

PAPER | 20

ANALYSIS
SYNTHESIS
EVALUATION
PERFORMANCE
VALUATION

GROUP IV ■ FINAL COURSE

FINANCIAL ANALYSIS AND **BUSINESS VALUATION (FABV)**



The Institute of Cost Accountants of India
(Statutory body under an Act of Parliament)

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FINANCIAL ANALYSIS AND BUSINESS VALUATION

FINAL

STUDY NOTES



The Institute of Cost Accountants of India

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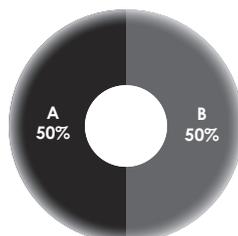
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Syllabus

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

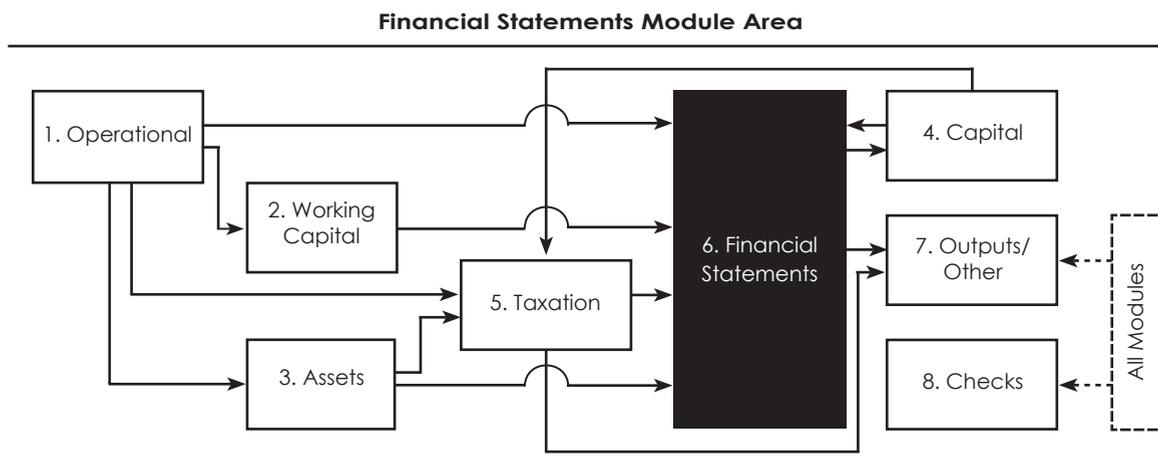


This Study Note includes

- 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

1.1 FINANCIAL STATEMENTS MODULE AREA

The Financial Statements Module Area is 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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'

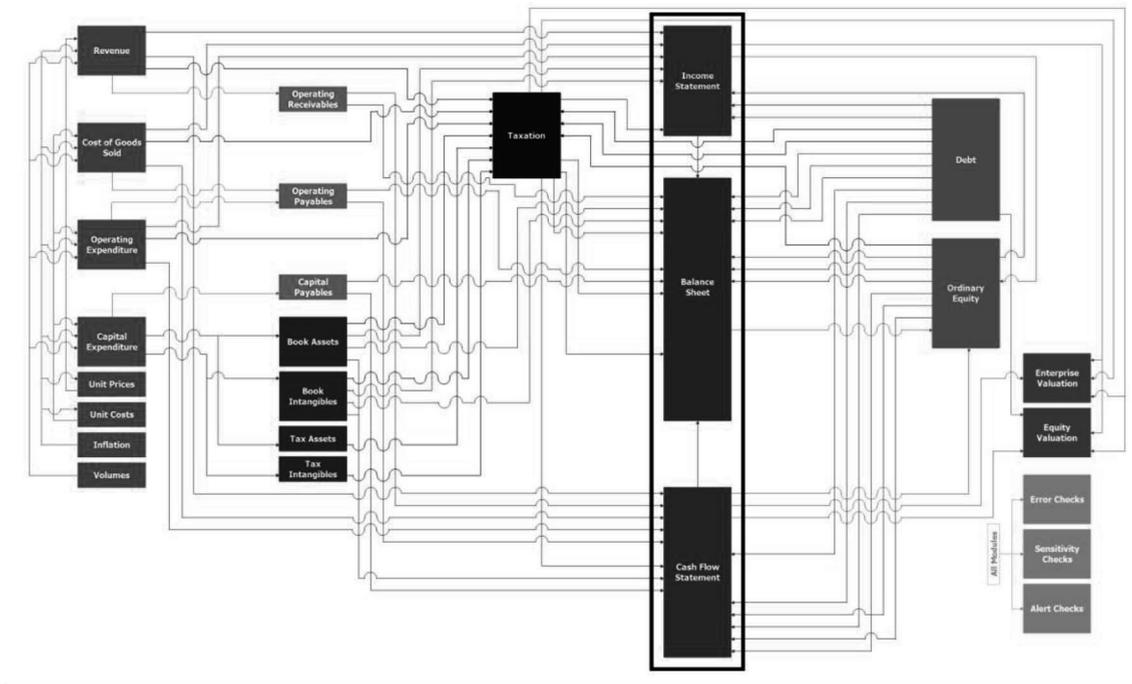
These three Financial Statement Modules can be built into a spreadsheet model independently, or linked together to establish relationships between them—e.g. Income Statement, Balance Sheet and Cash Flow Statement Modules might link in data from Operational, Working Capital and Assets Modules and then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

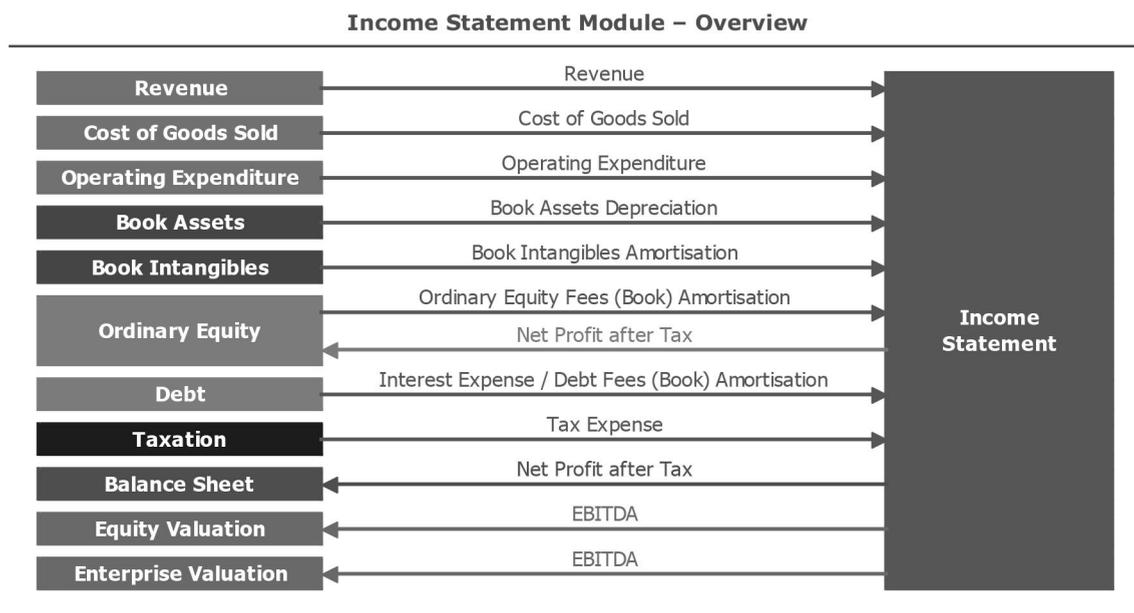
The diagram below shows each of the Module Types that can exist in a "whole of business financial model", organised into their respective Module Areas. It highlights the Financial Statements Module Area and the potential links between the Financial Statements Modules and other modules from other module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

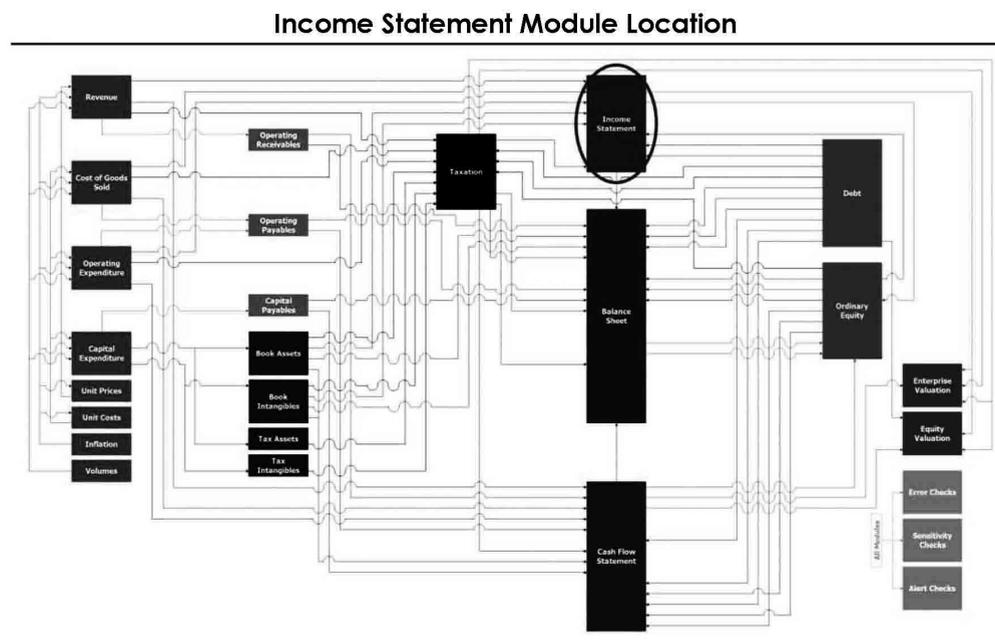
			Income Statement (₹)	
Revenue	₹1,500	— Revenue →	Revenue	1,500
Cost of goods sold	(₹200)	— Cost of goods sold →	Cost of goods sold	(200)
			Gross Margin	1,300
Operating expenditure	(₹300)	— Operating expenditure →	Operating expenditure	(300)
			EBITDA	1,000
Book assets	(₹150)	— Book assets Depreciation →	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:

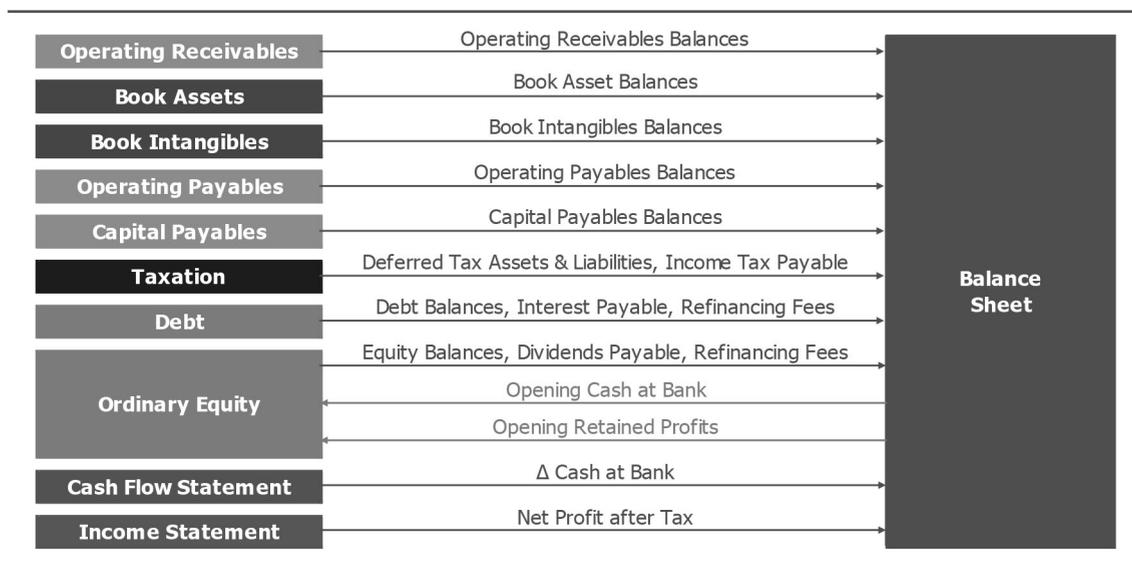


2. Balance Sheet Module

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.

Balance Sheet Module – Overview



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



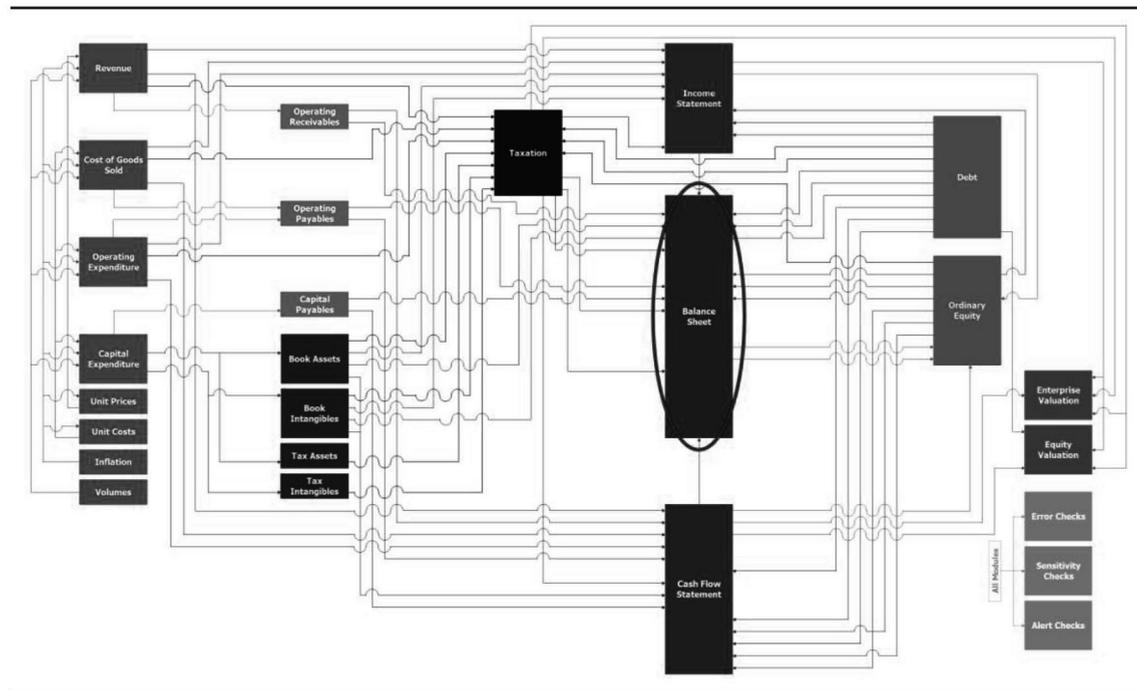
			Total Non-current liabilities	1,585
			Current liabilities	
Operating payables	₹95	— Operating payables balances →	Operating payables	95
Capital payables	₹30	— Capital payables balances →	Capital payables	30
Taxation	₹273	— Tax payables balances →	Tax payables	273
Debt	₹175	— Debt interest payables →	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

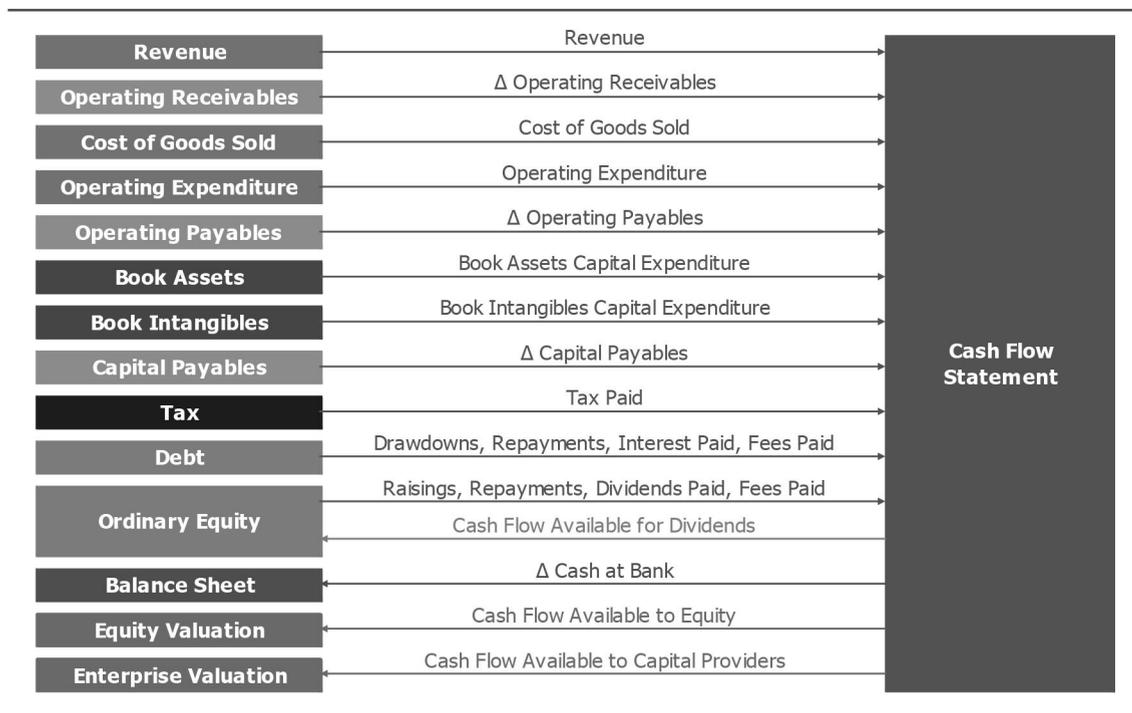


3. Cash Flow Statement Module

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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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)	— Increase in operating receivables →	Increase 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)	—Increase in Operating Receivables→	Increase 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

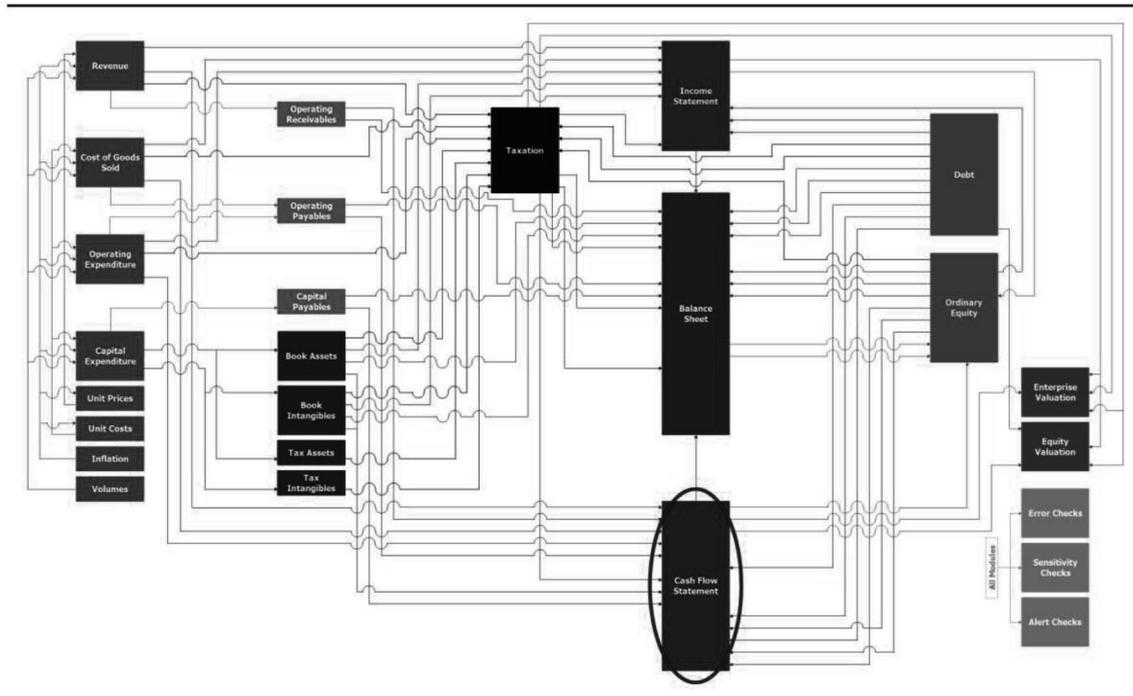
Note that when the indirect method is used to lay out a Cash Flow Statement, a reconciliation is undertaken with Net Profit After Tax (NPAT) on the Income Statement – i.e. NPAT is used as a starting point, after which adjustments are made for non-cash items in order to determine the cash inflows and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

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

- 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) Revenue = Market size x Market share x 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 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 x365 /revenue)
 - Stocks (last year stock x 365 / cost)
 - Creditors (last year creditor x 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 – equity ratio (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

Capital Budgeting

The capital budgeting process helps in identifying and evaluating capital projects. Decisions can be taken about whether to buy a new machine, or expand business in another geographic area, or replace an asset etc. by using a capital budgeting analysis.

The capital budgeting process has four administrative steps:

- Step 1: Idea generation:** There are number of sources from where ideas can come from such as — senior management, functional divisions, employees, or outside the company.
- Step 2: Analyzing project proposals:** To determine expected profitability of a project a cash flow forecast must be made.
- Step 3: Create the firm-wide capital budget:** To prioritize profitable projects, a firm must concentrate on timing of the project's cash flows, available company resources, and the company's overall strategic plan.
- Step 4: Monitoring decisions and conducting a post-audit:** An analyst should follow up on all capital budgeting decisions and compare the actual results to the projected results. The variances should be found out and the project managers are responsible to answer why projections did or did not match actual performance.

Methods of Capital Budgeting

Average Rate of Return (ARR) method

This method is used to measure the profitability of the investment proposals.

$$ARR = \frac{\text{Average Annual Profit after tax}}{\text{Average Investment}} \times 100$$

$$\text{Average Investment} = \frac{\text{Initial investment} + \text{Salvage value}}{2}$$

The average investment can be determined by the original investment plus salvage value, if any, divided by two. The investment which will give the highest rate of return will be accepted.

Example:

A machine is available for purchase at a cost of ₹ 1,00,000.

We expect it to have a life of five years and to have a scrap value of ₹ 20,000 at the end of the five year period. We have estimated that it will generate additional profits over its life as follows:

Year	1	2	3	4	5
Amount (₹)	25,000	35,000	35,000	20,000	5,000

These estimates are of profits before depreciation. You are required to calculate the Average Rate of Return.

Solution:

Total profit before depreciation over the life of the machine		= ₹ 1,20,000
∴ Average profit p.a.	= ₹ 1,20,000 / 5 years	= ₹ 24,000
Total depreciation over the life of the machine (₹ 1,00,000 – ₹ 20,000)		= ₹ 80,000
∴ Average depreciation p.a.	= ₹ 80,000 / 5 years	= ₹ 16,000
∴ Average annual profit after depreciation	= ₹ 24,000 – ₹ 16,000	= ₹ 8,000
Original investment required		= ₹ 1,00,000
Scrap value		= ₹ 20,000
Average investment	= (₹ 1,00,000 + ₹ 20,000) / 2	= ₹ 60,000
Accounting Rate of Return	= (₹ 8,000 / ₹ 60,000) × 100	= 13.33%

Payback Period Method

The payback period is the number of years it takes to recover the initial cost of the investment. The payback period is used to measure of liquidity.

$$\text{payback period} = \text{full years until recovery} + \frac{\text{unrecovered cost at the beginning of last year}}{\text{cashflow during the last year}} \times 12 \text{ months}$$

Example:

Aliva Industries Ltd. is thinking of investing in a project costing ₹ 40 lakhs. The life of the project is five years and the estimated salvage value of the project is zero. Straight line method of charging depreciation is followed. The tax rate is 50%. The expected cash flows before tax are as follows:

Year	1	2	3	4	5
Estimated Cash flow before depreciation and tax (₹ lakhs)	8	10	18	18	14

You are required to determine the payback period for the investment.

Solution:**Calculation of Annual Cash Inflow after Tax****(Amount in ₹ lakhs)**

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Cash inflow before depreciation and tax	8	10	18	18	14
Less: Depreciation	8	8	8	8	8
EBT	-	2	10	10	6
Less: Tax @ 50%	-	1	5	5	3
EAT	-	1	5	5	3
Add : Depreciation	8	8	8	8	8
Cash Inflow After Tax	8	9	13	13	11

Calculation of Payback Period (Amount ₹ lakhs)

Year	Cash inflow after tax	Cumulative cash inflow after tax
1	8	8
2	9	17
3	13	30
4	13	43
5	11	54

∴ Payback Period = $3 + \frac{₹10 \text{ lakhs}}{₹13 \text{ lakhs}} \times 12 \text{ months} = 3 \text{ years } 9 \text{ months}$

Discounted Payback Period

It considers the present values of the project's estimated cash flows. It is the number of years which a project can take to recover its initial investment in present value terms. The method does not take into account the cash flows beyond the payback period.

Example:

Spring Ltd. is implementing a project with an initial capital outlay of ₹ 10,000. Its cash inflows are as follows:

Year	1	2	3	4
Amount (₹)	8,000	3,000	1,000	6,000

The expected rate of return on the capital invested is 12% p.a. Calculate the discounted payback period of the project.

Solution:

Computation of Present Value of Cash Flows:

Year	Cash inflow (₹)	Discount factor @ 12%	Present value (₹)	Cumulative cash inflows (₹)
1	8,000	0.893	7,144	7,144
2	3,000	0.797	2,391	9,535
3	1,000	0.712	712	10,247
4	6,000	0.636	3,816	14,063
Total present value			14,063	

Discounted Payback Period = $2 + \left(\frac{₹465}{₹712} \times 12 \text{ months} \right) = 2 \text{ years } 8 \text{ months}$

Net Present Value (NPV)

The NPV is calculated by totaling the present values of all the expected incremental cash flows from a project. The cost of capital of the firm is used as the discount rate, after adjusting the risk level of the project.

$$NPV = CF_0 + \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \dots + \frac{CF_n}{(1+k)^n} = \sum_{t=0}^n \frac{CF_t}{(1+k)^t}$$

Here:

CF_0 = the initial investment outlay (a negative cash flow)

CF_t = after-tax cash flow at time t

k = required rate of return for project

If the NPV of the project is positive, then it can be accepted, otherwise not.

Example:

Your company can make either of the following two investments at the beginning of April, 2009. The following particulars are available in this respect:

	Project I	Project II
Estimated cost (to be incurred initially)	₹ 20,000	₹ 28,000
Estimated life (years)	4	5
Scrap value at the end of estimated life	Nil	Nil
Estimated Net Cash Flow (NCF) (₹)		
2009 - 10	5,500	5,600
2010 - 11	7,000	9,000
2011 - 12	8,500	9,000
2012 - 13	7,500	9,000
2013 - 14	—	9,000

It is estimated that each of the alternative projects will require an additional working capital of ₹ 2,000 which will be received back in full after the expiry of each project life. In estimating net cash flow, depreciation has been provided under straight line method. You are required to decide which project is profitable and why according to Net Present Value method.

Cost of finance to your company may be taken at 10% p.a. The present value of ₹ 1 to be received at the end of each year at 10% is:

Year	1	2	3	4	5
P.V.	0.91	0.83	0.75	0.68	0.62

Solution:

Net Present Value Method

Particulars	Project - I				Project - II			
	End of year	N.C.F. (₹)	P.V. Factor @ 10%	Present Value (₹)	End of year	N.C.F. (₹)	P.V. Factor @ 10%	Present Value (₹)
	(1)	(2)	(3)	(4)=(2)x(3)	(1)	(2)	(3)	(4)=(2)x(3)
	2009-10	5,500	0.91	5,005	2009-10	5,600	0.91	5,096
	2010-11	7,000	0.83	5,810	2010-11	9,000	0.83	7,470
	2011-12	8,500	0.75	6,375	2011-12	9,000	0.75	6,750
	2012-13	7,500	0.68	5,100	2012-13	9,000	0.68	6,120
					2013-14	9,000	0.62	5,580



Working Capital to be received back at the end of life		2,000	0.68	1,360		2,000	0.62	1,240
Total				23,650				32,256
Less: Estimated cost		20,000				28,000		
Working Capital		2,000				2,000		
				22,000				30,000
Net Present Value				1,650				2,256

Hence, Project – II is more profitable since its N.P.V. is higher.

Internal Rate of Return (IRR)

It is the discount rate (usually the firm's cost of capital) which enables the present value of the expected incremental after-tax cash inflows equal to the present value of the estimated cash outflows of the project. It can be said that PV (inflows) = PV (outflows). If IRR > the required rate of return, accept the project. If IRR < the required rate of return, reject the project.

$$NPV = 0 = CF_0 + \frac{CF_1}{(1+IRR)^1} + \frac{CF_2}{(1+IRR)^2} + \dots + \frac{CF_n}{(1+IRR)^n} = \sum_{t=0}^n \frac{CF_t}{(1+IRR)^t}$$

Determination of IRR can be done by interpolation. This can be done either directly by using Equation or indirectly by finding present values of annuity

$$IRR = r - \left(\frac{PB - DF_r}{DF_{r_L} - DF_{r_H}} \right) / IRR = r - \left(\frac{PB - DF_r}{DF_{r_L} - DF_{r_H}} \right) \dots \dots \dots \text{Equation (1)}$$

Where PB = Payback period,

DF_r = Discount factor for interest rate,

DF_{r_L} = Discount factor for lower interest rate,

DF_{r_H} = Discount factor for higher interest rate and

r = Either of the two interest rates used in the formula

Alternatively,

$$IRR = r - \left(\frac{PV_{CO} - PV_{CFAT}}{\Delta PV} \right) \times \Delta r / IRR = r + \left(\frac{PV_{CFAT} - PV_{CO}}{\Delta PV} \right) \times \Delta r \dots \dots \dots \text{Equation (2)}$$

Where PV_{CO} = Present value of cash outlay,

PV_{CFAT} = Present value of cash inflows (DF_r x annuity),

R = Either of the two interest rates used in the formula,

Δr = Difference in interest rates and

ΔPV = Difference in calculated present values of inflows

Example

A project costs ₹ 72,000 and is expected to generate cash inflows of ₹ 22,400 annually for 5 years. Calculate the IRR of the project.

Solution:

- (1) The payback period is 3.214 (₹ 72,000 / ₹ 22,400)
- (2) According to the present value of an annuity of one rupee Table, discount factors closest to 3.214 for 5 years are 3.274 (16 per cent rate of interest) and 3.199 (17 per cent rate of interest). The actual value of IRR which lies between 16 per cent and 17 per cent can, now, be determined using Equations, as follows —

$$\text{Substituting the values in Equation (1) we get: } IRR = 16 + \left(\frac{3.274 - 3.214}{3.274 - 3.199} \right) = 16.8 \text{ per cent}$$

$$\text{Alternatively, (starting with the higher rate), } IRR = 17 - \left(\frac{3.214 - 3.199}{3.274 - 3.199} \right) = 16.8 \text{ per cent}$$

Instead of using the direct method, we may find the actual IRR by applying the interpolation formula to the present values of cash inflows and outflows [Equation (2)].

$$PV_{CFAT} (0.16) = ₹ 22,400 \times 3.274 = ₹ 73,337.6$$

$$PV_{CFAT} (0.17) = ₹ 22,400 \times 3.199 = ₹ 71,657.6$$

$$IRR = 16 + \left(\frac{₹ 73,337.6 - ₹ 72,000}{₹ 73,337.6 - ₹ 71,657.6} \right) \times 1 = 16.8 \text{ per cent}$$

$$\text{Alternatively (starting with the higher rate), } IRR = r - \frac{(PV_{CO} - PV_{CFAT})}{\Delta PV} \times \Delta r$$

$$IRR = 17 - \left(\frac{₹ 72,000 - ₹ 71,657.6}{₹ 73,337.6 - ₹ 71,657.6} \right) \times 1 = 16.8 \text{ per cent}$$

Profitability Index (PI)

To determine the profitability index (PI), the present value of a project's future cash flows is divided by the initial cash outlay.

$$PI = \frac{PV \text{ of future cash flows}}{CF_0} = 1 + \frac{NPV}{CF_0}$$

If the NPV of a project is positive, the PI will be greater than one and then the project should be accepted. If the NPV is negative, the PI will be less than one and project can be rejected.

Example:

M/s Roy Brothers Co. has ₹ 3,00,000 to invest. The following proposals are under consideration. The cost of capital for the company is estimated to be 15%:

Project	Initial Outlay (₹)	Annual Cash (₹)	Life of Project (Years)
P	1,50,000	30,000	10
Q	80,000	20,000	8
R	70,000	15,000	20
S	50,000	15,000	10
T	50,000	12,000	20



Rank the above projects on the basis of Profitability Index Method. Present value of annuity of ₹1 received in steady stream discounted @ 15%:

8 years	=	4.487
10 years	=	5.019
20 years	=	6.259

Solution:

$$\text{Profitability Index} = \frac{\text{P.V. of Net Cash Flows}}{\text{Initial Cash Outlay}}$$

Calculation under Profitability Index Method

Project	Annual Cash Flow (₹)	Life of Project (Years)	P.V. at 15%	P.V. of N.C.F. (₹)	Initial Outlay (₹)	Profitability Index	Rank
(1)	(2)	(3)	(4)	(5)	(6)	(7) = $\frac{(5)}{(6)}$	(8)
P	30,000	10	5.019	1,50,570	1,50,000	1.004	5
Q	20,000	8	4.487	89,740	80,000	1.122	4
R	15,000	20	6.259	93,885	70,000	1.341	3
S	15,000	10	5.019	75,285	50,000	1.506	1
T	12,000	20	6.259	75,108	50,000	1.502	2

Terminal Value Method

The main assumption in this method is each cash inflow from a project is reinvested elsewhere at a predetermined rate of interest. When the present value of all the compounded reinvested cash inflows is greater than the present value of the cash outflows of that project then the project is accepted, otherwise not.

Example:

Original outlay, ₹ 15,000; Life of the project, 5 years; Cash inflows, ₹ 6,000 each for 5 years; and Cost of capital, 10 per cent.

Expected interest rates at which cash inflows will be reinvested:

Year-end	Per cent
1	7
2	7
3	8
4	8
5	8

Solution:

We would reinvest ₹ 6,000 received at the end of the year 1 for 4 years at the rate of 7 per cent. The cash inflows in year 2 will be re-invested for 3 years at 7 per cent, the cash inflows of year 3 for 2 years and so on.

There will be no reinvestment of cash inflows received at the end of the fifth year. The total sum of these compounded cash inflows is then discounted back for 5 years at 10 per cent and compared with the present value of the cash outlays, that is, ₹ 15,000 (in this case).

The PV of the terminal sum is given in the following Table.

Year	Cash inflows (₹)	Rate of interest	Years for investment	Compounding factor	Total compounded sum (₹)
1	2	3	4	5	6
1	6,000	7	4	1.311	7,866
2	6,000	7	3	1.225	7,350
3	6,000	8	2	1.166	6,996
4	6,000	8	1	1.080	6,480
5	6,000	8	0	1.000	6,000
					34,692

Now, we have to find out the present value of ₹ 34,692. The discount rate would be the cost of capital, k (0.10). The sum of ₹ 34,692 would be received at the end of year 5. Its present value = ₹ 34,692 \times 0.621 = ₹ 21,543.73.

The decision rule is that if the present value of the sum total of the compounded reinvested cash inflows (PVTs) is greater than the present value of the outflows (PVO), the proposed project is accepted otherwise not.

The firm would be indifferent if both the values are equal. Thus, since the PVTs of ₹ 21,543.73 exceeds the original outlay of ₹ 15,000, we would accept the assumed project under the Terminal Value criterion.

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.

- (c) 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.

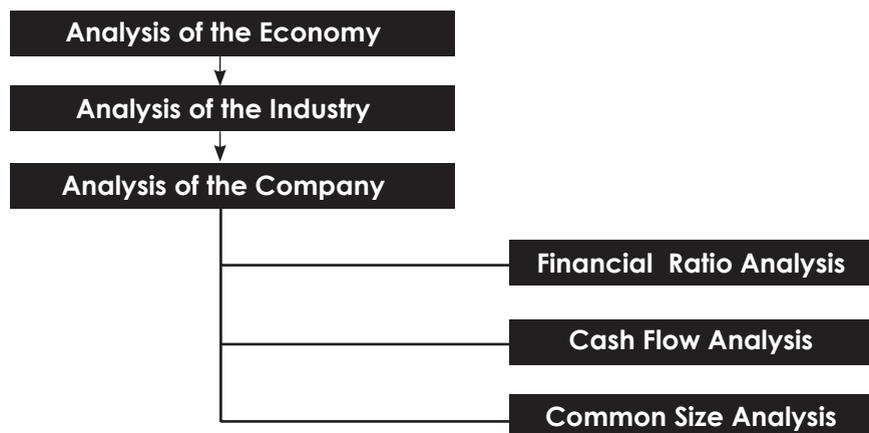
The goal of financial analysis is to assess the performance of a firm in the context of its stated goals and strategy. There are two principal tools of financial analysis: ratio analysis and cash flow analysis. Ratio analysis involves assessing how various line items in a firm's financial statements 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. The important aspects of the industry analysis 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 and 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 emphasis 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 which is 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, quality control technique, value added analysis etc. are implemented to minimise these problems.
- (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 disclosed by single statement and a study of trend of these factors as shown in series of statements, 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 conditions 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 are not 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 (or Method of Operation):** 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 129(1) of Company Act, 2013 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. 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 Accounting 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 of 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 Balance Sheet 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 Balance Sheet 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 Analysis - 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) Herereported accounting data,unreported accounting data (such as, market value of assets) and non-accounting data (e.g., share prices) are taken into consideration.

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 Financial Analysis — Ratio Analysis and Report Writing
- 2.5 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. 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.

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.
- How ratios are analysed and used in financial analysis.

2.2 REFORMULATING THE STATEMENT OF OWNERS' EQUITY

The statement of changes in owner's equity is part of the four main statements included within the annual report. It reflects, as the name says, changes for equity accounts for current and prior period as well as beginning and ending balances for the accounts.

The statement on its own tells the story of how the capital invested into the company by the owners has been used over the period. It gives an overview of the capital position, what other reserves compose of and how company uses the retained earnings (i.e. if it pays out dividends etc.).

It is merely a reflection of what's already disclosed in less detail on the balance sheet and income statement. Analysis of the statement of shareholders' equity provides summary of all transactions that affect shareholders' equity. It also provides reconciliation of beginning and ending owners' equity. It should be in the focus of the equity analysts.

