only to think of the familiar premium brands Whiskas and Pedigree Chum.

It is worth noting that in 2000 when commenting on Nestlé's takeover of Ralston Purina, Shailendra Kumar of the advertising consultancy Future Brand said: 'Customers who have pets they love want the best for them in the same way they would for their children. What's in a can of pet food is likely to be the same in most cases but advertisers can create an emotional difference. Nestlé is well versed in managing retail brands and pet food is really no different from milk or chocolate bars.'

It is therefore clear that the perception in the industry is that the brand is the most important factor and by acquiring the target that is what Proper Parent initially, and then Cornwell, received for their money.

Workforce

However brands do not operate in a vacuum and for a brand to succeed it needs to be well supported and that is what the workforce of the target has helped to do.

The target has a workforce of 52 employees that can be categorised into the following broad grades:

- Junior grades – 27 employees
- Middle grades – 12 employees
- Senior
- grades – 5 employees.

This table is a summary of the data describing the workforce.

	No.	Average annual remuneration	Total	Average length of service
Junior	27	22 000	594 000	3
Middle	12	55 000	660 000	6
Senior	5	105 000	525 000	5

We have allocated a percentage of remuneration to each of the grades in the target's staff list. This percentage is to take account of the totality of hire costs and will include some or all of the following:

- Salaries of the employees involved in the recruitment of employees
- Overhead costs
- Head-hunter fees

- Direct recruit and hiring expenditure such as advertising and travel.

The percentages that we use we crosschecked against a sample of actual costs in each of the categories, and the following percentages are adopted:

- Junior – 15%
- Middle – 25%
- Senior – 35%.

We have further added a percentage to reflect the cost of the training with regard to each of the employees in each grade. While this is to some extent a subjective exercise, the figures that we have used are internationally accepted as being typical for the grades involved.

The basic premise is that the more senior the staff the more expensive will be the training, and therefore the more valuable they are.

The percentages that we have used are as follows:

- Junior – 20%
- Middle – 35%
- Senior – 50%.

The total cost therefore for each of the grades is the sum of the hire cost and the training cost percentages outlined above and is summarised as follows:

- Junior – 35%
- Middle – 60%
- Senior – 85%.

The table below, shows the percentages for each grade of employee and the application of the total cost percentage to the total salary cost for each grade.

Grade	Total percentage	Total annual remuneration £'000	Annual costs £'000
Junior	35%	594	208
Middle	60%	660	396
Senior	85%	525	446
		Total	1 050

Notice periods for the work contracts lengthen as the grades increase at one month for junior grade, three months for middle grade and then six months for senior grade employees.

In the three years to the valuation date, the sales and marketing people have increased turnover from £8 million to a forecast £12 million (both rounded) in the current year, a 77% increase. They have also established themselves as a major force in a market place dominated by three large companies.

Opinion of value of the workforce

Although in some cases the workforce may not be separable from the brand, often the brand is sold without the workforce, and the workforce can be valued as a separate asset.

An assembled workforce possesses expertise and knowledge specific to a company and is important in sustaining the profitability and continued growth of the company. Value is attributable to an assembled workforce since it could be costly to locate, screen, hire and train a new workforce.

In addition, the more specialised the workforce, the greater the cost of its assemblage and the greater its value to the enterprise.



The valuation analysis of the assembled workforce estimates the value of the employees in place, as at the date of valuation, by determining on a replacement-cost basis: the cost to locate, screen and interview candidates, and to train new employees in their new positions.

Consequently the cost to replace method is adopted to arrive at the fair market value of the assembled workforce. This cost is estimated to be approximately one year's employment costs, which, in the year before the valuation date, were £1 050 000, say £1 million.

Brand valuation

An Earnings Before Interest and Tax Multiple (EBIT multiple) is applied to a projected EBIT figure for the brand to indicate a value.

The first requirement is therefore to arrive at an income stream for the brand in its own right. To achieve this the relief from royalties method is adopted.

It is therefore necessary to establish the appropriate royalty rate that would be paid to exploit the target's name in the market place. The best method of doing this is to establish what royalty rates are actually being paid in the market place for the right to exploit similar names.

Research shows that royalty rates for pet food products can be anything up to 8% of sales. For example in a USA tax case, expert evidence was given that for some of Carnation's products (Mighty Dog, Fancy Feast, Friskies Canned and Dry and Bright Eyes) the royalty rates varied between 2.1% for Bright Eyes and 8.1% for Mighty Dog.

As the target's name is associated with premium products and is very well known in the market place then it may be assumed that it would command a royalty rate at the top end of the survey. A royalty rate of 8% is adopted.

A figure slightly below the projected turnover figure for the year after the date of valuation is adopted. Starting with turnover of £12.6 million a conservative £12 million is used.

A royalty rate of 8% applied to a turnover figure of £12 million gives an EBIT amount of £960 000.

In looking to the market for a guide EBIT multiple, it is fortunate that a recent and relevant transaction can be found in Nestle's 2000 purchase of Ralston Purina, one of the USA's biggest pet food manufacturers on an EBIT of between 19 and 20. The acquirer acquired Proper Parent on the same multiple. This gives us a starting point as to the current state of the market place in relation to pet food companies.

However the target is not as large as Ralston Purina or Proper Parent and does not have the same number of brands or share in the market place. After taking these differences into consideration, a more conservative EBIT of 14 is selected.

Opinion of value of the brand

An EBIT of 14 applied to an income stream of £960 000 values the Brand at £13 440 000, say £13.4 million, at the date of valuation.

A value of £13.4 million based on royalties of £960 000 implies a post-tax P/E of approximately 20. This is not unreasonable, as in fact the acquirer purchased the whole of Proper Parent on a P/E of 43.1.

Conclusions

This valuation arises from a need by the client to account for intangible assets on its balance sheet. SEC accounting regulations and FASB standards govern guidance in the choice of concept of value.

In this case the concept of value and the fact that the SEC would scrutinise the valuation opinion directed both the choice of approach and technique.

It must be noted this case study is based on a valuation scenario that does not arise in the USA anymore. Relevant regulations have changed and it is no longer possible to place a separate value on the workforce for accounting purposes.

After gathering information and establishing the facts and operating assumptions concerning the assets, a valuation methodology for each of the brand and workforce is selected. In valuing the brand in this case the expected earnings are the focus. The relief from royalty approach is used to find the revenues expected from the brand.

After the royalty is applied to the forecasts supplied by the client and tax is taken the earnings are discounted to take account of the state of the economy and specific industry and business risks. The specific industry and business risks are benchmarked against those for comparable public companies and such influence as they might have had on recent transactions in the sector.

The workforce is valued using the cost approach because of the availability of detailed information. In valuing the brand, the expected earnings are the focus.

In the earnings based analysis, good precedent transactions give us a starting point. Factors influencing the discount rate finally adopted also include the high strength of the brand, and difference between the comparable quoted companies and transactions and the subject assets. In this case, market information is plentiful, and the value of the assets is placed in the market context. In the cost based analysis, detailed information from the client helped us to provide a value based on costs to build and maintain the workforce.

The workforce is valued using the cost approach because of the availability of detailed information. In valuing the brand, the expected earnings are the focus.

Case Study No 18 :-

Valuation of patents

Introduction

The instructions of the directors of Mining Technologies Limited (MT) are to provide an opinion as to the value of the intellectual property rights (IPR) and intangible assets owned by MT that relate to electronic components used in mining (electronic components) and associated hardware. This technology is the subject of a license agreement (the agreement) between MT and Deep Mines Technology Limited (DM), as at a certain date of valuation.

Included in the IPR to be valued are all patents that support the technology and that are included in the license agreement, plus the technical know-how owned by MT.

The valuation is required because, as of the valuation date, MT is in dispute with DM over their failure to adhere to the terms of the agreement. MT has terminated the agreement by notice in writing just before the valuation date.

MT is prepared to sell the IPR to DM. The valuation report is to be used to advise MT as to the contemporaneous value of its IPR.

For the purposes of this exercise the assumption is made that the termination of the agreement has effect in law and that MT has full power to dispose of the IPR in its entirety and further that the IPR is capable of providing a basis to produce a fully working product to achieve the sales forecast used in forming a valuation opinion.

Basis of valuation

In the case of valuation for a transaction, fair market value is a natural choice because, although there are always factors on the part of vendor and purchaser leading to a transaction that are not known to all parties, such a basis describes the relationship between a buyer and seller in neutral terms with minimal assumptions. Such a description may be useful for framing or setting a corridor within which to negotiate.

Fair market value is used as a basis of valuation. Following the ASA Business Valuation Committee we



define market value as the price expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's-length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.

Such a basis of value may or may not equate to the price achieved in an actual sale. In particular no account is taken of any special purchaser, who may be prepared to pay a different price for reasons such as strength of negotiating position, synergistic or other benefits.

Information used in the valuation

The opinion of value is based on the following information:

- A copy of an agreement between MT and DM dated some years before the valuation date
- A copy of a letter from TM's UK solicitors to DM, dated the month of the valuation, terminating the agreement, and the enclosures thereto
- A letter dated two years before the valuation date from MT's solicitor regarding the breaches of the agreement by DM
- A further letter dated late in the year before the valuation date from MT's solicitors to DM in which was set out MT's wish to either terminate the agreement or assign the technology to DM
- A paper prepared by MT's advisers entitled The Market for DM Components: Possible Global Sales
- Forecasts prepared by MT's advisers showing projected sales both domestically and abroad for electronic components based on MT's IPR. These are for the period from the year following the valuation date extending 12 years, when the legal life of some of the patents expires
- Various magazine articles that discuss the benefits of electronic components
- Various telephone conversations and a meeting with MT at which the history of and prospects for the IPR were discussed including a detailed consideration of the projected sales figures.

Research into the mining industry as it related to the IPR at the valuation date is also used.

The marketplace

Commercial components such as those produced from the subject assets are used in the mining, quarrying, civil engineering and construction industries.

According to industry sources, at the time of the valuation, the coal mining industry takes up about 60% of this market and that this is expected to grow at approximately 2% to 3% a year.

A further 25% of the market place is taken up with metal

mining, including gold, platinum, iron ore, copper, lead, nickel and zinc. This is growing at about 1.5% a year.

Quarrying, civil engineering and the construction industry account for roughly another 10% of the world mining market. Growth here has been much more cyclical and dependent on an individual country's economic performance. It is therefore difficult to estimate precisely long-term growth in this area. The remaining, but insignificant, use had been in industrial minerals, seismic applications and the film industry.

The consensus view over the years has been that the size of the component market worldwide was at the time of valuation between 1 000 million and 2 000 million units per year.

A survey made available at the time of valuation indicates that the market is, in fact, between 950 million and 1 050 million units per year.

The main areas of decline in the years up to the valuation date have been China, India and Russia, mainly as a result of the closure of coalmines. It should be noted however that none of these three are likely at the time of valuation to be major markets for the subject electronic components.

Another reason for the decline has been the improvement in mining techniques in developing countries, which have reduced consumption of components but again these are not major markets for the subject electronic components.

The major areas of growth are in the 'westernised countries', especially in the areas of civil engineering, quarries and metal mining, where electronic systems could bring substantial benefits.

If a very conservative figure of sales of 955 million units a year is adopted this is split amongst the various world regions as follows:

Area	Sales, millions of units per year
North America and the Caribbean	95
South America	60
Australasia	70
Western Europe and various 'Eastern' Countries	70
Africa	185
India	60
China	210
Russia and the 'Federation'	130
Far East and the rest of the world	75
Total	955

The figures for the first four regions listed are likely to be the most accurate whereas little 'hard' information is available for China and the Russian Federation. In addition the figures for India are notoriously unreliable and therefore the figures given above err very much on the side of caution.

As noted in the paragraph above, China, Russia and India are not likely to be major markets for the electronic components in the short term, and therefore the total accuracy of the figures is not vital, not least because they tend to use cheap non-electronic components.

As regards electronic components the largest potential market is contained within the first four regions listed above and therefore the forecast sales used in the valuation are based on reasonably accurate forecasts.

Fair market value is used as a basis of valuation. Following the ASA Business Valuation Committee we define market value as the price expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arms length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.

The product

The major benefits of electronic components are that they bring greater accuracy, control and reliability to the process of mining. The many benefits that accrue from this increased accuracy and control will enable the manufacturer to charge premium prices. These benefits include:



- Less vibration and noise
- Improved efficacy and therefore lower downstream mucking and crushing costs
- Fewer complementary components used
- Expanded drilling patterns and therefore reduced drilling costs
- Greater casting
- Reduced backbreak and overbreak enabling reduced concreting costs underground
- Improved slope stability on surface mines.

These benefits are especially relevant in relation to surface mines where the cost of the component as a proportion of the total component and complementary component costs is small. Therefore a tripling or quadrupling of component costs is not significant. A sale price of between US\$5 and US\$50 is not unreasonable for the export market at the time of valuation and therefore an average price of US\$27.50 is used. This includes any amount for all the accessories that form an integral part of the system.

This is important because it is surface mining that will form the major part of the export market (outside the country where DM itself was based) in the territories of Australia, North and South America and Europe, which are contained in the sales projections utilised.

As regards to the domestic market the cost of the components is, at the time, a much higher proportion of the total system costs and this will keep a tight rein on prices. This is clearly reflected in the sales projections where a price of US\$2 a unit is utilised for sales in the domestic market.

Until the valuation date, probably no more than six to 10 million components had been sold worldwide. The main reasons for this appear to be the lack of a reliable support system and the consequent lack of active marketing.

However the availability of a reliable system is thought to overcome this and sales are expected to rise while also allowing a premium price to be paid.

On the basis of a reliable working system DM itself predicts that after 10 years sales of up to 150 million per year (this is 10% of the halfway point between the 1 000 million and 2 000 million components per year mentioned as being the possible world market in the paragraph above) are possible of which 90 million units could be exported. This represents approximately only 15.8% of the total world market of 955 million units.

The DM projections are based on clearly identifying its market place and concentrating on North America, Europe, Australasia and the Pacific Rim. Deliberately excluded from their plans are:

- Very extreme cold temperature environments
- China, Russia and the Russian federation
- Underground coal mining
- Hostile parts of South America and Africa.

The exclusion of the geographical areas above also lessens the risk of relying on poor market intelligence because, as noted in the above paragraph, there is little

reliable information from these areas. However the exclusion of these areas does exclude from the potential market place anything up to a further 10% of additional sales.

It may well be therefore that a forecast of 150 million sales could be considered conservative.

Valuation approach chosen

After carefully considering all of the approaches, MT's IPR is valued by the income approach.

In these circumstances, and based on the available information, the accepted methodology for assessing the value of the IPR is to find the present value of the cash flows derived from the relief from royalty approach via the DCF methodology.

Cashflows and discount rate

It is first of all necessary to establish the cashflows to be used and for this the relief from royalties method is used. As described in more detail above, this method looks at the royalties one would have received if the asset were to be licensed out to a third party for an income stream.

Research was conducted into comparable royalty rates in the market place. In this exercise it is important to consider the terms under which the IPR is licensed, for example, you will expect a high premium on the rate for terms such as exclusivity as this and other scope factors such as geography often play an important role in determining rates. No direct comparables were found. The licensing agreements in the table below relate to technology in the drilling and refinery sector.

Although the agreements are not directly comparable with MT's IPR they at least provide a reasonable starting point on which to base calculations, as most of the examples involve technical engineering IPR in the mining or drilling fields.

For the purposes of this exercise, the transaction involving Mr Osborne and Total Containment was excluded from calculation of the guideline royalty as this also involved a large upfront payment of US\$5.45 million. An average of the other deals (taking an average for the two deals involving ranges), gave a royalty rate of 5.7%, say 6% rounded.

Pre-tax cashflows are isolated by applying a royalty rate of 6% to the forecast revenues provided by MT. To arrive at post-tax cash flows, a corporation tax rate of 30% is charged.

Details of financial modelling are found in Appendix 2.

Licensor	Licensee	Business	Royalty fee
Cybersensor	Nevtah Capital Management	Telecommunications	5% of gross revenues
FlowMole Partners	UTILX Corporation	Water, sewer and utility lines	6-7.25% of gross revenues
Insituform of North America	American Underground	Water, sewer and utility lines	8% of new contract volume
	Technology		
Keith Osborne	Total Containment	Piping systems	3% of gross revenues
Lift-Pump Plc	Toups Technology Licensing	Oil extraction	6% of gross revenues
E G Norris	Patriot Scientific	Ground penetrating radar	2.5% of gross revenues
OPW Fuelling Components	Total Containment	Piping systems	3% of gross revenues
D Richardson	Toups Technology Licensing	Oil extraction	6% of gross revenues
R E Surran	PM Management Systems	Detection device for gas pipelines and land mines	4% of gross revenues
Vital Images	CogniSels Development	Interpreting seismic and other subsurface information	5-15% of gross revenues

Source: Royalty Database Searches



The discount rate

As in Appendix 2, a discount rate is then applied to the free cash flow in each year.

The discount rate reflects the risk that the cash flows will not be achieved and also the time value of money.

The Capital Asset Pricing Model (CAPM) is adopted to arrive at an appropriate base for a discount rate on the assumption that the IPR will be funded solely by equity. This can be simply stated as follows:

$$C_e = R_f + \beta (R_e)$$

Where

C_e = The cost of equity

R_f = The risk free rate of return from the market.

β = The beta

R_e = The excess return to equity from the market over the risk free rate.

Each of these parameters can be quantified as follows:

1. The risk free rate of return. The best available approximation to this is the yield on five to 15-year government bonds. This stands at the valuation date at approximately 5% (Source: London Financial Times).
2. The beta. The beta is a measure of the stocks' sensitivity to market movements. The best method of obtaining the beta for an as yet unquoted entity is to use the beta of companies in a similar field as the IPR. The most appropriate beta for MT's IPR at the time of the valuation is 1.2 (Source: London Business School Risk Measurement Survey) being the figure then showing for the mining sector of the FTSE actuaries indices.
3. The equity premium. The consensus view is that the post-tax equity premium has historically always been in the region of 6% to 8%. However research around the valuation date by the Boston Consulting Group has shown that as of the valuation date, this has dropped to between 3% and 4%. 4% was adopted.
4. Calculation of the cost of equity. Given the assumptions above, the cost of equity (C_e) can be calculated thus:

$$C_e = R_f + \beta (R_e)$$

$$C_e = 5\% + 1.2(4.0)\%$$

$$C_e = 9.8\%$$

So, 9.8% is a reasonably well founded starting point for a discount rate. This value requires some adjustments in order for it to accurately reflect the relevant risks.

The following points of difference are among those that need to be considered in arriving at an appropriate discount rate to apply to the IPR:

- The IPR does not have a history of profitability
- CAPM utilises data derived from transactions in quoted stock (CAPM stock) that has historically paid dividends and can be expected to do so in the future
- CAPM stock usually has considerable tangible asset backing
- CAPM stock usually has full access to the capital markets

- CAPM stock is usually comprised of very substantial businesses with mass and diversity.

A substantial uplift to the starting point is therefore required. A discount rate of 25% is used in valuing MT's IPR.

Valuation

A discount rate of 25% applied to the forecast cashflows for the period through to 31 March 2015 implies a value for those cashflows today of US\$105 824 000, say US\$106 million.

Financial modelling is available in Appendix 2.

Conclusions

The context of this valuation is a legal dispute concerning the performance of a license agreement. This shaped the choice of a concept of value. Fair market value is used as a basis in order to provide a neutral starting point for negotiation and is a typical basis of valuation in a dispute situation.

In this case, because the information was available, the income approach is adopted. Cash flows derived by a royalty relief approach from projections supplied by the client are used. The life of the patents is considered and careful assumptions about the client's patent protections are made.

Discounting concerns included the differences between the subject asset and the quoted companies that are used in the CAPM approach, to provide a starting point for the model. These differences include the fact that the subject asset has no tangible asset backing, no real access to the capital markets and is not very diverse.

Case Study No. 19:-

VALUATION OF A BRAND NAME

Introduction

Intellectual property rights of Retail Equipment Limited (RE/'the company') are valued at a certain valuation date.

After discussions with the company it is agreed that the IPR in question consists of the brand name 'RE' itself ('the brand name'). It should be noted that RE is a registered trademark and has been for many years.

The reason for the valuation is a proposal that RE should sell the brand name to another UK company, namely Retail Precision UK Limited (RP). As these companies are connected it is necessary for UK tax purposes that the sale is shown to be on an arm's-length basis.

Legal guidance

The basis of valuation for UK tax purposes in this case is market value, which is defined in Section 272 (1) of the Taxation of Chargeable Gains Act 1992 (the Act) as 'the price which those assets might reasonably be expected to fetch on a sale in the open market'.

As in the first case study above, for the purposes of this tax-led case, open market value is defined here by the Act as the best price that could be expected for the brand name on a sale in the open market between a hypothetical willing seller and a hypothetical willing buyer on the basis that both are equally well informed about the IPR and the market within which it operates, and that each is acting for self interest and gain.

The information that is available to the parties in a sale for UK tax purposes is outlined in Section 273 (3) of the Act which states that 'there is available to any prospective purchaser of the asset in question all the information which a prudent prospective purchaser of the asset might reasonably require if he were proposing to purchase it from a willing vendor by private treaty and at arm's-length'.



Such a basis of valuation may or may not equate to the price achieved for the brand name on an actual sale. In particular no account was taken of any special purchaser who may pay a different price for reasons such as strength of negotiating position, or synergistic or other benefit.

Such economic outlook summaries are required at the time of valuation when the subject assets are exploited in many different countries, as in the present case.

Information used in the valuation

The opinion of value of the brand name was based on the following information:

- The audited accounts for RE for the financial year preceding the year of the valuation, which include the comparative figures for the previous year
- The management accounts for the period from the end of those accounts to the end of the calendar year preceding the year of the valuation
- The forecast outturn for the financial year of the valuation, the budget for the next financial year and projections for each of two following financial years
- An analysis of the company's turnover by brand for the three financial years to the year of valuation and one beyond. This kind of breakdown is of great benefit in forming a valuation opinion, as often brands operate in different markets and have different risk profiles
- A PowerPoint presentation prepared by RE's management that covers the retail equipment industry background, gives background details of the company and also gives various financial projections.

In addition the company premises are visited and discussions are held with the group financial controller of RE at which all aspects of the company both past and present are discussed.

The financial director of the company supplies further detailed information regarding financial information supplied and the future prospects of the company.

Detailed research is conducted into the market in which the company operates.

The business

RE had been in business in one form or another for many decades and for many years the company has been part of Rather Diverse Group. During this period the company, known as Rather Diverse Retail Equipment Limited ('Rather Diverse RE'), acquired the UK operating arm of the foreign firm Divide, which made cutters for supermarkets.

This continued until five years before the valuation when Rather Diverse put the Retail Equipment Divide Group (including Rather Diverse RE) up for sale and it was purchased by RP, a predominantly USA firm, almost four years before the date of valuation, for US\$154.6 million. Following this the company changed its name from Rather Diverse RE Limited to RE Divide Limited.

Since that date there has been a period of consolidation and cost-cutting throughout the RE RP Group ('the group') including in RE itself.

Finally it was decided two years before the valuation to outsource retail products and new appliances to China. In the following year the company took delivery of the first retail products shipped from China and the first appliances arrived in February, a month or two before the valuation date.

At the time of the valuation the group has a presence in 10 countries of which four (USA, Canada, UK and India) have distribution and marketing arms. Six further countries (France, Ireland, Italy, Austria, Sweden and Malaysia) are used for distribution only. In other key markets the group's goods are exported to a third-party distributor. In addition there are manufacturing facilities in the UK, USA and India.

The group has three main areas, namely industrial products, food retail products and an area that provides servicing for both of these areas. Industrial products makes up approximately 22% of sales with retail products making up approximately 13% and finally servicing, which is more than 50% of total sales and of which a large proportion is maintenance contracts. The remaining 15% of turnover is related to the sales and servicing of non-RE branded products.

As regards a geographical split, sales are made up of 50% to the UK with the rest predominantly to Europe and the USA but also to Malaysia and India. It should be noted that this applies to the group as a whole and not just RE.

The company has various industrial and retail products included for measuring and cutting. In addition RE has introduced a new retail product range that facilitates sales.

It should be noted that at the time of the valuation, the group is at the top of its field in the UK in both the industrial and retail sector.

Research

The economy

A valuation analysis sometimes requires a general understanding of current and projected economic issues that affect the equity analysis. A strong economic outlook will tend to increase value, while weak economic outlook will depress value and restrict marketability and liquidity.

Such economic outlook summaries are required at the time of valuation when the subject assets are exploited in many different countries, as in the present case.

The state of the economy in the United Kingdom is typically analysed using historic and forecasted data. In line with this, outside economic influences are also discussed as the global and European economic outlooks both impact on the United Kingdom economy.

This research also incorporates aspects of the general UK economy and the European economy in terms of gross domestic products (GDP), unemployment, interest rates, inflation and demographic statistical information and trends.

The sectors most applicable to RE are also considered in more detail.

Global economic outlook

Preliminary economic information is drawn from a variety of sources. In this case information from SG Securities (London) Ltd is a primary resource. At the time of the valuation, expectations for the global economy, especially the industrialised sectors, have shown little increase since the year preceding the valuation. The performance of the euro zone continues to be a cause for concern.

Globally, government bond yields have fallen to a 40-year low. Real yields have plummeted in the few months before the valuation date as investors have sought low risk assets. Yields on corporate debt have not mirrored the decline in government securities as investors wait for stronger economic growth to rescue weakened balance sheets.

Weak economic growth has been forecast in the region of 3%. Several points support this conclusion, such as:

- The USA manufacturing sector has failed to respond to the rising demand, leading to weakness in employment and income
- European corporates have cut back on costs more aggressively in an effort to boost profit margins in the absence of increasing revenue
- Although equity markets have grown in the 12 months to the valuation date, they have levelled off prior to the date of valuation.



Outlined below is an annual world growth summary in terms of real gross domestic product (GDP) and inflation over the four years to the year of the valuation.

Annual growth rate per cent	Real GDP				Inflation			
	VY-4	VY-3	VY-2	VY-1	VY-4	VY-3	VY-2	VY-1
World	4.5	2.0	2.6	3.5	3.9	3.7	3.7	3.4
Industrial countries	3.3	0.8	1.4	2.2	2.4	2.1	2.0	1.6
Euro zone	3.4	1.5	0.7	1.5	2.3	2.5	2.2	1.7
UK	2.9	1.9	1.4	2.6	2.2	2.2	2.3	2.5
USA	3.8	0.3	2.4	3.0	3.4	2.8	2.7	2.3

United States economy

Details of the USA economy are included as USA consumerism and industry continued to be the main stay of the global economy. For as long as the economy is dependent upon a single sector, investors do not have the confidence that economic growth is sustainable. While there are many questions raised about the sustainability of consumer spending, growth is expected to increase because income growth has been sufficiently strong and interest rates have been low. The risk is a decline in confidence due to electoral turbulence but the hope is that improvement will continue and that the USA will avoid a 'double-dip' recession caused by the war in Iraq and electoral factors. The question is whether growth will be strong enough to act as a vehicle for world growth.

Manufacturing growth is expected to average close to zero in the year preceding the valuation, but to pick up to around 2% in year of the valuation.

European economic outlook

Forecasts suggest that the euro zone should provide about 1.5% of growth early in the year of the valuation. Growth however is, in fact, weak at the time and there is little prospect of it accelerating.

The overall flavour of the European economic outlook has been that unemployment is rising and public finances are being seriously depleted. This points towards any strong growth being curbed substantially. This of course is somewhat dependent upon the anticipated improvement in the international situation. Overall EMU countries appear to be facing a long period of weak growth. Worsening growth prospects give the main euro zone governments few options. The target of limiting public deficits to 3% of GDP in the year before the year of the valuation has led to strong fiscal consolidation. Planned tax cuts have been cut back and public spending has been tightened as well as restrictions on public sector staffing and wages. It has not yet been demonstrated whether these efforts have been enough to offset the income shortfalls resulting from weak growth.

Although Germany has restated its aim of 'balancing the budget' in the year of the valuation, it has little chance of meeting this target. The poor medium to long-term growth outlook in Germany has meant that it might be unrealistic to expect a balanced budget at all. Italy is also believed to be in a similar situation. Given this background, it is unlikely that France will honour its commitments, despite having a better structural position. In the absence of any public deficit reduction, the government debt: GDP ratio will rise further in the euro zones especially in the largest countries (Germany and France), and come in well above the 60% threshold in Germany's case. Overall, the public sector debt is expected to fall only slightly from the preceding year, despite expected improvement in activity.

Almost all euro zone countries are seeing falling employment at the date of valuation. This has affected consumer confidence and consumption expectations. Employment is likely to continue falling rapidly in the near term. Having put too much faith in the rapid recovery, European companies now need to cut costs. The ratio of employment to GDP, which is a proxy for productivity, shows how far European companies trail their USA counterparts.

United Kingdom economy

Outlined below is statistical information relating to real economy statistics during the three years before the year of the valuation.

Per cent year on year	VY-3	VY-2	VY-1
GDP	1.9	1.4	2.6
Consumption expenditure	4.1	3.5	2.4
Government expenditure	2.2	3.8	3.2
Investments	-0.4	-3.7	0.9
Exports	1.4	-2.5	2.5
Imports	2.7	0.1	1.6
Consumer price growth	2.2	2.3	2.5
Wage growth	4.6	3.7	3.6
Profit growth	0.4	4.0	10.0
Unemployment rate	5.1	5.2	5.3

Source: National Statistics

The investment climate is still tentative and no dramatic revival in capital spending is expected until later in the year of the valuation. Low inflation has given the Bank of England some room to manoeuvre regarding any further interest rate movements.

The housing market continues to be a cause for concern following the significant rise in house prices during the few years preceding the year of the valuation. The early signs of a downturn in this sector are appearing in London, but even so, the government are still fearful of over stimulating this market, as it needs to stabilize throughout the UK.

With regard to fiscal policy the Treasury has launched a diverse consultation process to consider reform of the corporate tax system. Various changes have been made over the years; the most major being the move to quarterly payments due in the current tax year in place of advanced corporation tax payments.

This has already had the effect of increasing the speed of interaction between company tax changes and economic activity. The main concern of those who have commented to date is that the Treasury will use this 'reform' as a device to increase the tax burden on corporations. When the Chancellor removed tax relief on dividend payments to pension funds, it attracted very little immediate attention outside of the groups affected. However, this has now proved more significant and highly visible as a burden on most funds in a time when they have already suffered losses.

The gross outlook for the United Kingdom is again of moderate growth as consumer demand slows down. Consumers have been confident enough to borrow heavily to finance the shortfall between income growth and spending growth. These funds have come from mortgage equity withdrawal driven by the booming state of the housing market, which has made the consumer comfortable with the idea of making good the shortfall of income in relation to desire for spending through borrowing.

Retail surveys are not providing a clear guide to the outlook of the retail sector from the date of valuation. The Confederation of British Industry survey has been

forecasting very weak readings but the BRC survey paints a more positive, stabilised and growing scenario.



Growth in manufacturing at the valuation date is generally improving but the outlook is still modest. Such an environment provides little incentive to indulge in fresh investments. The effect of reduced investment has fuelled the slow growth. However no meaningful rise in unemployment has been evident.

There has been evidence that the United Kingdom economy has seemed to side step much of what has affected the euro zone and the global economy. However caution in fiscal policy and increased tax burdens on corporations have created concern that they may not be placated by any growth in the investment market.