A typical Statement of Shareholders' Equity:

	Opening book value of equity (ordinary and preferred)
Add	Net share transactions with equity shareholders + Capital contributions (paid in capital from share issues) - Share repurchases (into treasury stock or against paid-in capital)
Add	Net share transactions with preference shareholders + Capital contributions (share issues) - Share redemptions
Add	Change in retained earnings + Net income - Equity dividends - Preference dividends - Some share repurchases
Add/ less	Accumulated other comprehensive income
Add/ less	Earnings restatements due to change in accounting
Add/ less	Increase in equity from issuing stock options
	Closing book value of equity (ordinary and preferred)

Steps to reformulate the Statement of Shareholders' Equity:

1. Get the beginning shareholders' equity balance for the period. Exclude preference share capital from the calculations because reformulations are done for equity shareholders' only. Preference share is considered a liability for reformulation purposes.
2. Record the transactions with shareholders. These include dividends paid to equity shareholders, net proceeds from issuing equity shares and share repurchases. For example, if a company paid ₹ 1,00,000 in dividends, repurchased shares worth ₹ 2,00,000 and issued shares for net proceeds of ₹ 5,00,000, the total transaction with shareholders for the period is ₹ 2,00,000 (₹ 5,00,000 - ₹ 2,00,000 - ₹ 1,00,000).
3. Find the total income available to equity shareholders. This equals the net earnings for the period — net income minus preference dividends — plus other comprehensive income, which includes foreign exchange transaction gains or losses. Continuing with the example, if net income for the period is ₹ 1,00,000, no preference dividends are paid and there is a ₹ 5,00,000 foreign exchange gain, the total income available to equity shareholders for the period is ₹ 6,00,000 (₹ 1,00,000 + ₹ 5,00,000).
4. Calculate the ending shareholders' equity balance for the period. Add the beginning balance to the transactions with equity shareholders and the total income available to equity shareholders.

Reformulated Statement of Shareholders' Equity:

	Opening book value of equity shares
Add	Net transactions with equity shareholders + Capital contributions (share issues) - Share repurchases - Equity dividends
Add	Comprehensive income to equity shareholders + Net income + Other comprehensive income - Preference dividends
	Closing book value of equity shares

Elements of the Statement of Shareholders' Equity:

The equity account contains share capital, share premium, other reserves and retained earnings in our example. The headings shown for each column on the below mentioned table are the same for all the other tables shown.

(Amount in ₹)

	Note	Share Capital	Share Premium	Other Reserves	Retained Earnings	Total Equity
Balance at 1st April, 2013		5,00,000	9,00,000	1,00,000	25,00,000	40,00,000
Comprehensive income						
Profit or loss		—	—	—	3,20,000	3,20,000

• Share Capital and Share Premium:

A joint stock company estimates its maximum capital requirements. A share is nothing but a share in capital of the company. A company can issue shares at a price different from the face value of a share. In case issue price of a share is more than the par value of a share, the issue of such shares is said to be at a premium.

Whenever owners make payments into equity, it's formalized through releasing new shares with their nominal cost and the other thing is the premium paid that exceeds the nominal value but which still is decided to be paid into the capital.

(Amount in ₹)

	Note	Share Capital	Share Premium	Other Reserves	Retained Earnings	Total Equity
Transactions with owners						
Proceeds from shares issued		20,000	75,000	—	—	95,000
Dividends relating to 2012-13					-23,000	-23,000

In the above example, the nominal value paid was ₹ 20,000 and the share premium of ₹ 75,000. The accounting entry in such a case would be as follows:

Dr. — Cash and cash equivalents ₹ 95,000

Cr. — Share capital ₹ 20,000

Cr. — Share premium ₹ 75,000

• **Other Reserves:**

Other reserves are something as a part of equity. It is dependent on the company and its business. There are many things that can be disclosed as a part of other reserves – owner's loans, bonds given, asset revaluations etc.

In case anybody wants to measure the land and buildings at fair value and not as cost less depreciation, he/she will measure them annually and recognize all loss or gain from it. If the new value exceeds the old one, he/she will get gain and vice versa.

(Amount in ₹)

	Note	Share Capital	Share Premium	Other Reserves	Retained Earnings	Total Equity
Other comprehensive income						
Gain on the revaluation of land and building		—	—	11,520	—	11,520
Total other comprehensive income		—	—	11,520	—	11,520

In the above example, there's gain from the transaction, the entry would be as follows:

Dr. — Land / Building ₹ 11,520

Cr. — Other reserves ₹ 11,520

• **Retained Earnings:**

The company earns profits which accumulate over time, called retained earnings. Effectively the end result from the income statement is added to the beginning balance and that's the new retained earnings. If no other movements happen over the period within the balance, it's carry forward. There is no accounting entry for that, it's just where the profit or loss is grouped under equity and it changes naturally whenever an expense or income is booked in the income statement.

(Amount in ₹)

	Note	Share Capital	Share Premium	Other Reserves	Retained Earnings	Total Equity
Comprehensive income						
Profit or loss		—	—	—	1,25,700	1,25,700

Now in case if the company decides to pay dividends, it's something that normally comes from retained earnings and that's a decrease to the balance. The accounting entry in such a case would be as follows:

Dr. — Retained earnings

Cr. — Payable to owners

Once you make the payment, you use the same logic —

Dr. — Payable to owners

Cr. — Cash and cash equivalents

Note that paying dividends is a transaction on its own and as such it's not simply taken off from current year profits. It's disclosed as a separate change and it's advisable to show to which year's profit the dividends relate to.

Importance of the Statement of Shareholders' Equity

The statement of changes in owner's equity carries great importance which is imminent from its name. What the statement really shows is the movements within the equity accounts over the period. Even if the movement happened within the period and even if it carries no effect on balances at the reporting period date, it's still important to disclose those statements. The reason is — equity shows the strength of a company but not only strength, it's the efficiency of the business which is financed as well.

In case of financial difficulties and adverse situations a company with a strong capital position is able to survive more than one with a weaker standing in terms of existing equity. The aim of a company is normally to earn profits which in return increase the equity. A stronger position in a sense that if things go bad and company earns losses for some reason, earned profits in prior years can in turn now swallow the losses and not hurt the equity. If the retained earnings aren't big and company is making losses, there's going to be a point where these amount goes into negative.

Equity is a sum of share capital, share premium and retained earnings. If the first two can never be negative, the last one i.e. retained earnings can. In such a situation it will decrease the sum of share capital and premium.

The statement of changes in owner's equity shows all movements the owners have done over the period into something so vital for a company. Efficiency is related to running the business usually, but there's also something called efficient financing.

The statement of changes in owner's equity is an efficiency reflection. An equity that's exceeding liabilities and is mostly comprising of retained earnings is a sign the company is preparing for a huge investment, spreading its business or considerably over capitalized. The latter of which can be solved with paying out dividends which the owners rightfully deserve and something that keeps the company healthy.

Example:

Reformulation of a Statement of Owners' Equity: ABC Corporation, 2013-14

Reformulated Statement of Shareholders' Equity		
	(₹ '000)	(₹ '000)
Balance, 1st April, 2013		1,200
Transactions with shareholders		
Shares issues	527	
Shares repurchases	—	
Equity dividends	(78)	449
Comprehensive income		
Net income	290	
Loss on redemption of preference shares	(5)	
Tax benefit of preference dividends	1.2	
Foreign currency translation loss, net of taxes	(2.2)	
Preference dividends	(24)	260
Net addition of deferred compensation		(7)
Balance, 31st March, 2014		1,902

Note:

Deferred compensation:

When a firm issues shares at less than market value, current shareholders incur a loss. The amount of the compensation is the difference between the market value of the shares issued and the price paid by employees. Deferred compensation is also booked when shares are sold to employees at less than market price under an employee stock purchase plan, or when there are outright grants of stocks to employees. The deferred compensation is amortized to the income statement over the future period during which the employee is deemed to earn it. It is really an asset (like prepaid wages) but is entered in the equity section of the balance sheet. Here ABC issued shares worth ₹ 39,200 during 2012-13 but the employees paid only ₹ 22,700. The difference, ₹ 16,500 was compensation that the equity statement should recognize as deferred compensation but the amortization in the current period is ₹ 9,500. The net amount of deferred compensation of ₹ 7,000 (₹ 16,500 – ₹ 9,500) is posted in the above statement.

2.3 COMPREHENSIVE INCOME REPORTING

(Based on the Exposure draft of Ind-AS and other applicable literature)

Comprehensive income attempts to measure the sum total of all operating and financial events that have changed the value of an owner's interest in a business. It is measured on a per-share basis to capture the effects of dilution and options. It cancels out the effects of equity transactions for which the owner would be indifferent; dividend payments, share buy-backs and share issues at market value. It is calculated by reconciling the book value per-share from the start of the period to the end of the period.

Total comprehensive income is the change in equity during a period resulting from transactions and other events, other than those changes resulting from transactions with owners in their capacity as owners.

Total comprehensive income comprises all components of 'profit or loss' and of 'other comprehensive income'.

Other comprehensive income comprises items of income and expenses (including reclassification adjustments) that are not recognised in profit or loss as required or permitted by other Ind ASs.

Reclassification adjustments are amounts reclassified to profit or loss in the current period that were recognised in other comprehensive income in the current or previous periods.

The components of other comprehensive income include:

- (a) changes in revaluation surplus (Ind AS 16 Property, Plant and Equipment and Ind AS 38 Intangible Assets);
- (b) actuarial gains and losses on defined benefit plans recognised in accordance with paragraph 92 and 129A of Ind AS 19 Employee Benefits;
- (c) gains and losses arising from translating the financial statements of a foreign operation (Ind AS 21 The Effects of Changes in Foreign Exchange Rates);
- (d) gains and losses on remeasuring available-for-sale financial assets (Ind AS 39 Financial Instruments: Recognition and Measurement);
- (e) the effective portion of gains and losses on hedging instruments in a cash flow hedge (Ind AS 39).

Profit or loss is the total of income less expenses, excluding the components of other comprehensive income.

An entity may present components of other comprehensive income either:

- (a) net of related tax effects, or
- (b) before related tax effects with one amount shown for the aggregate amount of income tax relating to those components.

Other Ind ASs specify whether and when amounts previously recognised in other comprehensive income are reclassified to profit or loss. Such reclassifications are referred to in this Standard as reclassification adjustments. A reclassification adjustment is included with the related component of other comprehensive income in the period that the adjustment is reclassified to profit or loss. For example, gains realised on the disposal of available-for-sale financial assets are included in profit or loss of the current period. These amounts may have been recognised in other comprehensive income as unrealised gains in the current or previous periods. Those unrealised gains must be deducted from other comprehensive income in the period in which the realised gains are reclassified to profit or loss to avoid including them in total comprehensive income twice.

An entity shall disclose the amount of income tax relating to each component of other comprehensive income, including reclassification adjustments, either in the statement of profit and loss or in the notes.

An entity may present reclassification adjustments in the statement of profit and loss or in the notes. An entity presenting reclassification adjustments in the notes presents the components of other comprehensive income after any related reclassification adjustments.

Reclassification adjustments arise, for example, on disposal of a foreign operation (Ind AS 21), on derecognition of available-for-sale financial assets (Ind AS 39) and when a hedged forecast transaction affects profit or loss (paragraph 100 of Ind AS 39 in relation to cash flow hedges).

Reclassification adjustments do not arise on changes in revaluation surplus recognised in accordance with Ind AS 16 or Ind AS 38 or on actuarial gains and losses on defined benefit plans recognised in accordance with paragraphs 92 and 129A of Ind AS 19. These components are recognised in other comprehensive income and are not reclassified to profit or loss in subsequent periods. Changes in revaluation surplus may be transferred to retained earnings in subsequent periods as the asset is used or when it is derecognised (Ind AS 16 and Ind AS 38). Actuarial gains and losses are reported in retained earnings in the period that they are recognised as other comprehensive income (Ind AS 19).

Example 1:

An entity's statement of comprehensive income for the year ended 31st March,

	2014 (Amount in ₹)	2013 (Amount in ₹)
Revenue	6,50,000	5,90,000
Cost of sales	(4,20,000)	(3,70,000)
Distribution costs	(10,000)	(25,000)
Administrative expenses	(25,000)	(35,000)
Finance costs	(72,000)	(67,000)
Profit before tax	1,23,000	93,000
Income tax expense	26,000	17,000
Profit for the year	97,000	76,000
Other comprehensive income:		
Exchange differences on translating foreign operations, net of tax	12,000	(17,000)
Change in the fair value of hedging instruments, net of tax	(3,000)	4,000
Reclassified losses on hedging instrument to profit or loss	(1,000)	(8,000)
Other comprehensive income for the year, net of tax	8,000	(21,000)
Total Comprehensive Income for the year	1,05,000	55,000

Example 2:**Consolidated statement of comprehensive income: XYZ Group**For the years ended 31st March,

	2014 (₹ in lakhs)	2013 (₹ in lakhs)	2012 (₹ in lakhs)
(Losses)/ gains on revaluation of available-for-sale investments, net of tax	(40)	(15)	97
Foreign exchange translation differences, net of tax	369	(1,120)	(1,050)
Net actuarial (losses)/ gains on defined benefit pension schemes, net of tax	(170)	(192)	152
Foreign exchange losses/ (gains) transferred to the income statement	2	(582)	(438)
Fair value gains transferred to the income statement	(14)	—	(170)
Other, net of tax	(14)	(24)	36
Other comprehensive income/ (loss)	133	(1,933)	(1,373)
Profit for the financial year	520	3,003	4,453
Total comprehensive income for the year	653	1,070	3,080
Attributable to:			
— equity shareholders	551	1,200	3,587
— Non-controlling interests	102	(130)	(507)
	653	1,070	3,080

Reporting of Comprehensive Income:

Comprehensive income is to be reported in one of the following 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.

2.4 FINANCIAL ANALYSIS – RATIO ANALYSIS AND REPORT WRITING

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.

Overall 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 2.1: 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 2:1 is considered as ideal, although it depends upon industry.
		Debt to Total capital ratio = $\frac{\text{Short term debt} + \text{long-term debt}}{\text{Shareholder's Equity} + \text{Total Debt}}$	It indicates what proportion of the permanent capital of a firm consists of debt. It measures the share of the total assets financed by outside funds. A low ratio is desirable for creditors. 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 the outstanding interest on debt. A ratio of more than 3 times is satisfactory.
		Dividend Coverage = (i) $\frac{\text{Earning after tax}}{\text{Preference Dividend}}$ (ii) $\frac{\text{Earnings after tax} - \text{Preference Deividend}}{\text{Equity Dividend}}$	It measures the ability of firm to pay dividend on preference shares, and equity 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.
		Net Profit margin = $\frac{\text{Net Profit before interest and tax}}{\text{Sales}}$ <p style="text-align: center;">Or</p> $\frac{\text{Net Profit after Tax and Interest}}{\text{Sales}}$	It measures the net profit of a firm with respect to sale. This ratio is used to measure the efficiency of the firm.
6.	Expenses ratios	Operating ratio = $\frac{\text{Cost of Goods sold} + \text{other operating expenses}}{\text{Sales}}$	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 in relation to sales.
		Specific Expenses ratio = $\frac{\text{Specific Expenses}}{\text{Sales}}$	It measures the specific expenses in relation to sales.
7.	Return on Investments	Return on Assets (ROA) = $\frac{\text{Net Profit after Taxes} \times 100}{\text{Total Assets}}$	It measures the profitability of the total funds per investment of a firm.
		Return on Capital Employed (ROCE) = $\frac{\text{Net Profit} \times 100}{\text{Capital employed}}$ <p style="text-align: center;">Or</p> $\frac{\text{Net Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}}$	It measures profitability of the firm with respect to the 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 = $\frac{\text{Net Profit after taxes and Preference dividend}}{\text{Ordinary Shareholder's Equity}} \times 100$	It determines whether the firm has earned satisfactory return for its equity holders or not.

8.	Shareholder's ratios	Earnings per Share (EPS) = $\frac{\text{Net Profit after tax and Preference dividend}}{\text{Number of Ordinary Shares}}$	It measures the profit available to the equity holders on a per share basis.
		Dividend per Share (DPS) = $\frac{\text{Total dividends over a period}}{\text{Number of Ordinary Shares outstanding}}$	It is the net distributed profit belonging to the shareholders divided by the number of ordinary shares.
		Dividend Payout ratio (D/P) = $\frac{\text{Total Dividend to Equityholders}}{\text{Total net profit of equityholders}}$ <p style="text-align: center;">Or</p> $\frac{\text{Dividend per Share}}{\text{Earnings per Share}}$	<p>It shows what percentage share of the net profit after taxes and preference dividend is paid to the equity holders.</p> <p>A high D/P ratio is preferred from investor's point of view.</p>
		Earnings 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) = $\frac{\text{Market Value per Share}}{\text{Earnings per Share}}$	<p>It reflects the price currently paid by the market for each rupee of EPS.</p> <p>Higher the ratio better it is for owners.</p>
		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 ensure to keep the stock as low as possible.
		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.
		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. Higher the ratio, more efficient is the firm in utilizing its assets.
		Fixed Assets turnover = $\frac{\text{Net sales}}{\text{Fixed Assets}}$	
		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 2012-14 has been carried out below.

1. A Ltd.

Table 2.2

Name of the Company: A Ltd.

Balance Sheet as at : 31.03.2014

(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 2.3

Name of the Company: A Ltd.

Profit and Loss Statement for the year ended: 31.12.2014

(₹ in millions)

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
I. Revenue from operations		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:				
Cost of materials consumed	(1)	19,862.60—	22,503.60—	28,070.40
Purchases of Stock-in-Trade		—	—	—
Changes in inventories of finished goods work-in-progress and Stock –in-Trade		—	—	—
Employee benefits expense		843.00	399.60	—
Finance costs	(2)	3,420.90	2,941.80	738.70
Depreciation and amortization expense	(3)	34,722.20	31,963.30	3,054.30
Other expenses				21,463.20
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)	(2,269.50)
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 (VII – VIII)		22,956.60	17,373.70	19,313.20
X. Tax expense:				
(1) Current tax		6,889.30	5,246.00	4,917.00
(2) Deferred tax				
XI. Profit (Loss) for the period from continuing operations (after tax) (IX – X)		16,067.30	12,127.70	14,396.20
XII. Profit/(Loss) from discontinuing operations		—	—	—
XIII. Tax expense of discontinuing operations		—	—	—
XIV. Profit/(loss) from Discontinuing operations (after tax) (XII – XIII)		—	—	—
XV. Profit (Loss) for the period (XI + XIV)		16,067.30	12,127.70	14,396.20
XVI. Earnings per equity share:		—	—	—
(1) Basic				
(2) Diluted				

Proposed dividend for the year 2013-14, 2012-13 and 2011-12 are ₹ 4,317.60 million, ₹ 3,753.30 million and ₹ 3,750.20 million respectively.

Workings:

(₹ in millions)

1. Cost of Material Consumed	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
Interest expenses	843.00	399.60	738.70
Total	843.00	399.60	738.70

3. Depreciation and Amortization Expenses	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
Other non-recurring income	(227.70)	(766.40)	(2,269.50)
Total	(227.70)	(766.40)	(2,269.50)

Note:

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.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded from net profit (as per Note 7) 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. Excise duty has not been considered in Cost of Goods Sold while calculating Cost of Goods Sold ratios.

1.1 Ratio analysis for 2013-14

Table 2.4: Analysis of Financial Ratios for 2013-14

(₹ 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	0.67	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	0.46	It is not good.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long-term debt = ₹5,669.2 Shareholders' Equity = ₹60,162.20	0.09	It is safe from creditor's point of view.

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	32.0%	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 = $\frac{\text{Net Profit}}{\text{Total assets}}$	Net Profit = ₹16,067.30 Total Assets = ₹1,02,337.50	15.70%	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	37.8%	It is good.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹15,839.60 Net Worth = ₹60,162.20	26.33%	It is 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 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	15.02%	It is satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other operating Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹12,046.80 Other Expenses = ₹34,722.20 Sales = ₹80,215.90	58.3%	It is satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹63,145 Sales = ₹80,215.90	1.27	It is not safe.

1.2 Ratio analysis for 2012-13

Table 2.5: Analysis of Financial Ratios for 2012-13

(₹ 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 position is not good.
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	0.65	It is not satisfactory.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long-term debt = ₹4,820.30 Shareholders' Equity = ₹49,277.30	0.10	It is good, from creditors' point of view
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	24.67%	It is 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 = $\left(\frac{\text{Net Profit}}{\text{Total Assests}} \right)$	Net Profit = ₹12,127.70 Total Assets = ₹86,190.80	14.07%	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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹11,361.30 Net Worth = ₹49,277.30	23.06%	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 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	16.32	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	60.53%	It is satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹50,725.60 Sales = ₹72,299.70	1.43	It is not safe.

1.3 Ratio Analysis for 2011-12

Table 2.6: 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 = ₹23,079.40 Current Liabilities = ₹26,575.40	₹(3,496)	Liquidity position is not good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹23,079.40 Current Liabilities = ₹26,575.40	0.87	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 = $\left(\frac{\text{Long-term debt}}{\text{Shareholders' Equity}} \right)$	Total long-term debt = ₹3,064.1 Shareholders' Equity = ₹41,527.10	0.07	It is good, from creditors' point of view.

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 = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹14,396.20 Total Assets = ₹71,166.60	20.23%	It is 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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹12,126.70 Net Worth = ₹41,527.10	29.20%	It is safe.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹14,396.20 Capital Employed = ₹44,591.20	32.28%	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	26.64%	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	57.77%	It is satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹39,639.10 Sales = ₹68,947.90	1.74	It is not satisfactory.

1.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.7: Summary of Balance Sheet

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Current Assets	23,079.40	28,674.40	24,436.10	Short term liquidity has increased marginally.
Fixed Assets	39,639.10	50,725.60	63,145	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. Net Working Capital is affected.
Long term Liabilities	3,064.10	4,820.3	5,669.2	Debts have been increased in Capital Structure.

Table 2.8: Summary of Profit & Loss statement

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ 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	Raw Material Expenses have decreased.
Operating Profit	19,414.30	17,832.80	25,631.10	Operating profit has increased.
Profit Before Tax (PBT)	17,043.70	16,607.30	22,728.90	PBT has increased.
Net profit	14,396.20	12,127.70	16,067.30	Net profit has increased.

2. B Ltd.

Table 2.9

Name of the Company: B Ltd.

Balance Sheet as at : 31.03.2014

(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 2.10**Name of the Company: B Ltd.****Profit and Loss Statement for the year ended: 31.03.2014****(₹ in millions)**

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
I. Revenue from operations		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:				
Cost of materials consumed	(1)	41,754.00	24,908.90	14,652.10
Purchases of Stock-in-Trade		—	—	—
Changes in inventories of finished goods work-in-progress and Stock –in-Trade		—	—	—
Employee benefits expense		—	—	—
Finance costs	(2)	2,678.90	2,430.20	1,731.90
Depreciation and amortization expense	(3)	4,330.30	4,515.10	3,364.70
Other expenses		8,645.70	5,813.40	6,480.60
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 (VII – VIII)		20,020.80	15,027.80	9,451.10
X. Tax expense:				
(1) Current tax		4,654.00	2,655.50	2,418.50
(2) Deferred tax		—	—	—
XI. Profit (Loss) for the period from continuing operations (after tax) (IX – X)		15,366.80	12,372.30	7,032.60
XII. Profit/(Loss) from discontinuing operations		—	—	—
XIII. Tax expense of 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
XVI. Earnings per equity share:				
(1) Basic		—	—	—
(2) Diluted		—	—	—

Proposed dividend for the year 2013-14, 2012-13 and 2011-12 are ₹ 853.30 million, ₹ 620.20 million and ₹ 554.30 million respectively.

**Workings and Notes:****(₹ in millions)**

1. Cost of Material Consumed	As at 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 from net profit (as per note 7) 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. Excise duty is not considered in Cost of Goods Sold while calculating Cost of Goods Sold ratio.

2.1 Ratio Analysis for 2013-14

Table 2.11: Analysis of Financial Ratios for 2013-14

(₹ in millions)

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets – Current liabilities	Current Assets = ₹51,923.00 Current Liabilities = ₹41,116.40	₹10,806.60	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹51,923.00 Current Liabilities = ₹41,116.40	1.26	It is not good.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹39,823.40 Current Liabilities = ₹41,116.40	0.97	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long-term debt = ₹49,626.5 Shareholders' Equity = ₹54,153.20	0.92	It is good, from the point of view of the creditors.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹26,378.60 Interest = ₹2,678.90	9.85	It is 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 not 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 not 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 = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹15,366.80 Total Assets = ₹1,44,896.10	10.61%	It is not satisfactory
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹21,364 Net Worth = ₹54,153.20	39.45%	It is satisfactory
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹16,710.00 Net Worth = ₹54,153.20	30.86%	It is satisfactory
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹15,366.80 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	44.54%	It is 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	55.8%	It is satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹80,639.10 Sales = ₹76,778.30	0.95	It is not good.

2.2 Ratio Analysis for 2012-13

Table 2.12: Analysis of Financial Ratios for 2012-13

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹33,027.10 Current Liabilities = ₹21,154.80	₹11,872.30	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹33,027.10 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 = ₹23,221.50 Current Liabilities = ₹21,154.80	1.1	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long-term debt = ₹38,633.5 Shareholders' 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 safe.
6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹22,959.10 Sales = ₹53,681.40	42.77%	It is not 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 not good.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹12,372.30 Sales = ₹53,681.40	23.05%	It is not good.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹12,372.30 Total Assets = ₹97,352.10	12.71%	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	44.16%	It is satisfactory
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹13,931.40 Net Worth = ₹31,563.80	37.09%	It is satisfactory
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹12,372.30 Capital Employed = ₹76,197.30	16.24%	It is 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	32.18%	It is satisfactory.

14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold + other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹17,274.00 Other Expenses = ₹5,813.40 Sales = ₹53,681.40	43%	It is satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹53,963.10 Sales = ₹53,681.40	0.99	It is not good.

2.3 Ratio Analysis for 2011-12

Table 2.13: 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 = ₹18,049 Current Liabilities = ₹15,953.90	₹2,095.10	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹18,049 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 = ₹11,624.60 Current Liabilities = ₹15,953.90	0.73	It is not satisfactory.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long-term debt = ₹35,077.2 Shareholders' 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 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	20%	It is not satisfactory.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹7,032.60 Total Assets = ₹75,998.40	9.25%	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	37.5%	It is safe.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹6,943.80 Net Worth = ₹24,967.30	27.81%	It is good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹7,032.60 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	30.33%	It is satisfactory.
14.	Operating Ratio = $\left(\frac{\text{Cost of Goods sold} + \text{other Expenses}}{\text{Sales}} \right)$	Cost of goods sold = ₹10,685.00 Other Expenses = ₹6,480.60 Sales = ₹35,230.80	48.72%	It is satisfactory
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹50,851.20 Sales = ₹35,230.80	0.69	It is not good.

2.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.14: Summary of Balance Sheet

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Current Assets	18,049	32,027.10	51,923	Current asset position has increased. Liquidity position is very good.
Fixed Assets	50,851.20	53,963.10	80,639.10	Fixed Assets have increased due to increase in gross block.
Current Liabilities	15,953.90	21,154.80	41,116.40	Current Liabilities have increased also.
Long term Liabilities	35,077.2	38,633.5	49,626.5	Debts have increased due to more investment.

Table 2.15: Summary of Profit & Loss Statement

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Sales	35,230.80	53,681.40	76,778.30	Sales position has more than doubled in the last year.
Raw Material Cost	10,685.00	17,274.00	34,194.20	Purchase of raw material has been increased.
Operating Profit	14,098.10	22,959.10	26,378.60	Operating profit has increased also.
Profit Before Tax (PBT)	9,362.30	16,586.90	21,364.00	PBT has increased.
Net profit	7,032.60	12,372.30	15,366.80	Net profit has increased.

3. C Ltd.

Table 2.16

Name of the Company: C Ltd.

Balance Sheet as at : 31.03.2014

(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 2.17

Name of the Company: C Ltd.

Profit and Loss Statement for the year ended: 31.03.2014

(₹ in millions)

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
I. Revenue from operations		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:				
Cost of materials consumed	(1)	1,07,746.50	85,618.20	79,841.30
Purchases of Stock-in-Trade				
Changes in inventories of finished goods work-in-progress and Stock –in-Trade				
Employee benefits expense				
Finance costs	(2)	14,895.00	9,290.30	2,512.50
Depreciation and amortization expense	(3)	9,734.00	8,346.10	8,192.90
Other expenses		43,972.30	28,480.50	25,547.80
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	68,281.80	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 (VII – VIII)		67,211.90	65,890.50	63,940.80
X. Tax expense:				
(1) Current tax		21,148.70	23,802.80	20,404.70
(2) Deferred tax				
XI. Profit (Loss) for the period from continuing operations (after tax) (IX – X)		46,063.20	42,087.70	43,536.10
XII. Profit/(Loss) from discontinuing operations		—	—	—
XIII. Tax expense of 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
XVI. Earnings per equity share:				
(1) Basic		—	—	—
(2) Diluted		—	—	—

Proposed dividend for the year 2013-14, 2012-13 and 2011-12 are ₹ 11,689.50 million, ₹ 11,689.30 million and ₹ 9,439.10 million respectively.

Workings:

(₹ in millions)

1. Cost of Material Consumed	As at 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded from net profit (as per note-7) 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. Excise duty is not considered in Cost of Goods Sold while calculating cost of goods sold ratio.

3.1 Ratio Analysis for 2013-14

Table 2.18: Analysis of Financial Ratios for 2013-14

(₹ in millions)

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹1,16,967.30 Current Liabilities = ₹1,18,999.50	(₹2,032.20)	Availability of liquidity is less.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹1,16,967.30 Current Liabilities = ₹1,18,999.50	0.98	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹82,162.60 Current Liabilities = ₹1,18,999.50	0.69	It is not safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹2,69,461.80 Shareholders' Equity = ₹2,97,046.00	0.91	It is good, from creditors point of view.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹91,764.40 Interest = ₹14,895.00	6.16	It is 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 = ₹46,063.20 Sales = ₹2,43,483.20	18.92%	It is not good.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹46,063.20 Average Assets = ₹6,85,507.30	6.72%	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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹49,040.30 Net Worth = ₹2,97,046	16.51%	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 = ₹46,063.20 Capital Employed = ₹5,66,507.80	8.13%	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	34%	It is 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	52.06%	It is satisfactory
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹1,44,822.20 Sales = ₹2,43,483.20	1.68	It is not satisfactory

3.2 Ratio Analysis for 2012-13

Table 2.19: Analysis of Financial Ratios for 2012-13

(₹ in millions)

Sl. No.	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹3,83,514.50 Current Liabilities = ₹97,557.80	₹2,85,956.70	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹3,83,514.50 Current Liabilities = ₹97,557.80	3.93	It is safe
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹3,57,464.70 Current Liabilities = ₹97,557.80	3.66	It is satisfactory
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹1,80,216.9 Shareholders' Equity = ₹2,73,007.30	0.66	It is safe from creditors' point of view.

5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹82,445.40 Interest = ₹9,290.30	8.87	It is 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 = ₹42,087.70 Sales = ₹1,96,544.10	21.41%	It is satisfactory.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹42,087.70 Total Assets = ₹5,50,782	7.64 %	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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹44,479 Net Worth = ₹2,73,007.30	16.29%	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 = ₹42,087.70 Capital Employed = ₹4,53,224.20	9.29%	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	30.65%	It is 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	45.14%	It is satisfactory
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹1,26,235.60 Sales = ₹1,96,544.10	1.56	It is not safe

3.3 Ratio Analysis for 2011-12

Table 2.20: 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 = ₹1,48,744.40 Current Liabilities = ₹82,797.00	₹65,947.40	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹1,48,744.40 Current Liabilities = ₹82,797.00	1.8	It is not satisfactory.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹1,25,414.60 Current Liabilities = ₹82,797.00	1.51	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹96,453.3 Shareholders' Equity = ₹1,40,961.50	0.68	A small portion of the capital structure is financed by debt.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹69,137.50 Interest = ₹2,512.50	27.52	It is 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 not 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 not satisfactory.
8.	Net Profit margin = $\left(\frac{\text{Net Profit} \times 100}{\text{Sales}} \right)$	Net Profit = ₹43,536.10 Sales = ₹1,74,526.60	24.95%	It is not satisfactory.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹43,536.10 Total Assets = ₹3,20,211.80	13.6%	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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹44,193.40 Average Net Worth = ₹1,40,961.50	31.35%	It is good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹43,536.10 Capital Employed = ₹2,37,414.80	18.34%	It is 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	32.54%	It is 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	47%	It is good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹1,10,405.60 Sales = ₹1,74,526.60	1.58	It is not safe.

3.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.21: Summary of Balance Sheet

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Current Assets	1,48,744.40	3,83,514.50	1,16,967.30	Short term availability of liquidity is very less, except 2012-13.
Fixed Assets	1,10,405.60	1,26,235.60	1,44,822.20	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 2.22: Summary of Profit & Loss Statement

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Sales	1,74,526.60	1,96,544.10	2,43,483.20	Sales have increased.
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	43,536.10	42,087.70	46,063.20	Net profit has increased marginally.

4. D Ltd.

Table 2.23

Name of the Company: D Ltd.

Balance Sheet as at : 31.03.2014

(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 2.24**Name of the Company: D Ltd.****Profit and Loss Statement for the year ended: 31.03.2014****(₹ in millions)**

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
I. Revenue from operations		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:				
Cost of materials consumed	(1)	11,055.40	13,752.60	9,448.50
Purchases of Stock-in-Trade				
Changes in inventories of finished goods work-in-progress and Stock –in-Trade				
Employee benefits expense				
Finance costs	(2)	218.80	230.50	284.40
Depreciation and amortization expense	(3)	2,852.70	2,205.10	1,560.80
Other expenses		18,488.10	11,222.30	11,779.10
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 (VII – VIII)		33,906.60	60,665.60	64,788.50
X. Tax expense:				
(1) Current tax		6,630.50	16,689.60	20,365.30
(2) Deferred tax				
XI. Profit (Loss) for the period from continuing operations (after tax) (IX – X)		27,276.10	43,976.00	44,423.20
XII. Profit/(Loss) from discontinuing operations		—	—	—
XIII. Tax expense of 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
XVI. Earnings per equity share:				
(1) Basic		—	—	—
(2) Diluted		—	—	—

Proposed dividend for the year 2013-14, 2012-13 and 2011-12 are ₹ 1,690.10 million, ₹ 2,112.60 million and ₹ 2,112.60 million respectively.

Workings:

(₹ in millions)

1. Cost of Material Consumed	As at 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
Interest expenses	218.80	230.50	284.40
Total	218.80	230.50	284.40

3. Depreciation and Amortization Expenses	As at 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded from net profit (as per note 7) 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. Excise duty is not considered in Cost of Goods Sold while calculating Cost of Goods Sold ratio.

4.1 Ratio Analysis for 2013-14

Table 2.25: Analysis of Financial Ratios for 2013-14

(₹ 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 = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹86.90 Shareholders' Equity = ₹1,43,575.80	0.0006	It is not good, from the equity shareholders' view point.
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 = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹27,276.10 Total Assets = ₹1,59,386	17.11%	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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹25,959.90 Net Worth = ₹1,43,575.80	18.08%	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 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	11.47%	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	43.97%	It is good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹52,133.10 Sales = ₹56,885.10	1.09	It is not safe.

4.2 Ratio Analysis for 2012-13

Table 2.26: Analysis of Financial Ratios for 2012-13

(₹ 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	₹13,535.1	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 = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹3.90 Shareholders' Equity = ₹1,18,481.90	0.000033	It is not safe good from the point of view of the equity shareholders.

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 = ₹43,976 Sales = ₹78,954.70	55.7%	It is satisfactory.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹43,976 Total Assets = ₹1,32,099.40	33.29%	It is good.
10.	Return on Investments = $\left(\frac{\text{Net Profit before Tax} \times 100}{\text{Net Worth}} \right)$	Profit Before Tax = ₹56,860.70 Net Worth = ₹1,18,481.90	47.99 %	It is good.
11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹40,171.10 Net Worth = ₹1,18,481.90	33.9%	It is safe.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹43,976 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	6.76%	It is 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	20.97	It is good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹41,626.20 Sales = ₹78,954.70	1.9	It is not safe.

4.3 Ratio Analysis for 2011-12

Table 2.27: 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 = ₹14,863.10 Current Liabilities = ₹11,327.50	₹3,535.60	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 = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹3.90 Shareholders' Equity = ₹76,270.60	0.00005	The debt element is too small in the capital structures.
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 not 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 not 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 not good.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹44,423.20 Total Assets = ₹87,602	50.71%	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	83.31%	It is satisfactory.

11.	Return on Net Worth = $\left(\frac{\text{Net Profit} \times 100}{\text{Net Worth}} \right)$	Net profit = ₹43,175.60 Net Worth = ₹76,270.60	56.61%	It is good.
12.	Return on Capital Employed = $\left(\frac{\text{Net profit after taxes} \times 100}{\text{Total capital employed}} \right)$	Net Profit = ₹44,423.20 Capital Employed = ₹76,274.50	58.24%	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	3.18%	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	16.96%	It is safe.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹28,705.90 Sales = ₹85,474.20	2.98	It is not satisfactory.

4.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.28: Summary of Balance Sheet

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Current Assets	14,863.10	27,148.70	37,964.20	Current assets have increased. Liquidity availability is satisfactory.
Fixed Assets	28,705.90	41,626.20	52,133.20	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 2.29: Summary of Profit & Loss Statement

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ 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)	63,540.90	56,860.70	32,590.40	Substantial decrease in Profit Before Tax.
Net profit	44,423.20	43,976	27,276.10	Net profit didn't improve at all and it is decreased significantly.

5. E Ltd.
Table 2.30
Name of the Company: E Ltd.
Balance Sheet as at : 31.12.2014
(₹ in millions)

Ref No.	Particulars	Note No.	As at 31.03.14	As at 31.03.13	As at 31.03.12
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		585.58	607.36	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 31.03.14	As at 31.03.13	As at 31.03.12
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 31.03.14	As at 31.03.13	As at 31.03.12
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 2.31

Name of the Company: E Ltd.

Profit and Loss Statement for the year ended: 31.03.2014

(₹ in millions)

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
I. Revenue from operations		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:				
Cost of materials consumed	(1)	957.10	324.92	297.70
Purchases of Stock-in-Trade		—	—	—
Changes in inventories of finished goods work-in-progress and Stock –in-Trade		—	—	—
Employee benefits expense	(2)	583.54	718.67	744.96
Finance costs	(3)	777.78	955.37	1,293.20
Depreciation and amortization expense		4,107.70	3,882.86	2,622.84
Other expenses		—	—	—
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 (VII – VIII)		3,673.66	4,406.64	1,565.59
X. Tax expense:				
(1) Current tax		1,335.99	1,444.64	590.74
(2) Deferred tax		—	—	—
XI. Profit (Loss) for the period from continuing operations (after tax) (IX – X)		2,337.67	2,962.00	974.85
XII. Profit/(Loss) from discontinuing operations		—	—	—
XIII. Tax expense of 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
XVI. Earnings per equity share:				
(1) Basic		—	—	—
(2) Diluted		—	—	—

Proposed dividend for the year 2013-14, 2012-13 and 2011-12 are ₹ 636.00 million, ₹ 318.00 million and ₹318.00 million respectively.

Workings:

(₹ in millions)

1. Cost of Material Consumed	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
Interest expenses	583.54	718.67	744.96
Total	583.54	718.67	744.96

3. Depreciation and Amortization Expenses	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
Depreciation	777.78	955.37	1293.20
Total	777.78	955.37	1293.20

4. Exceptional Items	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
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.

10. Net worth is calculated as follows:

Share capital + reserve and surplus.

11. Other non-recurring income is excluded from net profit (as per note 7) 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. Excise duty is not considered in Cost of Goods Sold while calculating Cost of Goods Sold ratio.

5.1 Ratio Analysis for 2013-14

Table 2.32: Analysis of Financial Ratios for 2013-14

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹15,200.08 Current Liabilities = ₹11,914.43	₹3,285.65	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹15,200.08 Current Liabilities = ₹11,914.43	1.28	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹14,608.21 Current Liabilities = ₹11,914.43	1.23	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹4,785.71 Shareholders' Equity = ₹12,187.06	0.39	It is not good from equity shareholders' point of view.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹4,707.99 Interest = ₹583.54	8.07	It is 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	23.92%	It is satisfactory.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹2,337.67 Total Assets = ₹28,887.20	8.09%	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 Net Worth = ₹12,187.06	20.21%	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 = ₹2,337.67 Capital Employed = ₹16,972.77	13.77%	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	9.39%	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	51.42%	It is good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹13,101.54 Sales = ₹9,772.79	0.75	It is not good.

5.2 Ratio Analysis for 2012-13

Table 2.33: Analysis of Financial Ratios for 2012-13

(₹ in millions)

Sl. No	Ratios	Particulars	Values	Remarks
1.	Net Working Capital = Current assets-Current liabilities	Current Assets = ₹13,624.97 Current Liabilities = ₹10,534.89	₹3,090.08	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹13,624.97 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 = ₹13,142.46 Current Liabilities = ₹10,534.89	1.25	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹6,642.86 Shareholders' Equity = ₹10,616.97	0.63	It is not good as per equity shareholders' point of view.
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹5,593.44 Interest = ₹718.67	7.78	It is satisfactory.

6.	Operating Profit margin = $\left(\frac{\text{Operating Profit} \times 100}{\text{Sales}} \right)$	Operating Profit = ₹5,593.44 Sales = ₹9,801.22	57.07%	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 good.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹2,962 Total Assets = ₹27,774.72	10.66%	It is not 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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net Worth}} \right)$	Net profit = ₹3,030.83 Net Worth = ₹10,616.97	28.55%	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 = ₹2,962 Capital Employed = ₹17,259.83	17.16%	It is 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	3.22%	It is 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	42.84%	It is satisfactory.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹13,562.39 Sales = ₹9,801.22	0.72	It is not good.

5.3 Ratio Analysis for 2011-12

Table 2.34: 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 = ₹12,308.45 Current Liabilities = ₹8,979.31	₹3,329.14	Liquidity position is good.
2.	Current Ratio = $\left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$	Current Assets = ₹12,308.45 Current Liabilities = ₹8,979.31	1.37	It is not safe.
3.	Acid test or Quick ratio = $\left(\frac{\text{Quick Assets}}{\text{Current Liabilities}} \right)$	Quick Assets = ₹12,014.86 Current Liabilities = ₹8,979.31	1.34	It is safe.
4.	Debt-Equity Ratio = $\left(\frac{\text{Long term debt}}{\text{Shareholders' Equity}} \right)$	Total long term debt = ₹9,598.29 Shareholders' Equity = ₹8,387.33	1.14	It is satisfactory
5.	Interest Coverage = $\left(\frac{\text{Operating Profit}}{\text{Interest}} \right)$	Operating Profit = ₹2,968.95 Interest = ₹744.96	3.99	It is 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 satisfactory.
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 good.
9.	Return on Assets = $\left(\frac{\text{Net Profit}}{\text{Total Assets}} \right)$	Net Profit = ₹974.85 Total Assets = ₹26,964.93	3.62%	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 = $\left(\frac{\text{Net Profit} \times 100}{\text{Net worth}} \right)$	Net profit = ₹678.79 Net Worth = ₹8,387.33	8.09%	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 = ₹974.85 Capital Employed = ₹17,985.62	5.42%	It is not satisfactory
13.	Cost of Goods Sold Ratio = $\left(\frac{\text{Cost of Goods Sold}}{\text{Sales}} \right)$	Cost of goods sold = ₹296.92 Sales = ₹5,889.49	5.04%	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	49.58%	It is good.
15.	Fixed Assets turnover = $\left(\frac{\text{Sales}}{\text{Fixed assets}} \right)$	Fixed Assets = ₹14,042.57 Sales = ₹5,889.49	0.42	It is not safe.

5.4 Summary for Balance Sheet and Profit & Loss Statement

Table 2.35: Summary of Balance Sheet

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Current Assets	12,308.45	13,624.97	15,200.08	Current Assets have increased.
Fixed Assets	14,042.57	13,562.39	13,101.54	Fixed Assets have decreased marginally.
Current Liabilities	8,979.31	10,534.89	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 2.36: Summary of Profit & Loss Statement

	2011-12 (₹ in millions)	2012-13 (₹ in millions)	2013-14 (₹ in millions)	Remarks
Sales	5,889.49	9,801.22	9,772.79	Sales have increased.
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)	1,269.53	4,475.47	3,798.68	PBT has increased and then marginally decreased.
Net profit	974.85	2,962.14	2,337.67	Net profit has increased.

Comparison of Ratio Analysis of All Companies

Financial ratios of all the companies from 2011-12 to 2013-14 has been compared below:

Comparison of Current ratio of Different Companies from 2011-12 to 2013-14**Table 2.37: Comparison of Current Ratio**

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
2011-12	0.87	1.13	1.8	1.31	1.37	C Ltd. has a better ratio
2012-13	0.89	1.56	3.93	1.99	1.29	C Ltd. has a better ratio
2013-14	0.67	1.26	0.98	2.41	1.28	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 2011-12 to 2013-14. Short term liquidity position of B Ltd., D Ltd. (except 2013-14) and E Ltd. was not good as current ratio was more than 1 but less than 2. Liquidity position of C Ltd. was not satisfactory as the ratio varied from 1.8 to 0.98 in three years.

C Ltd. has the highest current ratio of 3.93 in the year 2012-13, followed by others. By 2013-14, the ratio of C Ltd. dropped to 0.98, with D Ltd. has the highest ratio of 2.41 and B Ltd. & E Ltd. with 1.26 and 1.28 respectively. It can also be seen that, in the period of 3 years, D Ltd. has improved its liquidity position compared to others, while positions of companies like C Ltd. and E Ltd. and A Ltd. have come down. Current ratio of C Ltd. decreased steeply from 2012-13 due to its decrease in current assets position.

Comparison of Debt – Equity ratio of different Companies from 2011-12 to 2013-14**Table 2.38: Comparison of Debt –Equity Ratio**

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
2011-12	0.07	1.4	0.68	0.00005	1.14	B Ltd. has a better ratio
2012-13	0.1	1.03	0.66	0.000033	0.63	B Ltd. has a better ratio
2013-14	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 (Debt-equity ratio) of A Ltd. increased from 0.07 to 0.09 from 2011-12 to 2013-14. Debt position of B Ltd. was satisfactory from the creditors point of view as the ratio varied from 1.4 to 0.92 from 2011-12 to 2013-14. Similarly debt position of E Ltd. was more than 1 in

2011-12 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 2011-12 to 2013-14 as their debts were paid off.

It can be concluded that B Ltd. has the highest debt- equity ratio of 1.40 in 2011-12 compared to other companies. C Ltd. has improved its ratio from 0.68 to 0.91 in three years. Though owner's share in the company has decreased but more outsiders have started investing in the company and that has led to desirable ratio. E LTD. has performed very badly as the ratio came down from 1.14 to 0.39. This is due to decrease in investment of creditors'.

Comparison of Net Profit margin of different companies from 2011-12 to 2013-14

Table 2.39: Comparison of Net Profit Margin

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
2011-12	20.9%	20%	24.95%	51.97%	16.55%	D Ltd. has a better net profit margin.
2012-13	16.77%	23.05%	21.41%	55.7%	30.22%	D Ltd. has a better net profit margin.
2013-14	20.03%	20.01%	18.92%	47.9%	23.92%	D Ltd. has a better net profit margin.

From Table 2.40, it can be seen that D Ltd. has the highest net profit margin in all the three years which is because of their increase in sales. Profitability of A Ltd. varied marginally from 20.9% to 20.03%. Profit Margin of E Ltd. has increased from 16.55% to 23.92% from 2011-12 to 2013-14. Though sales of the company C Ltd. increased, their profit percentage decreased from 2011-12 to 2013-14 due to their decrease in net profit. For the companies B Ltd. and E Ltd., sales as well as net profit margin both are increased during the study period.

D Ltd. remained the single most profitable firm in the three years. The net profit of E Ltd., C Ltd. and B Ltd. after increasing for the first year, decreased in the last year. Profit margin for A Ltd. has decreased and then increased in the period from 20.9% to 20.03%.

Comparison of ROI of Different Companies from 2011-12 to 2013-14

Table 2.40: Comparison of ROI

	A Ltd.	B Ltd.	C Ltd.	D Ltd.	E Ltd.	Remarks
2011-12	41%	37.5%	44.89%	83.31%	15.14%	D Ltd. has a better ratio
2012-13	33.70%	44.16%	25.01%	47.99%	42.15%	D Ltd. has a better ratio
2013-14	37.8%	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. decreased from 41% to 37.8% in three years due to substantial declining in its profit before tax. Similarly ROI of E LTD. increased from 15.14% to 31.17%. From 2011-12 to 2013-14, overall profitability of D Ltd. was better than other companies, though its ROI decreased from 47.99% to 22.70%. ROI of C Ltd. was highest in 2011-12 with 44.89% and then it declined to 23.63%. Similarly ROI of B Ltd. increased from 37.5% to 39.45% due to significant decrease in its expenses.

It can be said that ROI of C Ltd. declined steeply from 44.89% to 23.63% due to substantial increase in its expenses. Profitability of A Ltd. after declining in the first year to 33.70% and then increased marginally to 37.8% the last year. ROI of D Ltd. decreased gradually from 83.31% to 47.99% and then decreased to 22.70% because of fall in operating profit during the period. ROI of B Ltd. increased from 37.5% in 2011-12 to 39.45% 2013-14.

2.5 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 2013, 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 2014, exactly halfway through the financial year, BLT bought a further 20% of the ordinary share capital of CMU. In the year ended 31st August 2014 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 2014. 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 2014.

Solution:

BLT Group: Statement of changes in equity for the year ended 31st August 2014

	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

$$₹30,000 \times 6/12 \times 40\% = ₹6,000$$

$$₹30,000 \times 6/12 \times 20\% = ₹3,000$$

$$₹9,000$$



Group share

$$₹98,970 + (₹30,000 - ₹9,000) = ₹119,970$$

(W2) Transfer in respect of share purchase

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

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

Note: It is assumed that BLT purchased the further 20% of share capital of CMU at the proportionate value of share capital and profit of CMU.

Illustration 3.

On 1st January 2014, EFG issued 10,000 5% convertible bonds at their par value of ₹50 each. The bonds will be redeemed on 1st January 2019. 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:

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

	₹
Present value of principal: $₹500,000/(1.06)^5$ (factor from table = 0.747)	373,500
Present value of interest: $₹25,000 \times$ 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 2014 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: 31.03.2014

(₹ in million)

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
I. Revenue from operations		2,500	2,200	1,850
II. Other income		—	—	—
III. Total Revenue (I+II)		2,500	2,200	1,850
IV. Expenses:				
Cost of materials consumed		—	—	—
Purchases of Stock-in-Trade		—	—	—
Changes in inventories of finished goods work-in-progress and Stock –in-Trade		—	—	—
Employee benefits expense		—	—	—
Finance costs	(1)	20	0	(20)
Depreciation and amortization expense		—	—	—
Other expenses	(2)	2,450	2,140	1,800
Total expenses		2,470	2,140	1,780
V. Profit before exceptional and extraordinary items and tax (III-IV)		30	60	70
VI. Exceptional items		—	—	—
VII. Profit before extraordinary items and tax (V – VI)		30	60	70
VIII. Extraordinary Items		—	—	—
IX. Profit before tax (VII – VIII)		30	60	70
X. Tax expense:				
(1) Current tax		10	20	23
(2) Deferred tax		—	—	—
XI. Profit (Loss) for the period from continuing operations (after tax) (IX – X)		20	40	47
XII. Profit/(Loss) from discontinuing operations		—	—	—
XIII. Tax expense of discontinuing operations		—	—	—
XIV. Profit/(loss) from Discontinuing operations (after tax) (XII – XIII)		—	—	—
XV. Profit (Loss) for the period (XI + XIV)		20	40	47
XVI. Earnings per equity share:				
(1) Basic		—	—	—
(2) Diluted		—	—	—

Proposed dividend for the year 2013-14, 2012-13 and 2011-12 are ₹ 20 million, ₹ 30 million and ₹ 30 million respectively.



Workings:

(₹ in million)

1. Finance Costs	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
Interest receivable from credit sales	(90)	(60)	(45)
Interest payable	110	60	25
Total	20	0	(20)

2. Other Expenses	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
Cost of sales	1,750	1,500	1,250
Operating costs	700	640	550
Total	2,450	2,140	1,800

Name of the Company : Arizona

Balance Sheet as at : 31.03.2014

(₹ in million)

Ref No.	Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
I	EQUITY AND LIABILITIES				
1	Shareholders' Fund				
	(a) Share capital		90	90	90
	(b) Reserves and surplus		262	262	252
	(c) Money received against share warrants		—	—	—
2	Share application money pending allotment		—	—	—
3	Non-current liabilities				
	(a) Long-term borrowings		320	200	200
	(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		928	840	640
	(d) Short-term provisions		—	—	—
	Total (1+2+3+4)		1,600	1,392	1,182
II	ASSETS				
1	Non-current assets				
	(a) Fixed assets		—	—	—
	(i) Tangible assets		332	290	278
	(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		620	540	400
		(c) trade receivables		633	550	492
		(d) Cash and cash equivalents		15	12	12
		(e) Short-term loans and advances		—	—	—
		(f) Other current assets		—	—	—
		Total (1+2)		1,600	1,392	1,182

Workings:

(₹ in million)

1. Other Current Liabilities	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
Payables	300	300	300
Taxation	20	20	20
Overdraft	320	520	320
Total	640	840	640

Other information:

Depreciation charged for the three years was as follows:

2011-12	2012-13	2013-14
₹ 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 2013-14.

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:

2011-12	2012-13	2013-14
₹ 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 2014, two weeks after the financial statements for the year ended 31st March 2014 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.

Other Informations:

	2011-12	2012-13	2013-14
Gross Profit	600	700	750
Operating profit	50	60	50
Capital expenditure	—	72	112

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 2014
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 2011-12 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 9.2% to 7.4%.

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 1.52% to 1.82% over the three years as a result of the increasing loans and overdraft. The overdraft has been included within the calculation since interest is payable on overdraft.

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:

	2011-12	2012-13	2013-14
	₹ in million	₹ in million	₹ in million
Revenue	1,850	2,200	2,500
Revenue increase on 2012-13 & 2013-14		18.9%	35.1%
Net profit	47	40	20
Net profit decrease on 2012-13 & 2013-14		-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	542	552	672
ROCE = Operating Profit/Capital Employed	9.2%	10.9%	7.4%
Asset utilisation	2.15	2.05	1.95
Gearing = Loans + overdraft/Equity Shareholders's fund	1.52%	2.04%	1.82%
Interest cover $\left(\frac{\text{Operating profit} + \text{Interest receivables}}{\text{Interest Payables}} \right)$	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)	(10)
Net cash flow from operating activities		(158)	(153)
Investing activities			
Interest received		60	90
Capital expenditure		(72)	(112)
Financing activities			
Short-term 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 (summarised) as on 31st March, 2014 and 31st March, 2013.

Particulars	2013-14		2012-13	
	₹'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 @ ₹50 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, 2014 and 31st March, 2013

	2013-14		2012-13	
	₹'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		12

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 current market value of ordinary share is ₹2.40

Solution:

(1) Return on Capital Employed (ROCE)

(₹ in '000)

$$\frac{\text{Profit before Interest \& Taxes (PBIT)}}{\text{Capital Employed (CE)}} = \frac{₹(54+4)}{₹(236+80)} \times 100\% = 18.4\% \quad 2013-14$$
$$\frac{₹(46+4)}{₹(238+80)} \times 100\% = 15.7\% \quad 2012-13$$

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

$$\text{Gross Profit / Sales} = \frac{₹104}{₹418} \times 100\% = 24.9\% \quad 2013-14$$
$$\frac{₹90}{₹392} \times 100\% = 23.0\% \quad 2012-13$$

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

$$\frac{\text{Turnover}}{\text{Total Assets}} = \frac{₹418}{₹408} = 1.02 \text{ times} \quad 2013-14$$
$$\frac{₹392}{₹448} = 0.88 \text{ times} \quad 2012-13$$

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

(4) Current ratio

$$\frac{₹148}{₹92} = 1.61 \text{ for } 2013-14$$
$$\frac{₹170}{₹130} = 1.31 \text{ for } 2012-13$$

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.

(5) Quick ratio

$$\frac{₹(148 - 84)}{₹92} = 0.70 \text{ for } 2013-14$$
$$\frac{₹(170 - 74)}{₹130} = 0.74 \text{ for } 2012-13$$

The quick ratio is slightly better in 2012-13, which proves that higher inventory levels are being maintained for 2013-14.

(6) Inventory turnover ratio

$$\frac{₹314}{₹(74 + 84)} \times 0.5 = 4.0 \text{ times} \quad \text{for } 2013-14$$
$$\frac{₹302}{₹(58 + 74)} \times 0.5 = 4.6 \text{ times} \quad \text{for } 2012-13$$

This ratio shows how quickly the inventory is being sold. In 2012-13 it was being sold at a much higher rate than in 2013-14.

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

$$(7) \quad \text{Inventory days} = \frac{\text{₹}(74 + 84) \times 0.5}{\text{₹}314 \times 365 \text{ days}} = 92 \text{ days for 2013-14}$$

$$\frac{\text{₹}(58 + 74) \times 0.5}{\text{₹}302 \times 365 \text{ days}} = 80 \text{ days for 2012-13}$$

Alternatively this can be arrived at: 2013-14: $1/4 \times 365 = 92$ days. 2012-13/ $4.6 \times 365 = 80$ days

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

$$(8) \quad \text{Trade receivable days} = \frac{\text{₹} 58}{\text{₹}418 \times 365 \text{ days}} = 50.6 \text{ days for 2013-14}$$

$$\frac{\text{₹} 46}{\text{₹}392 \times 365 \text{ days}} = 42.8 \text{ days for 2012-13}$$

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

$$(9) \quad \text{Trade payable days} = \frac{\text{₹}72/\text{₹}324 \times 365}{\text{₹}110/\text{₹}318 \times 365} = \frac{81.1 \text{ days for 2013-14}}{126.3 \text{ days for 2012-13}}$$

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.

$$(10) \quad \text{Equity Gearing} = \frac{\text{Preference share capital} + \text{loans}}{\text{Ordinary Share Capital} + \text{reserves}}$$

$$\frac{\text{₹}(50 + 80)}{\text{₹}(236-50)} = 69.9\% \quad 2013-14$$

$$\frac{\text{₹}(50 + 80)}{\text{₹}(238-50)} = 69.1\% \quad 2012-13$$

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

$$(11) \quad \text{Total gearing} = \frac{\text{Preference share capital} + \text{loan}}{\text{total long term capital}}$$

$$\frac{\text{₹}130/\text{₹}(236 + 80)}{\text{₹}130/\text{₹}(238+80)} = \frac{41.1\%}{40.9\%} \quad \frac{2013-14}{2012-13}$$

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

$$(12) \quad \text{Interest cover} = \frac{\text{Profit before interest and tax}}{\text{interest payable}}$$

$$\frac{\text{₹}(54 + 4)/\text{₹}4}{\text{₹}(46 + 4)/\text{₹}4} = \frac{14.5 \text{ times}}{12.5 \text{ times}} \quad \frac{2013-14}{2012-13}$$

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.

$$(13) \quad \text{Dividend cover} = \frac{\text{Profit after tax and after preference dividend}}{\text{dividend paid}}$$

$$\frac{\text{₹}(34-4)/\text{₹}12}{\text{₹}(26-4)/\text{₹}10} = \frac{2.5 \text{ times}}{2.2 \text{ times}} \quad \frac{2013-14}{2012-13}$$

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

$$(14) \quad \text{EPS} = \frac{\text{Profit after tax and after preference dividend}}{\text{no of ordinary shares}}$$

$$\frac{\text{₹}(34-4)/1400}{\text{₹}(26 - 4)/1400} = \frac{\text{₹} 21.4 \text{ per share}}{\text{₹}15.7 \text{ per share}} \quad \frac{2013-14}{2012-13}$$



The EPS is increased from ₹ 15.70 to ₹ 21.40 in the year 2013-14. It indicates the growth in earnings of equity shares.

$$(15) \quad \text{PE ratio} = \text{Market price} / \text{EPS}$$
$$240/21.4 = 11.21 \text{ times} \quad 2013-14$$

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, 2014. 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, 2013, 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 ₹1 shares was fully taken up on 1st February 2014, reflecting, we believe, market confidence in the group's new management. Dividends have been reduced in 2013-14 in order to increase profit retention to fund the further growth planned for 2014-15. 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	2013-14	2012-13
Revenue	1,20,366	1,21,351
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 2014 (attributable to equity holders of the parent)

	Accumulated profit	Share capital	Share premium	Revaluation reserve	Total 2013-14	Total 2012-13
	₹'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	(155)				(155)	(364)
Closing Balance	21,128	3,100	4,200	2,000	30,428	24,623

BZJ Group: Consolidated statement of financial position (extract) as at 31st March 2014

	2013-14		2012-13	
	₹'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 (₹1 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 2014 and 2013, assuming that there was no change in the number of ordinary shares in issue during 2013-14.
- (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
 - 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 2014.

Solution:

(a) 31st March 2013 EPS - No change in capital structure

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

31st March 2014 EPS - New issue of shares on 1st February 2014

Time apportion shares to find Weighted Average Number of Shares

New shares issued = 3,00,000

Total shares after new issue = 31,00,000

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 2013-14 and 2012-13 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 2014.

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 2012-13. The gross profit has also declined by 9% from 2012-13 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 September 2013. They have also increased their inventory levels and reduced their trade receivables. Long term borrowings have increased by ₹10 million from 2012-13 and short term borrowings of ₹3.662 million in 2013-14 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 (Return on Capital Employed)- has shown a decline of 40.5% compared with 2012-13.

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 2013-14 a fall of 18.2% from 2012-13.

The gross profit margin is at 14.4% in 2013-14 showing a decrease of 8.3%. This suggests that BZJ is having problems in 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 2013-14 has resulted in a decline of the net profit margin of 32.4% to just 2.3% in 2013-14.

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 2013-14. Increase in property, plant and equipment is just over ₹19 million. 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 2013-14. The current ratio is 1.44 compared to 1.73 of 2012-13. Short term borrowings of nearly ₹4 million 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 not being paid quicker than last year as the average credit period being taken of 111.3 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 4% to 65.4 days. This means the average time taken from buy the goods to cash received from customers is 65.4 days compared to only 62.9 days in 2012-13. This also explains the cash flow problem of BZJ.

The gearing ratio has increased to 81.7% a rise of 29.9% from 2012-13. 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 2013-14.

The successful issue of shares during 2013-14 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 2014-15 and 2015-16 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

(Amount in ₹ '000)

	PERFORMANCE			
		2013-14	2012-13	% Change
ROCE (Return on Capital Employed) = $\frac{\text{Profit before Interest \& Taxes (PBIT)}}{\text{Capital Employed (CE)}} \times 100$	5,377 / (30,428 + 2,270 + 26,700)	9.1%		-40.5%
	6,617 / (24,623 + 1,947 + 16,700)		15.3%	[(9.1 - 15.3)/15.3]
Operating profit margin PBIT / turnover	5,377/1,20,366	4.5%		-18.2%
	6,617/1,21,351		5.5%	[4.5-5.5 / 5.5]
Asset turnover Turnover/Total assets	120,366/(95,605)	1.26 times		-28%
	121,351/(69,271)		1.75 times	[1.26-1.75/1.75]
Gross profit (GP) margin GP / Turnover x 100	17,342/1,20,366	14.4%		-8.3%
	19,065/1,21,351		15.7%	[14.4-15.7/15.7]
Operating expenses (OE) margin OE / Turnover x 100	11,965/1,20,366	9.9%		-3.9%
	12,448/1,21,351		10.3%	[(9.9-10.3)/10.3]
Net profit (NP) margin NP / turnover x 100	2,783 / 1,20,366	2.3%		-32.4%
	4,117/1,21,351		3.4%	[2.3-3.4/3.4]

POSITION				
		2013-14	2012-13	% Change
Current ratio	52,030/36,207	1.44:1		-16.8%
$\frac{\text{Current Assets (CA)}}{\text{Current Liabilities (CL)}}$	44,951/26,001		1.73:1	
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 (Cost of Sales)] 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	111.3 days	87.1 days	+27.8%
Working capital cycle Inventory days+trade receivable days - trade payable days	131.5 + 45.2-111.3 97.3 + 52.7-87.1	65.4 days	62.9 days	+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 2014.



- 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 2014. HPS has an option under the contract of sale to require TYD to repurchase the inventories on 31st March 2016, for ₹95,000. TYD has derecognised the inventories at their cost of ₹85,000, with a charge to cost of sales of this amount. 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 2014, ₹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 2014 are as presented below. (Note: at this stage of the analysis only one year's figures are considered).

TYD: Income Statement (Extract) for the year ended 31st March 2014.

	₹'000
Revenue	600
Cost of sales	<u>450</u>
Gross profit	150
Expenses	63
Finance costs	<u>17</u>
Profit before tax	70
Income tax expense	<u>25</u>
Profit for the period	45

TYD: Balance Sheet (Extract) as at 31st March, 2014

	₹ '000	₹ '000
Assets		
Non current assets		
Property, plant and equipment		527
Current assets		
Inventories	95	
Trade receivables	72	
Cash	6	173
		700
Equity and liabilities		
Share capital		100
Retained earnings		245
		345
Non current liabilities		
Long term borrowings		180
Current liabilities		
Trade and other payables	95	
Bank overdraft	80	175
		700

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, 2014. 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 as 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 effect a loan secured on the assets (inventory). Therefore TYD must show a liability in their balance sheet to this effect. The following correct journal entries are required:

Derecognise the sale	Dr. Sales ₹85,000 Cr. Cost of sales ₹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 2015 and 2016

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 (Extract) for the year ended 31st March, 2014.

	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

Revised Balance Sheet (Extract) of TYD as at 31st March, 2014

	After adjustments		Before adjustments	
	₹'000	₹'000	₹'000	₹'000
Assets				
Non current assets				
Property, plant and equipment		527		527
Current assets				
Inventories ₹ (95+32+85) [₹ '000]	212		95	
Trade receivables ₹ (72-40) [₹ '000]	32		72	

Cash	6	250	6	173
		777		700
Equity and liabilities				
Share capital		100		100
Retained earnings ₹ (245 - 8) [₹ '000]		237		245
		337		345
Non current liabilities				
Long term borrowings ₹ (180+85) [₹ '000]		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

(₹ '000)

Key ratios	Before adjustment	After adjustment
Gearing	43%	51%
Debt / equity		
₹(180+ 80)/₹(345+ 180+ 80)		
₹(265 + 80) / ₹(337 + 265 + 80)		
Current ratio	0.99 :1	1.43 :1
Current Assets (CA)/Current Liabilities (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 (Profit before Tax)/ revenue		
₹70 / ₹600		
₹62 / ₹475		
Other analysis		



Gross profit margin	25%	30%
GP (Gross Profit)/ revenue		
₹150/₹600		
₹142 / ₹475		
Asset turnover	0.9 times	0.6 times
Revenue / Total Assets		
₹600/₹700		
₹475 / ₹ 777		
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 ₹85,000.

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 :-

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 case study 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 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		Total	Ultimate Rank (R_1)
	Ratio in times	Rank	Ratio in times	Rank	Ratio in times	Rank		
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).

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.

$$\text{Quick Ratio} = (\text{Current Assets}-\text{Inventories})/\text{Current Liabilities}$$

	Square Pharmaceuticals Ltd.		Industry Average	
	2009-10	2010-11	2009-10	2010-11
Current ratio	2.05	1.50	2.37	2.04
Quick ratio	0.90	0.85	1.42	1.02

From the presented chart and information it is found that both current and quick ratio of the Square Pharmaceuticals are well below the industry average. This indicates that company may fall in problem to pay its current debt in the emergency situation. As a result debtor may want to increase their cost (interest rate) for this company which will make the company difficult to manage working capital.

Asset Management Ratio

Inventory turnover measures the number of times on average the inventory is sold during the period. Its purpose is to measure the liquidity of the inventory. Day's sales outstanding measures the number of times, on average, receivables are collected during the period.

	Square Pharmaceuticals Ltd.		Industry Average	
	2009-10	2010-11	2009-10	2010-11
Inventory Turnover Ratio	2.97	3.03	2.05	2.12
Days Sales Outstanding Ratio	16.18	20.93	32.94	35.26

From the information presented above it is found that Square Pharmaceuticals perform better both in inventory turnover ratio and day's sales outstanding (DSO) ratio. Inventory of Square Pharmaceuticals takes less times to be sold and its efficiency of collecting the receivables (DSO) are also higher compared to the industry. Both of the efficiency has been increased in the year 2010-11 compared to the year 2009-10.

Debt Management Ratio

Debt management ratio refers percentage of the total assets provided by the creditors of the company and the ability of the company to meet the interest payments as they come due. If both of the ratios are favorable, it will become easier for the firm to find debt at lesser cost (interest rate). Two frequently used debt management ratios are debt-equity ratio and time interest earned ratio. These two ratios of Square Pharmaceuticals along with industry average are presented below:

	Square Pharmaceuticals Ltd.		Industry Average	
	2009-10	2010-11	2009-10	2010-11
Debt-equity Ratio	0.23	0.21	0.35	0.29
Time Interest Earned (TIE) Ratio	7.76	10.42	5.35	6.08

From the information presented above it is found that Square Pharmaceuticals has less debt compared to the industry. On the other hand its' time interest earned ratio is also much higher than the industry average, which indicates that the company has higher ability to pay for its' debt and the ability also has been increased in the recent year.

Profitability Ratio

Profitability ratios measure the income or operating success of an enterprise for a given period of time. Income, or lack of it, affects the company's ability to obtain debt and equity financing. It also affects the company's liquidity position and the company's ability to grow. As a consequence, both creditors and investors are interested in evaluating earning power – profitability. Profitability is frequently used as



the ultimate test of management's operating effectiveness. Two commonly used profitability ratios are net profit margin and return on total assets ratio. These two ratios of Square Pharmaceuticals along with industry average are presented below:

	Square Pharmaceuticals Ltd.		Industry Average	
	2009-10	2010-11	2009-10	2010-11
Net Profit Margin	18.21%	18.80%	14.77%	16.38%
Return on Total Assets Ratio	14.21%	13.50%	8.94%	9.00%

Square Pharmaceuticals has earned more return both in terms of revenue and total assets compared to the industry. It indicates that Square Pharmaceuticals is able to utilize its' assets more efficiently than most of the other companies of the industry.

Market Value Ratio

Earnings per share (EPS) are a measure of the net income earned on each share of common stock. A measure of net income earned on a per share basis provides a useful perspective for determining profitability. And the EPS of Square Pharmaceuticals indicates that its' profitability per share is better than the industry.

	Square Pharmaceuticals Ltd.		Industry Average	
	2009-10	2010-11	2009-10	2010-11
Earnings Per Share	10.60	12.90	9.43	11.65
Price Earnings Ratio	33.97	25.21	35.59	62.25
Price to Book Value Ratio	36.01	32.52	34.15	30.97

The price earnings (PE) ratio is an often quoted measure of the ratio of the market price of equity share to the earnings per share. The price earnings (PE) ratio reflects investor's assessment of the company's future earnings.

Price to book value ratio used to compare a stock's market value to its book value. A higher P/B ratio implies that investors expect management to create more value from a given set of assets, all else equal. This ratio also gives some idea of whether an investor is paying too much for what would be left if the company went bankrupt immediately.

So, from the above information it is found that investors are expecting management of Square Pharmaceuticals to create more value from a given set of assets as they are paying more than the industry average for its' share.

From the data analyzed and presented above it can be concluded that Square Pharmaceuticals Limited performs better in all material aspects from the industry. Though its financial strength is higher than the most of the company, its' liquidity position is below the industry. This may create financing problem for the company. Other than that its' strong financial position, higher margin on sales, capabilities of managing debt, accounts receivables and inventories make it an attractive company to the investors who make informed decision.

Although Square Pharmaceuticals is performing well in the industry, still it has some scope for improvements, as its' performance is not so much higher than the industry. For improving its operational and financial efficiency Square Pharmaceuticals can –

1. Increase its liquidity position slightly to make it equal to the industry.
2. Setup benchmarking in some key categories, (i.e. - turnover), and try to achieve them as fast as possible.
3. Searching for new finances to expand its business to maintain an equivalent or more growth to the industry.
4. Looking for new market segment within the country as well as outside the country to expand its market.

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.

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.
- How comparative, common-size and trend analysis of the financial statement is done.
- How the elements of costs and sales are analysed to measure the changes in income.
- Why different methods and models are used in order to predict distress.
- How off-balance sheet items are categorised.
- Why bond analysis are helpful in the field of corporate debt instrument, alongwith others.

3.2 REFORMULATION OF THE BALANCE SHEET

(A) For Corporate Entities —

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			



Liabilities:

A. Share Capital

For each class of share capital (different classes of preference shares to be treated separately):

- (a) the number and amount of shares authorised;
- (b) the number of shares issued, subscribed and fully paid, and subscribed but not fully paid;
- (c) par value per share;
- (d) a reconciliation of the number of shares outstanding at the beginning and at the end of the reporting period;
- (e) the rights, preferences and restrictions attaching to each class of shares including restrictions on the distribution of dividends and the repayment of capital;
- (f) shares in respect of each class in the company held by its holding company or its ultimate holding company including shares held by or by subsidiaries or associates of the holding company or the ultimate holding company in aggregate;
- (g) shares in the company held by each shareholder holding more than 5 per cent shares specifying the number of shares held;
- (h) shares reserved for issue under options and contracts/commitments for the sale of shares/ disinvestment, including the terms and amounts;
- (i) for the period of 5 years immediately preceding the date as at which the Balance Sheet is prepared :
 - (A) Aggregate number and class of shares allotted as fully paid-up pursuant to contract(s) without payment being received in cash.
 - (B) Aggregate number and class of shares allotted as fully paid-up by way of bonus shares.
 - (C) Aggregate number and class of shares bought back.
- (j) terms of any securities convertible into equity/preference shares issued along with the earliest date of conversion in descending order starting from the farthest such date;
- (k) calls unpaid (showing aggregate value of calls unpaid by directors and officers);
- (l) forfeited shares (amount originally paid-up).

B. Reserves and Surplus

- (i) Reserves and Surplus shall be classified as:
 - (a) Capital Reserves;
 - (b) Capital Redemption Reserve;
 - (c) Securities Premium Reserve;
 - (d) Debenture Redemption Reserve;
 - (e) Revaluation Reserve;
 - (f) Share Options Outstanding Account;
 - (g) Other Reserves (specify the nature and purpose of each reserve and the amount in respect thereof);
 - (h) Surplus i.e., balance in Statement of Profit and Loss disclosing allocations and appropriations such as dividend, bonus shares and transfer to/from reserves, etc.;

- (ii) A reserve specifically represented by earmarked investments shall be termed as a “fund”.
- (iii) Debit balance of statement of profit and loss shall be shown as a negative figure under the head “Surplus”. Similarly, the balance of “Reserves and Surplus”, after adjusting negative balance of surplus, if any, shall be shown under the head “Reserves and Surplus” even if the resulting figure is in the negative.

C. Long-term Borrowings

- (i) Long-term borrowings shall be classified as:
 - (a) Bonds/debentures;
 - (b) Term loans :
 - (A) from banks.
 - (B) from other parties.
 - (c) Deferred payment liabilities;
 - (d) Deposits;
 - (e) Loans and advances from related parties;
 - (f) Long term maturities of finance lease obligations;
 - (g) Other loans and advances (specify nature).
- (ii) Borrowings shall further be sub-classified as secured and unsecured. Nature of security shall be specified separately in each case.
- (iii) Where loans have been guaranteed by directors or others, the aggregate amount of such loans under each head shall be disclosed.
- (iv) Bonds/debentures (along with the rate of interest and particulars of redemption or conversion, as the case may be) shall be stated in descending order of maturity or conversion, starting from farthest redemption or conversion date, as the case may be. Where bonds/debentures are redeemable by installments, the date of maturity for this purpose must be reckoned as the date on which the first installment becomes due.
- (v) Particulars of any redeemed bonds/debentures which the company has power to reissue shall be disclosed.
- (vi) Terms of repayment of term loans and other loans shall be stated.
- (vii) Period and amount of continuing default as on the balance sheet date in repayment of loans and interest, shall be specified separately in each case.

D. Other Long-term Liabilities

Other Long-term Liabilities shall be classified as:

- (a) Trade payables;
- (b) Others.

E. Long-term provisions

The amounts shall be classified as:

- (a) Provision for employee benefits;
- (b) Others (specify nature).



F. Short-term borrowings

- (i) Short-term borrowings shall be classified as:
 - (a) Loans repayable on demand;
 - (A) from banks.
 - (B) from other parties.
 - (b) Loans and advances from related parties;
 - (c) Deposits;
 - (d) Other loans and advances (specify nature).
- (ii) Borrowings shall further be sub-classified as secured and unsecured. Nature of security shall be specified separately in each case.
- (iii) Where loans have been guaranteed by directors or others, the aggregate amount of such loans under each head shall be disclosed.
- (iv) Period and amount of default as on the balance sheet date in repayment of loans and interest, shall be specified separately in each case.