Industry in the UK

As regards the measuring industry itself this is a relatively mature market, where increase in demand is mainly fuelled by technological development. In the measuring industry, product reliability and quality are key factors, which means for market leaders like RE pricing pressure is reduced. This gives them an important competitive edge in the market place and also places a high barrier to entry for any potential competitor.

Manufacturing growth is expected to average close to zero in the year preceding the valuation, but to pick up to around 2% in year of the valuation. This is based on the assumption that the world economy is gradually reviving and that the UK appears to be just in front of this trend.

UK productivity growth in manufacturing in the third quarter of the year two years prior to the valuation was slightly down when compared with the previous year but was up on a quarterly basis. In the third quarter of the year preceding the valuation, annual productivity growth for the whole economy was 1.5%, down from growth of 1.6% achieved in the previous quarter.

This small fall in annual productivity was explained by minor changes in the growth rate of both output and employment. Annual growth in output was 1.6%, down on growth of 1.7% in the previous quarter, while job growth edged up slightly. Compared with the previous quarter, productivity growth was 0.6%, up from 0.3% in the previous quarter. This is explained by an upturn in output when compared with the second quarter.

Annual manufacturing productivity growth is, at the date of valuation, 4.9%, down from 6% in the previous quarter. Manufacturing output in the third quarter was down by 0.2% when compared with the previous year.

Compared with the previous quarter, manufacturing productivity grew by 1.3% in the third quarter of the year prior to the valuation, down from growth of 2.3% in the previous quarter. This was due to a weaker quarterly growth rate for manufacturing output.

Unit wage costs for the whole economy grew by 2.5% in the third quarter of the year preceding the valuation compared to a year before, up from 1.6% in the previous quarter. This rise was primarily due to a pick up in wages and salaries growth.

Overall manufacturing unit wage costs showed an annual decline of 1.6%, up from a decline of 2.9% in the previous quarter.

The industrial sector appears to be coming out of any downturn but any growth it could achieve in the immediate future is expected be modest.

Food retailing

It is perhaps more applicable to associate the potential markets of RE Divide with the food retailing industry. This was due not only to many major clients operating in this sector, but also to the trend in consumer spending within the food industry.

It is estimated that consumer spending on food was £88 billion (including sales tax) in the year two years before the valuation. Sales by food retailers were substantially more, £99.6 billion (excluding sales tax) for the same period. There was growing consolidation within the food retail market but the

competition commission examination of bids for Safeway in the UK highlighted the fact that there are limits, which competition authorities will strive to maintain.

Outlined below are the UK leading five food retailers and their market share at the date of valuation. It should be noted that William Morrison has now completed the takeover of Safeway giving them a combined market share that is approximately equivalent to Sainsbury's.

Market share	
Tesco	27.2%
Asda	17.1%
J. Sainsbury	15.5%
Safeway	8.8%
William Morrison	6.5%

On the whole it was generally accepted that people like larger stores. In most countries customers welcome hypermarkets. They like the opportunity for one-stop shopping; they like the wide range and usually lower prices. In turn they also like the opportunity to purchase a variety of goods sometimes including small electrical goods. Therefore consolidation will be a constant theme across Europe for the foreseeable future. The future lies with wholly owned businesses where the management can exert maximum control.

The evolution of the Safeway ownership struggle dominates the UK sector around the valuation date. It is deemed likely that even with their purchase Morrisons would still find life difficult, partly because Safeway had stores which, on the whole, were on the small side for modern retailing, and partly because Asda and Tesco are such strong competitors and are constantly raising stakes. Sainsbury's has much to prove. It is a strong brand whose fortunes are simply waiting to be revived.

The UK food retailers have consistently outperformed all prior retail sales and were likely to continue to do so. In addition diversity between in- and out-of-town stores has allowed growth for the smaller independent retailers.

Overall, there is evidence that this is a productive market. The increased popularity, especially in the UK, of convenience and fast foods may have some impact on the actual breakdown of purchased products. However that does not mean that the larger stores and indeed some of the specialist stores will not continue to expand and open new premises.

Consolidation in the sector will lead to extensive refurbishment and refitting of shops and the introduction of smaller in town one-stop stores by some of the larger brands. This will also increase sales of goods sold into these stores.

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The market

Research was undertaken with regard to the following:

- Transactions involving companies that might be considered to have aspects of comparability
- The ratings of companies in the quoted sector both in the UK and abroad that might be considered to have aspects of comparability.

An outline of a summary of research follows.



Transactions

The most comprehensive of the various M&A databases (Thompson Financial) in this instance is interrogated to ascertain the market for companies broadly in the measuring sector in the period extending some three and a half years before the valuation date.

Three deals in the sector were found on the database, and other deals (not reported) are known to the shareholders. However it should be borne in mind that these are not of themselves fully comparable, and not enough public information is available from which to draw reliable valuation statistics.

These transactions are outlined below.

It should be noted that the P/Es are historic Exit P/Es.

Acquirer	Transaction P/E	Date
De Longhi Pinguino SA	30.5	2/2001
Salton Inc	12.8	4/2001
Gresham Trust Plc	12.2	2/2002
Average	18.5	

Quoted companies

Although no single company in the quoted sector could be said to be directly comparable with RE in terms of both activity and size, the following eight companies, all principally operating in the electronics and electrical equipment sector, are of interest.

A brief description of each company follows: (source: Bloomberg)

Alba Plc – Alba is based in Barking, Essex, and has a market capitalisation of £425 million. Alba has as its principal activity the production of more than 2 000 products including home appliances and consumer electronics.

Dewhurst Plc – Dewhurst is based in Hounslow, Middlesex and has a market capitalisation of £13.8 million. Dewhurst has as its principal activity that of the manufacture, marketing and sale of electrical apparatuses for industrial and commercial capital goods.

Dowding & Mills Plc – Dowding & Mills is based in Birmingham, and has a market capitalisation of £22.3 million. Dowding & Mills has as its principal activity that of the provision of electrical and mechanical services to industry and commerce.

Intelek Plc – Intelek is based in Swindon, Wiltshire and has a market capitalisation of £12.7 million. Intelek has as its principal trading activity that of designing and manufacturing of precision products and sub systems for the electronics industry operating in the USA and UK.

Mettler-Toledo – Mettler-Toledo is a USA company and has a market capitalisation of US\$1 902 million. It is a global provider of precision instruments and services for professional use including laboratory and industrial measuring.

Radstone Technology Plc – Radstone is based in Towcester, Northampton and has a market capitalisation of £104 million. Radstone has as its main trading activity that of the design of digital electronic equipment and the surface mount assembly of electronic sub systems.

Renishaw Plc – Renishaw is based in Wotton-under-Edge, Gloucestershire and has a market capitalisation of £375 million. Renishaw has as its principal trading activity that of the design and manufacture of precision inspection equipment.

The Roxboro Group Plc – Roxboro is based in Cambridge and has a market capitalisation of £78 million. The primary trading activity of Roxboro is that of the manufacture and sale of specialist components, sensors and instrumentation.

Sartorius AG – Sartorius is a German company and has a market capitalisation of u92 million. The primary trading activity of Sartorius is that of the development, manufacture and supply of a range of specialist laboratory and industrial measuring apparatus, filtration membranes and related technology. For comparative purposes the UK total market P/E ratios are summarised in the table below.

In considering comparative multiples to apply in valuing the brand name, attention is focussed on the average current and forecast (Year 1) ratios of 16.3 and 13.1 respectively. These ratios require adjusting to reflect, among other things, that a brand name in isolation is subject to valuation and not equity shareholdings in major companies. Once such an adjustment has been made P/Es in the 8.5 to 9 region would not be unreasonable.

Company/ sector	Historic P/E	Current P/E	Forecast P/E Yr1	Forecast P/E Yr2	Beta
Alba Plc	18.9	18.1	17.0	15.3	0.5
Dewhurst Plc	8.1	9.0	7.8	-	0.3
Dowding & Mills Plc	14.7	18.1	-	-	0.9
Intelek Plc	10.5	9.5	8.2	-	0.9
Mettler-Toledo	19.5	18.1	15.9	14.6	-
Radstone Technology Plc	20.4	20.0	16.8	15.3	0.5
Renishaw Plc	26.1	22.6	18.4	17.3	0.6
The Roxboro Group Plc	-	17.6	13.1	-	0.5
Sartorius	-	13.8	7.9	-	0.6
Average	16.9	16.3	13.1*	15.6*	0.6
UK Total	16.1	15.8	14.1	13.0	

Source: Reuters Estimates

* Averaging completed avoiding distortive factors and incomplete financial information.

Results and forecasts

Below are set out the audited results for the whole of

RE Divide Limited for the two years prior to the year of the valuation, the estimate for the year of the valuation and forecasts extending out for three financial years from the valuation date.

If those parts of RE that do not trade using the RE name and inter-group sales are excluded the turnover figures (also excluding £3 million per annum for non-RE maintenance work) for the same periods were as above.

The main reasons behind the drop in turnover in VY-2 and VY-1 include the general downturn in the economy and management concentrating on restructuring the business rather than sales growth.

In the valuation year, the company forecast an upturn in turnover and moving back into profits. Future growth from this year is forecast to be 6.2% in VY+1, 5.8% in VY+2 and 4.1% in VY+3.

In view of the predicted growth in the economy generally these increases do not seem unreasonable especially when one takes into account the fact that the company was not even forecasting that they would achieve the VY-2 level of turnover before VY+2.

	VY-2 £'000	VY-1 £'000	VY £'000	VY+1 £'000	VY+2 £'000	VY+3 £'000
Turnover	94 930	79 250	84 310	88350	92470	96450
Operating						
profit/(loss)	(1800)	(1370)	3090	4680	7 290	8 880
Pre-tax						
profit/(loss)	40	460	3 100	4 680	5 500	6 440

	VY-2 £'000	VY-1 £'000	VY £'000	VY+1 £'000	VY+2 £'000	VY+3 £'000
Turnover	72000	62000	65000	69000	73000	76000

Valuation approach chosen

In the previous section covering the valuation of intangible assets, the various methods by which the value could be quantified are discussed.

In these circumstances the accepted methodology for assessing the value of the IPR is to take an earnings approach via the DCF methodology.

On the basis that, although the cashflow forecasts are only for five years, the RE name will not disappear, a terminal value has been added, being the value today of the cashflows after the horizon and into perpetuity (again discounted to reflect time and risk) to give a total value for these cashflows. Note the assumption that the protected property could have its economic life extended indefinitely through maintenance.

Growth into perpetuity of 2.5%, roughly the prevailing forecast inflation for the UK, is assumed from the fourth year after the year of the valuation onwards. This does not seem unreasonable in view of the strength of the sector.

As noted previously this methodology is crosschecked by applying a P/E to prospective earnings for the year of the valuation and the following year.

Cashflows

In the application of the DCF methodology in valuing the brand name, it is first of all necessary to establish the cashflows to be used. As in case study three, the relief from royalties method is used to isolate cashflows attributable to the intangible asset.

Royalties are usually expressed as a percentage of turnover and therefore it is necessary to establish the likely turnover of products utilising the brand in future years.

The forecast turnover figures for the company (excluding those parts of RE that do not trade using the RE name and inter-group sales) through to the fourth financial year following the valuation date forms the basis of the cash flow derivation. Growth of a further 4% in the fifth financial year following the valuation date was used.

A royalty rate of 5% is adopted, being towards the upper end of royalty rates found in a study of licensing deals in similar types of business. These deals are set out in the table below.

The range of royalty rates is from 1% to 10% with an average of between 3.9% and 4.2%. However the closest comparables are those of Coleman, Remington, Service and Windmere. The average of these is 5.8% (the range being 3% to 10%).

The chosen royalty rate, 5%, is higher than the range of averages, 3.9% to 4.2%, and reflects the strength of the RE name in the market place.

The projected turnover figures and royalty payments based on the above growth assumptions are shown in Appendix 2.

In these circumstances the accepted methodology for assessing the value of the IPR is to take an earnings approach via the DCF methodology.

Royalties are usually expressed as a percentage of turnover and therefore it is necessary to establish the likely turnover of products utilising the brand in future years.

Licensor	Licensee	Low	High
American Medical Association	Sunbeam Products	3.0%	3.0%
Coleman Company Inc	Ranco Inc	5.0%	5.0%
Curtis Mathes Corporation	Curtis Mathes Corporation	1.5%	1.5%
Dianna L Cleveland	Innovative Tracking Solutions	1.0%	1.0%
Remington Corporation	Remington Products Company	3.0%	3.0%
Service Merchandise Company	Windmere-Durable Holdings	5.0%	5.0%
Wearever-Procter Silex Inc	Lincoln Foodservice Products	2.5%	5.0%
Windmere-Durable Holdings Inc	Salton	10.0%	10.0%
	Average	3.9%	4.2%

Deriving a discount rate for the brand name cash flows

CAPM is adopted to arrive at an appropriate basis figure for a discount rate:

- The risk free rate of return. The average yield on UK government bonds for a 10 to 15-year period that stood at the date of valuation (source: Bloomberg) is approximately 4.8%.
- The beta. Research has shown that in the UK, betas for companies in the same sector as RE were in the range of 0.3 to 1.0 at the valuation date (source: Bloomberg).

A beta of 0.6, the average, is adopted.

- The equity premium. The consensus view is that the post-tax equity premium has historically always been in the region of 6% to 8%. Research contemporaneous with the valuation has shown that this has dropped to between 3% and 4%. Four per cent was adopted as a conservative stance.

Calculation of the cost of equity. Given the assumptions above, the cost of equity (C_e) can be calculated thus:

$$C_e = R_f + \beta (R_e)$$

$$C_e = 4.8\% + 0.6(4.0)\%$$

$$C_e = 7.2\%$$

A discount rate of, say, 7% is produced in the first stage of the derivation. Such a discount rate is not considered appropriate for the valuation of the RE brand name unadjusted. The following points of difference are among those that need to be considered in arriving at an appropriate discount rate to apply to the brand name:

- RE has recently been a loss-making entity and there must be a risk that forecast turnover will not be achieved



- CAPM stock has considerable diversity
- CAPM stock is usually in respect of larger business undertakings.

CAPM needs to be uplifted by at least 100% to reflect the above points and therefore a discount rate of, say, 16% is applied.

The detailed modelling is shown in Appendix 2.

Valuation of the brand name

A discount rate of 16% applied to the forecast cashflows for the brand for the period through to the end of the fourth financial year after the date of valuation implies a value for those cashflows today of £8 179 million.

The same discount rate applied to the VY+4 cashflows into perpetuity and assuming growth of 2.5% implies a terminal value of £10 000 million.

The total value of the brand name based on the projected income stream is therefore £18 179 million, say, £18 million.

A value of £18 million implies a then current P/E of approximately 9.2 and a prospective P/E as of that date of 8.7. Although the current P/E was slightly high compared to those shown by the quoted comparables above there was only one month of the year left to run. A better comparison was therefore the prospective P/E, which was well within the range shown.

Conclusions

This valuation is undertaken as a result of the need of the company to strengthen its balance sheet following a period of losses. It has persuaded its auditors that its brand name has significant value and therefore should be an asset shown on its balance sheet.

Here SEC and UK tax regulations concerning transactions at arm's-length are the fundamental factors in the choice of concept of value.

A large amount of information was available in respect of both the company and the industry. The company supplied cash flows broken out by brand. The availability of this information supports the conclusion that the value of the brand was actively maintained. A large amount of industry and market information was available and it was possible to provide a large section on the economy in this case study.

Factors affecting the chosen discount rate include the company's recent financial history, and, since a CAPM approach is used to provide a starting point, key differences between the subject assets and CAPM companies.

This is a clear example of a report being driven by its target audience, that is, the auditors and their requirement that enough detail be included to convince them that the valuation had been properly undertaken.

Here SEC and UK tax regulations concerning transactions at arm's-length are the fundamental factors in the choice of concept of value.

Conclusion

Conclusions from the four case studies

These case studies demonstrate that key assumptions determined by the characteristics of intangible assets and the choice of the concept of value on which the valuation proceeds have an influence on the value and place a heavy emphasis on the judgment of the valuer.

Broadly, it can be seen that the context of the valuation provides guidance in choosing the concept of value and in conjunction with available information may help to determine which of the three main approaches are taken. The technique used is typically based on the quality and type of information available.

Case Study No. 20:-

**EVA BASED PERFORMANCE MEASUREMENT: A CASE STUDY
OF DABUR INDIA LIMITED**

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ABSTRACT

Traditional measures of corporate performance are many in number. Measures using common bases are Net Profit Margin, Operating Profit Margin, Return on Investment (ROI), Return on Net Worth (RONW), Earning Per Share (EPS) etc. Among these, again ROI is recognized as the most popular yardstick of overall performance. But it is often argued that, in general, these traditional measures fail to identify the true surplus. Economic Value Added (EVA) is advocated as a new measure of corporate performance that focuses on clear surplus in contrast to the traditionally used profit based indicators.

For evaluation of the efficiency of any decision, value creation or value addition aspect is of utmost importance in the present backdrop of corporate governance. Although adopting a holistic approach safeguarding the interests of all stakeholders is being emphasized and rightly so, it should be kept in mind that value creation or value addition aspect is of prime consideration in the assessment of the corporate policy guidelines. If that is not satisfied, wrong signals will be emitted from securities market and the continuance of the operations of the entity will be at stake. In view of the above considerations, in the present paper an attempt has been made to analyse the financial performance of Dabur India Limited by using EVA.

Introduction

The term 'Economic Value Added (EVA)' is a registered trademark of Stern Stewart & Co. of New York City (USA). Bennett Stewart in his book, *"The Quest for Value"*, used the term EVA with a symbol TM as super script, which is the normal practice of referring to any registered trademark whenever the term is used. Thus EVA is actually Stern Stewart & Co.'s trademark for a specific method of calculating economic profit. *"The Quest for Value"* was published in 1991. Peter Drucker claimed that he discussed EVA in 1964 in his book, *"Managing for Results"*. It cannot be denied, however, without going into argument as to who invented EVA first that the concept became popular only after Stern Stewart & Co. marketed it.

Just earning profit is not enough, a business should earn sufficient profit to cover its cost of capital and create surplus to grow. Stated simply, any profit earned over and above the cost of capital is Economic Value Added.

Traditionally the methods of measurement of corporate performance are many. Common bases used are: - Net Profit Margin (NPM), Operating Profit Margin (OPM), Return on Investment (ROI), Return on Net Worth (RONW) etc. Profit After Tax (PAT) is an indicator of profit available to the shareholder and Profit Before Interest After Tax (PBIAT) is an indicator of the surplus generated using total funds. ROI is still recognized as the most popular yardstick of profitability measurement.

However, the traditionally used profit indicators are ineffective parameters in explaining whether the reported profit covers the cost of capital. Old profit concept fails to indicate clear surplus.

The basic proposition is that the Return on Capital Employed should be greater than the Cost of Capital (i.e. $ROCE > K_0$).

Capital Employed highlights long term capital and cost of capital represents weighted average cost of capital.

Traditionally, Profit After Tax is shown in the Profit & Loss Account to indicate the profit available to the shareholders, both preference and equity. Ability to maintain dividend is not a test of profit adequacy. Ability to generate Economic Value Added is the only test of profit adequacy. Any surplus generated from operating activities over and above the cost of capital is termed as EVA.



It is a new measure of corporate surplus that should be shared by the employees, management and shareholders. EVA focuses on clear surplus in contradiction to the traditionally used profit available to the shareholders. It is used by companies as a performance indicator and also as a basis for executive compensation. Surplus should be derived by deducting cost of capital from profit before interest but after tax.

$EVA = NOPAT - WACC \times \text{Capital Employed}$.

Where, NOPAT means Net Operating Profit before Interest and after Tax.

WACC represents Weighted Average Cost of Capital.

EVA BASED PERFORMANCE MEASUREMENT

Capital Employed = Net Block + Trading Investment + Net Current Assets.

It is free from subjective assumption that needs to be adopted while identifying profit and cost of capital. Cost of equity is derived on the basis of Capital Assets Pricing Model (CAPM).

The founders of EVA traditionally use CAPM. Under CAPM Cost of Equity (K_e) is given by the following

$$K_e = R_f + \beta (R_m - R_f)$$

Where, R_f = Risk free return.

R_m = Market expected Rate of Return

=Risk Co-efficient.

Both market return and Beta are highly volatile, and if annual market return and yearly beta of a company are chosen for finding cost of equity, abnormally high or low market related cost of equity may be obtained. To avoid this difficulty, one may apply **“Long run approach”**.

While deriving EVA it becomes necessary to make certain accounting adjustments, which are required only for corporate reporting purposes. It is sometimes alleged that EVA talks too much about the shareholders value added rather than focusing on the interest of all stakeholders. But EVA is a powerful performance measurement tool and it is argued that if a company is able to serve its shareholders then it can better serve all other stakeholders also.

Objectives of the Study

This study has the following objectives:

1. To examine whether Dabur India Limited (DIL) has been able to generate value for its shareholders.
2. To compute the performance of the company by applying traditional performance indicator like ROI and the new corporate performance measure EVA.

Database and Methodology

The financial data of DIL, selected for this study has been collected from the published Annual Reports for the period 1998-99 to 2002-03. Capitaline-2000 Database Package has also been used for the collection of BSE Sensex and DIL Share Price data.

Computation of EVA involves calculation of three figures, (i) Net Operating Profit Before Interest After Tax, (ii) Capital Employed and (iii) Weighted Average Cost of Capital based on CAPM. To compute market return long run averaged annualized daily return has been considered. The long run period should represent all cycles and abnormalities of the capital market. For the purpose of analyzing risk containment measures in Indian stock index futures market, J.R.Varma Committee used data for the period 1st July 1990 to 30th June 1998. The objective of taking a long sample period was to consider two

full business cycles that will cover more than two interest rate cycles and two stock market cycles. Prof. Varma deliberated upon the reasons for inclusion of 1992 when index was influenced by the security scam. It is viewed that scam is a period of episodic volatility which could easily recur.

Thus, for the purpose of determining market return, abnormality in the market index should not be eliminated. It should be filtered through increasing the sample size. So it is possible to consider BSE Sensex during 1st April 1991 to 31st March 2003 for determining Market Return. In this study Market Return has been considered as 18.56% p.a., which is average of 2808 annualized daily return from 1st April 1991 to 31st March 2003.

It has been assumed that 10 year Treasury Gold Bond Yield i.e. 9% rate is the risk free rate in this study.

To calculate Beta it has been considered BSE Sensex Return & DIL Share Price Return from 7th March 1994 to 31st March 2003 and result is 0.71.

Survey of Literature

Easton, P. Harris, T. and Ohlson, J (1992) observed that Economic Value Added (EVA) is an increasingly popular corporate performance measure one that is often used by companies not only for evaluating performance, but also as a basis for determining incentive pay. Like other performance measures, EVA

EVA BASED PERFORMANCE MEASUREMENT

attempts to cope with the basic tension that exists between the need to come up with a performance measure that is highly co-related with shareholders wealth, but at the same time somewhat less subject to the random fluctuations in stock prices. This is a difficult tension to resolve and it explains the relatively low correlation of all accounting based performance measures with stock returns at least on a year to year basis.

Stewart (III), and Bennett, G. (1994) observed that “EVA is a powerful new management tool that has gained growing international acceptance as the standard of corporate governance. It serves as the centerpiece of a completely integrated frame-work of financial management and incentive compensation.” In essence, EVA is a way both to legitimize and to institutionalize the running of a business in accordance with basic microeconomics and corporate finance principles. The experience of a long list of adopting companies throughout the world strongly supports the notion that an EVA system, by providing such an integrated decision making framework, can refocus energies and redirect resources to create sustainable value for companies customers, employees, shareholders and for management.

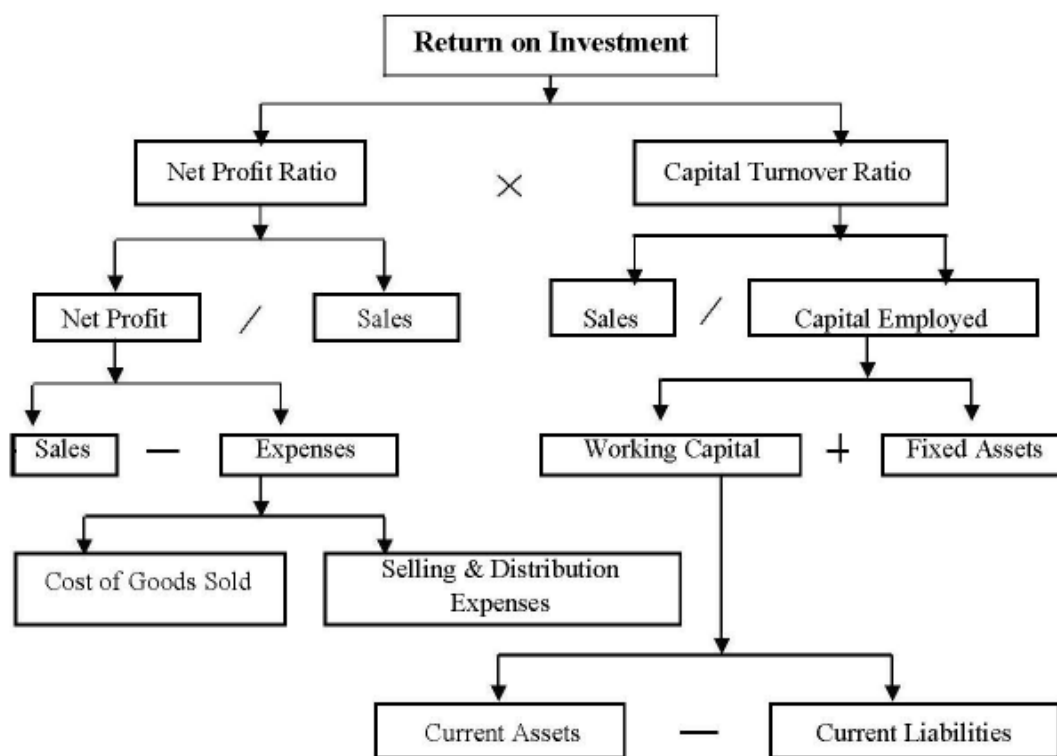
Rice, V.A. (1996) observed that “previously we used several measurements to gauge our financial outlook from earnings per share to discounted cash flow and return on average assets. With EVA, I saw a way to meet our business objectives and create a new corporate culture. It permeates every level from boardroom to the shop floor. Bonuses of all managers are determined solely by whether variety achieves its EVA targets. At our company every decision and every action result from analysis that uses EVA principles. We focus on ensuring that every investment produces return that exceeds our cost of capital. We believe this approach enables us to directly align management and shareholders interest”.

Thenmozhi, M. (2000) In order to have an understanding of how the traditional performance measures are comparable to EVA, data of three financial years between 1996 and 1999 were chosen from 28 companies. Only 6 out of the 28 companies have positive EVA while the others have negative. The EVA as a percentage of Capital Employed (EVA/CE) has been found to indicate the true return on capital employed. Comparing EVA with other traditional performance measures the study indicates that all the companies depict a rosy picture in terms of EPS, RONA and ROCE for all the three years. The study shows that the traditional measures do not reflect the real value of shareholders and EVA has to be measured to have an idea about the shareholders value.

Ray, Russ (2001) observed that the missing link between EVA and improved financials is actually productivity. EVA can be a powerful tool. When properly applied, it allows a firm to ascertain where

it's creating value and where it's not. More specifically it allows a firm to identify where the return on its capital is outstripping the cost of that capital. For those areas of the firm where the former is indeed greater than the latter EVA analysis then allows the firm to concentrate on the firm's productivity in order to maximize the value created of the firm. Finally, as investors buy more shares in the firm in order to have more claims on its increased value, they automatically bid up and eventually maximize the firm's share price. And as any good capitalist knows, maximizing share price is the name of the game in a free market economy. Thereafter marginal increases in value added can be attained by either decreasing the firm's cost of capital or by increasing its productivity.

DU – PONT MODEL

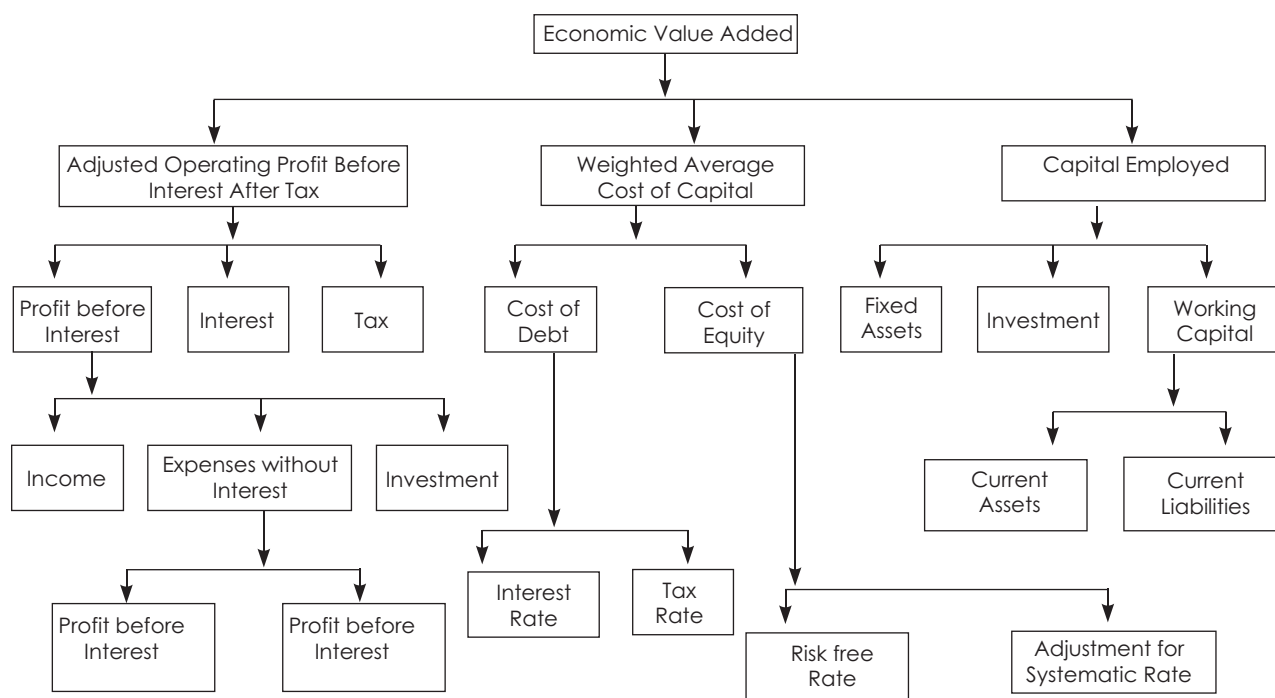


EVA BASED PERFORMANCE MEASUREMENT

The DU – PONT model is a typical traditional model of measuring financial performance on the basis of accounting income concept. The idea behind the model is that the Return on Investment (ROI) is the best overall financial performance measure and all activities of an organization ultimately contribute to the ROI. For such an analysis much emphasis is laid on financial ratios based on four related financial aspects of business i.e. Profitability, Liquidity, Leverage and Activity.

ROI represents the earning power of the company. ROI depends on two ratios (i) Net Profit Ratio and (ii) Capital Turnover Ratio. A change in any of these ratios will change the firm's earning power. These two ratios are affected by many factors.