G. Other current liabilities

The amounts shall be classified as:

- (a) Current maturities of long-term debt;
- (b) Current maturities of finance lease obligations;
- (c) Interest accrued but not due on borrowings;
- (d) Interest accrued and due on borrowings;
- (e) Income received in advance;
- (f) Unpaid dividends;
- (g) Application money received for allotment of securities and due for refund and interest accrued thereon. Share application money includes advances towards allotment of share capital. The terms and conditions including the number of shares proposed to be issued, the amount of premium, if any, and the period before which shares shall be allotted shall be disclosed. It shall also be disclosed whether the company has sufficient authorised capital to cover the share capital amount resulting from allotment of shares out of such share application money. Further, the period for which the share application money has been pending beyond the period for allotment as mentioned in the document inviting application for shares along with the reason for such share application money being pending shall be disclosed. Share application money not exceeding the issued capital and to the extent not refundable shall be shown under the head Equity and share application money to the extent refundable, i.e., the amount in excess of subscription or in case the requirements of minimum subscription are not met, shall be separately shown under "other current liabilities";
- (h) Unpaid matured deposits and interest accrued thereon;
- (i) Unpaid matured debentures and interest accrued thereon;
- (j) Other payables (specify nature).

H. Short-term provisions

The amounts shall be classified as:

- (a) Provision for employee benefits.
- (b) Others (specify nature).

Assets

I. Tangible assets

- (i) Classification shall be given as:
 - (a) Land;
 - (b) Buildings;
 - (c) Plant and Equipment;
 - (d) Furniture and Fixtures;
 - (e) Vehicles;
 - (f) Office equipment;
 - (g) Others (specify nature).
- (ii) Assets under lease shall be separately specified under each class of asset.
- (iii) A reconciliation of the gross and net carrying amounts of each class of assets at the beginning and end of the reporting period showing additions, disposals, acquisitions through business combinations and other adjustments and the related depreciation and impairment losses/reversals shall be disclosed separately.
- (iv) Where sums have been written-off on a reduction of capital or revaluation of assets or where sums have been added on revaluation of assets, every balance sheet subsequent to date of such write-off, or addition shall show the reduced or increased figures as applicable and shall by way of a note also show the amount of the reduction or increase as applicable together with the date thereof for the first five years subsequent to the date of such reduction or increase.

J. Intangible assets

- (i) Classification shall be given as:
 - (a) Goodwill;
 - (b) Brands/trademarks;
 - (c) Computer software;
 - (d) Mastheads and publishing titles;
 - (e) Mining rights;
 - (f) Copyrights, and patents and other intellectual property rights, services and operating rights;
 - (g) Recipes, formulae, models, designs and prototypes;
 - (h) Licences and franchise;
- (i) Others (specify nature).
- (ii) A reconciliation of the gross and net carrying amounts of each class of assets at the beginning and end of the reporting period showing additions, disposals, acquisitions through business



combinations and other adjustments and the related amortization and impairment losses/reversals shall be disclosed separately.

- (iii) Where sums have been written-off on a reduction of capital or revaluation of assets or where sums have been added on revaluation of assets, every balance sheet subsequent to date of such write-off, or addition shall show the reduced or increased figures as applicable and shall by way of a note also show the amount of the reduction or increase as applicable together with the date thereof for the first five years subsequent to the date of such reduction or increase.

K. Non-current investments

- (i) Non-current investments shall be classified as trade investments and other investments and further classified as:
 - (a) Investment property;
 - (b) Investments in Equity Instruments;
 - (c) Investments in preference shares;
 - (d) Investments in Government or trust securities;
 - (e) Investments in debentures or bonds;
 - (f) Investments in Mutual Funds;
 - (g) Investments in partnership firms;
 - (h) Other non-current investments (specify nature).

Under each classification, details shall be given of names of the bodies corporate indicating separately whether such bodies are (i) subsidiaries, (ii) associates, (iii) joint ventures, or (iv) controlled special purpose entities in whom investments have been made and the nature and extent of the investment so made in each such body corporate (showing separately investments which are partly-paid). In regard to investments in the capital of partnership firms, the names of the firms (with the names of all their partners, total capital and the shares of each partner) shall be given.

- (ii) Investments carried at other than at cost should be separately stated specifying the basis for valuation thereof;
- (iii) The following shall also be disclosed:
 - (a) Aggregate amount of quoted investments and market value thereof;
 - (b) Aggregate amount of unquoted investments;
 - (c) Aggregate provision for diminution in value of investments.

L. Long-term loans and advances

- (i) Long-term loans and advances shall be classified as:
 - (a) Capital Advances;
 - (b) Security Deposits;
 - (c) Loans and advances to related parties (giving details thereof);
 - (d) Other loans and advances (specify nature).
- (ii) The above shall also be separately sub-classified as:
 - (a) Secured, considered good;

- (b) Unsecured, considered good;
- (c) Doubtful.
- (iii) Allowance for bad and doubtful loans and advances shall be disclosed under the relevant heads separately.
- (iv) Loans and advances due by directors or other officers of the company or any of them either severally or jointly with any other persons or amounts due by firms or private companies respectively in which any director is a partner or a director or a member should be separately stated.

M. Other non-current assets

Other non-current assets shall be classified as:

- (i) Long-term Trade Receivables (including trade receivables on deferred credit terms);
- (ii) Others (specify nature);
- (iii) Long term Trade Receivables, shall be sub-classified as:
 - (A) (a) Secured, considered good;
 - (B) Unsecured, considered good;
 - (C) Doubtful.
- (b) Allowance for bad and doubtful debts shall be disclosed under the relevant heads separately.
- (c) Debts due by directors or other officers of the company or any of them either severally or jointly with any other person or debts due by firms or private companies respectively in which any director is a partner or a director or a member should be separately stated.

N. Current Investments

- (i) Current investments shall be classified as:
 - (a) Investments in Equity Instruments;
 - (b) Investment in Preference Shares;
 - (c) Investments in Government or trust securities;
 - (d) Investments in debentures or bonds;
 - (e) Investments in Mutual Funds;
 - (f) Investments in partnership firms;
 - (g) Other investments (specify nature).

Under each classification, details shall be given of names of the bodies corporate [indicating separately whether such bodies are: (i) subsidiaries, (ii) associates, (iii) joint ventures, or (iv) controlled special purpose entities] in whom investments have been made and the nature and extent of the investment so made in each such body corporate (showing separately investments which are partly paid). In regard to investments in the capital of partnership firms, the names of the firms (with the names of all their partners, total capital and the shares of each partner) shall be given.

- (ii) The following shall also be disclosed :
 - (a) The basis of valuation of individual investments;



- (b) Aggregate amount of quoted investments and market value thereof;
- (c) Aggregate amount of unquoted investments;
- (d) Aggregate provision made for diminution in value of investments.

O. Inventories

- (i) Inventories shall be classified as:
 - (a) Raw materials;
 - (b) Work-in-progress;
 - (c) Finished goods;
 - (d) Stock-in-trade (in respect of goods acquired for trading);
 - (e) Stores and spares;
 - (f) Loose tools;
 - (g) Others (specify nature).
- (ii) Goods-in-transit shall be disclosed under the relevant sub-head of inventories.
- (iii) Mode of valuation shall be stated.

P. Trade Receivables

- (i) Aggregate amount of Trade Receivables outstanding for a period exceeding six months from the date they are due for payment should be separately stated.
- (ii) Trade receivables shall be sub-classified as:
 - (a) Secured, considered good;
 - (b) Unsecured, considered good;
 - (c) Doubtful.
- (iii) Allowance for bad and doubtful debts shall be disclosed under the relevant heads separately.
- (iv) Debts due by directors or other officers of the company or any of them either severally or jointly with any other person or debts due by firms or private companies respectively in which any director is a partner or a director or a member should be separately stated.

Q. Cash and cash equivalents

- (i) Cash and cash equivalents shall be classified as:
 - (a) Balances with banks;
 - (b) Cheques, drafts on hand;
 - (c) Cash on hand;
 - (d) Others (specify nature).
- (ii) Earmarked balances with banks (for example, for unpaid dividend) shall be separately stated.
- (iii) Balances with banks to the extent held as margin money or security against the borrowings, guarantees, other commitments shall be disclosed separately.
- (iv) Repatriation restrictions, if any, in respect of cash and bank balances shall be separately stated.
- (v) Bank deposits with more than twelve months maturity shall be disclosed separately.

R. Short-term loans and advances

- (i) Short-term loans and advances shall be classified as:
 - (a) Loans and advances to related parties (giving details thereof);
 - (b) Others (specify nature).
- (ii) The above shall also be sub-classified as:
 - (a) Secured, considered good;
 - (b) Unsecured, considered good;
 - (c) Doubtful.
- (iii) Allowance for bad and doubtful loans and advances shall be disclosed under the relevant heads separately.
- (iv) Loans and advances due by directors or other officers of the company or any of them either severally or jointly with any other person or amounts due by firms or private companies respectively in which any director is a partner or a director or a member shall be separately stated.

S. Other current assets (specify nature)

This is an all-inclusive heading, which incorporates current assets that do not fit into any other asset categories.

T. Contingent liabilities and commitments (to the extent not provided for)

- (i) Contingent liabilities shall be classified as:
 - (a) Claims against the company not acknowledged as debt;
 - (b) Guarantees;
 - (c) Other money for which the company is contingently liable.
- (ii) Commitments shall be classified as:
 - (a) Estimated amount of contracts remaining to be executed on capital account and not provided for;
 - (b) Uncalled liability on shares and other investments partly paid;
 - (c) Other commitments (specify nature).

U. The amount of dividends proposed to be distributed to equity and preference shareholders for the period and the related amount per share shall be disclosed separately. Arrears of fixed cumulative dividends on preference shares shall also be disclosed separately.

V. Where in respect of an issue of securities made for a specific purpose, the whole or part of the amount has not been used for the specific purpose at the balance sheet date, there shall be indicated by way of note how such unutilized amounts have been used or invested.

W. If, in the opinion of the Board, any of the assets other than fixed assets and non-current investments do not have a value on realisation in the ordinary course of business at least equal to the amount at which they are stated, the fact that the Board is of that opinion, shall be stated.



(B) For Non-corporate Entities —

Exhibit 3.2 Balance Sheet

Balance Sheet as at

Liabilities	₹	Assets	₹
Capital Accounts:		Fixed Assets:	
Capital Accounts		Goodwill	
Current Accounts		Land and Building	
Long-term Liabilities:		Plant and machinery	
Debentures		Furniture	
Loan on Mortgage		Investments (with details)	
Current Liabilities:		Current Assets:	
Bank Overdraft		Stock-in-trade	
Sundry Creditors		Sundry Debtors	
Outstanding Expenses		Prepaid Expenses	
Outstanding Expenses		Accrued Income	
Income Received in Advance		Bills Receivable	
Bills Payable		Cash	
		Cash at Bank	

Classification of Liabilities:

The items appearing as liabilities in a balance sheet can be conveniently classified into:

- (1) **Proprietors' equity:** This includes all those amounts to which the proprietors of the business are entitled.
- (2) **Long-term liabilities:** These comprise those obligations which normally are not due for payment in the ordinary course of business within a relatively short time (usually those not due within a period of one year).
- (3) **Current liabilities:** They can be sub-divided into —
 - (a) trade liabilities which are incurred for goods and services bought on credit or expenses incurred, and
 - (b) financial liabilities, i.e., loans taken for short periods.
- (4) **Contingent liabilities:** The amount of the contingent liability to be stated on the face of the balance sheet by way of a note, unless there is a definite probability that a loss will materialise, in which case a specific provision against that loss should be made.

Classification of Assets:

The assets of a business may be classified into:

- (1) **Fixed assets:** These assets have a permanent nature acquired to assist the process of generating revenue-over a long period of time.

The fixed assets may be further classified into —

- (a) **Tangible assets:** These assets have physical existence.
- (b) **Intangible assets:** Intangible assets are the rights and privileges which will generate revenue in the future.
- (2) **Current assets:** These are expected to be converted into cash or consumed in the ordinary course of operations within a relatively short time (usually a year).

The current assets can be further sub-divided into:

- (a) **Liquid or quick assets:** These comprise cash balances and other current assets which can be converted into cash at short notice and less risk of loss.
- (b) **Circulating assets:** It comprise those rights to cash such as debtors, bills receivable and accrued income which will be converted into cash within a relatively short time, and those forms of property or rights to services which will be taken into the operative processes or consumed within a relatively short period, such as stock-in-trade and prepaid expenses,.
- (3) **Fictitious assets:** They are shown on the asset side of the balance sheet till they are written off. Such assets are not expected to realise any value or render any benefit to the business in future.
- (4) **Contingent assets:** Contingent assets often grow out of contingent liabilities. Contingent assets are not required to be disclosed in the balance sheet. Contingent assets arising out of contingent liabilities may, of course be inferred from such liabilities as stated in the balance sheet.

The non-corporate entities may prepare their balance Sheet as per Revised Schedule VI also (as per exhibit 3.1).

Reformulation of Balance Sheet under Revised Schedule VI

Particulars	Note	Figure as at the end of Current Reporting Period	Figure as at the end of Previous Reporting Period
		₹	₹
Net Current Assets:			
Current Assets			
Current Investments			
Inventories			
Trade Receivables			
Cash & Cash Equivalents			
Short-term Loans & Advances			
Other Current Assets			
Total Current Assets (A)			
Current Liabilities			
Short-term Borrowings			
Trade Payables			

Other Current Liabilities			
Short-term Provisions			
Total Current Liabilities (B)			
Net Current Assets [C=A-B]			
Net Non-current Assets:			
Non-current Assets			
Fixed Assets			
(i) Tangible Assets			
(ii) Intangible Assets			
(iii) Capital WIP			
(iv) Intangible Assets under Development			
Non-current Investments			
DTA (Net)			
Long-term Loans & Advances			
Other Non-current Assets			
Total Non-current Assets (D)			
Non-current Liabilities			
Long-term Borrowings			
DTL (Net)			
Other Long-term Liabilities			
Long-term Provisions			
Total Non-current Liabilities (E)			
Net Non-current Assets [F = D-E]			
Share Application Money Pending Allotment (G)			
Shareholders' Fund: [C+F-G]			
Represented by:			
Share Capital			
Reserves & Surplus			
Money Received against Share Warrants			

3.3 REFORMULATION OF THE INCOME STATEMENT

(A) For Corporate Entities —

Exhibit 3.3 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			

(1) Revenue from Operations:

A. For Company other than a Finance Company: Revenue from Operations shall disclose separately in the Notes,

Revenue from –

- (a) Sale of Products
- (b) Sale of Services
- (c) Other Operating Revenues
- (d) Less: Excise Duty

B. For Finance Company: Revenue from Operations shall include Revenue from:

- (a) Interest &
- (b) Other Financial Services

Revenue under each of the above heads shall be disclosed separately by way of Notes to Accounts to the extent applicable.

(2) Finance Costs: Finance costs shall be classified as:

- (a) Interest expense;
- (b) Other borrowing costs;
- (c) Applicable net gain/loss on foreign currency transactions and translation.

(3) Other income: Other income shall be classified as:

- (a) Interest Income (in case of a company other than a finance company);
- (b) Dividend Income;
- (c) Net gain/loss on sale of investments
- (d) Other non-operating income (net of expenses directly attributable to such income).

(4) Additional Information: A Company shall disclose by way of notes additional information regarding aggregate expenditure and income on the following items:-

- (I) (a) Employee Benefits Expense — showing separately the following:
 - (i) salaries and wages,
 - (ii) contribution to provident and other funds,
 - (iii) expense on Employee Stock Option Plan (ESOP) and Employee Stock Purchase Plan (ESPP),
 - (iv) staff welfare expenses.
- (b) Depreciation and amortization expense;
- (c) Any Item of income or expenditure which exceeds one per cent of revenue from operations or ₹ 1,00,000, whichever is higher;
- (d) Interest Income;
- (e) Interest Expense;
- (f) Dividend Income;
- (g) Net gain/ loss on sale of investments;
- (h) Adjustments to the carrying amount of investments;
- (i) Net gain or loss on foreign currency transaction and translation (other than considered as finance cost);
- (j) Payments to the auditor as (i) auditor, (ii) for taxation matters, (iii) company law matters, (iv) for management services, (v) for other services, (vi) for reimbursement of expenses;
- (k) Details of items of exceptional and extraordinary nature;
- (l) Prior period Items;
- (II) (a) In the case of manufacturing companies,-
 - (1) Raw materials under broad heads.
 - (2) goods purchased under broad heads.
- (b) In the case of trading companies, purchases in respect of goods traded in by the company under broad heads.
- (c) In the case of companies rendering or supplying services, gross income derived from services rendered or supplied under broad heads.
- (d) In the case of a company, which falls under more than one of the categories mentioned in (a), (b) and (c) above, it shall be sufficient compliance with the requirements herein if purchases, sales and consumption raw material and the gross income from services rendered are shown under broad heads.
- (e) In the case of other companies, gross income derived under broad heads.
- (III) In the case of all concerns having works in progress, works-in-progress under broad heads.
- (IV) (a) The aggregate, if material, of any amounts set aside or proposed to be set aside, to reserve, but not including provisions made to meet a specific liability, contingency or commitment known to exist at the date as which the balance-sheet is made up.
- (b) The aggregate, if material, of any amounts withdrawn from such reserves.



- (V) (a) The aggregate, if material, of the amounts set aside to provisions made for meeting specific liabilities, contingencies or commitments.
- (b) The aggregate, if material, of the amounts withdrawn from such provisions, as no longer required.
- (VI) Expenditure incurred on each of the following items, separately for each item:-
- (a) Consumption of stores and spare parts.
- (b) Power and fuel.
- (c) Rent.
- (d) Repairs to buildings.
- (e) Repairs to machinery.
- (f) Insurance.
- (g) Rates and taxes, excluding, taxes on income.
- (h) Miscellaneous expenses.
- (VII) (a) Dividends from subsidiary companies.
- (b) Provisions for losses of subsidiary companies.
- (VIII) The profit and loss account shall also contain by way of a note the following information, namely:-
- (a) Value of imports calculated on C.I.F basis by the company during the financial year in respect of-
- (i) Raw materials;
- (ii) Components and spare parts;
- (iii) Capital goods;
- (b) Expenditure in foreign currency during the financial year on account of royalty, know-how, professional and consultation fees, interest and other matters;
- (c) Total value if all imported raw materials, spare parts and components consumed during the financial year and the total value of all indigenous raw materials, spare parts and components similarly consumed and the percentage of each to the total consumption;
- (d) The amount remitted during the year in foreign currencies on account of dividends with a specific mention of the total number of non-resident shareholders, the total number of shares held by them on which the dividends were due and the year to which the dividends related;
- (e) Earnings in foreign exchange classified under the following heads, namely:-
- (i) Export of goods calculated on F.O.B. basis;
- (ii) Royalty, know-how, professional and consultation
- (iii) Interest and dividend;
- (iv) Other income, indicating the nature thereof.

(B) For Non-corporate Entities

Exhibit 3.4 Manufacturing Account

Manufacturing Account for the period ended

Dr.

Cr.

Particulars	₹	₹	Particulars	₹	₹
To Raw material Consumed:			By Trading A/c		***
Opening Stock	***		(Value of goods		
Add: Purchases	***		produced transferred at		
Add: Expenses and Charges			charged-out price)		
relating to purchases	***		" Profit & Loss A/c		***
	***		(Manufacturing Loss, if		
Less: Duty Drawback, Cash			any, transferred)		
Assistance on Raw Materials	***				
etc.	***				

Less: Returns/Loss of materials	***				

	***	***			
Less: Closing Stock	***	***			
" Direct Wages		***			
" Other Direct or Chargeable		***			
Expenses		***			
Prime Cost		***			
" Factory Overheads:					
" Different Factory Expenses	***				
Less: Sale of Scrap (if any)	***				

Add: Opening Work-in-Progress	***				

Less: Closing Work-in-Progress	***				
	***	***			
Works/Factory Cost		***			
" Profit & Loss A/c					
(Manufacturing Profit					
transferred)		***			

		***			***

(a) Prime cost: The prime cost covers all the costs involved in physically making the products and other costs that are directly related to the level of output. These are usually known as direct costs and common examples would include:

1. Direct materials
2. Direct labour/wages
3. Other direct costs (e.g. packaging, royalties)



(b) Overhead cost: This includes all other expenses concerned with the production of output but not in a direct manner. This means that if the level of production increased, then these expenses may also increase but not by the same proportion. Common examples of overhead costs would include:

1. Factory rent
2. Indirect labour
3. Depreciation of factory plant and equipment

Exhibit 3.5

Trading Account
for the year ended

Dr.		Cr.	
Particulars	Amount ₹	Particulars	Amount ₹
To Opening Stock	***	By Sales	***
Purchases ***		Less: Returns Inward	---
Less: Returns Outward ***	***	Closing Stock	***
Direct Expenses:			
Wages	***		
Carriage Inward	***		
Freight and Insurance	***		
Octroi	***		
Fuel	***		
Lighting and Heading	***		
Import Duty	***		
Royalty on Production	***		
Profit & Loss A/c	***		
(Gross Profit transferred)			
	***		***

- (i) **Opening Stock:** In the case of a manufacturing unit, it is composed of: raw materials, work-in-progress, and finished goods. But in the case of a trading concern, the opening stock is composed of finished goods only.
- (ii) **Purchases:** It includes both cash and credit purchase of goods.
- (iii) **Returns Outward:** It may be shown either as a deduction from the purchase in the debit side of Trading Account or it may be recorded in the credit side of the Trading Account.
- (iv) **Direct Expenses:** These are directly related to production or related to purchase of goods or the expenses which are incurred to convert the goods to saleable condition.
- (v) **Sales:** cash and credit sales of goods.
- (vi) **Returns Inward:** It may be shown either as deduction from the sales or it may be recorded in the debit side of the Trading Account.
- (vii) **Closing Stock:** Valuation of closing stock should be made on the basis of Cost Price or Market Price, whichever is lower.
- (viii) **Gross Profit/Gross Loss:** If the total of credit side of Trading Account is greater than the total debit side of Trading Account, the difference is known as Gross Profit. In the opposite case, that is a Gross Loss.

Exhibit 3.6

**Profit and Loss Account
for the year ended.....**

Dr.

Cr.

Expenditures	₹	Incomes	₹
To Office and Administration expenses	***	By Trading A/c	
Office Rent, Rates and Taxes	***	— Gross Profit transferred	***
Office Salaries	***	Revenue Incomes:	
Office Lighting	***	Commission Received	***
Insurance	***	Discount Received	***
Postage and Telegram	***	Non-Trading/Non-Operating	
Audit Fees Stationery	***	Incomes:	
Repairs and Renewals	***	Dividend Received	***
Depreciation on:		Interest on Bank Deposits	***
Office Building	***	Income from Sub-letting House	***
Office Furniture	***	Property	
Office Machinery	***	Abnormal Gains:	
Selling and Distribution Expenses:		Profit on Sale of Investments	***
Advertisement	***		
Carriage Outwards	***		
Godown Rent	***		
Storage	***		
Selling Expenses	***		
Salesmen's Salaries and Commission	***		
Bad Debts	***		
Provision for Bad Debts	***		
Financial Expenses:			
Interest on Loan	***		
Interest on Overdraft	***		
Bank Charges	***		
Bill Discounting	***		
Discount Allowed	***		
Interest on Debentures	***		
Abnormal Losses:			
Stock-Destroyed by Fire	***		
Goods Lost-in-transit	***		
Loss on Sale of Assets	***		
Capital A/c (Net Profit transferred)	***		
	***		***



- (i) **Office and Administration Expenses:** These are incurred for day-to-day operational and maintenance activities of the business.
- (ii) **Selling and Distribution Expenses:** These expenses are incurred for sales promotion and distributions of goods sold.
- (iii) **Financial Expenses:** These expenses are required for managing and supplying the sources of the finance necessary for the firm.
- (iv) **Abnormal Losses:** It includes — Stock destroyed by Fire, Goods Lost-in-Transit, Loss on Sale of Assets, etc.
- (v) **Revenue Incomes:** Incomes which arise in the ordinary course of the business.
- (vi) **Non-Trading/Non-operating Incomes:** they do not affect normal operational activities.
- (vii) **Abnormal Gains:** These are incomes that are received out of capital gains during the period. They include — Profit on sale of investment, etc.
- (viii) **Net Profit / Net Loss:** If the total of credit side of Profit & Loss Account is greater than the total debit side of Account, the difference is known as Net Profit. In the opposite case, that is a Net Loss.

The non-corporate entities may prepare their Income Statement as per Revised Schedule VI also (as per exhibit 3.3).

Reformulation of Income Statement under Revised Schedule VI

Particulars	Note	Figure as at the end of Current Reporting Period	Figure as at the end of Previous Reporting Period
		₹	₹
Operating Revenue (A)			
Revenue from operation			
Operating Expenses (B)			
Cost of materials consumed			
Purchases of stock-in trade			
Changes in inventories of finished goods / work-in-progress and stock-in-trade			
Employee benefit expense			
Depreciation and amortisation expense			
Other expenses			
Operating Income before tax [A-B]			
Taxes on Operating Income:			
Current tax			
Deferred tax			

Operating Income after tax (C)			
Other operating income (before tax):			
Exceptional items			
Extraordinary items			
Taxes on Other Operating Income: Current tax Deferred tax			
Other operating income (after tax) (D)			
Total Operating & Other Operating Income after tax [E=C+D]			
Financing Income (expense)			
Other income (related to financial activity)			
Finance costs			
Net financing income (before tax)			
Taxes on Financing Income: Current tax Deferred tax			
Net financing income (after tax) (F)			
Profit after tax for the year from Continuing Operation [G=E+F]			
Profit / (loss) from Discontinuing Operations			
Tax Expense on Discontinuing Operations			
Profit / (loss) from Discontinuing Operations (after tax) (H)			
Profit / (loss) for the period [G+H]			

So we can say that —

Reformulation process for an Income Statement

Profit from continuing operation

+ Profit from discontinuing operation

3.4 COMPARATIVE ANALYSIS OF THE BALANCE SHEET AND INCOME STATEMENT

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.

Common Size Statement

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.

Trend Ratio

Trend ratio is index number 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 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.

	Balances as on 31st March			
	2011 (₹)	2012 (₹)	2013 (₹)	2014 (₹)
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	2011-2012	2012-13	2013-14
		$\left(\frac{2011-12}{2010-11} \times 100\right)$	$\left(\frac{2012-13}{2010-11} \times 100\right)$	$\left(\frac{2013-14}{2010-11} \times 100\right)$
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: The reduction in cost of sales in the year 2012-13 and 2013-14 is mainly due to reduction in cost of material consumed. Except that 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 (₹)
2009-10	3,00,000	1,00,000	50,000
2010-11	3,25,000	1,50,000	75,000
2011-12	3,50,000	2,00,000	1,00,000
2012-13	3,60,000	2,50,000	1,25,000
2013-14	3,75,000	2,90,000	1,50,000

Solution:

Computation of Trend Ratio (%)

	2009-10	2010-11 $\left(\frac{2010-11}{2009-10} \times 100\right)$	2011-12 $\left(\frac{2011-12}{2009-10} \times 100\right)$	2012-13 $\left(\frac{2012-13}{2009-10} \times 100\right)$	2013-14 $\left(\frac{2013-14}{2009-10} \times 100\right)$
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. 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 2009-10 as the base year and interpret.

Year	Sales Revenue (₹ '000)	Inventories (₹ '000)	EBT (₹ '000)
2009-10	1,992	729	331
2010-11	2,450	801	455
2011-12	2,765	836	478
2012-13	3,131	964	548
2013-14	3,878	1,264	692

Solution:

Computation of Trend Ratio (%)

	2009-10	2010-11 $\left(\frac{2010-11}{2009-10} \times 100\right)$	2011-12 $\left(\frac{2011-12}{2009-10} \times 100\right)$	2012-13 $\left(\frac{2012-13}{2009-10} \times 100\right)$	2013-14 $\left(\frac{2013-14}{2009-10} \times 100\right)$
Sales	100	123	138.81	157.18	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

	2013 (₹)	2014 (₹)
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

	2013	2014
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 2012-13 to 32.4% in the year 2013-14. 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 2013-14 so, it is clear that company has been operated with tight supervision, tight inventory control for reduction of COGS (Cost of Goods Sold).

(ii) The interest on long term debt to net sales has declined from 5.7% in the 2012-13 to 3.8% in 2013-14. 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.

	2009-10	2010-11	2011-12	2012-13	2013-14
Particulars	₹ (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	2009-10	2010-11	2011-12	2012-13	2013-14
Cost of Materials $\left(\frac{\text{Cost of materials}}{\text{Sales}} \times 100 \right)$	12.5%	20%	25%	20%	21.05%
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 2009-10 which ultimately reduced to 42.11% in the ultimate year of the study period i.e. 2013-14. 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 (₹) 31.03.2013	Amount (₹) 31.03.2014
Shareholders' Fund		
Equity share capital (of ₹10 each)	7,20,000	7,20,000
Reserve & Surplus	2,88,000	5,46,000
Non-current Liabilities		
Long term debt	5,46,000	5,08,000
Current Liabilities		
Current Liabilities & Provisions	2,40,000	1,75,500
Total	18,00,000	19,50,000
Non-current Assets		
Fixed Assets	12,06,000	11,70,000
Current Assets		
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 31.03.2013 & 31.03.2014

	On 31.03.2013 % of total	On 31.03.2014 % of total
Shareholders' Fund		
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%
Non-current Liabilities		
Long term debt $\left(\frac{\text{Long term debt}}{\text{Total liabilities}} \times 100 \right)$	30.33%	26.05%
Current Liabilities		
Current Liabilities & Provision $\left(\frac{\text{Current liabilities}}{\text{Total liabilities}} \times 100 \right)$	13.33%	9%
	100%	100%
Non-current Assets		
Fixed Assets $\left(\frac{\text{Fixed assets}}{\text{Total assets}} \times 100 \right)$	67%	60%
Current Assets		
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 2013-14. 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 2013-14. Therefore it indicates that the liquidity position of the company have been significantly improved during the period under study. 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 31.03.2013 and 31.03.2014.

	31.03.13 (₹)	31.03.14 (₹)
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, 2013 and 2014

Particulars	31.03.13 (₹)	31.03.14 (₹)	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 31.03.2014 over 31.03.2013 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 2013-14 over 2012-13. 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 sales 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 (₹2,800). Similarly, there has been a considerable reduction in other expenses in relative term (29.4%) as well as in absolute term (₹2,000). These items have been responsible for the increase in profit before tax (PBT) 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 31.03.13 and 31.03.14:

	31.03.13 (₹)	31.03.14 (₹)
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 31.03.2013 and 31.03.2014

	31.03.13 (₹)	31.03.14 (₹)	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 2013-14 over 2012-13 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 2013-14 over 2012-13, 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 and Bank balance 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 31.03.14

	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 31.03.14

	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 31.03.14

	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 Expenses	22,000	1.1	21,000	2.0
Other current assets	20,000	1.0	21,000	2.0
Total Current Assets	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	19.1

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 statement 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.

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:

$$\text{Accounting Income (I)} = [\text{Revenue earned from operating activities (R)} + \text{Other incidental gains (G)}] - [\text{Expenses (E)} + \text{Other incidental losses (L)}]$$

$$\text{i.e., } I = (R + G) - (E + L)$$

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:

$$\text{Economic Income (E)} = \text{Consumption of capital during the period (C}_c\text{)} + [\text{Capital at the end of the period (C}_1\text{)} - \text{Capital at the beginning of the period (C}_0\text{)}] - \text{Fresh capital introduced during the period (C}_i\text{)}$$

$$\text{i.e., } E = C_c + (C_1 - C_0) - C_i$$

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:

$$\text{Income (I)} = \text{Net Assets at the end of the period (NA}_1\text{)} - \text{Net Assets at the beginning of the period (NA}_0\text{)} + \text{Withdrawal of capital during the period (W)} - \text{Fresh capital introduced during the period (F)}$$

i.e., $I = NA_1 - NA_0 + W - F$

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 Income/Gross Profit (GP)	—
Less:	Operating Expenses	—
Add:	Operating Income	—
	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 also, and it is 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	2012-13	2013-14
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	2012-13	2013-14	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) units 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 units]	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) units]	40,000
	Increase in Sales	3,40,000

Note: Here, the base year is 2012-13.

Illustration 2.

The comparative information for two years relating to P Ltd. are as follows:

Year	2012-13	2013-14
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:

- i. Change in quantity
- ii. Change in price
- iii. Change in quantity and price taken together

Solution:

	2012-13	2013-14	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) units 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 units]	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) units]	12,500
Total Increase in Sales	2,62,500

Note: Here, the base year is 2012-13.

Illustration 3.

Following figures have been extracted from the records of a company:

Year	2012-13	2013-14
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	2012-13	2013-14	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) units 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 units]	(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) units]	(25,000)
Increase in Sales	1,25,000

Note: Here, the base year is 2012-13.

Illustration 4.

Following figures have been extracted from the records of a company:

Year	2012-13	2013-14
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	2012-13	2013-14	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) units 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 units]	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) units]	50,000
Increase in Cost	3,50,000

Note: Here, the base year is 2012-13.

Illustration 5.

Following figures have been extracted from the records of a company:

Year	2012-13	2013-14
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	2012-13	2013-14	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) units 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 units]	(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) units]	(16,000)
Increase in Cost	2,00,000

Note: Here, the base year is 2012-13.

Illustration 6.

The following figures have been extracted from the records of a company:

Year	2012-13	2013-14
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	2012-13	2013-14	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) units 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 units]		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) units]		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) units 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 units]	(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) units]	(10,000)	
		(80,000)
Net Increase in Gross Profit		40,000

Note: Here, the base year is 2012-13.

Illustration 7.

Following figures have been extracted from the records of a company:

Year	2012-13	2013-14
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	2012-13	2013-14	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) units 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 units]		(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) units]		(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) units 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 units]	(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) units]	(10,000)	(2,30,000)
Net Increase in Gross Profit		10,000

Note: Here, the base year is 2012-13.

Illustration 8.

Following figures have been extracted from the records of Coral Company:

Year	2012-13	2013-14
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:**

	2012-13	2013-14	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 decrease in quantity [Change in quantity x Base year's unit selling price = (22,000-25,000) units 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 units]		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) units]		(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) units 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 units]	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) units]	(3,000)	
		61,000
Net Increase in Gross Profit		82,000

Note: Here, the base year is 2012-13.

Alternatively,

	₹	₹
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 = (22,000 - 25,000) units x ₹ 15]		(45,000)
2. Increase in profit due to increase in unit selling price at current year's quantity [Change in unit selling price x Current year's quantity = (₹ 18 - ₹ 15) x 22,000 units]		66,000
		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) units x ₹ 13]	39,000	
2. Increase in profit due to decrease in unit cost price at current year's quantity [Change in unit cost price x Base year's quantity = (₹ 13 - ₹ 12) x 22,000 units]	22,000	
		61,000
Net Increase in Gross Profit		82,000

Note: Here, the base year is 2012.

Illustration 9.

Following figures have been extracted from the records of Tulip Ltd.:

Year	2012-13	2013-14
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 2013-14 has increased by 20% over the year 2012-13. Account for changes in gross profit in the year 2013-14.

Solution:

Let the number of units sold in 2012-13 be 100.

Then, the number of units sold in 2013-14 = 100 + 20% of 100 = 120

	2012-13	2013-14	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) units 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 units]		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) units]		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) units 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 units]	(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) units]	(20,000)	
		(2,00,000)
Net Increase in Gross Profit		20,000

Note: Here, the base year is 2012-13.

Illustration 10.

M & Co. furnished the following data for the years 2012-13 and 2013-14. 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 2013.

Year	2012-13	2013-14
Sales (₹)	2,25,000	2,32,875
Cost of Goods Sold (₹)	1,65,000	1,60,380
Gross Profit (₹)	60,000	72,495

During 2013-14 there was a decrease in volume by 10%.

Solution:

Let the number of units sold in 2012-13 be 100.

Then, the number of units sold in 2013-14 = 100 - 10% of 100 = 90

	2012-13	2013-14	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 2013-14:**

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 2013-14:**

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) units x ₹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) x 100 units]		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) x (100 - 90) units]		(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) units x ₹ 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) x 100 units]	(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) x (100 - 90) units]	1,320	
		4,620
Net Increase in Gross Profit		12,495

Note: Here, the base year is 2012-13.

Alternatively,

	₹	₹
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) units x ₹ 2,250]		(22,500)
2. Increase in profit due to increase in unit selling price at current year's quantity [Change in unit selling price x Current year's quantity = (₹ 2,587.50 - ₹ 2,250) x 90 units]		30,375
		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) units x ₹ 1,650]	16,500	
2. Decrease in profit due to increase in unit cost price at current year's quantity [Change in unit cost price x Base year's quantity = (₹ 1,782 - ₹ 1,650) x 90 units]	(11,880)	
		4,620
Net Increase in Gross Profit		12,495

Note: Here, the base year is 2012-13.

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	2012-13	2013-14
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 2012-13 be 100 units.

Then, the volume of sales made in 2013-14 = 100 + 20% of 100 = 120

Particulars	2012-13	2013-14	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 2013-14:**

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 2013-14:**

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) units x ₹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) x 100 units]		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) x (120 - 100) units]		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) units 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 = (₹4,800 - ₹4,000) x 100 units]	(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) x (120 - 100) units]	(16,000)	
		(1,76,000)
Net Increase in Gross Profit		16,000

Note: Here, the base year is 2012-13.

Illustration 12.

Following figures have been extracted from the records of Simul Ltd.:

Year	2012-13	2013-14
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 2013-14 has increased by 10% over the year 2012-13. Account for changes in gross profit in the year 2013-14.

Solution:

Let the selling price per unit in 2012-13 be ₹ 100.

Then, the selling price per unit in 2013-14 = ₹ 100 + 10% of ₹ 100 = ₹ 110

Particulars	2012-13	2013-14	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) units 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 units]		30,000
3. Increase in profit due to change in price and quantity [Changes in unit selling price x Change in quantity] = [(₹110 - ₹100) × (3,500 - 3,000) units]		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) units 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 units]	(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) units]	(5,500)	
		(76,000)
Net Increase in Gross Profit		9,000

Note: Here, the base year is 2012-13.

Illustration 13.

Following figures have been extracted from the records of Pa Ltd.:

Year	2012-13	2013-14
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 2013-14 has increased by 10% over the year 2012-13. Account for changes in gross profit in the year 2013-14.

Solution:

Let the cost price per unit in 2012-13 be ₹ 100.

Then, the cost price per unit in 2013-14 = ₹ 100 + 10% of ₹ 100 = ₹ 110

Particulars	2012-13	2013-14	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) units 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 units]		(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) units]		(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) units 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 units]	(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) units]	(10,000)	
		(1,30,000)
Net Increase in Gross Profit		(20,000)

Note: Here, the base year is 2012-13.

Illustration 14.

Following figures have been extracted from the records of Babanchu Ltd.:

Year	2012-13	2013-14
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 2013-14 has increased by 10% and cost price for the year 2013-14 has reduced by 5% over the year 2012-13.