A change in any of these factors will change these ratios also. The various factors affecting the ROI can be put through a chart given above. This chart is known as DU – PONT Control Chart since it was first used by DU – PONT Company of the USA. The chart helps the management in concentrating attention on different forces affecting profit. An increase in profit can be achieved either by more effective use of capital which will result in a higher turnover ratio or better sales efforts which will result in a higher net profit ratio. The same rate of return can be obtained either by a low net profit ratio but a high turn over ratio or vice versa.

ECONOMIC VALUE ADDED MODEL

Economic Value Added represents value generating power of an organization. There are three factors to compute EVA. (i) Adjusted earning before interest after tax. (ii) Weighted average cost of capital and (iii) Capital Employed. A change in any of the three factors will change EVA. The various factors affecting the EVA can be put through a chart given above. The chart helps the management in concentrating attention on different factors affecting value. It is clear from the above chart that top management can take appropriate decision to create value in the following way:

Deploy more and more funds to those activities where the amount of NOPAT generated by the activities is greater than the cost of capital.

Withdraw fund from those activities wherein the amount of NOPAT is less than the amount of cost of capital unless there is strategic decision to lose in one activity in order to gain in another.

Improve the operating efficiency of the organization to retain the same amount of NOPAT by possible continuous reduction of existing capital or / and continuous increase of the existing NOPAT with existing amount of capital.

Optimize the capital structure through optimum debt equity mix in order to have the lowest possible weighted average cost of capital (WACC).

Till now, in India the finance managers are not computing EVA to measure financial performance of an organization due to subjective function. In this study it has been tried to eliminate subjective function as far as possible.



TABLE 1

Performance Highlights: Traditional System

(Amounts in ₹ Crore)

Financial Year	1998-99	1999-00	2000-01	2001-02	2002-03
Profit After Tax	50.1	77.43	77.92	64.44	85.1
Add Interest	28.8	26.93	29.18	22.13	14.53
Profit Before Interest After Tax	78.9	104.36	107.1	86.57	99.63
Average Capital Employed	518.76	574.31	576.47	580.68	564.58
Return on Investment (%)	15.21	18.17	18.58	14.91	17.65

EVA BASED PERFORMANCE MEASUREMENT

TABLE 2

Financial Performance of Dabur India Ltd.

Particulars	From 1998-99 to 2002-03 (Amount in ₹ Crore)									
	FY: 1998-99		FY: 1999-00		FY: 2000-01		FY: 2001-02		FY: 2002-03	
	Amount	% of Sales	Amount	% of Sales	Amount	% of Sales	Amount	% of Sales	Amount	% of Sales
Sales	914.77		1042.59		1166.47		1163.19		1232.3	
Other Income	17.42		34.19		18.87		13.87		8.3	
Material Cost	458.49	50.12	526.95	50.54	538.47	46.16	515.61	44.33	521.19	42.29
Excise Duty	37.01	4.05	42.24	4.05	59.36	5.09	60.61	5.21	73.37	5.95
Manufacturing Expenses	22.76	2.49	21.98	2.11	29.06	2.49	29.94	2.57	29.67	2.41
Selling & Administration Cost	258.95	28.31	292.09	28.02	339.73	29.12	364.57	31.34	386.27	31.35
Employee Cost	54.88	6.00	63.14	6.06	77.69	6.66	84.49	7.26	93.81	7.61
Financial Expenses	26.7	2.92	25.11	2.41	29.66	2.54	23.95	2.06	17.08	1.39
Depreciation & Misc. Expenditure Written off	22.19	2.43	24.16	2.32	26.2	2.25	25.38	2.18	23.66	1.92
Profit Before Tax	51.6	5.64	81.29	7.80	85.17	7.30	75.51	6.49	95.53	7.75
Provision For Tax	1.5	0.16	3.86	0.37	7.25	0.62	11.07	0.95	10.42	0.85
Profit After Tax	50.5	5.52	77.43	7.43	77.92	6.68	64.44	5.54	85.11	6.91

From the above table it is clear that Material Cost as a ratio to sales has come down from 50.12% in 1998-99 to 42.29% in 2002-03. It is possible due to increased yield ratio and efficient usage of raw and packing material. In few cases the company produced raw material for captive consumption purpose.

Selling & Administration expenses as a percentage of sales increased from 28.31% in 1998-99 to 31.35% in 2002-03. Excise Duty and Employee Cost as a percentage of sales registered an upward trend during the study period. Financial Expenses as a percentage of sales registered a downward trend during the study period except the F.Y. 2001-02.

EVA based Performance Management System**Cost of Equity under Capital Asset Pricing Model (CAPM):**

According to CAPM, the expected return on equity is given by the following equation:-

$$K_e = R_f + \beta (R_m - R_f).$$

$$\text{So, } K_e = 9\% + 0.71(18.56\% - 9\%)$$

$$= \mathbf{15.79\%}$$

Where K_e = Cost of Equity,

R_f = Risk free rate of Return,

β = Risk Co-efficient,

R_m = Rate of Return on market index.

Cost of Redeemable Debt:

The cost of redeemable debt is calculated by applying the following formula:

$$K_d = [I + (R_v - S_v)/N] * (1-T) / [(R_v + S_v) / 2]$$

Where: K_d = Cost of debt,

I = Annual interest payment,

N = Term of maturity period,

R_v = Redeemable value of debt at the time of maturity,

S_v = Sale value less discount and flotation expenses.

Cost of Redeemable Debt is shown in the following table :

Year	1998-99	1999-00	2000-01	2001-02	2002-03
Cost of Redeemable Debt (%)	9.59	9.59	9.59	9.59	9.59

Cost of Other Debts:

$$K_o = I (1-T) \text{ Where : } K_o = \text{Cost of other debts,}$$

EVA BASED PERFORMANCE MEASUREMENT

I = Average annual interest rate,

T = Company's effective corporate tax rate.

TABLE 3

Cost of Other Debts

Year	1998-99	1999-00	2000-01	2001-02	2002-03
Cost of Other Debt (%)	6.17	5.86	9.68	6.61	8.99

Weighted Average Cost of Capital (WACC)

According to The Chartered Institute of Management Accountants, London (CIMA) terminology the Weighted Average Cost of Capital "as the average cost of the company's finance, equity, debentures, bank loans weighted according to the proportion each element bears to the total pool of capital, weighting is usually based on market valuations, current yields and costs after tax." But for



EVA calculation purpose the WACC is computed by applying book value weights to cost of debt, cost of equity and cost of preference shares (if any). In other words, initially, cost of each source of capital is calculated separately. Then a weightage, representing the proportion of a particular source on the total invested capital is applied to compute overall cost of capital.

We have calculated weighted average cost of capital in the following way. $WACC = K_e * ESF / CE + K_d * LTD / CE + K_p * PSF / CE$

Where, WACC = Weighted average cost of capital,
 K_e = Cost of equity,
 ESF = Equity shareholders fund,
 CE = Capital employed,
 K_d = Cost of debt,
 LTD = Long term debt,
 K_p = Cost of preference share,
 PSF = Preference shareholders fund.

The capital structure of the company from 1998-99 to 2002-03 is given overleaf–

TABLE 4

Capital Structure of DIL (Based on Book Value)

Year	1998-99		1999-00		2000-01		2001-02		2002-03	
Particulars	Book Value (₹ lac)	Proportion (%)	Book Value (₹ lac)	Proportion (%)	Book Value (₹ lac)	Proportion (%)	Book Value (₹ lac)	Proportion (%)	Book Value (₹ lac)	Proportion (%)
Share Capital	2850.67		2852.06		2852.13		2855.94		2857.50	
Reserves & Surplus	23299.61		29151.56		33368.09		37181.14		38251.58	
Total	26150.28		32003.62		36220.22		40037.08		41109.08	
Less Misc. Expenditure	983.81		704.08		738.41		347.93		240.03	
Net Worth	25166.47	0.46	31299.54	0.52	35481.81	0.64	39689.15	0.65	40869.05	0.79
14.75% Debentures	1500.00	0.03	1500.00	0.02	1500.00	0.03	1000.00	0.02	500.00	0.01
Other Loans	27993.58	0.51	27402.00	0.46	18109.79	0.33	20316.73	0.33	10500.81	0.20
Loan Funds	29493.58	0.54	28902.00	0.48	19609.79	0.36	21316.73	0.35	11000.81	0.21
Capital Employed	54660.05		60201.54		55091.60		61005.88		51869.86	

The capital structure of the company from 1998-99 to 2002-03 on the basis of Market Value is given below :

TABLE 5

Capital Structure of DIL (Based on Market Value)

Year	1998-99		1999-00		2000-01		2001-02		2002-03	
	Market Value (₹ lac)	Proportion (%)	Market Value (₹ lac)	Proportion (%)	Market Value (₹ lac)	Proportion (%)	Market Value (₹ lac)	Proportion (%)	Market Value (₹ lac)	Proportion (%)
Net Worth	18587.84	0.39	23367.65	0.45	17369.58	0.47	15879.00	0.43	10258.42	0.48
14.75% Debentures	1500.00	0.03	1500.00	0.03	1500.00	0.04	1000.00	0.03	500.00	0.02
Other Loans	27993.58	0.58	27402.00	0.52	18109.79	0.49	20316.73	0.54	10500.81	0.50
Loan Funds	29493.58	0.61	28902.00	0.55	19609.79	0.53	21316.73	0.57	11000.81	0.52
Capital Employed	48081.42		52269.65		36979.37		37195.73		21259.23	

The closing market price of DIL's one share in 1998-99 was ₹ 65.20. The market value of the company's equity is obtained by multiplying the number

EVA BASED PERFORMANCE MEASUREMENT

of the outstanding shares (285.08950 lacs) by the Closing share price. The market value of Debt is assumed to be equal to the book value. In the same way it has been calculated for 1999-00, 2000-01, 2001-02 & 2002-03 respectively. The WACC of the company under CAPM from 1998-99 to 2002-03 is given below—

TABLE 6

WACC of DIL under CAPM (Based on Book Value)

Year	1998-99		1999-00		2000-01		2001-02		2002-03	
Particulars	(%)	Proportion	(%)	Proportion	(%)	Proportion	(%)	Proportion	(%)	Proportion
Cost of Equity	15.79	0.46	15.79	.52	15.79	.64	15.79	.65	15.79	.79
Cost of Debenture	9.59	0.03	9.59	.02	9.59	.03	9.59	.02	9.59	.01
Other Cost of Debt	6.17	0.51	5.86	.46	9.68	.33	6.61	.33	8.99	.20
WACC	10.70		11.10		13.59		12.64		14.37	

The WACC of the company under CAPM from 1998-99 to 2002-03 on the basis of Market Value is given below:

TABLE 7

WACC of DIL under CAPM (Based on Market Value)

Year	1998-99		1999-00		2000-01		2001-02		2002-03	
Particulars	(%)	Proportion	(%)	Proportion	(%)	Proportion	(%)	Proportion	(%)	Proportion
Cost of Equity	15.79	0.39	15.79	0.45	15.79	0.47	15.79	0.43	15.79	0.48
Cost of Debenture	9.59	0.03	9.59	0.03	9.59	0.04	9.59	0.03	9.59	0.02
Other Cost of Debt	6.17	0.58	5.86	0.52	9.68	0.49	6.61	0.54	8.99	0.50
WACC	10.02		10.44		12.55		10.65		12.27	



Basic EVA: It is a rudimentary form of EVA arrived at without making any adjustments. Basic EVA of DIL is as follows:

TABLE 8

WACC as per CAPM (Weight based on Book value)

(Amounts in ₹ Lac)

Financial Year	1998-99	1999-00	2000-01	2001-02	2002-03
Average Capital Employed	51876.25	57430.795	57646.57	58068.375	56457.505
WACC	10.70%	11.10%	13.59%	12.64%	14.37%
Cost of Capital Employed	5550.76	6374.82	7834.17	7339.84	8112.94
Profit After Tax	5010.32	7743.16	7792.34	6444.34	8510.44
Add : Interest after tax	2879.78	2693.08	2918.31	2213.44	1452.84
NOPBIAT	7890.10	10436.24	10710.65	8657.78	9963.28
EVA	2339.34	4061.42	2876.48	1317.94	1850.34
EVA on Capital Employed (%)	4.51	7.07	4.99	2.27	3.28

TABLE 9

WACC as per CAPM (Weight based on Market value)

(Amounts in ₹ Lac)

Financial Year	1998-99	1999-00	2000-01	2001-02	2002-03
Average Capital Employed	51876.25	57430.795	57646.57	58068.375	56457.505
WACC	10.02%	10.44%	12.55%	10.65%	12.27%
Cost of Capital Employed	5198.00	5995.77	7234.64	6184.28	6927.34
Profit After Tax	5010.32	7743.16	7792.34	6444.34	8510.44
Add : Interest after tax	2879.78	2693.08	2918.31	2213.44	1452.84
NOPBIAT	7890.10	10436.24	10710.65	8657.78	9963.28
EVA	2692.10	4440.47	3476.01	2473.50	3035.94
EVA on Capital Employed (%)	5.19	7.73	6.03	4.26	5.38

From the above tables it is evident that the company has been able to create value for its shareholders but due to change weight, to compute WACC, amount of EVA has materially changed. Selection of weight is a very tricky area, because one can easily manipulate the WACC (%) and also change the amount of EVA. Without any accounting adjustment any company can easily compute basic EVA to know whether the company is value creating or value destroying roughly. But as per Stern Stewart recommendation to compute true EVA more than 160 potential accounting adjustments are required. In Indian scenario if we analysis deeply after considering Indian Accounting Standards and Corporate Laws certain accounting adjustments are necessary to compute true EVA. Important adjustments are: Stock valuation, Government grants of revenue & capital nature, Tax effect accounting, Prior period adjustments, R&D expenses, Amortization of Intangibles, Capitalization of asset linked foreign currency loss or gain, Provision for retirement benefits, Warranty claims, Prior period adjustments, adjustment for revaluation reserve and related depreciation and Off Balance Sheet Asset etc.

After considering all the necessary accounting adjustments *Disclosed EVA* has been computed in the following way.

EVA BASED PERFORMANCE MEASUREMENT

TABLE 10

Adjusted Capital Employed and Adjusted Net Operating Profit.

(Amounts in Rs. Lac)

Capital Employed	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Shareholders' Funds	21929.07	25166.47	31299.54	35481.81	39689.2	40869.1
Loan Funds						
14.75% Debentures	1500	1500	1500	1500	1000	500
Secured Long term Loans	392.06	341.93	478.06	487.21	1819.27	1488.07
Others Loan Funds	13509.81	16741.82	12917.93	12228.74	8563.92	6599.42
Total Loan Funds	15401.87	18583.75	14895.99	14215.95	11383.2	8587.49
Less : Adjusment for foreign exchange	-1251.72	-1624.48	-1817.86	-1993.05	-1980.64	-1925.49
Add: Adjusted Depreciation for foreign exchange	144.79	209.69	227.79	246.86	243.16	235.21
Adjusted Capital Employed	36224.01	42335.43	44605.46	47951.57	49334.9	47766.3
Average Capital Employed		39279.72	43470.445	46278.515	48643.2	48550.6
Adjustment for foreign exchange						
Exchange fluctuation loss capitalised						
For 1996-97	101.38	72.77	61.65	52.23	44.25	37.49
For 1997-98	1150.34	906.28	804.41	714	633.74	562.51
For 1998-99		645.43	572.82	508.38	451.19	400.43
For 1999-00			378.98	341	306.84	276.09
For 2000-01				377.44	337.54	301.87
For 2001-02					207.08	185.83
For 2002-03						161.27
Total adjustment	1251.72	1624.48	1817.86	1993.05	1980.64	1925.49
Adjusted Depreciation due to exchange fluctuation loss capitalised						
For 1996-97		13.12	11.12	9.42	7.98	6.76
For 1997-98		114.76	101.86	90.41	80.25	71.23
For 1998-99		81.81	72.6	64.44	57.19	50.76
For 1999-00			42.21	37.98	34.16	30.75
For 2000-01				44.61	39.9	35.68
For 2001-02					23.68	21.25
For 2002-03						18.78
Total adjustment		209.69	227.79	246.86	243.16	235.21
Adjusted Net Operating Profit						
Profit After Tax		5010.32	7743.16	7792.34	6444.34	8510.44
Add : Interest		1845.28	1460.35	2018.53	1055.8	1062.18
Less : Foreign Exchange Loss Capitalised		727.25	421.18	422.05	230.75	180.05
Add: Adjusted depreciation due to foreign exchange loss capitalised		209.69	227.79	246.86	243.16	235.21
Adjusted Net Operating Profit		6338.04	9010.12	9635.68	7512.55	9627.78



Accounting Adjustments

Certain accounting adjustments are necessary for computation of Net Operating Profit After Tax (NOPAT) and Capital Employed because certain accounting policies adopted by a company may wrongly classify revenue, expense, assets and liabilities.