Account for changes in gross profit in the year 2013-14.

Solution:

Let the cost price per unit in 2012-13 be ₹ 100.

Then, the cost price per unit in 2013-14 = ₹ 100 - 5% of ₹ 100 = ₹ 95

Particulars	2012-13	2013-14	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) units 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 units]		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) units]		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) units 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 units]	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) units]	5,000	
		(70,000)
Net Increase in Gross Profit		1,70,000

Note: Here, the base year is 2012-13.

Alternatively,

	₹	₹
Changes in profit due to changes in Sales:		
1. Increase in profit due to decrease in quantity [Change in quantity x Base year's unit selling price = (6,000 - 5,000) units x ₹ 150]		1,50,000
2. Increase in profit due to increase in unit selling price at current year's quantity [Change in unit selling price x Current year's quantity = (₹ 165 - ₹ 150) x 6,000 units]		90,000
		2,40,000
Changes in profit due to changes in cost:		
1. Decrease in profit due to decrease in quantity [Change in quantity x Base year's unit cost price = (6,000 - 5,000) units x ₹ 100]	(1,00,000)	
2. Increase in profit due to decrease in unit cost price at current year's quantity [Change in unit cost price x Base year's quantity = (₹ 100 - ₹ 95) x 6,000 units]	30,000	
		(70,000)
Net Increase in Gross Profit		1,70,000

Note: Here, the base year is 2012-13.

Illustration 15.

Following figures have been extracted from the records of Debya Ltd.:

Year	2012-13 (₹)	2013-14 (₹)
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 2013-14 has gone up by 10% over the year 2012-13. Moreover, cost of materials, labour and overhead have gone up by 10% each. Account for changes in net profit in the year 2013-14.

Solution:

Let the number of units sold in 2012-13 be 100.

Then, the number of units sold in 2013-14 = 100 + 10% of 100 = 110

	2012-13	2013-14	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) units 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 units]		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) units]		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) units 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 units]	(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) units]	(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) units 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 units]	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) units]	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) units 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) x 100 units]	(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) units]	(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 2012-13.

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:

- (i) The unit must be registered for not less than 5 years period.
- (ii) Its accumulated losses at the end of the financial year are equal to or exceed its net worth.

As per section 253(1) of the Companies Act, 2013 [Not yet enforced] —

- (i) Where on a demand by the secured creditors of a company representing fifty per cent or more of its outstanding amount of debt; and
- (ii) the company has failed to pay the debt within a period of thirty days of the service of the notice of demand or to secure or compound it to the reasonable satisfaction of the creditors;

any secured creditor may file an application to the Tribunal in the prescribed manner along with the relevant evidence for such default, non-repayment or failure to offer security or compound it, for a determination that the company be declared as a sick company.

According to the Reserve Bank of India, a Micro or Small Enterprise (as defined in the MSMED Act 2006) may be said to have become Sick, if —

- (a) Any of the borrowal account of the enterprise remains NPA for three months or more;

OR

- (b) There is erosion in the net worth due to accumulated losses to the extent of 50% of its net worth during the previous accounting year.

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 treat 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)

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.

In 1983, Altman developed a revised Z-score model for privately held firms. "Credit analysis, private placement dealers, accounting auditors, and firms themselves are concerned that the original model is only applicable to publicly traded entities (since X_4 requires stock price data)". The revised Z-scores substitute the book value of equity for the market value in X_4 . The new Z-score model ratios are listed below:

X_1 = Working capital / total assets

X_2 = Retained earnings / total assets

X_3 = EBIT / total assets

X_4 = Book value of Equity/total liabilities

X_5 = Sales / total assets

A change in the weight factor is also calculated.

The revised Z-Score formula follows :

$$Z = 0.717(X_1) + 0.847(X_2) + 3.107(X_3) + 0.420(X_4) + 0.998(X_5)$$

Zones of Discrimination:

$Z > 2.9$ – "Safe" Zone

$1.23 < Z < 2.9$ – "Grey" Zone

$Z < 1.23$ – "Distress" Zone

Z-score estimated for manufacturers, industrials, non-manufacturers & emerging markets



$X_1 = (\text{Current Assets} - \text{Current Liabilities}) / \text{Total Assets}$

$X_2 = \text{Retained Earnings} / \text{Total Assets}$

$X_3 = \text{Earnings before Interest and Taxes} / \text{Total Assets}$

$X_4 = \text{Book Value of Equity} / \text{Total Liabilities}$

Z-Score bankruptcy model: $Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$

Zones of discriminations:

$Z > 2.60$ – “Safe” Zone

$1.1 < Z < 2.60$ – “Grey” Zone

$Z < 1.1$ – “Distress” Zone

L. C. Gupta's study (1979) for Distress Analysis

Gupta's sample consisted of 41 cotton textile companies (comprising 20 sick and 21 non-sick companies) and also 39 non-textile companies (comprising 18 sick and 21 non-sick companies). Although Gupta was able to make a good match between sick and non-sick companies in the textile group, no proper matching could be done for many sick companies in the non-textile group. So, his finding was essentially based on the study of textile samples.

Gupta selected 63 financial ratios based on data extracted from published financial statements. Seven of them were subsequently excluded from the study as they did not appear to have any relevance. The ratios selected by him were classified into (a) Profitability ratios and (b) Balance Sheet ratios. He employed the criterion of 'percentage classification error' to judge the predictive power of financial ratios. The ratio which showed the least 'percentage classification error' at the earliest possible time was deemed to have the highest predictive power.

The findings of Gupta's study can be summarised as below:

- (1) Two best ratios of about equal merit in predicting corporate sickness were
 - (a) Earnings before depreciation, interest and taxes (EBDIT) to sales, and
 - (b) Operating cash flow (OCF) to sales
- (2) EBDIT was considered superior to EBIT (Earnings before interest and tax) as it could be used for comparing profitability of different companies regardless of their varying policies of depreciation and size and age of fixed assets. It was also revealed that cash flow generating capacity per unit of sales was closely related with survival prospect of the firm.
- (3) The next best three ratios were:
 - (a) EBDIT to Total Assets (gross)
 - (b) OCF to Total Assets (gross)
 - (c) EBDIT to (Interest + 0.25 of debt)
- (4) Gupta's study revealed that while studying sickness, more emphasis should be given on income statement than balance sheet as predictive ability of best balance ratios was much less than that of best profitability ratios.

Illustration 16.

From the information given below relating to Bad Past Ltd., calculate Altman's Z-score and comment:

$$\left(\frac{\text{Working capital}}{\text{Total assets}} \right) = 25\%$$

$$\left(\frac{\text{Retained earnings}}{\text{Total assets}} \right) = 30\%$$

$$\left(\frac{\text{Earnings before interest and taxes}}{\text{Total assets}} \right) = 15\%$$

$$\left(\frac{\text{Market value of equity}}{\text{Book value of total debt}} \right) = 150\%$$

$$\left(\frac{\text{Sales}}{\text{Total assets}} \right) = 2 \text{ times}$$

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:

$$X_1 = \text{Working Capital to Total Assets} = 25\%$$

$$X_2 = \text{Retained Earnings to Total Assets} = 30\%$$

$$X_3 = \text{EBIT to Total Assets} = 15\%$$

$$X_4 = \text{Market Value of Equity Shares to Book Value of Total Debt} = 150\%$$

$$X_5 = \text{Sales to Total Assets} = 2 \text{ times}$$

$$\begin{aligned} \text{Hence, Z-score} &= (1.2 \times 25\%) + (1.4 \times 30\%) + (3.3 \times 15\%) + (0.6 \times 150\%) + (1 \times 2) \\ &= 0.30 + 0.42 + 0.495 + 0.90 + 2.00 = 4.115 \end{aligned}$$

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.

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:

$$X_1 = \text{Working Capital to Total Assets} = 0.250$$

$$X_2 = \text{Retained Earnings to Total Assets} = 0.50$$

$$X_3 = \text{EBIT to Total Assets} = 0.19$$

$$X_4 = \text{Book Value of Equity Shares to Book Value of Total Debt} = 1.65$$

$$X_5 = \text{Sales to Total Assets} = 3 \text{ times}$$

$$\text{Hence, Z-score} = (0.717 \times 0.25) + (0.847 \times 0.50) + (3.107 \times 0.19) + (0.420 \times 1.65) + (0.998 \times 3)$$

$$= 0.17925 + 0.4235 + 0.59033 + 0.693 + 2.994 = 4.88$$

Note: As the calculated value of Z-score is much higher than 2.9, 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
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

- (i) Market value per share ₹ 12.50.
- (ii) 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:

$$X_1 = \text{Working Capital to Total Assets} = \left(\frac{1,40,000}{7,00,000} \right) = 0.20$$

$$X_2 = \text{Retained Earnings to Total Assets} = \left(\frac{60,000}{7,00,000} \right) = 0.0857$$

$$X_3 = \text{EBIT to Total Assets} = \left(\frac{1,40,000}{7,00,000} \right) = 0.2$$

$$X_4 = \text{Market Value of Equity and Preference Shares to Book Value of Total Debt} = \left(\frac{2,50,000}{4,40,000} \right) = 0.568$$

$$X_5 = \text{Sales to Total Assets} = \left(\frac{7,00,000}{7,00,000} \right) = 1 \text{ times}$$

$$\begin{aligned} \text{Hence, Z-score} &= (1.2 \times 0.20) + (1.4 \times 0.0857) + (3.3 \times 0.20) + (0.6 \times 0.568) + (1 \times 1) \\ &= 0.24 + 0.11998 + 0.66 + 0.3408 + 1 = 2.36078 \end{aligned}$$

Notes:

1. Calculation of Working Capital

Working Capital = Current Assets - Current Liabilities

Here, Working Capital = (Inventory + Book Debts + Loans & Advances + Cash at Bank) - (Sundry Creditors + Outstanding Expenses)

$$\begin{aligned} &= ₹(1,80,000 + 70,000 + 20,000 + 10,000) - (80,000 + 60,000) \\ &= ₹1,40,000 \end{aligned}$$

2. Calculation of Total Assets

Total Assets = Fixed Assets + 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 x ₹12.50 = ₹2,50,000

6. Calculation of Book Value of Total Debts

Book Value of Total Debts = Long-term Debts + Current Liabilities

$$\begin{aligned} \text{Here, Book Value of Total Debts} &= 10\% \text{ Debentures} + (\text{Sundry Creditors} + \text{Outstanding Expenses}) \\ &= ₹ [3,00,000 + (80,000 + 60,000)] = ₹4,40,000 \end{aligned}$$

7. Calculation of Sales

Here, Operating Profit = 20% on Sales = ₹1,40,000

$$\text{Hence, Sales} = \left(\frac{100}{20}\right) \times ₹1,40,000 = ₹7,00,000$$

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 extract of a Balance Sheet of a company as on 31 March, 2014:

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

- (i) Net sales for 2013-14 were ₹ 20,00,000.
- (ii) Price-Earnings Ratio is ₹ 10.
- (iii) Dividend Pay-out Ratio is 50%.
- (iv) Dividend per Share in 2013-14 is ₹ 20.
- (v) 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:

$$X_1 = \text{Working Capital to Total Assets} = \frac{(1,00,000)}{14,00,000} = (0.07143)$$

$$X_2 = \text{Retained Earnings to Total Assets} = \frac{2,00,000}{14,00,000} = 0.1429$$

$$X_3 = \text{EBIT to Total Assets} = \frac{3,76,000}{14,00,000} = 0.2686$$

$$X_4 = \text{Market Value of Equity to Book Value of Total Debt} = \frac{16,00,000}{8,00,000} = 2.00$$

$$X_5 = \text{Sales to Total Assets} = \frac{20,00,000}{14,00,000} = 1.4286 \text{ times}$$

$$\begin{aligned} \text{Therefore, Z-score} &= \{1.2 \times (-) 0.07143\} + (1.4 \times 0.1429) + (3.3 \times 0.2686) + (0.6 \times 2) + (1 \times 1.4286) \\ &= -0.0857 + 0.2001 + 0.8864 + 1.2 + 1.4286 = 3.6294 \end{aligned}$$

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 2013-14 = ₹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 2013-14 = ₹40

$$\begin{aligned} \text{Hence, Market Value per Equity Share (MPS)} &= \text{Price Earnings Ratio} \times \text{EPS} \\ &= 10 \times ₹40 = ₹400 \end{aligned}$$



Market Value of Equity Shares = 4,000 shares x ₹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

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 (extract) of Q Ltd. as on 31 March 2014.

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:

- (i) Depreciation written off ₹8 crores.
- (ii) Preliminary Expenses written off ₹1.60 crores.
- (iii) 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) Cash profit = Net profit + (Non-cash expenses/losses debited to profit & Loss A/c) – (Non-cash incomes/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 crores)

- (ii) Net Working Capital = Current Assets – Current Liabilities

= ₹[57.60 - 78.40] = (₹ 20.80 crores)

- (iii) Net Worth = Share Capital + Reserves & Surplus - Miscellaneous Expenditure - Profit & Loss A/c (Dr.)

Here, Net Worth = Equity Share Capital - Profit & Loss A/c (Dr.)

= ₹[20.80 - 40.00] = (₹ 19.20 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				
			$\frac{(0.8+0.7)}{2} = 0.75$	2	1	2+1 = 3
T	0.70	F				
			$\frac{(0.7+0.6)}{2} = 0.65$	1	1	1+1 = 2
S	0.60	F				
			$\frac{(0.6+0.5)}{2} = 0.55$	0	1	0+1 = 1
P	0.50	NF				
			$\frac{(0.5+0.4)}{2} = 0.45$	0	2	0+2 = 2
R	0.40	NF				

Observations of the Study

- (i) 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.
- (ii) Sample companies are arranged in descending order of their, Total Debts to Total Assets Ratio.



- (iii) For every two consecutive ratios as arranged, a 'Cut-off Ratio' is calculated by simple average of two ratios.
- (iv) 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.
- (v) 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.
 - 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 0.65. 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.

(v) 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 company's 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 regarding potential obligations of its employees to return amounts previously paid as carried interest; to investors in 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.

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 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 cover 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.

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.

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:

$$\begin{aligned}\text{Annual coupon interest} &= ₹1,000 \times 0.10 \\ &= ₹100\end{aligned}$$

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

$$C = ₹50$$

$$n = 40$$

$$r = 0.055$$

$$= ₹50 \left[\frac{1 - \frac{1}{(1.055)^{40}}}{0.055} \right]$$

$$= ₹50 \left[\frac{1 - \frac{1}{8.51331}}{0.055} \right]$$

$$= ₹50 \left[\frac{1 - 0.117463}{0.055} \right]$$

$$= ₹50[16.04613]$$

$$= ₹ \mathbf{802.31}$$

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:

$$\frac{₹1,000}{(1.055)^{40}} = \frac{₹1,000}{8.51331} = ₹117.46$$

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>	₹117.46
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

$$= ₹50 \left[\frac{1 - \frac{1}{(1.034)^{40}}}{0.034} \right]$$

$$= ₹50 [21.69029]$$

$$= ₹ \mathbf{1,084.51}$$



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

$$= ₹50 \left[\frac{1 - \frac{1}{(1.050)^{40}}}{0.050} \right]$$

$$= ₹50 [17.159]$$

$$= ₹857.95$$

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 X 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	523.04	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 rupees 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.

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.

(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 puttable.

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,

$$\text{Conversion value} = \text{₹17} \times 50 = \text{₹850}$$

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 then 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 equity shares if the convertible bond is purchased and then converted into the equity shares 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 shares rises above the market conversion price, any further share 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,

Market conversion premium per share = market conversion price - 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 and dividend per share is ₹1. 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 April 2013, 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 March 2014 is available for the contract:

Total revenue according to contract	₹ 1,00,00,000
Total expected cost	₹ 80,00,000
Cost incurred during 2013-14	₹ 12,00,000

Under the completed contract method, how much revenue will be reported in 2013-14?

- 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 2013-14 will be $₹(1,00,00,000 \times 12,00,000/80,00,000)$ 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 2013-14, 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 2014-15. Agro purchased the land in 2005-06 for ₹20,00,000. Using the installment method, how much profit will Agro report for 2013-14?

- 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., $₹30,00,000 \div ₹50,00,000 = 60\%$). Agro will, therefore, recognize ₹6,00,000 in profit for 2013-14 ($₹10,00,000 \text{ cash received} \times 60\%$). C is the cash received.

Illustration 26.

During 2013-14, Arbic Toys, which began business in October, 2013, 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 2013-14, 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 2013-14?

- 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 2013-14, Rytte Products had net income of ₹10,00,000. On 1st April, 2013 there were 10,00,000 shares outstanding. On 1st October, 2013, 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 2013-14?

- A. ₹0.73
- B. ₹0.91
- C. ₹0.95

Solution:

C is correct.

The weighted average number of shares outstanding for 2013-14 is 1,050,000. Basic earnings per share would be ₹10,00,000 ÷ 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 of India Ltd. (ASI) had 10,00,000 average shares outstanding during all of 2013-14. During 2013-14, ASI also had 10,000 options outstanding with exercise prices of ₹10 each. The average share price of ASI during 2013-14 was ₹15. For purposes of computing diluted earnings per share, how many shares would be used in the denominator?

- A. 10,00,000
- B. 10,03,333
- C. 10,10,000

Solution:

B is correct.

With stock options, the treasury stock method must be used. Under that method, the company would receive ₹1,00,000 (10,000 x ₹10) and would repurchase 6,667 shares (₹1,00,000 ÷ ₹15). The shares for the denominator would be:

Shares outstanding (A)		10,00,000
Options exercises	10,000	
Less: Treasury shares purchased	(6,667)	
(B)		3,333
Denominator (A+B)		10,03,333

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	2011-12	2012-13	2013-14	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 2011-12, the project was 50% complete at year-end. Under the percentage-of-completion method, 2011-12 revenue is ₹500 [₹1,000 x 50%]. Expenses (cost incurred) were ₹400; thus, net income for 2011-12 was ₹100 [₹500 revenue - ₹300 expenses].

At the end of 2012-13, 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 2011-12, 2012-13 revenue is ₹375 [₹875 - ₹500]. 2012-13 expenses were ₹300. So 2012-13 net income was ₹75 [₹375 revenue - ₹300 expense].

At the end of 2013-14, 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 2011-12 and 2012-13, 2013-14 revenue is ₹125 [₹1,000 - ₹875]. 2013-14 expenses were ₹100 so 2013-14 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

	2011-12 (₹)	2012-13 (₹)	2013-14 (₹)	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 2013-14, 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: $(2/5) (\₹12,000) = ₹4,800$
- Year 2: $(2/5) (\₹12,000 - ₹4,800) = ₹2,880$
- Year 3: $(2/5) (\₹12,000 - ₹7,680) = ₹1,728$

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 $(2/5) (\₹12,000 - ₹9,408) = ₹1,036.80$ 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 closing inventory under each of the two methods — FIFO, Average Cost.

Inventory data

January 1 (opening 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 (COGS) : Value the seven units sold during the unit cost of first units purchased, start with the opening inventory and the earliest units purchased and work down, as illustrated in the following table.

FIFO COGS Calculation		
From opening 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
Closing inventory	3 units @ ₹5 per unit	₹15

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
Closing inventory	3 units @ ₹3.80 per unit	₹11.40

The following table summarizes the calculations of COGS and closing inventory for each method.

Summary:

Inventory system	COGS	Closing Inventory
FIFO	₹23.00	₹15.00
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 preference shareholders, 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 2013-14, 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 2013-14. 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 2013-14 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 2013-14, 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

- The debt-to-equity ratio but not the total asset turnover.
- The total asset turnover but not the debt-to-equity ratio.
- 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?

- They are not recognized.
- As an adjustment to paid-in capital.
- 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?

- They are not recognized.
- They flow through retained earnings.
- 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:

	Fair 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 ₹9,80,000. 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) Correct answer is B.

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 2012-13 and uses the weighted average cost of inventory method. During 2012-13 it purchased 45,000 units of inventory at ₹10 each and sold 40,000 units for ₹20 each. In 2013-14 it purchased another 50,000 units at ₹11 each and sold 45,000 units for ₹22 each. Its 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 2012-13, 5,000 units of inventory were at ₹10 each and the 50,000 units were purchased at ₹11 in 2013-14. The weighted average cost of inventory during 2013-14 was thus $\text{₹}[(5,000 \times 10) + (50,000 \times 11)] = \text{₹}[50,000 + 5,50,000] = \text{₹}6,00,000$ and the weighted average cost for each unit was $\text{₹}6,00,000/55,000 = \text{₹}10.91$. Cost of goods sold were $\text{₹}10.91 \times 45,000$, which is approximately ₹4,99,950.

Illustration 51.

Rang Ltd. started business in 2012-13 and uses the FIFO inventory method. During 2012-13 it purchased 45,000 units of inventory at ₹10 each and sold 40,000 units for ₹20 each. In 2013-14 it purchased another 50,000 units at ₹11 each and sold 45,000 units for ₹22 each. Its 2013-14 closing inventory balance was:

- A. ₹1,05,000
- B. ₹1,09,000
- C. ₹1,10,000

Solution:

C is correct

Rang uses the FIFO method, and thus the first 5,000 units sold in 2013-14 indicate the 2012-13 inventory. Of the inventory purchased in 2013-14, 40,000 units were sold and 10,000 units remain, valued at ₹11 each for a total of ₹1,10,000.

Illustration 52.

Neonex Factories produces pencils at a factory designed to produce 10 million pencils per year. In 2013-14 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 closest 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.

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 54.

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?

Solution:

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.

Illustration 55.

Use the inventory data in the following figure to calculate the cost of goods sold and closing inventory under FIFO, and weighted average cost methods.

Inventory data

April 1 (opening 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 and Closing Inventory Calculation:

From opening 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
Closing inventory	3 units @ ₹6	₹18

Average cost of goods sold: Value the seven unit sold at the average unit cost of goods available.

Average COGS and Closing Inventory Calculation:

Average unit cost	₹45/10	₹4.50 per unit
Weighted average cost of goods sold	7 units @ ₹4.50 per unit	₹31.50
Closing inventory	3 unit @ ₹ 4.50 per unit	₹13.50

Summary

Inventory system	COGS	Closing inventory
FIFO	₹27.00	₹18.00
Average cost	₹31.50	₹13.50

Illustration 56.

Sample balance sheet for 2012-13 and 2013-14 and an income statement for 2013-14 of PSP Ltd. are shown below. The sample balance sheet and income statement were prepared using the FIFO inventory cost flow method. Calculate the current ratio, inventory turnover, long term debt to equity ratio, and operating profit margin for 2013-14 under FIFO.

Name of the Company: PSP Ltd.

Balance Sheet as at : 31.03.2014

(Amount in ₹)

Ref No.	Particulars	Note No.	As at 31.03.14	As at 31.03.13
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	31.03.14	31.03.13
Equity share capital	300	300
Further issue of equity shares	400	400
Total	700	700
2. Reserve & Surplus	31.03.14	31.03.13
Retained earnings	320	180
Total	320	180
3. Other Current Liabilities	31.03.14	31.03.13
Current portion of long term debt	55	45
Total	55	45
4. Tangible Assets	31.03.14	31.03.13
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: 31.03.2014
(Amount in ₹)

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013
I. Revenue from operations		4,000	—
II. Other income		—	—
III. Total Revenue (I+II)		4,000	—
IV. Expenses:			
Cost of materials consumed		3,000	—
Purchases of Stock-in-Trade		—	—
Changes in inventories of finished goods work-in-progress and Stock -in-Trade		—	—
Employee benefits expense		—	—
Finance costs	(1)	50	—
Depreciation and amortization expense		—	—
Other expense	(2)	650	—
Total expenses		3,700	—
V. Profit before exceptional and extraordinary items and tax (III-IV)		300	—
VI. Exceptional items		—	—
VII. Profit before extraordinary items and tax (V – VI)		300	—
VIII. Extraordinary Items		—	—
IX. Profit before tax (VII – VIII)		300	—
X. Tax expense:			
(1) Current tax		100	—
(2) Deferred tax		—	—

XI. Profit (Loss) for the period from continuing operations (after tax) (IX – X)		200	—
XII. Profit/(Loss) from discontinuing operations		—	—
XIII. Tax expense of discontinuing operations		—	—
XIV. Profit/(loss) from Discontinuing operations (after tax) (XII – XIII)		—	—
XV. Profit (Loss) for the period (XI + XIV)		200	—
XVI. Earnings per equity share:			
(1) Basic		—	—
(2) Diluted			

Workings:

(Amount in ₹)

1. Finance Costs	As at 31.03.2014	As at 31.03.2013
Interest	50	—
Total	50	—

2. Other Expenses	As at 31.03.2014	As at 31.03.2013
Operating Expenses	650	—
Total	650	—

Solution:

Current Ratio

The current ratio (current assets/current liabilities) under FIFO is ₹620/₹325 = 1.91

Here Current Assets = ₹(105+205+310) = ₹620

Current liabilities = ₹(110+160+55) = ₹325

Inventory Turnover

The inventory turnover ratio (COGS/average inventory) for 2013-14 under FIFO 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/ shareholders' equity) is (₹610+₹105)/(₹700+₹320) = ₹ 0.70.

Operating Profit Margin

The operating profit margin (operating profit/ revenue) ₹350/₹4,000=8.8%.

Here operating profit = ₹350 or ₹(4,000-3,000-650)

Revenue = ₹4,000.

Illustration 57.

At the beginning of 2013-14, Small Manufacturing Company had 560 units of inventory as follows:

Year purchase	Number of units	Cost per unit (₹)	Total cost (₹)
2009-10	120	10	1,200
2010-11	140	11	1,540
2011-12	140	12	1,680
2012-13	160	13	2,080
	560		6,500

Due to a strike, no units were produced during 2013-14. During 2013-14, Small sold 400 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 (assumed by FIFO).

Solution:

Because of the FIFO liquidation, actual COGS (cost of goods sold) was ₹ 4,420 as follows:

	Units	Costs (₹)	
Opening inventory	560	6,500.00	
+ purchase	0	0.00	
- Closing inventory	(160)	(2,080.00)	(₹ 13 × 160 units)
= COGS (actual)	400	4,420.00	

Had Small replaced 400 units sold, COGS would also have been ₹ 4,420 as follows:

	Units	Costs (₹)	
Opening inventory	560	6,500.00	
+ purchase	400	5,600.00	(₹ 14 × 400 units)
- Closing inventory	(560)	(7,680.00)	
= COGS (if replaced)	400	4,420.00	

The COGS (₹ 4,420) would be same if FIFO liquidation method is followed. So there would be no artificial profit arising out of liquidation of inventory.

Illustration 58.

On 1st April 2012, 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 March 2013, EF reported pre-tax profits of ₹62,000. The tax charge was ₹20,000. During the financial year ended 31st March 2013, EF paid a total dividend of ₹5,000 to its shareholders.

In the year ended 31st March 2014, 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 March 2014 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 March, 2014 was :

- ₹2,41,900.
- ₹2,43,400.
- ₹2,46,700.
- ₹2,58,000.

Solution:

The correct answer is **A**.

Particulars	₹'000	₹'000
Cost of investment		280
2012-13 profit after tax (62 - 20)	42	
2012-13 dividend	(5)	
2013-14 loss after tax (18 - 4)	(14)	
	23	
Group share = 30% x ₹23,000		6.9
		286.9
Less: Impairment		(45)
		241.9

Illustration 59.

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 2014, 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 2013, 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 2013 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 2014 for inclusion in the group's consolidated balance sheet (to the nearest ₹).

Solution:

Particulars	₹	₹	₹
Minority share of preference 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 60.

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 2014, 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 2014.

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 61.

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 62.

On 31st December 2013, 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 2014, LMN held 80% of the share capital of its subsidiary RST.

Revenue for the period ended on 31st March 2014 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 31st March 2014?

- 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 63.

On 1st April, 2013, 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 April, 2015. The amount payable on that date will be ₹3,00,000. The discount rate relevant to the liability is 8%.

YQS's profit for the period ended 31st March, 2014 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 31st March, 2014, 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 April, 2013, 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 64.

DA controls another entity, CB, owning 60% of its ordinary share capital. At the group's year end, 31st March 2014, 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 March, 2014, DA sent a cheque for ₹2,000, which was not received by CB until 3rd April 2014.

Which ONE of the following sets of consolidation adjustments to current assets and current liabilities is correct?

- Deduct ₹6,000 from both consolidated receivables and consolidated payables.
- Deduct ₹3,600 from both consolidated receivables and consolidated payables.
- Deduct ₹6,000 from consolidated receivables and ₹4,000 from consolidated payables, and include cash in transit of ₹2,000.
- 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 65.

At 1st April 2013, S held 80,000 of the 1,00,000 issued ordinary shares of T. The acquisition of T took place on 1st April 2012, 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 2013, 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 ₹4,00,000)	(80)
Less: unamortised goodwill: ₹1,20,000 x 3-5/5 x 20/80	(21)
Consolidated profit on disposal	24

Illustration 66.

As well as its investment in U, 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 2014, 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, so unrealised profit in inventory at 31st March 2014 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 or she cannot ignore the cash flow statement. 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/she 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. To understand the needs for cash, he or 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.

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.

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.

Checklist:

- How to calculate free cash flow?
- The difference between the direct and indirect method of calculations for cash from operations.
- Various items related to the cash flow statement according to the AS-3.

- How reformulation of cash flow is made?
- Make an analysis and interpretation on the basis of cash flow statement.
- How to examine the quality of earnings and reported cash flow.

Free Cash Flow:

It is a measure of financial performance, calculated as operating cash flow minus capital expenditures. When dividends are the cash flow actually paid to shareholders, free cash flow (FCF) is the cash flow available to shareholders. A company must make capital expenditures to continue to exist and to grow and FCF considers these expenditures.

There are two types of free cash flows — (1) free cash flow to the firm (FCFF) and (2) free cash flow to equity (FCFE). Free cash flow to the firm (FCFF) is the cash flow available to all the firm's suppliers of capital, once the firm pays all operating expenses (including taxes) and expenditures needed to sustain the firm's productive capacity. Free cash flow to equity (FCFE) is the cash flow available to the firm's common shareholders once operating expenses (including taxes), expenditures needed to sustain the firm's productive capacity, and payments to (and receipts from) debtholders are accounted for.

Calculation of Free Cash flow:

There are three ways to do the free cash flow calculation. Free cash flow is defined as the cash flow available to all the company's investors, including shareholders and bondholders, after the company has made all investments necessary to sustain its ongoing operations. The ways of calculation are described as under:

- A. Free Cash Flow = Sales Revenues - Operating Costs and Taxes – Required investments in Operating Capital. Here, Sales revenues are taken from the income statement. Operating costs and taxes are also taken from the income statement. Investment in new operating capital show up as increases in fixed assets on the balance sheet.
- B. Free Cash Flow = Net Operating Profit after Taxes (NOPAT) – Net investments in operating capital. Here, NOPAT is the same figure [Sales Revenue - Operating Costs and Taxes] as in the first free cash flow calculation and net investment in operating capital is the same as the third term in the first calculation or the increase in fixed assets on the balance sheet.
- C. Free Cash Flow = Net Cash Flow from Operations - Capital Expenditures. Here, Net Cash Flow from Operations comes from the first section of the Cash Flow Statement and Capital Expenditures come from the increase in fixed assets off the balance sheet.

It is important to note that free cash flow relies heavily on the state of a company's cash from operations, which in turn is heavily influenced by the company's net income. Thus, when the company has recorded a significant amount of gains or expenses that are not directly related to the company's normal core business, the analysts or investor should carefully exclude those from the free cash flow calculation to get a better picture of the company's normal cash-generating ability.

Free Cash Flow is important to stakeholders (equity stock owners, debt holders, preference share holders, convertible stock holders, etc.) because it can provide a more accurate picture of an entity's financial health than net income. Net income includes non-cash accounting adjustments and may not accurately reflect crucial aspects of a company's health. Free Cash Flow is an important and useful metric to evaluate whether a company has sufficient cash resources to meet the goals of the entity and its' stakeholders.



Net Free Cash Flow Calculation:

Net Free Cash Flow makes further allowances for capital expenses to keep current levels of operation, the current portion of long term debt, and dividends the company currently intends to pay.

Net Free Cash Flow (NFCF) = Free Cash Flow (FCF) – current capital expenses – current portion of long term debt – current portion of future dividends.

Importance of Free Cash Flow

Use free cash flow calculations to evaluate the strength and health of an organization. A company with a negative free cash flow may not have the liquidity to stay in business without obtaining additional cash through borrowing or raising equity capital. Falling cash flows are a warning sign that the company that future earnings may not be able to grow.

A company with positive net free cash flow is generating the cash needed to pay operating bills, meet working capital requirement, pay taxes, meet current interest and debt payments, invest in capital expenditures, and pay dividends. Rising cash flows can indicate a company is healthy and many times precedes increasing earnings and enhanced shareholder value.

4.2 GAAP STATEMENT OF CASH FLOWS AND REFORMULATED CASH FLOW STATEMENTS

Cash flow statement is additional information to users of financial statement. This statement exhibits the flow of incoming and outgoing cash. This statement assesses the ability of enterprise to generate cash and to utilize the cash. The statement is one of the tools for assessing the liquidity and solvency of the enterprise.

A cash flow statement is a listing of the flows of cash into and out of the business or project. A cash flow statement, along with the balance sheet and income statement are the three most common financial statements used to gauge a company's performance and overall health. The same accounting data is used in preparing all three statements, but each takes a company's pulse in a different area. If a company is consistently bringing in more cash than it spends, that company is considered to be of good value.

A cash flow statement must be included for each year for which an income or operating statement is included. Thus, the annual reports of most organizations include cash flow statements for either two or three years for comparative purposes. The purpose of the cash flow statement is to report how an organization generated and used its cash. Knowing where the cash comes from is important in projecting whether cash will be generated from those sources in the future. Knowing where the cash goes is important in assessing the organization's future cash needs. When presenting cash flow statements, most companies combine cash and cash equivalents because short-term investments classified as cash equivalents are used primarily as a substitute for cash.

AS-3 prescribes two forms of presentation of cash flow statement, such as —

- (i) **Direct method:** Under this method, the net Cash Flow from Operating Activities is to be calculated directly by deducting the cash outflows from the Operating Activities from cash inflows from the Operating Activities.

Proforma of Cash Flow Statement under Direct Method

Cash Flow Statement of _____ for the period ended _____

	₹	₹	₹
A. Cash Flows from Operating Activities			
Cash Receipts from Customers		---	
Less: Cash Paid to Suppliers & Employees		---	
Cash Generated from Operation		---	
Less: Income Tax Paid		---	
Cash Flows from Operation before Extraordinary Items		---	
Add: Proceeds from any Disaster Settlement		---	
Net Cash Flow from Operating Activities			---
B. Cash Flows from Investing Activities:			
Proceeds from Sale of Fixed Assets including investments		---	
Less: Purchase of Fixed Assets including investments		---	
Add: Interest Received		---	
Dividend Received		---	
Net Cash Flow from Investing Activities			---
C. Cash Flows from Financing Activities:			
Proceeds from issuance of Share Capital		---	
Proceeds from Long-term Borrowings		---	
Less: Repayment of Long-term Borrowings including Redemption of Preference Shares		---	
Less: Interest Paid	---		
Dividend Paid	---	---	
Net Cash Flow from Financing Activities			---
Net Increase in Cash & Cash Equivalents			---
Add: Cash & Cash Equivalents at the beginning of the period			---
Cash & Cash Equivalents at the end of the period			---

(ii) **Indirect method:** Under this method, the net Cash Flow from Operating Activities is to be calculated indirectly by adding back all the non-operating and non-cash items debited and by deducting all the non-operating and non-cash items credited to the Profit & Loss Account for an accounting year with the net profit for that year.



Proforma of Cash Flow Statement under Indirect Method

Cash Flow Statement of _____ for the period ended _____

	₹	₹	₹
A. Cash Flows from Operating Activities:			
Net Profit for the Period before Taxation & Extraordinary items		---	
Add: Adjustment for Non-current and Non-operating items charged to P&L A/c:			
Depreciation	---		
Interest Paid	---		
Foreign exchange Loss	---		
Loss on Sale of Fixed Assets & Investments	---	---	
Less: Adjustment for Non-current and Non-operating items credited to P&L A/c:			
Interest Earned	---		
Dividend Earned	---		
Profit on Sale of Fixed Assets & Investments	---	---	
Operating Profit before Working Capital Changes		---	
Add: Increase in Operating Current Liabilities	---		
Decrease in Operating Current Assets	---	---	
Less: Increase in Operating Current Assets	---	---	
Decrease in Operating Current Liabilities		---	
Cash Generated from Operation		---	
Less: Income Tax Paid		---	
Add: Proceeds from any Disaster Settlement		---	
Net Cash Flow from Operating Activities			---
B. Cash Flows from Investing Activities:			
Proceeds from Sale of Fixed Assets including investments		---	
Less: Purchase of Fixed Assets including investments		---	
Add: Interest Received		---	
Dividend Received		---	
Net Cash Flow from Investing Activities			---
C. Cash Flows from Financing Activities:			
Proceeds from issuance of Share Capital		---	
Proceeds from Long-term Borrowings		---	
Less: Repayment of Long-term Borrowings including Redemption of Preference Shares		---	

Less: Interest Paid	---	---	
Dividend Paid	---	---	
Net Cash Flow from Financing Activities			---
Net increase in cash & cash equivalents			---
Add: Cash & Cash Equivalents at the beginning of the period			---
Cash & Cash Equivalents at the end of the period			---

Cash Flows from Operating Activities

Operating or trading activities are the core revenue-producing activities of an enterprise. The principal business activities of an enterprise, other than Investing and Financing Activities, are called Operating Activities. For an example, in case of a book-publishing company, the principal business activities are printing and publication of books and their sales. The publishing company may have huge excess cash which are invested outside the business from where the company may receive a substantial amount of cash in the form of interest, but this activity is not the principal business activity of the company and hence, should not be treated as an operating activity of the company. Its Operating Activities are printing and publication of books and their sales. All cash receipts (i.e., inflows of cash) and cash payments (i.e., outflows of cash) for printing, publication and sale of books are to be considered as Cash Flows from Operating Activities.

Examples of Cash Inflows from Operating Activities: Cash sales of goods/services, collection from credit sales or debtors etc.

Examples of Cash Outflows from Operating Activities: Cash purchases of goods/ services, payment against credit sales, payment of factory expenses, payment of office & administration expenses, payment of selling & distribution expenses, payment of wages etc.

Cash Flows from Investing Activities

Investing activities are those which related to the acquisition and disposal of long-term assets and other investments, not included in the cash equivalents. In other words, Investing Activities arise out of acquisition and sale of Fixed Assets and long-term investments made outside the enterprise. With reference to the previous example, if a book publishing company invests its funds for acquisition of Fixed Assets, even though they are used for carrying on its Operating Activities, or into shares of another company, it will be investing activities. Any inflows or outflows of cash or cash equivalents from these activities of the company are to be treated as Cash Flows from Investing Activities.