Necessary accounting adjustments are discussed below: -

- (1) **Depreciation:** Depreciation on Fixed Assets have been provided on written down value method at rates specified in schedule XIV of the Companies Act. For assets impaired depreciation has been charged on pre-impaired amount. As regards fixed assets acquired out of loan taken in foreign currencies loss or gain on such loans at the year-end is adjusted to the value of such fixed assets and depreciation on the differential amounts of fixed assets arising out of exchange loss or gains on foreign currency loan are adjusted over the remaining life of the concerned fixed assets. But to calculate EVA interest on exchange loss or gain should be charged to P&L A/C not Assets A/C, so it has been adjusted to calculate "Disclosed EVA".
- (2) **Impairment of Assets:** The Company has identified impairable assets at the year end in terms of para 5 to 13 of AS-28 issued by ICAI and arrived at impairment loss therein being the difference between the book value and recoverable value of relevant assets. Impairment loss, so arrived at, has been adjusted against opening general reserve as per transitional provision laid down in para 124 of AS-28. This accounting policy has actual impact on EVA.
- (3) **Investment:** Investment being long term in nature (except for investment in Dabur International Ltd, Dabur Oncology Plc and Dabur Pharma Ltd. which are current in nature) is held at cost. Provision will be made as and when deemed necessary under AS-13 issued by ICAI.
- (4) **Deferred Entitlement on LTC:** In terms of the opinion of the Expert Advisory Committee of the ICAI, the Company has provided liability occurring on account of deferred entitlement towards LTC in the period in which the employees concerned render their services. So no accounting adjustments are necessary to calculate "Disclosed EVA".

EVA BASED PERFORMANCE MEASUREMENT

- (5) **Inventories:** Stocks are valued at lower of cost or net realizable value. Basis of determination of cost remain as follows :
 - Raw Materials, Packing Materials, Stores & Spares:- on FIFO Basis.
 - Work-In-Process: At cost of input plus overhead up to the stage of completion.
 - Finished Goods: At Cost of Input plus Appropriate Overhead.
- (6) **Research and Development Expenses:-** Contributions towards scientific research expenses are charged to the profit & loss account in the year in which the contribution is made. But due to lack of data it is not possible to segregate research expenses and development expenses.
- (7) **Retirement Benefits:** Liabilities in respect of retirement benefits to employees are provided for as follows:
 - Leave salary of employees of the company on the basis of actuarial valuation.
 - Gratuity liability on the basis of payment advice from Life Insurance Corporation of India from whom the company's gratuity trust has taken the Group Gratuity Insurance Policy.
 - Liability for superannuation fund on the basis of the premium paid to Life Insurance Corporation of India in respect employees covered under the superannuation fund policy. So no accounting adjustments are required to calculate disclosed EVA.
- (8) **Reorganization of Income and Expenses:** Sales and Purchase are accounted for on the basis of passing of title to the goods.

- Sales comprise of sale price of goods including excise duty and sales tax but exclude discount.
- Export sales are accounted for on the basis of date of bill of lading.
- All items of incomes and expenses have been accounted for on accrual basis.

So to calculate disclosed EVA no adjustments are required.

- (9) **Deferred Taxation:** The liability of company is estimated considering the provision of the Income Tax Act 1961. Deferred Tax is recognized subject to the consideration of prudence, on time differences being the difference between taxable income and accounting income that originate in one period and capable of reversal in one or more subsequent periods. Tax effect accounting has the effect of spreading tax impact and estimating timing difference. This should be followed while determining EVA.
- (10) **Foreign Currency Transaction:** In respect of foreign branches /offices, revenue items have been converted at average of month end exchange rates during the year. Fixed assets have been converted at the rates prevailing on dates of purchase. Assets & Liabilities other than fixed assets are converted at the year-end exchange rate. Exchange gain or loss arising out of above is charged to profit & loss account.

As regards fixed assets acquired out of loan taken are foreign currencies, loss or gain on such loans at the year-end is adjusted to the value of such fixed assets. But to calculate disclosed EVA it has been adjusted. Capital Employed and Net Operating Profit After Tax have been charged due to that adjustment.

(11) Miscellaneous Expenditure:

- Share issue expenses are being amortized over a period of ten years.
- Technical know-how fees paid to Technical Collaborators are being amortized over a period of five years.
- Strategic Management Consultancy expenses are being amortized over a period of five years.
- Deferred Employees compensation under ESOP are being amortized on straight line basis over vesting period.

So no accounting adjustments are required to calculate disclosed EVA.

Disclosed EVA is as follows:

TABLE 11

WACC as per CAPM (Weight based on Book value)

(Amounts in ₹ Lac)

Financial Year	1998-99	1999-00	2000-01	2001-02	2002-03
Average Capital Employed	39279.72	43470.445	46278.515	48643.215	48550.56
WACC	10.70%	11.10%	13.59%	12.64%	14.37%
Cost of Capital Employed	4202.93	4825.22	6289.25	6148.50	6976.72
Adjusted Net Operating Profit	6338.04	9010.12	9635.68	7512.55	9627.78
EVA	2135.11	4184.90	3346.43	1364.05	2651.06
EVA on Capital Employed (%)	5.44	9.63	7.23	2.80	5.46



EVA BASED PERFORMANCE MEASUREMENT

TABLE 12

WACC as per CAPM (Weight based on Market value)

(Amounts in ₹ Lac)

Financial Year	1998-99	1999-00	2000-01	2001-02	2002-03
Average Capital Employed	39279.72	43470.445	46278.515	48643.215	48550.56
WACC	10.02%	10.44%	12.55%	10.65%	12.27%
Cost of Capital Employed	3935.83	4538.31	5807.95	5180.50	5957.15
Adjusted Net Operating Profit	6338.04	9010.12	9635.68	7512.55	9627.78
EVA	2402.21	4471.81	3827.73	2332.05	3670.63
EVA on Capital Employed (%)	6.12	10.29	8.27	4.79	7.56

TABLE 13

ROI versus EVA performance indicators of DIL

Financial Year	1998-99	1999-00	2000-01	2001-02	2002-03
ROI (%)	14.43	17.34	19.44	14.18	19.21
WACC (%)	10.02	10.44	12.55	10.65	12.27
Basic EVA on Capital Employed(%)	4.51	7.07	4.99	2.27	3.28
(Weight based on book Value)					
Basic EVA on Capital Employed(%)	5.19	7.73	6.03	4.26	5.38
(Weight based on market Value)					
Disclosed EVA on Capital Employed (%)	5.44	9.63	7.23	2.80	5.46
(Weight based on book Value)					
Disclosed EVA on Capital Employed (%)	6.12	10.29	8.27	4.79	7.56
(Weight based on market Value)					

The above table shows that divergence exists between the performance results given by traditional measure (based on ROI) and percentage of EVA on Capital Employed both basic and disclosed. The Return on Investment (ROI) does not reflect the real value addition to shareholders' wealth and it is not possible to judge the efficiency of any decision, value creation or value addition aspect is of utmost importance in the present backdrop of corporate governance but EVA based performance measurement system give an idea clearly about the shareholders value addition or value destruction. The company has been successfully able to create value for its shareholders during the study period.

Conclusion

Performance measurement systems that were successful in the past are becoming obsolete and in some cases are dysfunctional and obstructive to improvements. A dynamic and more competitive environment requires dynamic benchmarks to get a clear picture of whether the firm is a value generator or a value destroyer.

The EVA based performance measurement system is the basis on which the company should take appropriate decisions related to the choice of strategy, capital allocation, merger & acquisitions, divesting business and goal setting. While deciding resource allocation it becomes necessary to appreciate the EVA impact of such decision. Management Accountants have the full knowledge about the company that would create value. They are in a position to guide a company in its restructuring mission for value creation. So a Management Accountant is expected to successfully transform traditional management system into value based management system.

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Case Study No. 21:-

BHARAT HOTELS COMPANY

Bharat Hotels Company (BHC) is a major hotel chain of India. The company operates 35 hotels of which 14 are owned by it and the rest are owned by others but managed by BHC. BHC's principal strategy has been to serve the high end of the international and leisure travel markets in major metropolises, secondary cities, and tourist destinations. It plans to continue to develop new businesses and leisure hotels to take advantage of the increasing demand which is emanating from the larger flow of commercial and tourist traffic of foreign as well as domestic travelers.

BHC believes that the unique nature of its properties and the emphasis on personal service distinguishes it from other hotels in the country. Its ability to forge management contracts for choice properties owned by others has given it the flexibility to swiftly move into new markets while avoiding the capital intensive and time consuming activity of constructing its hotels.

BHC's major competitors in India are two other major Indian hotel chains and a host of other five star hotels which operate in the metropolises as an extension of multinational hotel chains. The foreign hotel majors are considerably stronger than the Indian hotels in terms of financial resources, but their presence in the country has historically been small. With the government committed to developing India as a destination for business and tourism, several hotel majors have announced their intention to establish or expand their presence in the country.

BHC's operating revenues and expenses for the year just concluded (year 0) were as follows:

Operating Revenues	₹ (in million)
Room rent	1043
Food and beverages	678
Management fees for managed properties	73

Operating Expenses	₹ (in million)
Materials	258
Personnel	258
Upkeep and services	350
Sales and general administration	350



BHC's assets and liabilities (in million rupees) at the end of year 0 were as follows:

Owners' Equity & Liabilities	₹ (in million)	Assets	₹ (in million)
Net worth	1126	Net Fixed Assets	1510
Debt	900	Gross Block:	2110
		Accumulated depreciation	600
		Net Current Assets	516
	2026		2026

1. Based on the valuation report prepared by the author in mid-1980s for a major chain of hotels whose name has been disguised at the client's request.

BHC had no non-operating assets

At the beginning of year 0, BHC owned 2190 rooms. It has planned the following additions for the next seven years. Most of the land needed by the company for these additions has been already acquired.

Year	Rooms	Investment ₹ (in million)
1	90	200
2	130	300
3	80	240
4	130	500
5	186	800
6	355	1400
7	150	1300

A good portion of investment in year 7 would be toward purchase of land. For the sake of simplicity assume that the addition will take place at the beginning of the year. For developing the financial projections of BHC, the following assumptions may be made.

- The occupancy rate will be 60 percent for year 1. Thereafter, it will increase by 1 percent per year for the next six years
- The average room rent per day will be ₹2,500 for year 1. It is expected to increase at the rate of 15 percent per year till year 7.
- Food and beverage revenues are expected to be 65 percent of the room rent
- Material expenses, personnel expenses, upkeep and services expenses, and sales and general administration expenses will be, respectively, 15, 15, 18, and 18 percent of the revenues (excluding the management fees).
- Working capital (current assets) investment is expected to be 30 percent of the revenues.
- The management fees for the managed properties will be 7 percent of room rent. The room rent from managed properties will be more or less equal to the room rent from owned properties.
- The depreciation is expected to be 7 percent of the net fixed assets.
- Given the tax breaks it enjoys, the effective tax rate for BHC will be 20 percent. Besides financial projections, the following information is relevant for valuation.
- The market value of equity of BHC at the end of year 0 is ₹3050 million. The imputed market value of debt is ₹900 million.

- BHC's stock has a beta of 0.921
- The risk-free rate of return is 12 percent and the market risk premium 8 percent.
- The post-tax cost of debt is 9 percent
- The free-cash flow is expected to grow at a rate of 10 percent per annum after 7 years.

DCF Value

The DCF value of BHC is calculated as follows:

Free Cash Flow Forecast Based on the information provided above, the forecast for revenues and operating expenses is developed in the first three panels of the table below. The schedule for current assets, fixed assets, and depreciation is shown in the fifth panel. Finally the free cash flow forecast is developed in the fourth panel of the table.

Financial Projections							
PANEL 1 (₹ in million)							
Year	1	2	3	4	5	6	7
A.Rooms	2280	2410	2490	2620	2806	3161	3311
B. Occupancy rate	0.60	0.61	0.62	0.63	0.64	0.65	0.66
C. Average room rent (in ₹)	2500	2875	3306	3802	4373	5028	5783
PANEL 2 (₹ in million)							
D. Room rent from owned properties	1248	1543	1863	2291	2867	3771	4613
E. Food & beverage revenues	811	1003	1211	1489	1864	2451	2998
F. Revenue from owned properties (D + E)	2059	2546	3074	3780	4731	6222	7611
G. Management fees from managed properties	87	108	130	160	200	264	323
H. Total revenues(F+G)	2146	2654	3204	3940	4931	6486	7934
PANEL 3 (₹ in million)							
I. Material Expenses	309	382	461	567	710	933	1142
J. Personnel Expenses	309	382	461	567	710	933	1142
K. Upkeep and service expenses	371	458	553	680	852	1120	1370
L. Sales and general admn expenses	371	458	553	680	852	1120	137
M. Total operating expenses	1360	1680	2028	2494	3124	4106	5024
PANEL 4 (₹ in million)							
N. EBDIT (H-K)	786	974	1176	1446	1807	2380	2910
O. Depreciation	120	132	140	166	210	293	329
P. EBIT	666	842	1036	1280	1597	2087	2581
Q. NOPLAT	533	674	829	1024	1278	1670	2065
R. Gross cash flow	653	806	969	1190	1488	1963	2394
S. Gross investment (Fixed assets) + Current assets)	302	446	398	712	1085	1848	1716
T. Free cash flow from operations (R-S)	351	360	571	478	403	115	678

PANEL 5 (₹ in million)							
A. Net current Assets@	516	618	764	924	1134	1419	1867
B. Net current assets addition@	102	146	158	212	285	448	416
C. Gross block@	2110	2310	2610	2850	3350	4150	5550
D. Capital Expenditure@	200	300	240	500	800	1400	800
E. Acc Deprn@	600	720	852	984	1150	1360	1653
F. Net block(C+D+E)	1710	1890	1998	2366	3000	4190	4697
G. Depreciation	120	132	140	166	210	293	329

@ At the beginning of year

Cost of Capital BHC has two sources of finance, equity and debt. The cost of capital for BHC is:

Cost = Weight of Equity x Cost of Equity + Weight of Debt x Cost of Capital Debt

The weights of equity and debt, based on market value, are as follows;

$$\text{Weight of Equity} = \frac{3050}{3950} = 0.772$$

$$\text{Weight of Debt} = \frac{900}{3950} = 0.228$$

The cost of debt is given to be 9 percent. The cost of equity using the capital asset pricing model is calculated below:

Cost of Equity of BHC = Risk-free rate + Beta of BHC (Market risk premium)

$$= 12 + 0.921(8) = 19.37$$

Given the component weights and costs, the cost of capital for BHC is:

$$= (0.772)(19.37) + (0.228)(9) = 17.00 \text{ percent}$$

Continuing Value The continuing value may be estimated using the growing free cash flow perpetuity method. The projected free cash flow for year 7 is ₹678 million. Thereafter it is expected to grow at a constant rate of 10 per cent per year. Hence the expected continuing value at the end of the seventh year is given by

$$CV_7 = \frac{FCF_8}{k - g} = \frac{678 (1.10)}{0.17 - 0.10} = ₹10654 \text{ million}$$

Calculation and Interpretation of Results the value of equity is equal to:

Discounted free cash flow during the explicit forecast period + Discounted continuing value + Value of non-operating assets - Market value of debt claims

$$= \frac{351}{(1.17)} + \frac{360}{(1.17)^2} + \frac{571}{(1.17)^3} + \frac{478}{(1.17)^4} + \frac{403}{(1.17)^5} + \frac{115}{(1.17)^6} + \frac{678}{(1.17)^7} + \frac{10654}{(1.17)^7} + 0 - 900$$

$$= ₹4279 \text{ million}$$

Since the discounted continuing value $[10654 / (1.17)^7] = ₹3550$ million looms large in this valuation, it is worth looking into it further. Its key determinant appears to be the expected growth rate in the free cash flow beyond the explicit forecast period. This has been assumed in the preceding analysis to be

10 percent. What happens to the estimate of equity value if the growth rate happens to be different? The sensitivity of the estimate of equity value to variations in the growth rate in a range of, say 8 percent to 12 percent is shown below:

Growth rate(percent)	Equity value estimate (₹ in million)
8	3490
9	3835
10	4279
11	4871

Case Study No. 22:-

BHARAT HEAVY ELECTRICALS LIMITED (BHEL)

Established in 1964, BHEL, a public sector company is the largest engineering and manufacturing enterprise in India in the energy related / infrastructure sector. BHEL caters to core sectors of Indian economy viz., power generation and transmission industry, transportation, renewable energy, and defence.

In March 1992, BHEL was a 100 percent government-owned company. In the wake of the economic reforms initiated in 1991, BHEL felt that the scope for strategic alliance with foreign companies had increased. It also anticipated that the Government of India would partially disinvest its stake in BHEL. In this context it asked the author to do a valuation as on March 31, 1992 (the lien date).

The inputs for the valuation exercise came largely from the five year plan BHEL had developed for the period 1992-1997. From the detailed financial projections available in the plan, the free cash flow forecast for the five year period, 1992-1997, was prepared, as shown in the table below. Surprisingly, while the company had detailed plans and projections for five years, it did not have any projections for the period thereafter. So, the explicit forecast period was set at five years.

BHEL: Free Cash Flow Forecast

	1992-93	93-94	94-95	95-96	96-97
• Turnover	3350	3700	4200	5000	6000
• EBDIT (12%)	402	444	504	600	720
• Depreciation (3.12%)	104.5	115.4	131.0	156.0	187.2
• EBIT (8.88%)	297.5	328.6	373.0	444.0	532.8
• Tax rate	45%	40%	35%	35%	35%
• Tax	133.9	131.4	130.6	155.4	186.5
• NOPLAT	163.6	197.2	242.4	288.6	346.3
• Add: Depreciation	104.5	115.4	131.0	156.0	187.2
• Gross Cash Flow	268.1	312.6	373.4	444.6	533.5
• Less: (CAPEX + AWC)	103.0	135.0	153.0	182.0	219.0
• Free Cash Flow	165.1	177.6	220.4	262.6	314.5

The free cash flow forecast was based on the following assumptions:

- EBDIT, depreciation, and EBIT would be 12.00 percent, 3.12 percent, and 8.88 percent respectively of the turnover.
- The tax rate would be 45 percent for the year 1992-1993. Thereafter it would decline by 5 percent each year for two years and stabilise at 35 percent beyond two years. This assumption was in line with the indication given by Dr. Manmohan Singh, the Finance Minister.



The management of BHEL estimated its weighted average cost of capital at 12.5 percent. The terminal value at the end of 5 years was estimated as a multiple (12X) of the free cash flow for year 5. The multiple was judgmentally determined.

Given the above projection and assumptions, the enterprise value was calculated as follows:

Present value of free cash flow during the explicit forecast period:

$$\text{PV (FCF)} = \frac{165.1}{(1.125)} + \frac{177.6}{(1.125)^2} + \frac{220.4}{(1.125)^3} + \frac{262.6}{(1.125)^4} + \frac{314.5}{(1.125)^5}$$
$$= 780.3 \text{ crore.}$$

Present value of horizon or terminal value:

$$\text{PV (HV)} = 314.5 \times 12 \times \frac{1}{(1.125)^5}$$
$$= ₹ 2094.3 \text{ crore}$$

$$\text{Enterprise value} = 780.3 + 2094.3 = ₹2874.6 \text{ crore}$$

On March 31, 1992, BHEL had a total debt of ₹775 crore on its balance sheet. It was assumed that the book value of debt was a good proxy for its market value. So, the equity value was estimated as:

$$2874.6 - 775 = ₹2099.6 \text{ crore}$$

As on March 31, 1992, BHEL had 24 crore shares outstanding of ₹10 each. So, the imputed value per share worked out to:

$$2099.6 / 24 = ₹87.5$$

Case Study No. 23:-

VALUATION IN THE MERGER OF TOMCO AND HLL

Tata Oil Mills Company (TOMCO) was merged with Hindustan Lever Limited (HLL) in 1993. The effective date of merger was April 1, 1993. The exchange ratio finalised was 2:15. A dissenting shareholder challenged the valuation of shares. Initially, the Bombay High Court and subsequently the Supreme Court overruled the objections. The salient facts and extracts from the judgments of Bombay High Court and Supreme Court are given below:

TOMCO			
Market Prices on June 17, 1993: ₹ 52.50			
As at	31.03.93	31.03.92	31.03.91
Face value (₹)	10	10	10
Book value(₹)	29.75	29.45	36.17
Dividend (%)	-	12.5	20.06
Earnings per share(₹)	0.30	0.50	5.19

HLL			
Market Prices on June 17, 1993: ₹ 375			
As at	31.12.92	31.12.91	31.12.90
Face value (₹)	10	10	10
Book value(₹)	23.80	20.75	27.36
Dividend (%)	42.0	38.5	42.0
Earnings per share(₹)	7.03	5.73@	6.29

@There was a bonus issue in 1991.

With respect to valuation, the Bombay High Court observed as follows:

1. In arriving at the fair exchange ratio the author has considered all the three methods, namely, the yield value, the asset value, and the market value of the shares of both the companies and has given appropriate weightages to each of the above values.
2. Since both the companies are in similar business, uniform basis of capitalisation of profit has been adopted in determining the yield value.
3. The valuation was confirmed by two other auditors namely A.F. Ferguson and N.M. Raiji

With respect to valuation, Supreme Court observed as follows:

1. If the market price basis as on 17.06.93 is adopted, the exchange ratio of 2:15 was very fair.
2. If the yield method is adopted, the ratio would be astronomically high in favour of HLL.
3. If book value is taken, then TOMCO shares would be higher than HLL.
4. The question was what should be adopted for arriving at a proper exchange ratio ₹ The usual rule is that shares of the going concern must be taken at quoted market value.

Case Study No. 24:-

BHORUKA POWER CORPORATION LIMITED

Bhoruka Power Corporation Limited (BPCL, hereafter) is a highly profitable power generation company which has done very well right from its inception in 1992. It has grown at a healthy rate, achieved a high return on equity and built impressive reserves and surplus. In terms of two key financial performance measures, viz., net profit to sales ratio, and return on net worth, BPCL outperformed all the listed power generation companies.

The superior financial performance of BPCL is attributable to three factors, in the main: (a) allotment of choice hydel sites by the government at a nominal water cess, (b) good project implementation and commendable technical and managerial capability, and (c) banking and wheeling arrangement.

While BPCL has done very well, its investments in group companies have soured. It had to write off nearly ₹4.5 crore of its loan to Bhoruka Steels and its investments in Prabhu Securities, an investment subsidiary, has eroded considerably. This raises serious concerns in the mind of any strategic investor.

BPCL is currently operating hydel power projects at Shivapur (18 MV) and Shahapur (6.6 MW) and is setting up a hydel project at Rajankollur (2 MW). BPCL has begun work on a thermal power project to be set up at Wadi (53 MW). It is exploring a few other options.

BPCL will enjoy superior returns on its existing hydel projects and even on the thermal project at Wadi (where it has worked out the tariff structure assuming a return on equity of 25 percent). However, it appears that the profitability of new hydel projects may not match the profitability of its existing projects. Hence its thrust in future will probably be in the area of thermal power where profitability is likely to be moderate.



Three methods have been employed for valuing BPCL's equity.

- Replacement cost method
- Earnings capitalisation method
- Discounted cash flow method

Replacement Cost Method According to the **replacement cost method**, the value of equity is derived as follows:

Value of equity = Replacement cost of fixed assets + Net current assets - Loan funds.

BPCL had 24.6 MW of hydel capacity in operation which may be assigned a replacement cost of ₹4.5 crore per MW. In addition, as on March 31, 1998 its other assets would be as follows:

- Capital works in progress : ₹10.1 crore
- Net current assets : ₹6.1 crore

The loan funds on that date would be ₹37.8 crore

BPCL's value of equity as per the **replacement cost method** is worked out below:

• Replacement cost of 24.6 MW of hydel capacity in operation (₹4.5 crore per MW)	= ₹ 110.7
+ Capital works in progress as on 31 st March, 1998	= 10.1
+ Net current assets as on 31 st March, 1998	= 6.1
- Loan funds as on 31 st March, 1998	= 37.8
	₹ 89.1 crore

2. Based on a valuation report prepared by the author as on March 31, 1998 (the lien date) at the request of the company.

Since the number of outstanding shares of BPCL is 0.825 crore, the replacement cost per share is: $89.1 / 0.825 = ₹108$

Earnings Capitalisation Method:

According to earnings capitalisation method, the value of equity is estimated as:

Normal profit after tax × An appropriate P/E multiple

Normal profit after tax:

For a company that experiences a lot of variability in profit after tax it is a common practice to use a weighted average of profit after tax for 2 to 3 years. However, in the case of BPCL, profit after tax has been rising steadily and this is expected to continue in the foreseeable future. In such a situation, it suffices to look at profit after tax for the current year. This is expected to be ₹14.2 crore.

Appropriate P/E multiple:

How can one establish an appropriate P/E multiple? The P/E multiple is mainly function of the following factors:

- Growth prospects
- Risk characteristics
- Size of the company
- Liquidity
- Corporate governance

While BPCL scores well on the first two factors, it does not currently fare well on the remaining factors. (Its size is not large; since it is an unlisted company there is no secondary market; its funds have been used for subsidising group companies).

The P/E multiple for the power generation companies currently varies between 4.5 and 13.5 with an average of about 9.5.

Given the above evaluation of BPCL a P/E multiple of 7.0 seems appropriate for it.

Given a profit after tax figure of ₹14.2 crore and an appropriate multiple of 7, the value of BPCL's equity works out to:

$$14.2 \times 7 = ₹99.4 \text{ crore}$$

On a per share basis, it works out to:

$$99.4/0.825 = ₹120.5$$

Discounted Cash Flow Method Ordinarily when a DCF valuation of company is done, one estimates the entity value by discounting the free cash flows to all providers of capital using the post-tax weighted average cost of capital as the discount rate. From the entity value, the value of debt is subtracted to arrive at the value of equity.

In the case of BPCL, however, we have looked at the cash flows to equity over a period of 15 years and discounted the same at a discount rate reflecting the cost of equity. This procedure has been followed because the capital structure is expected to change significantly over time.

How are cash flows to equity defined? The cash flows to equity represent the net cash flows accruing to equity shareholders after taking into account the operations, the financing from non-equity sources, and servicing of non-equity sources. More specifically, the cash flows to equity are defined as follows:

Revenues

- Operating expenses
- = Earnings before interest, taxes, depreciation, and amortization (EBITDA)
- Depreciation and amortisation
- = Earning before interest and taxes (EBIT)
- + Interest expenses
- = Earnings before taxes
- + Depreciation and amortisation
- = Cash flow from operation
- + Proceeds of preference issues
- + Sale of assets (fixed and current)
- Increase in current assets (inventories, debtors, and others)
- Preference dividends
- Redemption of debt
- Redemption of preference capital



The cash flow to equity stream for the period 1998-99 through 2012-2013 for BPCL is projected to be as follows:

Year	Cashflow to equity (₹ in lakhs)
1998-1999	1137
1999-2000	- 580
2000-2001	2958
2001-2002	4363
2002-2003	4855
2003-2004	5236
2004-2005	4588
2005-2006	4078
2006-2007	6216
2007-2008	6456
2008-2009	7271
2009-2010	7337
2010-2011	7454
2011-2012	7763
2012-2013	6716 + 17288 = 24004 (Terminal value)

Note that the cash flow to equity is derived from the projected fund flow statement for the period 1998-2013.

At the end of 2012-2013 a terminal value of ₹17288 lakh has been obtained as follows:

Depreciated value of 80 MW	14400*
+ Net current assets excluding cash	+4996
- Long term debt	-21088
	=17288

The present value of equity - related cash flows and derivatively the intrinsic value per share has been worked out at two discount rates: 20% and 22%.

Discount Rate	Present value of equity related cash flows	Intrinsic value per share
20%	₹172.04 cr	₹ 208.5
22%	₹ 151.74 cr	₹ 183.9

* The depreciation value of 80 MW capacity has been arrived as follows: 80×450 (Cost per megawatt) $\times 0.40 = 14400$.

Averaging:

Thus, we find that the three methods, not surprisingly, produce different estimates of intrinsic value per share:

- Replacement cost method : ₹108
- Earnings capitalisation method : ₹120.5
- DCF method (assuming a 22% discount rate) : ₹183.9

Why is there such a discrepancy? The discrepancy in the case of BPCL may be due to the following reasons:

- The replacement cost method does not capture the 'economic rents' BPCL expects from favourable circumstances.
- The earnings capitalisation method is influenced by the current valuation norms (P/E multiples) in the market which are somewhat depressed.

Since all the methods have their merits and demerits, prudence calls for taking an average of the values provided by the methods. A simple arithmetic average the values are:

$$(108 + 120.5 + 183.9) / 3 = ₹137.5$$

In private transactions of the equity of unlisted companies there is often a discount of 15%-25% over the intrinsic value. This discount is a function of (a) the faith the private equity investor has in the projections provided by the company and the quality of management and corporate governance and (b) the relative bargaining power of the two parties.

Case Study No. 25:-

VALUATION IN THE MERGER OF ICICI BANK

When the Reserve Bank of India announced in 2001 that it would encourage financial institutions to transform themselves into banks, the management of ICICI and ICICI Bank quickly initiated the process of amalgamating ICICI with ICICI Bank.

ICICI retained JM Morgan Stanley as its financial advisor; ICICI Bank retained DSP Merrill Lynch as its financial advisor; and ICICI and ICICI Bank retained Deloitte Haskins and Sells as an independent accounting firm in connection with the proposed amalgamation. These advisors rendered their valuation opinion dated October 25, 2001.

Based on the opinions provided by the advisors, the Boards of ICICI Bank and ICICI finally approved a swap ratio of 1:2.

JM Morgan Stanley

Based on publicity available information, financial forecasts and projections provided by the management of the companies, and discussions with the managements of the companies, JM Morgan Stanley performed three kinds of financial analysis: dividend discount analysis, historical market price analysis, and precedent transaction analysis.

Dividend Discount Analysis The dividend discount value was obtained as follows:

Present value of the projected dividend stream for 7 years

Add: Present value of the terminal value

To determine the projected dividend stream, it was assumed that the ratio of tangible common equity to tangible risk - weighted assets would remain constant at 10 percent.