Examples of Cash Inflows from Investing Activities: Sale proceeds of Fixed Assets and long-term investments, income received from investments, etc.

Examples of Cash Outflows from Investing Activities: Purchase of Fixed Assets, additions to Fixed Assets, investments made, payment of tax relating to investment income etc.

Cash Flows from Financing Activities

Financing activities are the activities of an enterprise which result in changes in size and composition of the owner’s capital (including Preference Share Capital) and borrowings of that enterprise. We can say that these activities are related to the total capital employed (i.e., equity & Preference Share Capital and long-term loans) of an enterprise. Any inflows of cash from these activities or outflows of cash for these activities in an enterprise are to be treated as ‘Cash Flows from Financing Activities’. As per previous example, the book-publishing company issues its equity shares, redeems its debentures, preference shares etc.



Examples of Cash Inflows from Financing Activities: Proceeds received from the issue of equity and preference shares and debentures, proceeds received from the long-term loans, etc.

Examples of Cash out Flows from Financing Activities: Redemption of preference shares and debentures, repayment of long-term loans, payment of equity and preference dividend, payment of interest on loans, etc.

Foreign Currency Cash flows

Any cash inflows arising from transactions in foreign currency should be recorded in an enterprise in reporting currency. The amounts which are to be reported should be done by applying the exchange rate at the date of cash flow statement. A rate approximates the actual rate may also be used. For example, weighted average exchange rate for a period may be used for recording foreign currency transactions.

Reconciliation should be reported in a separate part in order to reconcile cash and cash equivalents at the beginning and at the end of the period to record the effect of changes in exchange rates on cash and cash equivalents held in foreign currency. The unrealized gains and losses arising from changes in foreign exchange rates are not the cash flows. The differential amount arising due to changes in exchange rate should not be included in operating, investing and financing activities. This shall be shown separately in the reconciliation statement.

Extraordinary Items

Any cash flows relating to extraordinary items should be classified into operating, investing or financing activities to the extent possible and these items should be separately disclosed in the cash flow statement. Some of the examples for extraordinary items is bad debt recovered, claims from insurance companies, winning of a law suit or lottery etc.

Interest and Dividends

Cash flows arising from interest and dividends received and paid should each be disclosed separately. The treatment of interest and dividends, received and paid, depends upon the nature of the enterprise i.e., financial enterprises and other enterprises.

In case of financial enterprises, cash flows arising from interest paid and interest & dividends received, should be classified as cash flows from operating activities.

In case of other enterprises, cash outflows arising from interest paid on debentures and term loans should be classified as cash outflow from financing activities whereas cash outflows from interest paid on working capital loan should be classified as cash outflow from operating activities. Moreover, interest and dividends received should be treated as cash inflow from investing activities and dividend paid on equity share capital and preference share capital should be classified as cash outflow from financing activities.

Taxes on Income

Cash flows relating to the taxes on income should be separately disclosed. It should be classified as cash flows from operating activities unless they can be specifically identified with financing and investing activities. When tax cash flows are allocated over more than one class of activity, the total amount of taxes paid is disclosed.

Investments in Subsidiaries, Associates and Joint Ventures

Investments in Subsidiaries, Associates and Joint Ventures should be reported in the cash flow statement as investing activity. Any dividends received should also be reported as cash flow from investing activity.

Acquisition and Disposal of Subsidiaries and Other Business Units

The aggregate cash flows arising from acquisitions and disposals of subsidiaries or other business units should be presented separately and classified as investing activities.

Noncash Transactions

Some transactions do not involve cash or cash equivalents. Investing and financing transactions that do not require the use of cash or cash equivalents should be excluded from a cash flow statement. Such transactions should be disclosed elsewhere in the financial statements in a way that provides all the relevant information about these investing and financing activities. The exclusion of noncash transactions from the cash flow statement is consistent with the objective of a cash flow statement as these do not involve cash flows in the current period. Examples of noncash transactions — the acquisition of assets by assuming directly related liabilities, the acquisition of an enterprise by means of issue of shares, conversion of debt into equity.

Reformulation of Cash Flow Statement:

	Year 1	Year 2
Free Cash Flow		
Reported cash flow from operations		
Net interest payments (after tax)		
Adjusted cash flow from operation		
Cash Investment reported		
Investment in operating cash		
Net Investment in financial assets		
Adjusted cash flow from investing activity		
Free Cash Flow		
Financing Flows to claimants		
Debt Financing:		
Investment in cash equivalent		
Net investment in financial assets		
Net proceeds/repayment of borrowings		
Net Interest payment (after tax)		
Other interest-bearing financing activities		
Subtotal		
Equity Financing		
Cash Dividend Payment		
Proceeds from exercise of stock options		
Payment for treasury shares & shares bought back		
Net Proceeds from issue of equity securities		
Subtotal		
Total Financing Flows		



It can be calculated alternatively, as follows:

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>

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 dependence 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 last month of previous year to first month of next year 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. First-in, first-out (FIFO) and weighted average 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, FIFO and weighted average inventory methods result in gross profit and ending inventory amounts as follows:

	FIFO (₹)	Weighted Average (₹)
In the income statement:		
Sales	30	30
Cost of goods sold	15	17
Gross profit	15	13
In the balance sheet:		
Inventory	36	34
	[18+18]	[51/3×2]

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 weighted average method of inventory, the ₹17 cost of the unit is charged to cost of goods sold. If the company must spend ₹18 (or more) to replace the unit sold, operating cash flows using weighted average method are:

	₹
Cash inflow from sales	30
Cash outflow to replace the unit sold	18
Net cash inflow from operations	12
Reported gross profit	13
Excess gross profit over cash inflow	1



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 weighted average rather than FIFO. This is true when prices are rising or falling.

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 weighted average method.

Assume in the example above that the company had ₹6 in other expenses and the tax rate was 35 percent.

	Weighted Average Method (₹)	FIFO (₹)
Sales	30	30
Cost of goods sold	17	15
Gross profit	13	15
Other expenses	6	6
Net income before tax	7	9
Income tax	2.5	3.2
Net income	4.5	5.8

The company pays higher taxes using FIFO than weighted average. If prices were falling instead of rising, the reverse would be true.

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 2013-14 financial statements :

(₹ millions)

Year ended 31st March	2013	2014
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 2013-14 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.

Akansha Ltd., 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	31.03.2013	31.03.2014	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	31.03.2013	31.03.2014	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	31.03.2014		
Net income	₹20 million		
Depreciation	₹2 million		
Balance Sheet Item	31.03.2013	31.03.2014	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: 31.03.2014

(Amount in ₹)

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013
I. Revenue from operations		1,00,000	—
II. Other income	(1)	10,000	—
III. Total Revenue (I+II)		1,10,000	—
IV. Expenses:			
Cost of materials consumed		40,000	—
Purchases of Stock-in-Trade		—	—
Changes in inventories of finished goods work-in-progress and Stock –in-Trade		—	—
Employee benefits expense	(2)	5,000	—
Finance costs	(3)	500	—
Depreciation and amortization expense	(4)	7,000	—
Other expenses		—	—
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)		57,500	—
VIII.	Extraordinary Items		—	—
IX.	Profit before tax (VII – VIII)		57,500	—
X.	Tax expense:			
	(1) Current tax		20,000	—
	(2) Deferred tax		—	—
XI.	Profit (Loss) for the period from continuing operations (after tax) (IX – X)		37,500	—
XII.	Profit/(Loss) from discontinuing operations		—	—
XIII.	Tax expense of discontinuing operations		—	—
XIV.	Profit/(loss) from Discontinuing operations (after tax) (XII – XIII)		—	—
XV.	Profit (Loss) for the period (XI + XIV)		37,500	—
XVI.	Earnings per equity share:			
	(1) Basic		—	—
	(2) Diluted		—	—

Proposed dividend for the year 2013-14 was ₹8,500.

Workings:

(Amount in ₹)

1. Other Income	As at 31.03.2014	As at 31.03.2013
Gain from sale of land	10,000	—
Total	10,000	—

2. Employees Cost/ Benefits Expenses	As at 31.03.2014	As at 31.03.2013
Wages	5,000	—
Total	5,000	—

3. Finance Costs	As at 31.03.2014	As at 31.03.2013
Interest	500	—
Total	500	—

4. Employees cost/ benefits expenses	As at 31.03.2014	As at 31.03.2013
Depreciation	7,000	—
Total	7,000	—

Name of the Company: ABC Company

Balance Sheet as at : 31.03.2014

(Amount in ₹)

Ref No.	Particulars	Note No.	As at 31.03.2014 (₹)	As at 31.03.2013 (₹)
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 31.03.2014	As at 31.03.2013
Equity Share Capital	40,000	50,000
Total	40,000	50,000

2. Reserve & Surplus	As at 31.03.2014	As at 31.03.2013
Retained earnings	59,000	30,000
Total	59,000	30,000

3. Long- term Borrowings	As at 31.03.2014	As at 31.03.2013
Bonds	15,000	10,000
Total	15,000	10,000

4. Other Current Liabilities	As at 31.03.2014	As at 31.03.2013
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 31.03.2014	As at 31.03.2013
Taxes payable	5,000	4,000
Dividends payable	6,000	1,000
Total	11,000	5,000

6. Tangible Assets	As at 31.03.2014	As at 31.03.2013
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 31.03.2014	As at 31.03.2013
Goodwill	10,000	10,000
Total	10,000	10,000

8. Trade Receivable	As at 31.03.2014	As at 31.03.2013
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.

Note that purchases for the year 2013-14 was amounted to ₹38,000.

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 cash 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 - ₹40,000 = ₹5,000

Beginning accounts payable + purchases - cash paid to suppliers = ending accounts payable = ₹5,000 + ₹38,000 - ₹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

The rest part of the answer this illustration will be same as previous illustration, resulting in a total cash flow of ₹ 24,000.

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	2013-14	2012-13	2011-12
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	0.5%	0.4%	0.5%
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 : 31.03.2014

(Amount in ₹)

Ref No.	Particulars	Note No.	As at 31.03.14	As at 31.03.13
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 31.03.14	As at 31.03.13
Equity share capital	430	400
Total	430	400

2. Reserve & Surplus	As at 31.03.14	As at 31.03.13
Retained earnings	350	300
Total	350	300

3. Long term Borrowings	As at 31.03.14	As at 31.03.13
Mortgage	535	585
Bank note	100	0
Total	635	585

4. Other Current Liabilities	As at 31.03.14	As at 31.03.13
Accounts payable	470	450
Interest payable	15	10
Total	485	460

5. Short term Provisions	As at 31.03.14	As at 31.03.13
Dividends payable	10	5
Total	10	5

6. Tangible Assets	As at 31.03.14	As at 31.03.13
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: 31.03.2014
(Amount in ₹)

Particulars	Note No.	As at 31.03.2014	As at 31.03.2013
I. Revenue from operations		1,425	—
II. Other income	(1)	10	—
III. Total Revenue (I+II)		1,435	—
IV. Expenses:			
Cost of materials consumed		1,200	—
Purchases of Stock-in-Trade		—	—
Changes in inventories of finished goods work-in-progress and Stock –in-Trade		—	—
Employee benefits expense		—	—
Finance costs	(2)	30	—
Depreciation and amortization expense	(3)	100	—
Other expenses		—	—
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)		105	—
VIII.	Extraordinary Items		—	—
IX.	Profit before tax (VII – VIII)		105	—
X.	Tax expense: (1) Current tax (2) Deferred tax		45 —	— —
XI.	Profit (Loss) for the period from continuing operations (after tax) (IX – X)		60	—
XII.	Profit/(Loss) from discontinuing operations		—	—
XIII.	Tax expense of discontinuing operations		—	—
XIV.	Profit/(loss) from Discontinuing operations (after tax) (XII – XIII)		—	—
XV.	Profit (Loss) for the period (XI + XIV)		60	—
XVI.	Earnings per equity share: (1) Basic (2) Diluted		—	—

Workings:

(Amount in ₹)

1. Other Income	As at 31.03.2014	As at 31.03.2013
Gain on sale of old machine	10	—
Total	10	—

2. Finance Costs	As at 31.03.2014	As at 31.03.2013
Interest	30	—
Total	30	—

3. Depreciation and Amortization	As at 31.03.2014	As at 31.03.2013
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 2013, 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 31st October. NS has no other investments in associates.

Net profit for the year in TP's income statement for the year ended 31st October 2013 was ₹230,000. It declared and paid a dividend of ₹1,00,000 on 1st July 2013. 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 31st October 2013?

- 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 31st March 2014. Its consolidated opening balance at net book value for property, plant and equipment was ₹2,07,000. 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 April 2013. There were no other disposals. The depreciation charge for the year ended 31st March, 2014 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 31st March, 2014?

- 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 March, 2013, the consolidated balance sheet of MIP included minority interests of ₹77,600. One year later, on 31st March, 2014 the minority interests' balance was ₹64,700. During the year ended 31st March, 2014, 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 March, 2014 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 March, 2014?

- A. ₹3,100
- B. ₹3,400
- C. ₹19,400
- D. ₹22,400.

Solution:

The correct answer is B.

	₹	Reason
Balance brought forward	77,600	Opening balance of minority interest (liability)
Disposal (25% x ₹64,000)	(16,000)	Net assets left to minority
Share of profit for the period	6,500	Share of group's profit, increases the liability for minority
Dividend paid (balancing fig)	(3,400)	Dividend paid by MIP
Balance carried forward	64,700	Closing balance of minority interest (liability)

Illustration 14.

GPX's financial statements included an investment in associate at ₹66,00,000 in its consolidated balance sheet at 31st March, 2013. At 31st March, 2014, 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 31st March, 2014.

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 31st March, 2014.

- A. ₹90,000
- B. ₹240,000
- C. ₹390,000
- D. ₹420,000.

Solution:

The correct answer is A.

(₹ in '000)

Opening investment in associate	6,600
Add: share of profit of associate	240
Cash flow (dividend paid) (balancing figure)	<u>(90)</u>
Closing investment in associate	<u>6,750</u>

Illustration 15.

The consolidated financial statements of P for the year ended 31st March 2014 showed the following balances:

Minority interest in the consolidated balance sheet at 31st March 2014 is ₹6 million [₹3.6 million at 31st March 2013].

Minority interest in the consolidated income statement for the year ended 31st March 2014 is ₹2 million.

During the year ended 31st March 2014, the group acquired a new 75% subsidiary whose net assets at the date of acquisition were ₹6.4 million. On 31st March 2014, 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 2014?

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)	<u>(2.7)</u>
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. Residual earnings are determined by the profitability of shareholders' investment, Return on Equity or 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.

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 now future ROE will be different from current ROE. She or he aims to forecast ROE, and to do so she or he 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. 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.

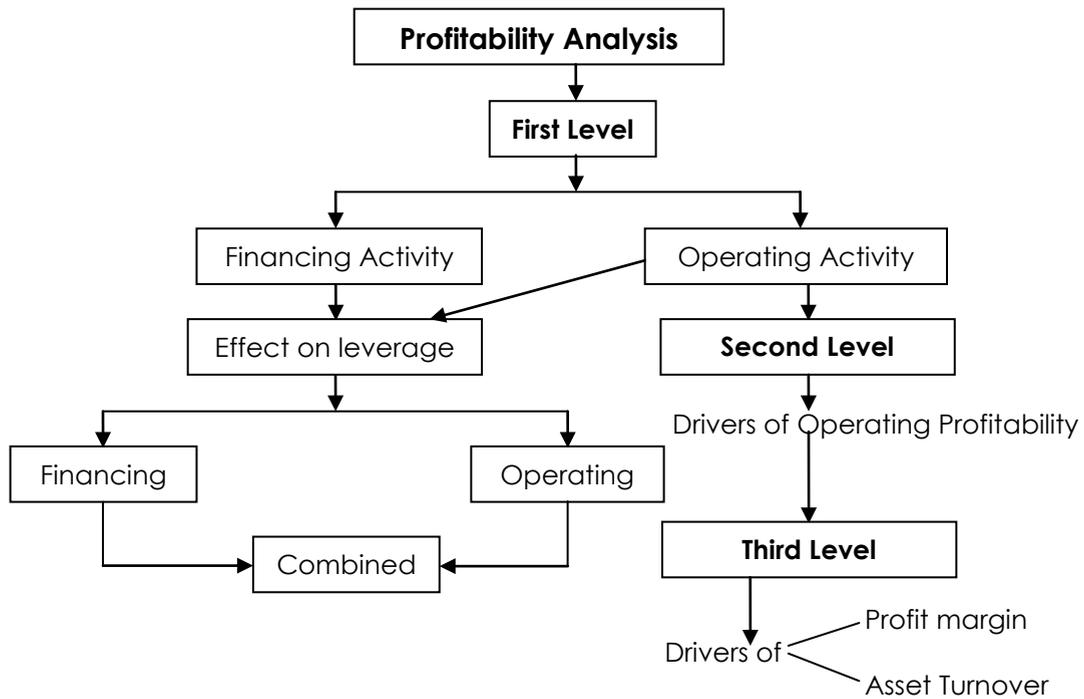
With this thinking, profitability analysis becomes a tool for management planning, strategy analysis, and decision making, as well as valuation. The manager recognizes that generating higher profitability generates value. What drives profitability? How will profitability change as a result of a particular 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, 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 leverage affects ROE.
- How profit margins, asset turnovers, and their composite ratios drive RNOA (Return on Net Operating Assets).
- How Du Pont analysis is used

5.2 CUTTING TO THE CORE OF OPERATIONS: THE ANALYSIS OF PROFITABILITY



We can analyse the above diagram with the help of the following example:

The following informations are related to the operating activity of a product for two consecutive years:

Particulars	No. of units	Amount per unit (₹)	Total (₹)
Year 1:			
Sales	500	40	20,000
Costs	500	<u>30</u>	<u>15,000</u>
Profit	500	10	5,000
Year 2:			
Sales	700	50	35,000
Costs	700	<u>35</u>	<u>24,500</u>
Profit	700	15	10,500

The difference between the selling price per unit and cost per unit is the profit per unit. In the year 1, as the selling price per unit was ₹ 40 and the cost price per unit was ₹ 30, the profit figure came out was ₹ 10 per unit. In the year 2, the profit per unit was ₹ 15, resulting in the same manner. In the year 2, the selling price per unit was increased by ₹ 10 but the cost per unit was increased by ₹ 5. Thus the profit was effectively increased by ₹ 5. The total number of units sold was also increased by 200 in the year 2. As a result, the profit was increased to ₹ 10,500 in that year. So we can say that the profit of ₹ 10,500 was consist of ₹ 7,000 (700 units @ ₹ 10 per unit) and ₹ 3,500 (700 units @ ₹ 5 per unit). This is the second layer break-down in profitability analysis.

Again, there are three different ways to analyse the profit figure of year 2, i.e. ₹ 10,500. We can consider the difference between the volumes (volume variance) of the product of two years and then consider the difference in the profit margin (margin variance) of the same product for those years. In the first year, only 500 units were sold, yielding a profit of ₹ 5,000 (500 units @ ₹ 10 per unit). In the second year, total 700 units were sold with a profit of ₹ 10,500. If we analyse the volume and profit margin (in the third layer break-down of profitability analysis), the profit of ₹ 10,500 will be broken as —

- (i) 500 units were sold with a profit of ₹ 10 each = ₹ 5,000
- (ii) 200 (700-500) units were sold with a profit of ₹ 15 each = ₹ 3,000
- (iii) 500 units were sold with a profit of ₹ 5 (₹ 15 - ₹ 10) each = ₹ 2,500.

Illustration 1.

Prinsley Ltd. had drawn up the following Sales Budget for July, 2014:

Product 'A'	5,500 units at ₹ 90 each
Product 'B'	4,700 units at ₹ 80 each
Product 'C'	7,500 units at ₹ 120 each

The actual sales for July, 2014 were:

Product 'A'	5,650 units at ₹ 110 each
Product 'B'	4,800 units at ₹ 70 each
Product 'C'	6,000 units at ₹ 100 each

The costs per unit of Product 'A', Product 'B' and Product 'C' were ₹ 70, ₹ 60 and ₹ 85 respectively.

Analyse the variances to show the effects on turnover:

- (i) Sales price variance;
- (ii) Sales mix variance;
- (iii) Sales quantity variance;
- (iv) Total sales value variance.

Solution:

Sales Variances (effects on turnover)

Toys	Budgeted			Actuals		
	Quantity (unit)	Rate (₹)	Amount (₹)	Quantity (unit)	Rate (₹)	Amount (₹)
Product 'A'	5,500	90	4,95,000	5,650	110	6,21,500
Product 'B'	4,700	80	3,76,000	4,800	70	3,36,000
Product 'C'	7,500	120	9,00,000	6,000	100	6,00,000
Total	17,700		17,71,000	16,450		15,57,500

(i)	Sales Price Variance	= Actual Quantity x (Standard Rate – Actual Rate)	
	Product 'A'	= 5,650 units x ₹ (90 – 110)	
		= 5,650 units x ₹ 20	= ₹ 1,13,000 (F)
	Product 'B'	= 4,800 units x ₹ (80 – 70)	
		= 4,800 units x ₹ 10	= ₹ 48,000 (A)
	Product 'C'	= 6,000 units x ₹ (120 - 100)	
		= 6,000 units x ₹ 20	= ₹ 1,20,000 (A)
			<u>= ₹ 55,000 (A)</u>
(ii)	Sales Mix Variance	= Standard Rate x (Revised Budgeted Quantity – Actual Quantity)	
	Product 'A'	= ₹ 90 x (5,112 – 5,650) units	= ₹ 48,420 (F)
	Product 'B'	= ₹ 80 x (4,368 – 4,800) units	= ₹ 34,560 (F)
	Product 'C'	= ₹ 120 x (6,970 – 6,000) units	= ₹ 1,16,400 (A)
			<u>= ₹ 33,420 (A)</u>

Note: Revised Budgeted Quantity = $\frac{\text{Actual Mix}}{\text{Budgeted Mix}} \times \text{Budgeted Quantity}$

Product 'A' (in units)	= $\frac{16,450}{17,700} \times 5,500$	= 5,112
Product 'B' (in units)	= $\frac{16,450}{17,700} \times 4,700$	= 4,368
Product 'C' (in units)	= $\frac{16,450}{17,700} \times 7,500$	= 6,970

(iii)	Sales Quantity Variance = Standard Rate x (Budgeted Quantity – Revised Budgeted Quantity) (or Revised Sales Volume Variance)		
	Product 'A'	= ₹ 90 x (5,500 – 5,112) unit	= ₹ 34,920 (A)
	Product 'B'	= ₹ 80 x (4,700 – 4,368) unit	= ₹ 26,560 (A)
	Product 'C'	= ₹ 120 x (7,500 – 6,970) unit	= ₹ 63,600 (A)
			<u>= ₹ 1,25,080 (A)</u>

(iv)	Total Sales Value Variance = Budgeted Sales – Actual Sales	
		= ₹ 17,71,000 – ₹ 15,57,500 = ₹ 2,13,500 (A)

Verification:

Total Sales Value Variance = Sales Price Variance + Sales Mix Variance + Sales Quantity Variance
 ₹ 2,13,500 (A) = ₹ 55,000 (A) + ₹ 33,420 (A) + ₹ 1,25,080 (A)



Illustration 2.

Barnali Toys Ltd. is manufacturing and selling three standard products (toys). The company has a standard cost system and analyses the variances between the budget and the actual periodically.

The summarized result for 2013-14 were as follows:

Product	Budget			Actual		
	Selling price per unit (₹)	Cost per unit (₹)	No. of units sold	Selling price per unit (₹)	Cost per unit (₹)	No. of units sold
Toys X	80	55	10,000	75	50	13,000
Toys Y	50	28	15,000	54	30	13,000
Toys Z	70	43	16,000	72	48	15,000

- (a) Calculate the variance in profit during the period.
- (b) Analyse the variance in profit into:
 - (i) Sales price variance;
 - (ii) Sales volume variance;
 - (iii) Cost variance;
 - (iv) sales margin quantity variance;
 - (v) Sales margin mix variance.

Solution:

Working Notes:

1. (a) Actual margin per unit

Actual sales price per unit – Std. cost per unit

$$\text{Toys X} = ₹ 75 - ₹ 55 = ₹ 20$$

$$\text{Toys Y} = ₹ 54 - ₹ 28 = ₹ 26$$

$$\text{Toys Z} = ₹ 72 - ₹ 43 = ₹ 29$$

- (b) Budgeted margin per unit

Budgeted sales price per unit – Std. cost per unit.

$$\text{Toys X} = ₹ 80 - ₹ 55 = ₹ 25$$

$$\text{Toys Y} = ₹ 50 - ₹ 28 = ₹ 22$$

$$\text{Toys Z} = ₹ 70 - ₹ 43 = ₹ 27$$

2. (a) Actual Profit = Actual Quantity of units sold x Actual Margin per unit

	₹
Toys X = 13,000 units x ₹ 20	2,60,000
Toys Y = 13,000 units x ₹ 26	3,38,000
Toys Z = 15,000 units x ₹ 29	4,35,000
Total	10,33,000

(b) Budgeted Profit = Budgeted Quantity of units sold x Budgeted Margin per unit

	₹
Toys X = 10,000 units x ₹ 25	2,50,000
Toys Y = 15,000 units x ₹ 22	3,30,000
Toys Z = 16,000 units x ₹ 27	4,32,000
Total	10,12,000

3. (a) Budgeted margin per unit on actual mix

$$= \frac{(\text{₹}25 \times 13,000) + (\text{₹}22 \times 13,000) + (\text{₹}27 \times 15,000)}{41,000} = \frac{\text{₹}(3,25,000 + 2,86,000 + 4,05,000)}{41,000}$$

$$= \text{₹}24.78049 \text{ p.u.}$$

(b) Budgeted margin per unit on budgeted mix

$$= \frac{(\text{₹}25 \times 10,000) + (\text{₹}22 \times 15,000) + (\text{₹}27 \times 16,000)}{41,000} = \frac{\text{₹}(2,50,000 + 3,30,000 + 4,32,000)}{41,000}$$

$$= \text{₹}24.68293 \text{ p.u.}$$

Calculation of Sales Variances —

I. Total Sales Margin Variance

$$\text{Actual Profit} - \text{Budgeted Profit} = \text{₹}10,33,000 - \text{₹}10,12,000 = \text{₹}21,000 \text{ (F)}$$

II. Sales Margin Price Variance

Actual Quantity (Actual margin per unit – Budgeted margin per unit)

Toys X	= 13,000 units × ₹ (20 – 25)	= ₹ 65,000 (A)
Toys Y	= 13,000 units × ₹ (26 – 22)	= ₹ 52,000 (F)
Toys Z	= 15,000 units × ₹ (29 – 27)	= ₹ 30,000 (F)
		= ₹ 17,000 (F)

III. Sales Margin Volume Variance

Budgeted margin per unit (Actual Quantity – Budgeted Quantity)

Toys X	= ₹ 25 (13,000 – 10,000) units	= ₹ 75,000 (F)
Toys Y	= ₹ 22 (13,000 – 15,000) units	= ₹ 44,000 (A)
Toys Z	= ₹ 27 (15,000 – 16,000) units	= ₹ 27,000 (A)
		= ₹ 4,000 (F)

The sales margin volume variance can be further segregated into the following:

III. (a) Sales Margin Mix Variance

Total Actual Quantity (Budgeted margin per unit on actual mix – Budgeted margin per unit on budgeted mix)

$$= 41,000 \text{ units} \times \text{₹} (24.78049 - 24.68293) \text{ p.u.} = \text{₹} 4,000 \text{ (F)}$$

III. (b) Sales Margin Quantity (Sub-volume) Variance

Budgeted margin per unit on budgeted mix (Total actual Quantity – Total budgeted quantity)

$$= \text{₹} 24.68293 \times (41,000 - 41,000) \text{ units} = 0$$

Summary of Sales Margin Variances

	(₹)	(₹)
Price Variance		17,000 (F)
Volume Variance	4,000 (F)	
(i) Mix Variance	0	
(ii) Quantity sub-volume variance		4,000 (F)
Total Sales Margin Variance		21,000 (F)

The Analysis of Profitability

The return on shareholders' equity (SE) is calculated as —

$$\text{Return on Equity (ROE)} = \frac{\text{Profit after Tax (PAT)}}{\text{Shareholders' Equity (E)}}$$

$$\text{or, ROE} = \frac{(\text{PBIT} - I)(1 - t)}{E}$$

$$\text{or, ROE} = \frac{(\text{TA} \times \text{ROI} - I)(1 - t)}{E}$$

$$\text{or, ROE} = \frac{[(E + D)\text{ROI} - rD](1 - t)}{E}$$

$$\text{or, ROE} = [\text{ROI} + (\text{ROI} - r)D/E] (1 - t)$$

Here, PBIT = Profit before Interest and tax (or operating income), I = Interest on debt, t = corporate tax rate, TA = Total assets, ROI = Return on Investment, D = Debt and D/E = Debt-equity ratio.

First-Level Breakdown:

Operating Activities

These are the activities involved in earning revenues. Cash inflows from these activities primarily accrue from the major revenue-producing activities like cash receipts from the sale of goods and the rendering of services, cash payments to suppliers for goods and services, cash payments to employees etc.

Financing Activities

These activities report the changes in the size and composition of the shareholders' / owner's capital (including preference share capital in case of companies) and debt of the enterprise. Example of these activities are cash proceeds from issuing shares or other similar instruments, cash payments to redeem preference shares, cash repayments of amount borrowed, i.e. redemption of debenture, bonds etc. Financing activities are transactions or business events that affect long-term liabilities and equity. Financing activities show how a company funds its operations and expansions externally. Internal financing is not included. For example, a company that pays for its own plant expansion doesn't need financing. Thus, no financing activities exist because equity and liability accounts are unchanged by the expansion.

Effect on Leverage

The term, "Leverage" can be used to describe the meaning of the firm's ability to use fixed cost assets or funds to magnify the return to its owners. According to James Horne, leverage is "the employment of an asset or funds for which the firm pays a fixed cost or fixed return." While the former is termed as "fixed operating cost", the latter may be termed as "fixed financial cost". If a firm is not required to

pay fixed cost or fixed return, there will be no leverage. There are two types of leverage are relevant, one indeed arising from financing activities (financial leverage) but another from operating activities (operating leverage).

Since fixed cost or return has to be paid or incurred irrespective of the volume of output or sales, the size of such cost or return has considerable influence over the amount of profits available for the shareholders.

Operating Leverage

Operating leverage is the tendency of the operating profit or earnings before interests and taxes (EBIT) to vary disproportionately with sales. The operating costs of a firm fall into three categories — fixed, variable and semi-variable. It is the firm's ability to use fixed operating cost to magnify the effects of changes in sales on its earnings before interest and taxes. This leverage relates to the sales and the profit variations. Sometimes a small fluctuation in sales would have a great impact on profitability due to the existence of fixed cost elements in the cost structure. A company with high proportion of fixed costs to the total costs will have a high operating leverage and in that case more of its profit will vary with a given percentage in sales and vice versa.

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \text{ or } \frac{\text{Contribution}}{\text{Operating Profit}}$$

When there is a change of 1% in sales produces a more than 1% change in EBIT or profit, there is an existence of operating leverage and this is measured as "degree of operating leverage" or DOL.

$$\text{DOL} = \frac{\text{Percentage change in profits}}{\text{Percentage change in sales}} > 1$$

$$\text{Or, } \frac{\text{Percentage change in EBIT}}{\text{Percentage change in sales}} > 1$$

$$\text{Or, } \frac{\% \Delta \text{ EBIT}}{\% \Delta Q} > 1$$

$$\text{Or, } \frac{Q(P - V)}{Q(P - V) - F} > 1$$

Financial Leverage

It is the ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on the earnings per share. These fixed charges do not vary with the EBIT or operating profit. It refers to the use of debt fund in the capital structure. It indicates the use of earnings in making payments for fixed interest and fixed dividend bearing securities. Favourable or positive leverage occurs when the firm earns more on the asset purchased with the funds, than the fixed cost of their use. A high ratio is risky but the low ratio indicates a low interest outflow and consequently lower borrowings.

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}}$$

The degree of financial leverage (DFL) is a measurement of responsiveness of firm's EPS to the changes in its EBIT.

$$\text{DFL} = \frac{\text{Percentage change in EPS}}{\text{Percentage change in EBIT}} > 1$$

$$\text{Or, } \frac{\% \Delta \text{ EPS}}{\% \Delta \text{ EBIT}} > 1$$

$$\text{Or, } \frac{(\Delta \text{EPS} / \text{EPS})}{(\Delta \text{EBIT} / \text{EBIT})} > 1$$

$$\text{Or, } \frac{\text{EBIT}}{\text{EBIT} - I - \frac{D_p}{1-t}}$$

Trading on equity:

Financial leverage is sometimes called as 'trading on equity'. The purpose behind this principle is to give the equity shareholders a high rate of return than the general rate of earning on the capital employed in the company with an objective to compensate them for the risk which they have to bear.

Effect of Financial Leverage on ROE:

The effect of financial leverage on return on equity (ROE) is positive, if cost of debt (after tax) is less than return on assets (ROA).

Combined Leverage:

Both operating and financial leverages are closely concerned with the firm's capacity to meet its fixed costs (both operating and financial). It measures the percentage change in EPS due to percentage change in sales. It will be favourable if sales increase and vice versa.

Combined Leverage = Operating Leverage × Financial Leverage

Degree of Combined Leverage (DCL) = DOL × DFL

$$\begin{aligned} \text{DCL} &= \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}} \times \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}} = \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}} \\ &= \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Contribution}}{\text{EBT}} \end{aligned}$$

The usefulness of DCL lies in choosing the financial plans for new investments. It can be said that combined leverage is a measure of the total risk of the firm. To keep the total risk within manageable limits, a firm which has high degree of operating leverage should have low financial leverage and vice versa.

Second-Level Breakdown:

Drivers of Operating Profitability

In the second level break-down, we will discuss about the drivers of the operating profitability. There are two drivers to describe the operating profitability, namely Profit Margin (PM) and Asset Turnover (ATO).

1. Profit Margin (PM): It is a ratio which measures the relationship between profit and sales. Generally, as the profits may be gross or net, there are two types of profit margins, such as gross profit margin and net profit margin.

- (i) **Gross Profit Margin:** This ratio describes the relationship between gross profit and net sales. The ratio is basically used to measure the efficiency of the operation of the company. This ratio can be compared with previous years' result to ascertain the level of efficiency. If there is any

decrease in the rate of gross profit as compared to the previous years, it may be due to — decrease in selling price of the goods without corresponding decrease in the cost of goods sold, increase in cost of goods sold without corresponding increase in the selling price, closing stock may have been undervalued or the opening stock may have been overvalued.

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

$$\text{Or, } \frac{\text{Sales} - \text{Cost of goods sold}}{\text{Net Sales}} \times 100$$

(ii) **Net Profit Margin:** Net profit is arrived at by deducting operating expenses from gross profit. Net profit margin measures the percentage of each sales rupee remaining after deducting all expenses. The ratio helps in determining the efficiency with which the affairs of the business are being managed. If gross profit ratio is constant, an increase in this ratio over the previous accounting periods indicates the improvement in the operational efficiency of the business. The ratio can be computed in any one out of the following three ways:

- Operating profit ratio = $\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Net Sales}} \times 100$
- Pre-tax profit ratio = $\frac{\text{Earnings before taxes (EBT)}}{\text{Net Sales}} \times 100$
- Net profit ratio = $\frac{\text{Earnings after interest and taxes (EAT)}}{\text{Net Sales}} \times 100$

2. Assets Turnover: This is a ratio, also known as Investment Turnover ratio. It indicates the relationship between sales and assets or investments of a firm. The ratio is used to measure the efficiency of a firm in utilising and managing its assets. The higher the turnover ratio, the more efficient is the utilisation and management of the assets and vice versa. The ratio should be compared across time and with the industry average. The total assets are net of depreciation in the denominator. So in the case of an old and established company, the ratio is likely to be higher, as compared to a new one (provided other things being equal). In such a case, turnover ratio is likely to give misleading impact relating to the relative efficiency.

$$\text{Assets Turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

Third-Level Breakdown:

Drivers of Profit Margin

In the third-level breakdown, the profit margins are again broken into two components, as follows:

$$\text{PM} = \text{Sales Profit Margin} + \text{Other Items Profit Margin}$$

1. Sales Profit Margin: It is an important indicator of the success of any business. It is the difference between the gross margin ratio and expenses ratio. We have already discussed about the gross profit margin in the part of second level breakdown. The expenses ratio is the complementary of net profit ratio. Suppose, if the net profit ratio is 25%, the expenses ratio will be 75%. It is also called operating ratio.

$$\text{Sales Profit Margin} = \text{gross margin ratio} - \text{expenses ratio}$$



Expenses ratio is calculated by dividing expenses by sales. There are various types of expenses to compute the ratio, such as — cost of goods sold, administrative expenses, selling expenses, distribution expenses, financial expenses etc. but it excludes taxes, dividends and extra-ordinary losses (due to theft of goods, destroyed by fire etc.). the different variants of expenses ratios are calculated as follows:

$$1. \text{ Material cost ratio} = \frac{\text{Material consumed}}{\text{Net sales}} \times 100$$

$$2. \text{ Labour cost ratio} = \frac{\text{Labour cost}}{\text{Net sales}} \times 100$$

$$3. \text{ Factory overhead ratio} = \frac{\text{Factory expenses}}{\text{Net sales}} \times 100$$

$$4. \text{ Administrative expenses ratio} = \frac{\text{Administrative expenses}}{\text{Net sales}} \times 100$$

$$5. \text{ Selling expenses ratio} = \frac{\text{Selling expenses}}{\text{Net sales}} \times 100$$

$$6. \text{ Financial expenses ratio} = \frac{\text{Financial expenses}}{\text{Net sales}} \times 100$$

$$7. \text{ Operating ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net sales}} \times 100$$

- 2. Other Items Profit Margin:** There are certain items which have an impact on the profit margin. These items are not related to the day-to-day operation. The examples of such other operating items profit margin ratios are as follows:

Other items profit margin

$$= \frac{\text{Subsidiary income}}{\text{Net sales}} + \frac{\text{Special items}}{\text{Net sales}} + \frac{\text{Other equity income}}{\text{Net sales}} + \frac{\text{Other gains and losses}}{\text{Net sales}}$$

Drivers of Assets Turnover

Assets Turnover, an important component of drivers of operating profitability, can be broken down further into the following drivers of individual assets and liabilities.

- 1. Fixed Assets Turnover:** This ratio indicates the extent to which investments in fixed assets contribute towards sales. It is difficult to interpret as asset values are based on historic cost. An increase in the figure of fixed assets may result from the replacement of an asset at an increased price or the purchase of an additional asset intended to increase production capacity. The ratio is calculated as follow:

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Net sales}}{\text{Fixed assets (net)}}$$

This ratio can further be divided into turnover of each item of fixed assets to find out the extent of each fixed assets has been properly used. Examples of such divisions are:

$$\text{Plant and Machinery to Turnover Ratio} = \frac{\text{Net sales}}{\text{Land and Buildings (net)}}$$

$$\text{Land and Buildings to Turnover Ratio} = \frac{\text{Net sales}}{\text{Land and buildings (net)}}$$

- 2. Working Capital Turnover Ratio:** This ratio implies the extent of working capital turned over in achieving sales of a firm. It also indicates whether or not the working capital has been effectively utilised in making sales. If any company can achieve a higher level of sales with relatively small amount of working capital, it will indicate the operational efficiency of the company. It is calculated —

$$\text{Working Capital Turnover Ratio} = \frac{\text{Net sales}}{\text{Working capital}}$$

Working capital turnover ratio may be of different forms for different purposes. Some of them are as follows:

- (i) **Debtors Turnover Ratio:** This ratio measures whether the amount of resources tied up in debtors is reasonable and whether the company has been efficient in converting debtors into cash, as debtors constitute an important element in current assets. This ratio is a test of liquidity of the debtors in a firm. It show the relationship between credit sales and debtors of a firm and is calculated as follows:

$$\text{Debtors Turnover} = \frac{\text{Credit sales}}{\text{Average debtors} + \text{Average bills receivables}}$$

Average Collection Period: Another ratio is used for measuring the liquidity of firm's debtors is the average collection period. It is interrelated and dependent upon the debtors turnover ratio. It is computed as:

$$\text{Average Collection Period} = \frac{\text{Months (days) in a year}}{\text{Debtors turnover}}$$

- (ii) **Creditors Turnover Ratio:** It indicates the speed with which the payments for credit purchases are made to the creditors. The term creditors include trade creditors and bills payable. It is calculated as follows:

$$\text{Creditors Turnover} = \frac{\text{Credit purchases}}{\text{Average creditors}}$$

Creditors Payment Period: This ratio is used for the measurement of the creditors turnover period which shows the average time taken to pay for goods and services purchased by the company. The formula is —

$$\text{Creditors Payment Period} = \frac{\text{Average creditors}}{\text{Credit purchases}} \times 365 \text{ (in days)}$$

- (iii) **Inventory Turnover Ratio:** The ratio implies whether investment in inventory is efficiently used or not. In other words, it indicates the number of times inventory is replaced during the year. The higher the stock turnover rate or the lower the stock turnover period is better, although the ratio is dependent on companies. For an example, the stock turnover rate in a food retailing



company must be higher than the rate in a manufacturing concern. If the turnover of stock of a firm goes slower than for its industry then there may be obsolete goods in hands or inventory stocks may be high. It is computed as follows:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$\text{Average Inventory} = \frac{(\text{opening stock} + \text{closing stock})}{2}$$

The computation of the turnover for the individual components of inventory may be useful in some context. These types of ratios can be computed in respect of raw materials and work-in-progress. These are calculated as follows:

$$\text{Raw Material Turnover} = \frac{\text{Cost of raw material used}}{\text{Average raw material inventory}}$$

$$\text{Work-in-progress Turnover} = \frac{\text{Cost of goods manufactured}}{\text{Average Work-in-progress inventory}}$$

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 5.1 (below) for a sample Du Pont analysis for Tulip.

Table 5.1. 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 3.

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:

- Prepare a short report to the directors of Expand that, based on the financial information provided, assesses the relative profitability of Hone and Over.
- 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 4.

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:

- 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.
- 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.
- 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 × 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. The analysis of growth is explained.

Analysts often talk of growth in terms of a firm's ability to grow earnings. 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 is a prerequisite for the profitability analysis of the last study note. Correspondingly, the trend analysis is a prerequisite for the analysis of growth. 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.

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.

Table 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.

Table 6.1 Growth and No – Growth Firms

A Growth Firm: Genuine Electric		(₹ amounts in millions)						
	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08	2006-07
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 2007-08, residual earning (based on a required return of 12 percent) was on a growth path up to 2011-12 and abnormal earnings growth was (mainly) positive. Growth slowed after 2011-12. Can GE generate more growth in the future?

A Growth Firm: Hypee		(₹ amounts in millions)						
	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08	
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 2012-13, 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)

	2010-11	2009-10	2008-09	2007-08	2006-07	2005-06	2004-05	2003-04
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 analysis period but, with declining sales growth rates and lower ROE, was not able to maintain the growth. From 2004-05 to 2009-10, Ricky reported little growth in residual earnings, with both lower ROE and investment growth. Correspondingly, abnormal earnings growth was negative in many years.

Growth and No-growth Firms

A Cyclical Firm: Central Airlines

(₹ amounts in millions)

	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08	2006-07
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 2009-10 to 2011-12. (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 2009-10 to 2011-12 was also modest, with growth coming from growth in investment. ROE declined after 2011-12, 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 2008-09 (in Table 6.1), but on an 8.1 percent decline in sales. Why? Should this growth be given different weight from that in 2012-13 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.

Table 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 Table 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.

Table 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,

$$\begin{aligned} \text{Change in residual earnings} &= \text{Change due to change in ROE over the cost of capital} \\ &+ \text{Change due to change in equity} \end{aligned}$$

$$\Delta RE_1 = [\Delta(\text{ROE} - \text{Cost of capital})_1 \times SE_0] + [\Delta SE_1 \times (\text{ROE} - \text{Cost of capital})_1]$$

Where Δ indicates changes. As abnormal earnings growth is the change in residual earning, this calculation also explains abnormal earnings growth.

Hypee, Inc.

An analysis of its growth are summarized here (₹ in millions). All balance sheet numbers are averages for the year.

	2013-14	2012-13
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 2013-14, Hypee had residual earning of ₹642.0 million from a ROE of 22.98 percent as follows:

$$\begin{aligned} \text{Residual earnings}_{2013-14} &= (22.98\% - 8.5\%) \times ₹4,434 \text{ million} \\ &= ₹642.0 \text{ million} \end{aligned}$$

(using average SE, as in the ROE calculation). And for 2012-13, Hypee's residual earning were

$$\begin{aligned} \text{Residual earnings}_{2012-13} &= (10.29\% - 8.5\%) \times ₹3,936 \text{ million} \\ &= ₹70.5 \text{ million} \end{aligned}$$

(A required return of 8.5 percent is used for these years. In contrast to the 11.1 percent Table 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 Table 6.1.)

The increase in residual earning of ₹571.5 million is also the abnormal earnings growth for 2013-14. 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,

$$\begin{aligned} \Delta RE_{2013-14} &= (12.69\% \times ₹3,936 \text{million}) + [₹498 \text{million} \times (22.98\% - 8.5\%)] \\ &= ₹499.5 \text{ million} + ₹72.1 \text{ million} \\ &= ₹571.6 \text{ million} \end{aligned}$$

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 2012-13 equity earning at a 22.98 percent higher rate; second, ₹72.1million of the growth came from the additions to equity in 2013-14 of ₹498 million that earned at the 2013-14 rate of 22.98 percent.

Ricky International Ltd.

Ricky's financial statement numbers are summarized below:

(₹ in million)

	2013-14	2012-13
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 2013-14 growth in residual earning was less impressive than that for Hypee:

$$\begin{aligned} \text{Residual earnings}_{2013-14} &= (18.93\% - 9.0\%) \times ₹1,131 \text{ million} \\ &= ₹112.3 \text{ million} \end{aligned}$$

(Again using average SE for the year). And for 2012-13,

$$\begin{aligned} \text{Residual earnings}_{2012-13} &= (18.12\% - 9.0\%) \times ₹961 \text{ million} \\ &= ₹87.6 \text{ million} \end{aligned}$$

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:

$$\begin{aligned} \Delta \text{RE}_{2013-14} &= (0.81\% \times ₹961 \text{ million}) + [₹170 \text{ million} \times (18.93\% - 9.0\%)] \\ &= ₹7.8 \text{ million} + ₹16.9 \text{ million} \\ &= ₹24.7 \text{ million} \end{aligned}$$

6.3 THE ANALYSIS OF CHANGES IN PROFITABILITY AND SUSTAINABLE EARNINGS

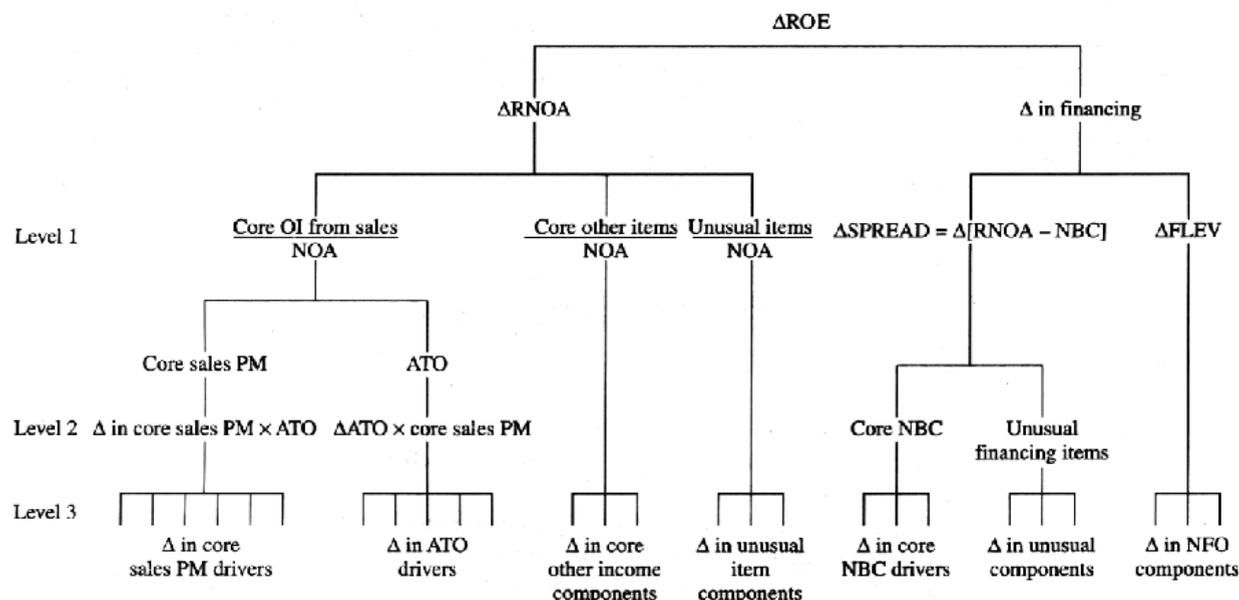
Return on equity (ROE) is driven by operations and by the financing of the operations. So the change in ROE is explained by change in the profitability of operations and by changes in financing.

Figure 6.1 guides the analysis of the changes in these two components and this figure corresponds to the analysis of changes in ROE rather than the level of ROE. Both changes in profitability (Δ RNOA) and changes in financing are analyzed through three levels of investigation. Remember that, as with the analysis of the level of ROE, 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 (Δ 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 one-time components.

Exhibit 6.1 lays out a template that adds to the reformulation of income statements 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 Table 6.3. The better you know the business, the better you will be in identifying these items. See Table 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.

Table 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

Table 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)

	2013-14	2012-13	2011-12
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- 2013-14 levels in the future? Is research becoming less successful in producing new products? Is the lower operating income in 2013-14 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)

	2013-14	2012-13	2011-12
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 2013-14 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.

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 Table 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 increase future income to make the merger appear more profitable?

Table 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 1999-2000, CLT wrote off considerable income with restructuring charges- ₹3.7 billion, ₹11.6 billion, and ₹8.9 billion, respectively for 2000-2001 to 2002-2003, 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:

	2003-04	2004-05	2005-06	2006-07	2007-08
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 2000-01 to 2002-03, 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.

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 Table 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 Table 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 2010-11 to 2013-14.

Central Line Tools (CLT)
Components of Pension Expense, 2009-2012

(₹ in millions)

	2013-14	2012-13	2011-12	2010-11
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 2010-11 to 2012-13, 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 Table 6.6.

Tutorial Note 1 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 Table 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 Table 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".

Tutorial Note : 1

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

Table 6.6 Beware of Returns on Pension Assets

The expected return on plan assets component expense must be handled with care. Bellow 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. 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 2013-14 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 2007-08. 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 2008-09 to 2010-11 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.

Table 6.7 Gain and Losses from Sales of Shares

In the rising stock market of the 1990s, firms' holdings of equity shares appreciated. The sales of the shares sometimes provided a significant portion of profits.

Aksar

In its third quarter report for 2013-14, 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 2013-14. However notes to the report indicated that these earning 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 September, 2008. 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 2011-12 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.

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 Table 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 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.

Exhibit 6.2 Reformulated Income Statements for Hypee, Inc., with core Income Separated from Unusual Income, 2011-12 to 2013-14.

Name of the Company: Hypee, Inc.

Profit and Loss Statement for the year ended: 31.03.2014

(₹ in millions)

	Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 2013-14, 2012-13 and 2011-12 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.

Hypee had a core RNOA (after – tax) of 21.6 percent in 2013-14: 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 2012-13, 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, 2011-12 to 2013-14 (₹ in millions)

Name of the Company: Ricky International Limited

Profit and Loss Statement for the year ended: 31.03.2014

(₹ in millions)

	Particulars	Note No.	As at 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
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 31.03.2014	As at 31.03.2013	As at 31.03.2012
Tax:			
Taxes as reported	68	72	61
Tax on financial items ¹	5	6	5
Total	73	78	66

5. The minority interests for 2013-14, 2012-13 and 2011-12 are ₹ 5 million, ₹ 5 million and ₹ 3 million respectively.

Note: ¹ Marginal tax rate was 35.9%, 35.9% and 35.5% for 2013-14, 2012-13 and 2011-12 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 Table 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:

$$\text{RNOA} = (\text{core sales PM} \times \text{ATO}) + \frac{\text{Core other OI}}{\text{NOA}} + \frac{\text{UI}}{\text{NOA}}$$

Table 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 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.

Where
$$\text{Core sales PM} = \frac{\text{CoreOI from sales}}{\text{sales}}$$

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 Table 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 2012-13 and 2013-14 drivers for Hypee and Ricky are compared in the analysis.

Table 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

$$\Delta \text{RNOA}_{2013-14} = (\Delta \text{core sales PM}_{2013-14} \times \text{ATO}_{2012-13}) + (\Delta \text{ATO}_{2013-14} \times \text{Core sales PM}_{2013-14}) + \Delta \left(\frac{\text{Core other OI}}{\text{NOA}} \right) + \Delta \left(\frac{\text{UI}}{\text{NOA}} \right)$$

Hypee

Hypee's increase in RNOA of 13.69 percent, from 9.62 percent in 2012-13 to 23.31 percent in 2013-14, is explained as follows:

$$\begin{aligned} \Delta \text{RNOA}_{2013-14} &= 13.69\% \\ &= (0.75\% \times 2.43) + (0.33 \times 7.84\%) + 0 + \left(\frac{74}{4,441} + \frac{335}{4,395} \right) \end{aligned}$$

(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 2013-14 drop in RNOA of 3.48% from 27.88 percent to 24.40 percent is explained as

$$\begin{aligned} \Delta \text{RNOA}_{2013-14} &= -3.48\% \\ &= (0.74\% \times 5.09) + (-1.19 \times 5.71\%) + 0 + \left(\frac{22}{972} - \frac{18}{685} \right) \end{aligned}$$

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.

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 2013-14 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). It is noted that $FLEV = NFO/SE$ and the operating spread is the difference between the RNOA and the net borrowing cost (NBC); $SPREAD = RNOA - NBC$. Table 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 2005-06 when the firm had a very large share repurchase. The analysis comes with a firm warning.

Table 6.10 The analysis of the effects of Financial Changes in ROE come with a warning

In 2005-06, 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)

	2005-06	2004-05
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 2005-06, but this masks a considerably higher drop of 2.8 percent in operating profitability. The ROE was maintained with borrowing. Had Ricky maintained its 2004-05 leverage of 0.187, the ROE on a 14.1 percent RNOA would have been 15.8 percent:

$$\begin{aligned} \text{ROE} &= \text{RNOA} + (\text{FLEV} \times \text{SPREAD}) \\ \text{ROE}_{2005-06} &= 14.1 + [0.187 \times (14.1 - 4.9)] \\ &= 15.8\% \end{aligned}$$

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

$$\Delta \text{ROE}_{2013-14} = \Delta \text{RNOA}_{2013-14} + (\Delta \text{SPREAD}_{2013-14} \times \text{FLEV}_{2012-13}) + (\Delta \text{FLEV}_{2013-14} \times \text{SPREAD}_{2013-14})$$

For Ricky, the 2005-06 change in ROE is

$$\begin{aligned} \Delta \text{ROE}_{2005-06} &= -0.3\% \\ &= -2.8\% + (-2.9 \times 0.187) + (0.328 \times 9.2) \\ &= -2.8\% - 0.54\% + 3.02\% \end{aligned}$$

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 2005-06 net borrowing cost was 4.9 percent relative to 4.8 percent for 2004-05.

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

$$\text{NBC} = \frac{\text{Core net financial expenses}}{\text{NFO}} + \frac{\text{Unusual financial expenses}}{\text{NFO}}$$

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 ΔFLEV and ΔNBC are small, then a useful approximation is

$$\Delta\text{ROE}_1 = \Delta\text{RNOA}_1 \times [1 + \text{Average FLEV}_1]$$

If ΔFLEV 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 Table 6.10.

6.4 THE ANALYSIS OF GROWTH IN SHAREHOLDERS' EQUITY

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:

$$\Delta\text{SE} = \Delta\text{NOA} - \Delta\text{NFO}$$

Since $\text{ATO} = \text{Sales} / \text{NOA}$,

$$\text{NOA} = \text{Sales} \times \frac{1}{\text{ATO}}$$

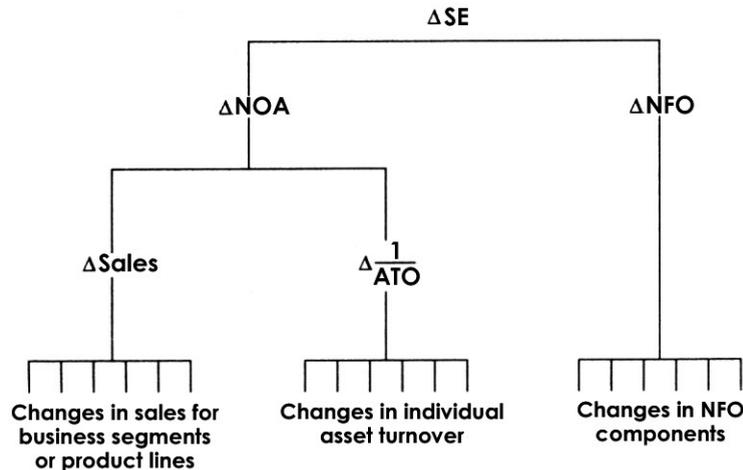
So

$$\text{SE} = \Delta \left(\text{Sales} \times \frac{1}{\text{ATO}} \right) - \Delta\text{NFO}$$

Sales require investment in net operating assets and the inverse of the asset turnover, $1/\text{ATO}$, is the amount of net operating assets in place to generate ₹ 1 of sales. Hypee's 2013-14.

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 [$\Delta(1/\text{ATO})$].

Figure 6.2 The Analysis of Changes in Shareholders' Equity



ATO was 2.76, so $1/2.76$, or 36.2 per cents of net operating assets, were in place to generate ₹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.

Table 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 2013-14 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 ($1/\text{ATO}$) and maximizes the operating income per rupee of sales (PM).

Table 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

$$\Delta SE_{2013-14} = \left(\Delta \text{Sales}_{2013-14} \times \frac{1}{\text{ATO}_{2012-13}} \right) + \left(\Delta \frac{1}{\text{ATO}_{2013-14}} \times \text{Sales}_{2013-14} \right)$$

Hypee

Hypee's average shareholders' equity increased by ₹498 million in 2013-14. 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: Table 6.2)

$$\begin{aligned} \Delta SE_{2013-14} &= (\text{₹}1,556 \text{ million} \times 0.411) + (-0.0485 \times \text{₹}12,253 \text{ million}) + \text{₹}453 \text{ million} \\ &= \text{₹}640 \text{ million} - \text{₹}594 \text{ million} + \text{₹}453 \text{ million} \\ &= \text{₹}499 \text{ million} \end{aligned}$$

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 2013-14 (Reference: Table 6.2). As sales increased by ₹300 million and the asset turnover decreased from 5.09 to 3.90, the change in equity is

$$\begin{aligned} \Delta SE_{2013-14} &= (\text{₹}300 \text{ million} \times 0.197) + (0.0601 \times \text{₹}3,785 \text{ million}) - \text{₹}116 \text{ million} \\ &= \text{₹}59 \text{ million} + \text{₹}227 \text{ million} - \text{₹}116 \text{ million} \\ &= \text{₹}170 \text{ million} \end{aligned}$$

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, Table 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

Table 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 2011-12, 2012-13, and 2013-14 the forecasted residual earnings calculated from the forecasted earnings. The forecast was made at the end of 2010-11.

Dignity Corp
Analyst Forecast, March, 2011
(Amounts in rupees per share)
Required return of 10%

	2009-10A	2010-11A	2011-12E	2012-13E	2013-14E
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, 2011-12 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.

$$V_{2010-11}^E = \frac{4.75}{0.10}$$

= ₹ 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:

$$V_{2010-11}^E + d_{2010-11} = 11 \times ₹4.43 = ₹48.73$$

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 6.13 assumes and splits Indian firms at their median (trailing) P/E and P/B each year from 1975-76 to 2013-14 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 6.13
Frequency of High and Low P/B and P/E ratios, 1975-76 to 2013-14

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 6.14
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 6.15
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 $\bar{RE} > RE_0$	B $\bar{RE} > RE_0$ $RE_0 < 0$	C $\bar{RE} > RE_0$ $RE_0 < 0$
Normal	D $\bar{RE} = RE_0$ $RE_0 > 0$	E $\bar{RE} = RE_0$ $RE_0 = 0$	F $\bar{RE} = RE_0$ $RE_0 < 0$
Low	G $\bar{RE} < RE_0$ $RE_0 > 0$	H $\bar{RE} < RE_0$ $RE_0 > 0$	I $\bar{RE} < RE_0$

[Here, \bar{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 6.14. 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 6.15.

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 Table 6.16 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 earning 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 Table 6.16) 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.

Table 6.16 Cell Classification Examples

A.	<p>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 2013-14, 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.</p>
B.	<p>Normal P/B- High P/E Burncorp. Burncorp, a financial services holding company, reported earnings for 2011-12 of ₹0.65 per share and a ROE of 5.4 percent. Analysts in 2012-13 forecasted earnings of ₹1.72 for 2000-01 and ₹2.00 for 2013-14, 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.</p>
C.	<p>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 2011-12 with earnings of 0.21 per share. Analysts forecast a ROE of 6.2 percent for 2012-13 and 7.8 percent for 2013-14, 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.</p>
D.	<p>High P/B – Normal P/E Dignity Corp. Dignity, with a positive but constant RE, was a cell D firm in 2010-11. Dignity was priced at 11 times earnings (cum – dividend), and at 1.8 times book value, as we saw in Table 6.1</p>
E.	<p>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 2012-13. Analysts forecasted that ROE would be 10.6 percent for 2013-14 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.</p>
F.	<p>Low P/B – Normal P/E Enmarg Café Inc. in 2012-13, analysts covering Enmarg Café, a theme restaurant (“a wild place to eat”), forecasted earnings of ₹0.62 per share for 2012-13 and ₹0.71 for 2013-14, 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 2011-12 was 6.5 percent. With 2011-12 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.</p>
G.	<p>High P/B – Low P/E AB Airways Group. AB airways reported a ROE of 81 percent in 1999-2000. Analysts deemed 2011-12 to be a particularly good year and forecast ROE for 2012-13 and 2013-14 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.</p>
H.	<p>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 2011-12. Analysts forecasted in 2012-13 that the ROE would decline to 11.7 percent by 2013-14. The market gave the share a P/B of 1.0 in 2012-13, in line with the forecasted ROE equaling the cost of capital. But the P/E was 7, consistent with the expected drop in the ROE.</p>
I.	<p>Low P/B – Low P/E SAL Corporation. Sky-fy Airline's holding company traded at a P/B of 0.7 in mid – 2012-13 and a P/E of 6. It reported a ROE of 29.2 percent for 2011-12, but its ROE was expected by analysts to drop to 10.6 percent (before a special gain) in 2012-13 and to 9.1 percent in 2013-14.</p>

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 2011-12. A firm with poor prospects can fall into cell **C**

Table 6.17 Subsequent Earnings Growth for Different Levels of P/E, 1977-78 to 2013-14

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 6.17 shows the Molodovsky effect at work. The table shows the relationship between trailing P/E and earnings growth for three P/E groups from 1977-78 through 2013-14. 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. It's a huge gain in efficiency that 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 particular the employees of the company.

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 specter 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 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:** 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.
- **Giving up 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

(i) 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.

(ii) 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.

(iii) 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.

(iv) 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.

(v) 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.

(vi) 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 stocks 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 bias 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 affected 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 out come.

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; 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 networth 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.

IGBVT 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 or 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.

IGBVT 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 received to sell an 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 comprise 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 (Nilsson et al. 2002, p. 301). To be useful, the substance value must be positive, if liabilities are bigger than assets there is no use of the method (Lundén, 2007, p. 22).

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.

Mathematically it can be expressed as the following formula:

$$PV = \sum FV / (1 + i)^n$$

Where,

PV = Present Value

FV = Future Value

i = discount rate reflecting the risks of the estimated future value

n = raised to the nth power, where n is the number of compounding periods

Source: http://www.hogefenton.com/article_valuation.html

As formula shows, 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 to shareholders and the residual income measure has focus on return which is derived 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 these approaches may be different because they 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 policies
- (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. 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 un/under 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 non-cash item
Depreciation				Adjustment for 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: $K_e = R_f + \beta(R_M - R_f)$

K_e = Required rate of return

R_f = Risk free rate

β = Beta coefficient

R_M = Expected return for common stocks in the market

$(R_M - R_f)$ = 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_o) 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.

$$P_0 = \frac{DPS_0 (1 + g_n)}{r - g_n} + \frac{DPS \times H (g_o - g_n)}{r - g_n}$$

Stable growth
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_o = 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 in consistent.

8.2.7 Three Stage Discount Model

This model assumes on initial period of stable high growth, second period of declining growth and a third period of stable low growth that lasts forever.

$$P_0 = \underbrace{\sum_{t=1}^{t=n_1} \frac{EPS_0 (1+g_a)^t \times II_a}{(1+r)^t}}_{\text{High growth}} + \underbrace{\sum_{t=n_1+1}^{t=n_2} \frac{DPS_t}{(1+r)^t}}_{\text{Transition}} + \underbrace{\frac{EPS_{n_2} (1+g_n) \times II_n}{(r-g_n)(1+r)^n}}_{\text{Stable growth}}$$

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 n1 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.
- (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 Multipliers

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 :

$$P_0 = \frac{EPS_0 \times \text{Payout ratio} \times (1+g) \times \left(1 - \frac{(1+g)^n}{(1+r)^n}\right)}{r-g} + \frac{EPS_0 + \text{Payout ratio} \times (1+g)^n \times (1+g_n)}{(r-g_n)(1+r)^n}$$

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.

8.4 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 = Cash Flow from operations + After-tax interest expense - 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 - After-tax interest expense + 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.,

$$= \sum_{t=1}^T \frac{FCF_t}{(1+k)^t} + \frac{FCF_{t+1}}{k-g} \times \frac{1}{(1+k)^T}$$

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 = Value of stock today

FCFE = 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%. A premium of 5.50% is used for market.

Calculate value of stock.

Solution:

Estimating value

Long term bond rate 7.5%

Cost of equity = 7.5% + (0.90 × 5.50%) = 12.45%

Expected growth rate 6%

Base year FCFE = Earning per share – (Capital Exp. – Dep.) (1 – Debt Ratio) – Change in working capital (1 – Debt Ratio)

$$= 3.15 - (3.15 - 2.78) (1 - 0.25) - 0.50 (1 - 0.25)$$

$$= 2.49$$

$$\text{Value per share} = 2.49 \times 1.06 / (0.1245 - 0.06) = ₹ 41.$$

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:

$$P_n = \text{FCFE}_{n+1} (r_n - g_n)$$

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.

$$P_0 = \sum_{t=1}^{t=n_1} \frac{\text{FCFE}_t}{(1+r)^t} + \sum_{L=n_1+1}^{L=2} \frac{\text{FCFE}_L}{(1+r)^L} + \frac{P_{n_2}}{(1+r)^2}$$

Where P_0 = Value of stock today

FCFE_t = FCFE in year t

t = Cost of equity

P_{n_2} = 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.

$TV = \frac{CF_1 (1+g)}{k-g}$ where CF_1 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,

$$[PV \text{ of TV as } \frac{[6726 \times (1.02)]}{0.118 - 0.02} \times \frac{1}{(1+0.118)^{10}} = ₹25879 \text{ mln. [We have assumed } g = 2\%]$$

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.

$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{\text{CF to Firm} - 1}{(1 + \text{WACC})^t}$$

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.

Error 1: Discount Cash Flows to Equity at Cost of Capital to Get Too High a Value for Equity

PV of equity = $50/1.0994 + 60/1.0994^2 + 68/1.0994^3 + 76.2/1.0994^4 + (83.49 + 1,603)/1.0994^5 = 1,248$

Error 2: Discount Cash Flows to Firm at Cost of Equity to Get Too Low a Value For The Firm

PV of firm = $90/1.13625 + 100/1.13625^2 + 108/1.13625^3 + 116.2/1.13625^4 + (123.49 + 2,363)/1.13625^5 = 1,613$

PV of equity = PV of firm – Market value of debt

$$= 1,612.86 - 800 = 813$$

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:

$$\text{Firm Value} = \text{Capital Invested}_{\text{Assets in Place}} + \sum_{t=1}^{t=\infty} \frac{\text{EVA}_{t,\text{Assets in Place}}}{(1 + \text{WACC})^t} + \sum_{t=1}^{t=\infty} \frac{\text{EVA}_{t,\text{Future Projects}}}{(1 + \text{WACC})^t}$$

Where :

$$\text{Economic Value Added for all years} = (\text{Return on Capital Invested} - \text{WACC}) (\text{Capital Invested})$$

$$\text{Terminal EVA} = \text{EVA} / (\text{WACC} - \text{Net sales growth rate}).$$

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	$\frac{(0.15 - 0.10)(100)}{0.10}$	₹ 50 crore
+ PV of EVA from New Investments in Year 1	$\frac{(0.15 - 0.10)(10)}{(0.10)}$	₹ 5 crore
+ PV of EVA from New Investments in Year 2	$\frac{(0.15 - 0.10)(10)}{(0.10)(1.10)^1}$	₹ 4.55 crore
+ PV of EVA from New Investments in Year 3	$\frac{(0.15 - 0.10)(10)}{(0.10)(1.10)^2}$	₹ 4.13 crore
+ PV of EVA from New Investments in Year 4	$\frac{(0.15 - 0.10)(10)}{(0.10)(1.10)^3}$	₹ 3.76 crore
+ PV of EVA from New Investments in Year 5	$\frac{(0.15 - 0.10)(10)}{(0.10)(1.10)^4}$	₹ 3.42 crore
Value of Firm		₹ 170.85 crore

$$\text{Firm Value} = \text{Capital Invested}_{\text{Assets in Place}} + \sum_{t=1}^{t=\infty} \frac{\text{EVA}_{t,\text{Assets in Place}}}{(1+\text{WACC})^t} + \sum_{t=1}^{t=\infty} \frac{\text{EVA}_{t,\text{Future Projects}}}{(1+\text{WACC})^t}$$

Thus, ₹ 170.85 crores = ₹ 100 crores + ₹ 50 crores + ₹ 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 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:

$$\text{Value of preferred share} = \text{Dividend} / \text{Required rate of return}$$

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%.

$$\text{Conversion ratio} = \frac{\text{Par value of conversion security}}{\text{conversion price}} = 25/27 = 0.9259$$

$$\begin{aligned} \text{Conversion value} &= (\text{Conversion ratio}) \times (\text{Market value per share of the common stock}) \\ &= (0.9259) \times (\text{₹}13.25) = \text{₹}12.27 \end{aligned}$$

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 FCFE for the year just ended is ₹28 million. FCFE 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

$$\text{WACC} = 0.30(7.0\%) (1 - 0.35) + 0.20(6.8\%) + 0.50(11.0\%) = 8.225\%$$

The firm value is

$$\text{Firm value} = \text{FCFE}_0(1 + g) / (\text{WACC} - g)$$

$$\text{Firm value} = 28(1.04) / (0.08225 - 0.04) = 29.12/0.04225 = \text{₹}689.23 \text{ million}$$

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:

- (a) 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

True value Ltd. is planning to raise funds through issue of common stock for the first time. However, the management of the company is not sure about the value of the company and therefore it attempts to study similar companies in the same line which are comparable to True value in most of the aspects.

From the following information, you are required to compute the value of True value Ltd. using the comparable firms approach.



(₹ in crore)

Company	True value Ltd.	Jewel-value Ltd.	Real value Ltd.	Unique value Ltd.
	₹	₹	₹	₹
Sales	250	190	210	270
Profit after tax	40	30	44	50
Book value	100	96	110	128
Market value		230	290	440

The value feels that 50% weightage should be given to earnings in the valuation process; sales and book value may be given equal weightages.

Solution:

The valuation multiples of the comparable firms are as follows:

Particular	Jewel-value Ltd.	Real value Ltd.	Unique value Ltd.	Average
Prices/Sales ratio*	1.21	1.38	1.63	1.41
Price/Earnings ratio**	7.67	6.59	8.80	7.69
Price/Book value ratio***	2.40	2.64	3.44	2.83

Applying the multiples calculated as above, the value of True value Ltd. can be calculated as follows:

Particular	Multiple Average	Parameter ₹ cr.	Value ₹ cr.
Prices/Sales	1.41	250	352.50
Price/Earnings	7.69	40	307.60
Price/Book value	2.83	100	283.00

By applying the weightage to the P/S ratio, P/E ratio and P/BV ratio we get:

$[(352.50 \times 1) + (307.60 \times 2) + (283.00 \times 1)] / (1+2+1) = 312.675$, i.e. ₹ 312.675 crores is the value.

Alternative:

$₹ (352.50 \times 0.25 + 307.60 \times 0.50 + 283.00 \times 0.25) = ₹ 312.675$ crore.

Working Notes:

$$\text{*Price/Sales Ratio} = \frac{\text{Market Value}}{\text{Sales}}$$

$$\text{**Price/Earnings Ratio} = \frac{\text{Market Value}}{\text{Profit after tax}}$$

$$\text{***Price/Book value ratio} = \frac{\text{Market Value}}{\text{Book Value}}$$

Illustration: 14

Equity Share Capital	₹ 5,00,000
13% Preference Share Capital	₹ 2,00,000
Reserves and Surplus	₹ 6,00,000
Non trade investments (Face value 1,00,000) Rate of Interest	10%
20% Debentures	₹ 3,00,000
Profits before tax	₹ 2,00,000
Tax Rate	40%
WACC	13%
Calculate EVA	

Solution:

Economic Value Added = (Return on operating capital – weighted average cost of capital) x Operating capital.

Working Note – 1**Calculation of Return on operating capital**

	₹
NOPAT = Profit before tax	2,00,000
+ Interest Expense	60,000
- Non operating income	<u>10,000</u>
Operating EBIT	2,50,000
Less: economic taxes @ 40%	<u>1,00,000</u>
NOPAT	<u>1,50,000</u>

Working Note – 2**Calculation of Operating Capital**

	₹
Equity Share capital	5,00,000
Reserve and surplus	6,00,000
13% preference share capital	2,00,000
20% debenture	<u>3,00,000</u>
Total	16,00,000
Less: Non operating assets	<u>1,00,000</u>
Operating Capital	<u>15,00,000</u>

$$\text{ROOC} = \frac{1,50,000}{15,00,000} \times 100 = 10\%$$

$$\text{EVA} = (10\% - 13\%) \times 15,00,000 = ₹ (45,000)$$

**Illustration: 15**

Following is the Profit and Loss Account and Balance Sheet for M/s Henry Ltd.

(₹ in lakhs)

	2013	2014
Turnover	652	760
Pre-tax accounting profit	134	168
Taxation	46	58
Profit after tax	88	110
Dividends	30	36
Retained earnings	58	74

Balance Sheet extracts are as follows:

(₹ in lakhs)

	2013	2014
Fixed Assets	240	312
Net current assets	260	320
Total	500	632
Equity Share holders funds	390	472
Medium and long-term bank loan	110	160

The Companies performance in regard to turnover had increased by 17% along with increase in pre-tax profit by 25% but shareholders are not satisfied by the company's preference in the last 2 years. You are required to calculate economic value added as suggested by M/s. Stern Stewerts & Co., USA, so that reasons of non-satisfaction can be evaluated. You are also given

SN.	Particulars	2013	2014
1.	Pre-tax cost of debt	9%	10%
2.	Cost of equity	15%	17%
3.	Tax rate	35%	35%
4.	Interest expense	₹ 8	₹ 12

Solution:

Calculation of ROOC:

(₹ in lakhs)

NOPAT	2013	2014
PBT	134	168
Add: Intt. Expenses	8	12
	142	180
Less: Taxes @ 35%	49.7	63
NOPAT (A)	92.3	117
Operating Capital		
Equity Shareholder's Funds	390	472
Long Term Debt	110	160
Operating Capital(B)	500	632
ROOC = A/BX100	18.46%	18.52%

Calculation of WACC	2013	2014
Kd	$9\%(1-0.35) \times 110/500$ 1.287%	$10\%(1-0.35) \times 160/632$ 1.645%
Ke	$15\% \times 390/500$ 11.7%	$17\% \times 472/632$ 12.7%
	12.99%	14.34%
EVA		
ROOC	18.46%	18.51%
Less: WAAC	12.99%	14.34%
Spread	5.47%	4.17%
EVA = Spread x Op. Cap.	2,735 Lakhs	2635.44 Lakhs

Since EVA has declined in Year 2014 by 99.56 Lakhs this can be attributed as reason for non-satisfaction.