The terminal value at the end of 7 years was determined by applying the price-to-book value multiple derived from Gordon formula⁰ using an estimated sustainable return on equity (ROE) and carrying out a sensitivity analysis assuming three perpetual growth rates to year 2008 projected value.

The dividend stream and "terminal value" were discounted to present value using discount rates of 16.5%, 17.0%, and 17.5% for ICICI and 14.9%, 15.4% and 15.9% for ICICI Bank which JM Morgan Stanley viewed as the appropriate range of discount rates for a company with ICICI's and ICICI Bank's risk characteristics, respectively.

The investments and subsidiaries of ICICI and ICICI Bank were separately valued through methods considered appropriate by JM Morgan Stanley and such value was added to the dividend discount value of ICICI and ICICI Bank respectively.



The above analysis implied an exchange ratio of 1 equity share of ICICI Bank for 1.83 to 2.11 equity shares of ICICI.

Historical Market Price Analysis For the one week, one month, and three month period ending August 31, 2001, the price and volume data for the equity shares of ICICI and ICICI Bank on the domestic stock exchanges (the BSE and the NSE) and the American Deposit Receipts (ADRs) of these companies on the NYSE was examined. Data from September 1, 2001 was ignored because of the rumours in the market place of this transaction and the episode of 9/11.

On the basis of the volume-weighted average of the closing market price for one week, one month, and 3 - month period, the share exchange ratio ranged from 1 ICICI Bank share for 1.44 to 2.12 ICICI share. The share exchange ratio on the basis of one week volume -weighted average on NSE was 2.04.

Precedent Transaction Analysis JM Morgan Stanley selected seven international acquisition transactions that were structured as minority squeeze-out transactions similar to the proposed amalgamation.

The premium / (discount) paid in these transactions over unaffected market prices ranged from a high of 28.0 percent to a low of 15.2 percent.

The share exchange ratio of 1:2 that was finally approved implied the following premium / (discount) to the unaffected price of ICICI Bank price on August 30, 2001.

	Premium / (discount) to unaffected price of ICICI Bank
B.S.E	(1.7%)
N.S.E	(1.4%)
N.Y.S.E	(18.9%)

DSP Merrill Lynch

DSP Merrill Lynch performed three kinds of analysis which was historical market price analysis, dividend discount market price analysis, and precedent transaction analysis.

Historical Market Price Analysis Market price data of ICICI Bank and ICICI shares was examined for last 10 trading days to last 6 months. Based on this data, the share exchange ratio ranged from 1 ICICI Bank share for 1.6 to 2 ICICI shares.

Dividend Discount Analysis The dividend discount model was applied to the shares of both companies. The specifics of the application were as follows:

- A forecast horizon of 6 years (FY 03-08) was chosen.
- Major operating assumptions (operating assets, borrowings, deposits, yields, costs, provisions and other income) were based on estimates provided by the management of the respective companies and refined through subsequent discussions.
- The cash flow stream discounted was based on the maximum dividend payable subject to regulatory constraints in respect of capital adequacy and prudent transfers to statutory reserves.
- DSP Merrill Lynch used a cost of equity range of 17.6% to 19.6% for ICICI and 16.5% to 18.5% for ICICI Bank.
- The terminal value was derived using the perpetual growth rates estimated for both ICICI and ICICI Bank.

Based on the above assumptions, a share exchange ratio of 1 share of ICICI Bank for 1.8 to 2.0 share of ICICI was obtained.

Precedent Transaction Analysis

Considering ICICI Bank as the target company, various transactions involving Indian banks were considered as appropriate comparables.

The following parameters were examined for each of the selected transactions: (a) P/E ratio, (b) P/BV ratio, and (c) Premium to 5 - day average market price.

ICICI Bank was valued based on the above parameters, resulting in a share exchange ratio in the range of 1 ICICI Bank share for 1.8 to 2.1 ICICI shares.

Deloitte Haskins and Sells

Deloitte Haskins and Sells performed three kinds of analysis: (a) net asset value analysis, (b) dividend discount analysis, and (c) historical market price analysis.

Net Asset Value Analysis

The net asset value analysis was done as follows: (a) No adjustment was made to the value of the fixed assets, (b) The quoted investments of both companies were considered at market values as on June 30, 2001. (c) Provisions for non-performing assets were considered without further adjustments.

On the basis of the above, adjusted book value per share for ICICI and ICICI Bank worked out to 111.73 and 67.45 respectively suggesting an exchange ratio of 1 share of ICICI Bank for 0.6 share of ICICI.

Considering that ICICI was a term lending financial institution with considerable exposure to cyclical projects (such as steel) and ICICI Bank was a commercial bank with a new portfolio consisting mainly of working capital advances, it was felt that emphasis should be more on future earnings potential and less on net asset values.

Dividend Discount Analysis

Deloitte Haskins Sells performed a dividend discount analysis based on estimates provided by the respective companies. It valued separately certain assets, like investment in subsidiaries and other investments, which were not considered as part of cash flow generating assets.

Based on dividend discount analysis, it arrived at an exchange ratio of 1 ICICI Bank share for 2.17 ICICI shares.

Historical Market Price Analysis

Although Deloitte Haskins and Sells looked at historical prices over periods of 3 months, 6 months, and 12 months, it regarded the period June - August 2001 to be representative. The unaffected share prices of the two companies during this period were ₹65.23 for ICICI and ₹126.29 for ICICI Bank.

Based on this, it established an exchange ratio of 1 ICICI Bank share for 1.94 ICICI shares.

Case Study No. 26:-

SASKEN COMMUNICATION TECHNOLOGIES

Set up in 1989, Sasken Communication Technologies Limited (Sasken, hereafter) provides telecommunication software solutions and services to network equipment manufacturers, terminal device manufacturers, and semiconductor companies around the world. Headquartered in Bangalore, Sasken has offices around the world. Sasken presently employs about 1350 persons.

Extracted from a valuation report of the equity shares of Sasken Communication Technologies Limited prepared by the author as on March 31, 2004 (the lien date)

Sasken is an unlisted public company. It prepares its financial statements in conformity with the Indian GAAP (this is required mandatorily) as well as the US GAAP (this is done optionally).

Sasken plans to issue stock options to its employees in April 2004. Sasken wants to ascertain the



intrinsic value of its equity shares to structure its employee stock option scheme and determine the compensation cost associated with it.

The valuation of Sasken's equity shares was done using two methods, the DCF method and the direct comparison method - for a technologically intensive company like Sasken whose major assets are its human and intellectual capital, which are not reflected on the conventional balance sheet, the adjusted book value method is not considered appropriate. In this section we discuss the valuation of Sasken using the direct comparison method (relative valuation method).

Sasken's Performance

The revenues and profits of Sasken grew at an impressive rate right from its inception in 1989-90 to 2000-01; indeed, in terms of return on net worth, it was one of the most profitable companies in the software industry during the decade of 1990s. The following two years, 2001 - 2003, were a trying period because the shrinkage in the world telecom market adversely impacted the growth and margins of Sasken. However, in 2003 - 04, Sasken witnessed a distinct rebound and its performance improved appreciably. The key financial numbers of Sasken for the period 2000 - 2004 are given in table below.

Sasken Communication Financials

₹ in million				
(other than per share data)				
	00-01	02-02	02-03	03-04
Net sales	1428.3	1086.3	1092.6	1636.0
PAT	281.1	(156.4)	12.7	170.1
Net profit margin (%)	19.7	(14.4)	1.2	10.4%
Equity capital ('5 par)	125.7	126.7	127.1	151.6
Net worth	1017.0	905.2	1012.6	1163.0
Debt	317.7	353.9	267.5	14.0
Return on net worth	27.6%	(17.3%)	0.1%	14.6%
Earnings per share	11.2	(6.2)	0.05	5.6
Book value per share	40.0	35.6	40.0	38.4
Sales per share	56.1	42.8	43.0	54.7

Sasken's future looks promising for the following reasons: (a) the global telecom market is recovering (b) Sasken is well - positioned in those segments of the telecom market which are growing rapidly, (c) Sasken has restructured its licensing arrangement with its customers and this is expected to augment its overall income from licensing.

The combination of these factors is expected to generate a robust growth in revenues and improve the net profit margin over the next five years. The best current estimates of revenue growth and net profit margin are as follows:

Year	Revenue growth rate	Net profit margin
2004-05	62%	8%
2005-06	30%	10%
2006-07	20%	11%
2007-08	20%	14%
2008-09	10%	15%

Given the track record of Sasken and the improvement in business conditions, these are fairly credible estimates

Comparable Companies

The software industry in India comprises of firms varying widely in terms of size, focus area, revenue-mix (from products and services), technological intensity, and so on.

Sasken's focus is exclusively on telecommunication software solutions and services. Among the listed software companies in India, Hughes Software is perhaps closest to Sasken in terms of focus. Subex Systems is another company that may be used as a reference company. The following tables present the key financial numbers for Hughes Software, and Subex Systems.

Hughes Software Financials

₹ in million				
(other than per share data)				
	00-01	01-02	02-03	03-04
Net Sales	1985.4	2348.8	2203.7	3440.0
PAT	629.3	522.5	378.4	748.0
Net profit margin	31.7%	22.3%	17.2%	21.7%
Equity capital (₹ 5 par)	167.1	167.5	168.0	168.0
Net worth	2001.3	2469.2	2651.5	3333.1
Debt	-	-	-	-
Return on net worth	31.4%	21.2%	14.3%	22.4%
Earnings per share	18.8	15.6	11.3	22.3
Book value per share	59.9	73.7	78.9	99.2
Sales per share	59.4	70.1	65.6	102.4

*Annualised on the basis of 9 months performance up to 31/12/03

@ Assuming a dividend rate of 40 percent

Subex Systems Financials

₹ in million				
(other than per share data)				
	00-01	01-02	02-03	03-04
Net Sales	552.4	591.8	700.1	837.7
PAT	102.8	41.8	96.1	171.9
Net profit margin	18.6%	7.1%	13.7%	20.5%
Equity capital (₹ 5 par)	71.3	71.3	73.4	73.4
Net worth	488.5	367.2	474.9	639.5
Debt	123.1	304.6	437.2	-
Return on net worth	21.0%	11.4%	20.2%	26.9%
Earnings per share	14.4	5.9	13.1	23.4
Book value per share	68.5	51.5	64.7	87.1
Sales per share	77.5	83.0	95.4	114.1

*Annualised on the basis of 9 months performance up to 31/12/03

@ Assuming a dividend rate of 10 percent

The market price per share of Hughes Software and Subex Systems as on March 23, 2004 was:

Hughes Software: ₹ 570

Subex Systems : ₹ 280

The relevant multiples for Hughes Software and Subex Systems are:

	Hughes Software	Subex Systems
Price to earnings per share	25.6	12.0
Price to book value	5.75	3.21
Price to sales share	5.62	2.45



A comparison of Hughes Software, Subex Systems, and Sasken suggests that:

- In terms of turnover Hughes is nearly twice the size of Sasken which in turn is nearly twice the size of Subex.
- Hughes Software has a renowned international parent, Sasken and Subex Systems do not have that advantage
- Sasken has historically displayed greater volatility in performance compared to Hughes Software and Subex Systems.

Taking into account factors like size, volatility, technological intensity, international affiliation, capital structure and corporate governance, appropriate multiple values for Sasken were judgmentally estimated as follows:

P/E: 12.0

P/B: 3.3

P/S: 2.5

Based on these multiple values estimates for Sasken are:

- Value estimate based on P/E multiple = $12.0 \times 5.6 = ₹67.2$
- Value estimate based on P/B multiple = $3.3 \times 38.4 = ₹126.7$
- Value estimate based on P/S multiple = $2.5 \times 54.7 = ₹136.8$

Taking a simple arithmetic average of these three estimates, we get a direct comparison value of:

$$\frac{67.2 + 126.7 + 136.8}{3} = ₹110.2$$

Case Study No. 27:-

VALUATION OF INFOSYS BRAND

From time-to-time, we have used various models for evaluating assets of the Balance Sheet to bring certain advances in financial reporting to the notice of our shareholders. The aim of such modeling is to lead the debate on the Balance Sheet of the next millennium. These models are still the subject of debate among researchers and using such models and data in projecting the future is risky. We are not responsible for any direct, indirect or consequential losses suffered by any person using these models or data.

A Balance Sheet discloses the financial position of a company. The financial position of an enterprise is influenced by the economic resources it controls, its financial structure, liquidity and solvency, and its capacity to adapt to changes in the environment. However, it is becoming increasingly clear that intangible assets have a significant role in defining the growth of a high-tech company.

Valuing the Brand

The wave of brand acquisitions in the late 1980s exposed the hidden value in highly branded companies, and brought brand valuation to the fore. The values associated with a product or service is communicated to the consumer through the brand. Consumers no longer want just a product or service; they want a relationship based on trust and familiarity.

A brand is much more than a trademark or a logo. It is a 'trustmark' - a promise of quality and authenticity that clients can rely on. Brand equity is the value addition provided to a product or a company by its brand name. It is the financial premium that a buyer is willing to pay for the brand over a generic or less worthy brand. Brand equity is not created overnight. It is the result of relentless pursuit of quality in manufacturing, selling, servicing, advertising and marketing. It is integral to the quality of client experiences in dealing with the company and its services over a period.

The third annual BRANDZ™ Top 100 Most Powerful Brands ranking published in cooperation with the Financial Times was announced in April 2009 by Millward Brown. According to the report, Google topped the ranking with a brand value of US \$100 billion. The market capitalization of Google at that time was US \$84 billion. Thus, 119% of market capitalization represented its brand value. (Source: www.nasdacj.com).

Methodology

The task of measuring brand value is a complex one. Several models are available for accomplishing this. The most widely used is the brand-earnings-multiple model. There are several variants of this model. We have adapted the generic brand-earnings-multiple model (given in the article 'Valuation of Trademarks and Brand Names' by Michael Birkin in the book, Brand Valuation, edited by John Murphy and published by Business Books Limited, London) to value our corporate brand, "Infosys." The methodology followed for valuing the brand is given as follows:

- Determine brand profits by eliminating the non-brand profits from the total profits.
- Restate the historical profits at present-day values.
- Provide for the remuneration of capital to be used for purposes other than promotion of the brand.
- Adjust for taxes.
- Determine the brand-strength or brand-earnings multiple.

Brand-strength multiple is a function of a multitude of factors such as leadership, stability, market, internationality, trend, support and protection. We have internally evaluated these factors on a scale of 1 to 100, based on the information available within.

	In ₹ crore		
	2009	2008	2007
Brand value	32,345	31,863	31,617
Market capitalization	75,837	82,362	1,15,307
Brand value as a percentage of market capitalization	42.7%	38.7%	27.4%
Brand value / revenue (x)	1.49	1.91	2.28

Brand Valuation

	In ₹ crore		
	2009	2008	2007
Profit before interest and tax	6,907	5,344	4,245
Less: Non-brand income	426	634	335
Adjusted profit before tax	6,481	4,710	3,910
Inflation factor	1.000	1.092	1.192
Present value brand profits	6,481	5,142	4,660
Weightage factor	3	2	1
Weighted average profits	5,731	-	-
Remuneration of capital	801	-	-
Brand-related profits	4930	-	-
Tax	1676	-	-
Brand earnings	3254	-	-
Brand multiple	9.94	-	-
Brand value	32,345	-	-

Assumptions

- The figures above are based on consolidated Indian GAAP financial statements.
- Brand revenue is total revenue excluding other income after adjusting for cost of earning such income, since this is an exercise to determine our brand value as a company and not for any of our products or services.
- Inflation is assumed at 8.4% per annum, 5% of the average capital employed is used for purposes other than promotion of the brand and tax rate is at 33.99%.
- The earnings multiple is based on our ranking against the industry average based on certain parameters (exercise undertaken internally and based on available information).