Illustration: 16

- (a) Explain the concept of market value added (MVA). How is EVA connected with MVA?
- (b) From the following information concerning Nebula Ltd., prepare a statement showing computation of EVA for the year ended 31st March 2014:

Summarized Profit and Loss Account for the year ended 31st March 2014

	₹
Sales	20,00,000
Cost of goods sold	12,00,000
Gross Profit	8,00,000
Expenses:	
General	2,00,000
Office and administration	2,50,000
Selling and distribution	<u>64,000</u>
Profit before interest and tax (PBIT)	2,86,000
Interest	<u>36,000</u>
Profit before tax (PBT)	2,50,000
Tax 40%	1,00,000
Profit after tax	1,50,000

Summarized Balance Sheet as on 31st March 2014

Particular	2013 (₹)
EQUITY AND LIABILITIES:	
SHAREHOLDER'S FUNDS	
Share capital	2,40,000
Reserves and Surplus	1,60,000
	4,00,000
NON-CURRENT LIABILITIES	
Long-term Borrowings	2,40,000
	2,40,000
CURRENT LIABILITIES	
Trade payables	1,60,000
	1,60,000
TOTAL	8,00,000
ASSETS	
NON-CURRENT ASSETS	
FIXED ASSETS:	
Tangible assets	6,00,000
	6,00,000
CURRENT ASSETS	
Inventories	1,20,000
Trade receivables	60,000
Cash and bank balances	20,000
	2,00,000
TOTAL	8,00,000

Other particulars:

- (i) Cost of goods includes depreciation expenses of ₹ 60,000.
- (ii) The expectation return of shareholders is 12%.

Solution:

- (a)** Market Value Added (MVA) is the value added to the business by management since the business was established, over and above the money invested by the owners. Thus, $MVA = \text{Market capitalization} - \text{invested equity capital}$. According to another version, MVA is the difference between a company's market value. (debt plus equity) at any point of time minus the total capital invested in the company, since inception. For all practical purposes, MVA may be considered as the accumulated EVA As generated by the business over time. If a company goes on by creating EVA year after year, then these will add up to give a high MVA.

(b) Calculation of ROOC

EBIT	2,86,000
Less: Tax (40%)	<u>1,14,400</u>
NOPAT	<u>1,71,600</u>

Calculation of Operating Capital

Equity Share Capital	2,40,000
+ Reserve & Surplus	1,60,000
+ Term Loans	<u>2,40,000</u>
Operating Capital	<u>6,40,000</u>

$$\text{ROOC} = \frac{1,71,600}{6,40,000} \times 100 = 26.81\%$$

Calculation of WACC

$$K_d = \frac{36,000}{6,40,000} \times (1 - 0.40) = 3.38\%$$

$$K_e = \frac{12\%}{6,40,000} \times 4,00,000 = 7.50\%$$

$$\text{WACC} (3.38\% + 7.50\%) = \underline{10.88\%}$$

$$\text{EVA} = (26.81\% - 10.88\%) \times 6,40,000 = ₹ 1,01,95,200$$



Illustration: 17

Following is the information collected for a company, provided to you:

BALANCE SHEET OF XYZ LTD AS AT 31st MARCH (₹ in Crores)

Particular	2013
EQUITY AND LIABILITIES:	
SHAREHOLDER'S FUNDS	
Share capital	36.37
Reserves and Surplus	2,225.66
	2,262.03
NON-CURRENT LIABILITIES	
Long-term Borrowings	6,322.76
Deferred tax liabilities (Net)	39.39
Other long-term liabilities	7.09
Long-term provisions	355.03
	6,724.27
CURRENT LIABILITIES	
Trade payables	1,797.88
Other current liabilities	12.24
Short-term provisions	19.00
	1,829.11
TOTAL	10,815.41
ASSETS	
NON-CURRENT ASSETS	
FIXED ASSETS:	
Tangible assets	4,535.68
Capital work-in-progress	898.83
Intangible assets	550.00
	5,984.51
Non-current investments	1,664.30
Long-term loans and advances	891.97
Other non-current assets	3.03
	2,559.30
CURRENT ASSETS	
Current investments	142.50
Inventories	1,389.92
Trade receivables	585.77
Cash and bank balances	38.41
Short-term loans and advances	115.00
	2,271.60
TOTAL	10,815.41

STATEMENT OF PROFIT AND LOSS OF XYZ LTD. FOR THE YEAR ENDING ON 31st MARCH

(₹ in Crores)

Particulars	2013
Revenue from operations	295.00
Less: Excise Duty	26.39
	268.61
Other Operating Income	0.30
Other Income	0.13
	269.04
TOTAL Revenue	
EXPENSES	
Raw materials consumed	132.79
Power & Fuel Cost	21.37
Changes in inventories of finished goods, work-in-progress, and stock-in-trade	(1.63)
Employee benefits expense	5.97
Depreciation and amortization expense	20.77
Interest cost	32.19
Other expenses	34.23
TOTAL expenses	245.69
PROFIT/(LOSS) BEFORE TAX AND EXTRA-ORDINARY ITEMS	23.35
Less: Extra-Ordinary items	0.64
PROFIT/(LOSS) BEFORE TAX	22.71
Tax Expenses	
Tax paid @ 32.50%	7.38
Deferred Tax	1.37
	8.75
PROFIT/(LOSS) AFTER TAX	13.96

If the Weighted Average Cost of Capital (WACC) is 15% then you are required to calculate EVA for the year 2012-13.

Solution:

$$EVA = NOPAT - \text{Capital Employed} \times \text{Cost of Capital}$$

Calculation of NOPAT

(₹ in crores)

Profit /(Loss) Before Tax and Extra – ordinary items	₹ 23.35
Adjustments for	
Add: Interest Cost	₹ 32.19
Less: Non –Operating Income	(₹ 0.13)
Operating Profit Before Tax	₹ 55.41
Less: Income Tax @ 32.50%	₹ 18.01
Net Operating Profit After Tax (NOPAT)	₹ 37.40

**Calculation of Capital Employed:**

(₹ in crores)

Share Capital	₹ 36.37
Reserves and Surplus	₹ 2,225.66
Long – Term Borrowings	₹ 6,322.76
Other long term liabilities	₹ 7.09
Long term provisions	₹ 355.03
Capital Employed	₹ 8946.91
Net Operating Profit After Tax (NOPAT)	₹ 37.40
Less: The cost of Capital Employed (8,946.91 x 15%)	₹ 1,342.04
EVA	₹ (1,304.64)

Illustration: 18

ABC Ltd. requires an initial investment of ₹12 lakh for its new store for which ₹4 lakh would come from borrowing at an interest rate of 8%. The interest is paid for 5 years and the entire principal with interest is repaid at the end of the sixth year. The interest expenses are tax deductible at a rate of 36%, but the principal payments are not. The cash flows to the firm are expected to be ₹80,000 initially. These cash flows are expected to grow at a rate of 30% for the first 4 years and at 75% from the fifth year. Estimate the free cash flow to equity.

Solution:

Free cash flow to equity = (Net operating income - Interest) + Depreciation and amortization - Capital expenditure - Change in working capital - Principal repayments + Proceeds from new debt issues.

or

FCFE = FCFF + Borrowing - Interest (1 - t) - Principal repaid

Year	FCFF	Borrowing	Interest(1 - t)	Principal repaid	FCFE
0	(12,00,000)	4,00,000			(8,00,000)
1	80,000		20,480		59,520
2	1,04,000		20,480		83,520
3	1,35,200		20,480		1,14,720
4	1,75,760		20,480		1,55,280
5	3,07,580		20,480		2,87,100
6	5,38,265		20,480	4,00,000	1,17,785

Illustration: 19

Alpha India Ltd. is trying to buy Beta India Ltd. Beta India Ltd., is a small biotechnology firm that develops products that are licensed to major pharmaceutical firms. The development costs are expected to generate negative cash flows of ₹10 lakh during the first year of the forecast period. Licensing fee is expected to generate positive cash flows of ₹5, 10, 15 and 20 lakh during 2-5 years respectively. Due to the emergence of competitive products cash flows are expected to grow annually at a modest 5% after the fifth year. The discount rate for the first five years is estimated to be 15% and then drop to 8% beyond the fifth year. Calculate the value of the firm.

Solution:

Year	Cash Flows	Discount rate @15%.	Present value
1	(10)	1.15	(8.69)
2	5	1.323	3.779
3	10	1.521	6.575
4	15	1.749	8.576
5	20	2.011	9.945

Total sum of present value = 20.185

$$\text{Terminal Value}_t = \frac{\text{Cash Flow}_{t+1}}{r - g_{\text{stable}}}$$

$$\begin{aligned} \text{Cash Flow}_{t+1} &= \text{Cash flow}_t (1 + g) \\ &= 20(1+0.05) = 21 \text{ lakh} \end{aligned}$$

$$\begin{aligned} \text{Terminal Value} &= 21 / (0.08 - 0.05) \\ &= ₹ 700 \text{ lakh.} \end{aligned}$$

Present value of terminal value = $700 / 2.011 = 348.08$

Value of the firm = ₹20.185 + ₹348.08 = ₹368.265 lakh

Illustration 20.

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:

$$\text{FCFE} = \text{NI} + \text{Non Cash Charges} - \text{Net Investment} - \text{Net Change in Working Capital} + \text{Net Borrowing}$$

$$\text{FCFE} = 285 + 180 - 349 - (39 + 44 - 22 - 23) + (10 + 40)$$

$$\text{FCFE} = 285 + 180 - 349 - 38 + 50 = ₹128 \text{ million}$$

Or directly from FCFF as follows:

$$\text{FCFE} = \text{FCFF} - \text{Interest} (1 - \text{Tax rate}) + \text{Net borrowing}$$

$$\text{FCFE} = 156 - 130(1 - 0.40) + (10 + 40)$$

$$\text{FCFE} = 156 - 78 + 50 = ₹128 \text{ million}$$

Illustration 21.

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:

$$\text{Equity} = 3031.67 - 1500 = ₹1531.67 \text{ Crores}$$

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 22.

Given below is the Balance Sheet of Khan Ltd. as on 31.3.2012:

Equity and Liability	₹ (in Lakh)	Assets	₹ (in Lakh)
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
Equity Share Capital of ₹ 10 each	100	(i) Tangible Assets:	
(b) Reserve & Surplus		— Land and Building	40
— General Reserve	40	— Plant and Machinery	80
(2) Current Liabilities:		(b) Non-Current Investments	10
(a) Trade Payables		(2) Current Assets:	
— Sundry Creditors	30	(a) Inventories	20
		(b) Trade Receivables	
		— Sundry Debtors	15
		(c) Cash & Cash Equivalents	5
Total	170	Total	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:

- (i) 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.
- (ii) In subsequent years, additional advertisement expenses of ₹ 5 lakhs are expected to be incurred each year.
- (iii) 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.
- (iv) Effective Income-tax rate is 30%.
- (v) 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 23.

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:

$$FCF_1 = 2.00(1.05) = ₹2.1 \text{ million}; g = 5\%;$$

$$\beta = 1.5; R_f = 5\%; (R_M - R_f) = 6\% = RP_M$$

$$W_d = 30\%; T = 40\%; K_d = 8\%$$

$$K_e = R_f + RP_M(\beta) = 5\% + 6\%(1.5) = 14\%$$

$$WACC = W_d K_d (1-T) + W_e K_e$$

$$= 0.30(8\%)(0.60) + 0.70(14\%)$$

$$= 11.24\%$$

$$\begin{aligned} \text{Value of firm} &= \frac{FCF(1+g)}{WACC-g} \\ &= \frac{2.1}{0.1124-0.05} = ₹33.65 \text{ million} \end{aligned}$$

$$\text{Value of Equity Shares} = V_{\text{firm}} - V_{\text{debt}} = 33.65 - 10.82 = ₹22.83 \text{ million}$$

$$\text{Price} = 22.83 \text{ million} / 1 \text{ million shares} = ₹22.83 / \text{share}$$

Illustration 24.

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:

$$FCF_1 = ₹2.5 \text{ million}, FCF_2 = ₹2.9 \text{ million and } FCF_3 = ₹3.4 \text{ million};$$

$$g = 5\%;$$

$$\beta = 1.5; R_f = 5\%; RP_M = 6\%;$$

$$W_d = 30\%; T = 40\%; K_d = 8\%$$

WACC was calculated as 11.24%.

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:

$$TS1 = TS2 = TS3 = \text{Interest} \times T$$

$$= 1,500,000 \times 0.40 = 6,00,000$$

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	57.21 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:

$$V_{\text{Firm}} = \frac{3.1}{1.122} + \frac{3.5}{(1.122)^2} + \frac{4.0}{(1.122)^3} + \frac{57.21}{(1.122)^3} = ₹ 48.88 \text{ million}$$

$$\text{Equity value} = V_{\text{Firm}} - V_{\text{Debt}}$$

$$= 48.88 \text{ million} - 10.82 \text{ million}$$

$$= 38.06 \text{ million}$$

or ₹38.06 per share since there are 1 million shares outstanding.

Illustration 25.

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

$$PV_{1-t} = \{[FCFE_0 \times (1 + g)^t] / (1 + WACC)^t\}$$

$$PV_{1-5} = \left[\frac{4 \times 1.35}{1.18} + \frac{4 \times (1.35)^2}{(1.18)^2} + \frac{4 \times (1.35)^3}{(1.18)^3} + \frac{4 \times (1.35)^4}{(1.18)^4} + \frac{4 \times (1.35)^5}{(1.18)^5} \right]$$

$$= 5.4 / 1.18 + 7.29 / (1.18)^2 + 9.84 / (1.18)^3 + 13.29 / (1.18)^4 + 17.93 / (1.18)^5$$

$$= 4.58 + 5.24 + 5.99 + 6.85 + 7.84$$

$$= ₹ 30.50 \text{ lakh}$$

Calculation of Terminal Value

$$\text{Where } P_n = FCFE_n \times (1 + g) / (k_e - g)$$

$$= (17.93 \times 1.05) / 0.12 - 0.05$$

$$= 18.83 / 0.07$$

$$= ₹ 269 \text{ lakh}$$

$$\text{PV of Terminal Price } 269 / (1.18)^5 = 117.58$$

$$P_{0'}_{FCFE} = PV_{1-5} + PV_T$$

$$= 30.50 + 117.58 = ₹ 148.08 \text{ lakh.}$$

Illustration 26.

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	1.00
Preliminary Expenses W/O	0.00
Depreciation	1.92
Profit before taxes	35.30
Income taxes	12.35
Tax at the rate of	35%
Net profit	22.95

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	578.45	740.41	888.49	1012.88
Operating expenses	335.50	503.25	644.16	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	76.28
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	66.35	75.98

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	66.35	0.572	37.95
2017-18	75.98	0.497	37.76
Terminal Value* (g=0%)	506.50	0.497	251.73
Value of Firm			418.59
Value of Debt			11.32
Equity Value			407.27
Equity shares outstanding			1.02
Share price in ₹			399.28

$$* \frac{75.98 (1 + 0\%)}{(15\% - 0\%)}$$

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 27.

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	106.30	132.16	164.14	199.00
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	5.22	9.73	15.87	23.08
-Provisions for taxation	2.59	1.72	3.21	5.23	7.61
Net profit	5.28	3.50	6.52	10.64	15.47
Add: Depreciation	3.23	9.29	9.63	9.63	9.31
Less: capital spending	14.58	30.30	1.71	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	8.27	12.78

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	-31.68
2010-11	1.85	0.703	1.30
2011-12	8.27	0.625	5.17
2012-13	12.78	0.555	7.09
Terminal Value* (g = 5%)	179.40	0.555	99.57
Total PV			60.86
No. of shares outstanding in Crs			1.06
Fair Value of Share in ₹			57.41

$$* \frac{12.78 (1 + 5\%)}{(12.48\% - 5\%)}$$

The intrinsic value of share is ₹57 approximately.

Valuation of Business**Illustration 28.**

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 29.

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.

- (i) Tax Rate for the year just ended was 36%. Future Tax rate is estimated at 34%.
- (ii) 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.
- (iii) 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 30.

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	100.19
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 ÷ 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 11.11%	₹900.09 Lakhs
(d) Capitalization of current CFAT at 11.11%	₹1,125.11 Lakhs
(e) Simple Average of all of the above = (a+b+c+d) ÷ 4	₹911.80 Lakhs

Illustration 31.

Kolkata Ltd and Mumbai Ltd have agreed that Kolkata Ltd will take over the business of Mumbai Ltd with effect from 31st December 2013. It is agreed that:

- (i) 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.
- (ii) 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	2014	2015	2016	2017	2018
Benefit (in ₹ Lakhs)	50	75	90	100	105

The benefit is estimated to grow at the rate of 2% from 2018 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
2014	50 x 0.833	41.65
2015	75 X 0.694	52.05
2016	90 X 0.579	52.11
2017	100 X 0.482	48.20
2018	105 X 0.402	42.21
2019 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 32.

XY Ltd. which is specialized in manufacturing garments is planning for expansion to handle a new contract which it expects to obtain. An investment bank has approached the company and asked whether the Co. had considered Venture Capital Financing. In 2011, the company borrowed ₹100 lakhs on which interest is paid at 10% p.a. The company shares are unquoted and it has decided to take your advice in regard to the calculation of value of the company that could be used in negotiations using the following available information.

Year 2015		Year 2016	
Turnover (₹ Lakhs)	Probability	Turnover (₹ Lakhs)	Probability
2,000	0.6	2,500	0.7
		3,000	0.3
1,500	0.3	2,000	0.5
		1,800	0.5
1,200	0.1	1,500	0.6
		1,200	0.4

Company's forecast turnover for the year 31st March 2015 is ₹2,000 lakhs which is mainly dependent on the ability to obtain the new contract the chance of which is 60%, turnover for the following year is dependent to some extent on the outcome of the year to 31st March 2015.

Following are the estimated turnovers and probabilities:

Operating costs inclusive of depreciation are expected to be 40% and 35% of the turnover respectively for the years 31st March 2015 and 2016. Tax is to be paid at 30%. It is assumed that profits after interest and taxes are free cash flows. Growth in earnings is expected to be 40% for the years 2017, 2018 and 2019 which will fall to 10% each year after that. Industry average cost of equity (net of tax) is 15%.

Solution:

We need to find the value of the company today, for which we need to find the future cash flows and discount them at the expected rate of return (given as 15%). In the given problem since it is given that profit after interest and taxes can be taken as cash flows, we find the same for the year ending 2015 onwards as below:

Expected turnover for the year 2015 = $0.6 \times 1200 + 0.3 \times 1500 + 0.1 \times 2000 = ₹1770$ lakhs

Joint probability for the turnover in year 2006 would be as follows:

Year 2016 - Turnover	2500	3000	2000	1800	1500	1200
Joint Probability	0.42	0.18	0.15	0.15	0.06	0.04
Expected Turnover -2016	₹2298 lakhs					

Cash flow table:

Particular	2015	2016	2017	2018	2019	2020 to end
Turnover	1,770	2,298				
Operational Costs	708	804				
Interest	10	10				
Profit Before Tax	1,052	1,484				
Tax	316	445				
Cash Flows = PAT	736	1,039	1,455	2,037	2,852	62,744
PV factor @15%	0.870	0.756	0.658	0.572	0.497	0.497
PV@15%	640	785	957	1165	1417	31181*

Constant growth from 2020:

$$\text{Value} = D/k = (2852 \times 1.1 / (0.15 - 0.10)) \times 0.497 = ₹31181 \text{ lakhs}$$

Total value of company = Sum of last row = ₹36145 lakhs

Illustration 33.

You are the director of Ram Company. One of the projects you are considering is the acquisition of Shyam Company. Shyam, the owner of Shyam Company, is willing to consider selling his company to Ram Company, only if he is offered and all-cash purchase price of ₹5 million. The project estimates that the purchase of Shyam Company will generate the following marginal after-tax cash flow:

Year	Cash Flow ₹
1	1,000,000
2	1,500,000
3	2,000,000
4	2,500,000
5	3,000,000

If you decide to go ahead with this acquisition, it will be funded with Ram's standard mix of debt and equity, at the firm's weighted average (after-tax) cost of capital of 9 percent. Ram's tax rate is 30 percent. Should you recommend acquiring Shyam Company to your CEO?

Solution:

Year	Cash Flow ₹	PV Factor @ 9%	PV of cash flow
1	1,000,000	0.917	9,17,431
2	1,500,000	0.842	12,62,520
3	2,000,000	0.772	15,44,367
4	2,500,000	0.708	17,71,063
5	3,000,000	0.650	19,49,794
Total value of the project			74,45,175

Since the value of Shyam Company, is ₹74, 45,175 a figure greater than minimum desired amount of ₹50 lakhs to be paid to Shyam Company, Ram Company can consider buying Shyam Company.

Illustration 34.

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 35.

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:

- Z Ltd will acquire the whole of Equity Share Capital of X Ltd and Y Ltd by issuing its own shares fully paid.
- 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.



(iii) 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

- (iv) 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.
- (v) 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.
- (vi) 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.
- (vii) 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.
- (viii) A provision for ₹7,500 should be made for Directors Fee for the half year.
- (ix) On 30th June 2013, it is planned to pay interim dividend as: Per share X Ltd – 5% , Y Ltd - 4.40%, Z Ltd - 4%
- (x) 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 = $\left[\frac{\text{Profit to Equity shareholders}}{1/\text{PE ratio}} \right]$ $\therefore K_e = \frac{1}{\text{PE ratio}}$	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 36.

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 –

- (i) 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.
- (ii) 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.
- (iii) 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.
- (iv) 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.
- (v) 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
			5337.90		10,647.30
Total (Round off)			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 37.

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 –

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital 4,000 Equity Share Capital of ₹ 100 each	4,00,000	(a) Fixed Assets (i) Tangible Assets: (Cost Less Depreciation)	6,00,000
(b) Reserve & Surplus – General Reserve	3,00,000	(2) Current Assets:	
(2) Current Liabilities:		(a) Inventories (Stock & WIP)	2,00,000
(a) Short Term Borrowings – Bank O/D	2,40,000	(b) Trade Receivables – Sundry Debtors	3,40,000
(b) Trade Payables – Sundry Creditors	3,00,000	(c) Cash & Cash Equivalents	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 before Extra – Ordinary Items	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:

- (i) There were no change in the Issued Share Capital of Subhash Ltd during this period.
- (ii) 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

- (iii) It is anticipated that 1% of the may prove difficult to be realized.
- (iv) The cost of capital of Chandra Ltd is 10%.
- (v) 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 × 1%)	(3,400)
Total Value		7,56,600

Note: 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 ÷ 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)

$$\text{Or, } r = \frac{\text{Profit before extra-ordinary items}}{\text{Capital + Reserve - 1/2 of Profit Retained}} \times 100$$

$$\begin{aligned} \therefore r &= \frac{80,000}{4,00,000 + 3,00,000 - 1/2 \times 35,500} \times 100 \\ &= \frac{80,000}{6,82,250} \times 100 = 11.73\% \end{aligned}$$

Step 4: Calculation of $b \times r = g = \text{Return} \times \text{Retention Ratio}$

$$= 11.73\% \times 0.433$$

$$= 5.08\%$$

Step 5: Avg Profit = ₹(3,38,500 ÷ 5) = ₹67,700

$$\begin{aligned} \text{Step 6: Market Value} &= \frac{E(1-b)}{K_e - b \cdot r} = \frac{67,700(1-0.433)}{0.10 - 0.0508} \\ &= \frac{38,385.90}{0.0492} = ₹7,80,201.22 \end{aligned}$$

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 Mergers & Acquisitions
- 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	• Anti Takeover defences
• 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.

(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.

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.

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 :

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.

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 off 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 have 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 merger with healthy company as the most successful route for revival of their financial health. 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 Motives of 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 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 TSL'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 favourable environment for mergers is that it imposes a certain discipline on the management. If lacklustre performance renders a firm more vulnerable to potential acquisition, existing managers will strive continually to improve their performance.

(d) **Sales synergy:**

These synergies occurs 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.
- (iii) 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.

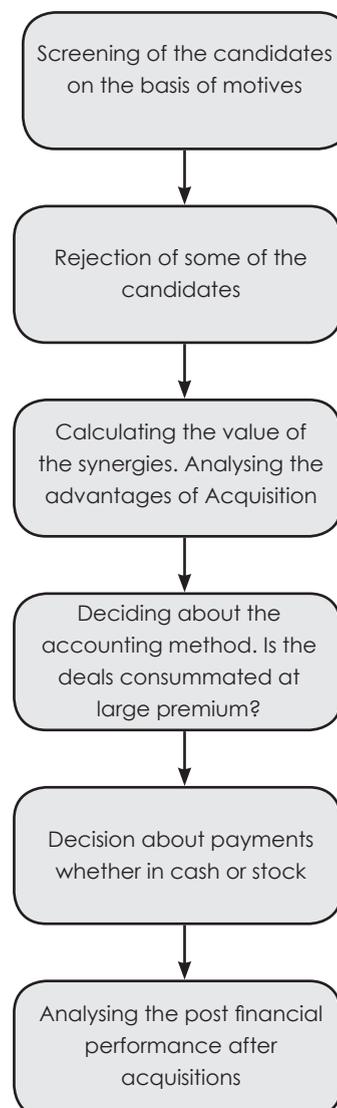
Note: This is based on 2002-reported net income and is a combination of US GAAP and CGAAP figures.

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.

$$NPV = \text{Gain} - \text{Cost}$$

$$= [PV_{b_t} - (PV_b + PV_t)] - (\text{Cash paid} - PV_t)$$

9.6 APPROACHES TO VALUATION IN CASE OF MERGER & ACQUISITIONS

Investors in a company that are aiming to take over another one must determine whether the purchase will be beneficial to them. In order to do so, they must ask themselves how much the company being acquired is really worth.

Naturally, both sides of an M&A deal will have different ideas about the worth of a target company: its seller will tend to value the company at as high of a price as possible, while the buyer will try to get the lowest price that he can.

There are, however, many legitimate ways to value companies. The most common method is to look at comparable companies in an industry, but deal makers employ a variety of other methods and tools when assessing a target company. Here are just a few of them:

1. **Comparative Ratios** - The following are two examples of the many comparative metrics on which acquiring companies may base their offers:
 - **Price-Earnings 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 ratio of other companies in the industry.
2. **Replacement Cost** - 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.
 3. **Discounted Cash Flow** (DCF) - 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.

Synergy: The Premium for Potential Success

For the most part, acquiring companies nearly always pay a substantial premium on the stock market value of the companies they buy. The justification for doing so nearly always boils down to the notion of synergy; a merger benefits shareholders when a company's post-merger share price increases by the value of potential synergy.

Let's face it; it would be highly unlikely for rational owners to sell if they would benefit more by not selling. That means buyers will need to pay a premium if they hope to acquire the company, regardless of what pre-merger valuation tells them. For sellers, that premium represents their company's future prospects. For buyers, the premium represents part of the post-merger synergy they expect can be achieved. The following equation offers a good way to think about synergy and how to determine whether a deal makes sense. The equation solves for the minimum required synergy:

$$\frac{\text{Pre - Merger Value of Both Firms + Synergy}}{\text{Post - Merger Number of Shares}} = \text{Pre - Merger Stock Price}$$

In other words, the success of a merger is measured by whether the value of the buyer is enhanced by the action. However, the practical constraints of mergers, which we discuss in part five, often prevent the expected benefits from being fully achieved. Alas, the synergy promised by deal makers might just fall short.

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

$$= ₹ 12 \text{ lakhs} - ₹ 9 \text{ lakhs}$$

$$= ₹ 3 \text{ lakhs.}$$

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:

$$\begin{aligned}\text{The cost to Company A} &= ₹ 3,00,000 + (60,000 \times ₹2) \\ &= ₹ 3,00,000 + ₹ 1,20,000 \\ &= ₹ 4,20,000/-\end{aligned}$$

$$\begin{aligned}\text{Worth of Company B} &= (₹15 - ₹ 2) \times 60,000 \\ &= ₹ 13 \times 60,000 \\ &= ₹ 7,80,000/-\end{aligned}$$

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:

$$\begin{aligned}\text{Amount to be paid to shareholders of Company B} &= ₹12,00,000 \\ \text{Market price of shares of Company A} &= ₹75 \\ \text{No. of shares to be offered} &= ₹12,00,000 / ₹ 75 \\ &= 16,000\end{aligned}$$

Now, shareholders of Company B will own part of Company A, and will benefit from any future gains of the merged enterprise.

$$\begin{aligned}\text{Their share in the merged enterprise} &= 16,000 / (1,00,000 + 16,000) \\ &= 13.8\%\end{aligned}$$

Further, now suppose that the benefits of the merger has been identified by Company A to have a present value of ₹4,00,000

$$\begin{aligned}\text{The value of the merged entity} &= ₹ 75,00,000 + (₹9,00,000 + ₹ 4,00,000) \\ &= ₹ 88,00,000\end{aligned}$$

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, 2011.

1. Listing Agreement

Conditions for continued listing:

Clauses 40A and 40B of the listing agreement were amended to bring them in consonance with the Regulations. These clauses are placed under the heading "Conditions for Continued Listing".

40A. - Minimum level of public shareholding

- (i) The issuer company agrees to comply with the requirements specified in Rule 19(2) and Rule 19A of the Securities Contracts (Regulation) Rules, 1957.
- (ii) Where the issuer company is required to achieve the minimum level of public shareholding specified in Rule 19(2)(b) and/or Rule 19A of the Securities Contracts (Regulation) Rules, 1957, it shall adopt any of the following methods to raise the public shareholding to the required level:-
 - (a) issuance of shares to public through prospectus; or
 - (b) offer for sale of shares held by promoters to public through prospectus; or
 - (c) sale of shares held by promoters through the secondary market.



Provided that for the purpose of adopting the method specified at sub-clause (c) above, the issuer company agrees to take prior approval of the Specified Stock Exchange (SSE) which may impose such conditions as it deems fit.

Explanation: For the purposes of this clause the term "Specified Stock Exchange (SSE)" shall mean:-

- (a) where the issuer company is listed on one stock exchange only, then that stock exchange;
- (b) where the issuer company is listed on one or more stock exchange(s) having nationwide trading terminal(s) and / or on one or more stock exchange(s) not having nationwide trading terminal(s), then all such stock exchange(s) having nationwide trading terminal(s); and
- (c) where the issuer company is listed on one or more stock exchange(s) and none of those stock exchanges have nationwide trading terminals, then the stock exchange which was chosen as the Designated Stock Exchange by the company for the previous issue of its shares, or the regional Stock Exchange, as the case may be."

40B - Takeover Offer

A company agrees that it is a condition for continued listing that whenever the take-over offer is made or there is any change in the control of the management of the company, the person who secures the control of the management of the company and the company whose shares have been acquired shall comply with the relevant provisions of the SEBI (Substantial Acquisition of Shares and Takeovers) Regulations, 2011.

2. SEBI (Substantial Acquisition of Shares and Takeover) Regulations Act, 2011.

SEBI (SAST) Regulations, 2011 is the most significant law which regulates M&As deals involving Indian Listed Companies. It endeavors to protect the interest of the investors of a listed company and make sure that an exit opportunity is given to the public shareholders at a highest possible price where there is a substantial acquisition of shares or voting rights or control over a listed company, consolidation of holdings by existing shareholders. The new Takeover Regulations sought to better ensure that the takeover markets operate in a fair, equitable and transparent manner. The exit opportunity is given to the shareholders in following situation:

I. Mandatory/Triggered Open Offer

SEBI (SAST) Regulations, 2011 provides the triggering events on which the acquirer is required to give an open offer to the shareholders of the Target Company. The triggering event may be signing of Share Purchase Agreement or actual acquisition of shares from the market or passing of special resolution for preferential basis and so on. Thus as soon as the intention of the acquirer to acquire the shares of Target Company beyond the threshold limits mentioned in the regulations, is expressed undeniably, the acquirer is required to give an open offer to the shareholders of the Target Company except where the acquisition is exempted under regulation 10 of these regulations. One of the triggering events is contemplated under regulation 3 of SEBI (SAST) Regulations, 2011.

Regulation 3 of SEBI (SAST) Regulations, 2011

Regulation 3 contains provisions regarding substantial acquisition of shares or voting rights of the Target Company. It provides specific limits beyond which the acquirer(s) is required to come out with an open offer in accordance with these Regulations.

The major thresholds limit as per SEBI (SAST) Regulations, 2011

Offer for minimum 26%

I: Trigger Point – Acquisition of $\geq 25\%$ shares



II: Trigger Point – Acquisition of $> 5\%$ in a financial year

1. Initial Threshold Limit

Regulation 3(1) provides that when an acquirer together with PACs intends to acquire shares or voting rights which along with the existing shareholding would entitle him to exercise 25% or more of the voting rights in the target company, in such a case the acquirer is required to make public announcement to acquire at least additional 26% of the voting capital of Target Company from the shareholders through an open offer.

2. Creeping Acquisition Limit

This regulation is meant for allowable acquisitions (both direct & indirect) only for those who already hold more than 25% shares or voting rights but less than 75% shares or voting rights in the Target Company. Regulation 3(2) allows the persons either by themselves or through PAC with them who are holding more than 25% but less than 75% shares or voting rights in the Target Company to acquire further upto 5% shares or voting rights in the financial year ending 31st March. The allowable acquisition of 5% is popularly known as 'Creeping Acquisition'. Thus, the acquirer is permitted to acquire additional shares and consolidate his holdings within the aforesaid limits.

However, it is to be noted that the creeping acquisition limit is subject to the condition that the post acquisition shareholding of the acquirer does not exceed beyond the maximum permissible non-public shareholding.

Further, where the acquirer who along with the PACs holds equal to or more than 25% but less than 75% shares and desires to acquire more than 5% shares in any financial year, can do so by making an open offer to the shareholders of the Target Company.

Determination of the quantum of acquisition of additional voting rights

- No Netting off Allowed

The limit of 5% shall be calculated by aggregating all the purchases without netting the sales.

For example: where an acquirer holding 56% shares have acquired further 4% shares in the company during the financial year 2012-13 and sold of 2% shares in the same financial year, then he can further acquire only 1% shares without making the Public Announcement regardless of the fact that he has sold of 2% shares in the financial year 2012-13.

- Acquisition of shares by way of issue of new shares

The difference between the pre-allotment and the post-allotment percentage voting rights shall be regarded as the quantum of additional acquisition.

Particulars	Pre shareholding		Shares to be allotted pursuant to Preferential allotment		Post shareholding		Changes	
	No. of shares	%	No. of shares	%	No. of shares	%	No. of shares	%
Promoters	70	58.3	16	11.99	86	63.33	16	5
Non promoters	50	41.67			50	36.67	0	(5)
Total	120	100			136	100	16	0.00

In the present case, the incremental increase in voting right is 5%, although the fresh allotment constitutes 11.99% of the expanded capital of the Company.

Accordingly, the incremental increase in voting rights is within the creeping acquisition limit



3. Individual shareholding of Acquirer to be considered

The most important point to be noted here is that now the Individual Acquirer Shareholding shall also be considered for determining the Open Offer Trigger Points apart from consolidated shareholding of Acquirer and Persons Acting in Concert.

For Instance:

Promoter	Pre Holding	Creeping Acquisition	Post Holding	Applicability of SEBI (SAST) Regulations, 2011
A	23%	3%	26%	Open Offer Obligations
B	7%	2%	9%	-
Total	30%	5%	35%	-

4. Change in Control

Regulation 4 of the SEBI (SAST) Regulations, 2011 specifies that if any acquirer including person acting in concert acquires control over the Target Company irrespective of the fact whether there has been any acquisition of shares or not, then he has to give public announcement to acquire shares from shareholders of the Target Company.

Offer Size

In mandatory open offer, the acquirer has to give open offer to the shareholders for acquisition of atleast 26% of the total shares of the Target Company.

Till now, 61 Mandatory Offers have been made under SEBI (SAST) Regulations, 2011.

II. Voluntary Open Offer

“Voluntary Open Offer” means Open Offer given by the acquirer voluntarily without triggering the mandatory Open Offer obligations as envisaged under SEBI (SAST) Regulations, 2011. Generally, the purpose of giving Voluntary Open Offer is to consolidate the shareholding.

Regulation 6 of SEBI (SAST) Regulations, 2011 deals with the concept of Voluntary Open Offer and provides the eligibility, conditions and restrictions with respect to the same that are detailed below:

Eligibility for making Voluntary Open Offer

- Acquirer along with PACs should be holding atleast 25% or more shares in the Target Company prior to making voluntary Open Offer.
- The Acquirer or PACs have not acquired any shares of the Target Company in the preceding 52 weeks without attracting the Open Offer obligation.

Conditions for making Voluntary Open Offer

- The aggregate shareholding after completion of the Voluntary Open Offer should not exceed beyond the maximum permissible non-public shareholding.
- No acquisition during the offer period except under the Voluntary Open Offer.

Restrictions

The acquirer becomes ineligible to acquire further shares for a period of six months after the completion of Open Offer except by way of:

- Another Voluntary Open Offer;
- Acquisitions by making a competing offer.

Size of the Voluntary Open Offer

Particulars	By a person holding 25% or more shares and making voluntary Open Offer u/r 6	By a person holding less than 25%
Minimum Offer Size	10%	26%
Maximum Offer Size	Maximum permissible non public shareholding permitted under Securities Contracts (Regulations) Rules 1957	Maximum can be for entire share capital of the target company.

Till now, 6 Voluntary Offers have been made under SEBI (SAST) Regulations, 2011.

III. Competing Offer

The term Competing Offers refers to an offer given by any other person (Competitor Acquirer) after an offer has already been given by an acquirer to the shareholders of the Target Company to acquire the shares held by them.

E.g. If 'A' (Acquirer) has already given an Open Offer in terms of SEBI (SAST) Regulations, 2011 to the shareholders of X Ltd. (Target Company) and subsequently during the relevant period, B (any other person) also gives the similar offer to the shareholders of the Target Company, then offer given by B shall be termed as 'Competing Offer' in terms of these regulations.

Legal Provision

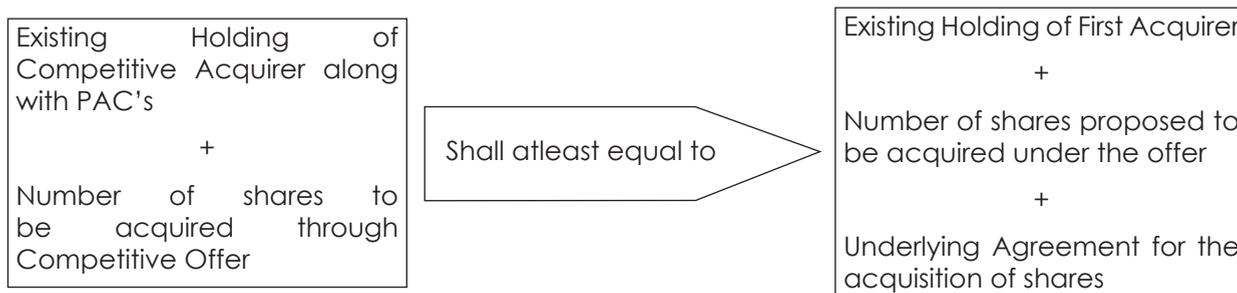
Regulation 20 of SEBI (SAST) Regulations, 2011 deals with the concept of Competing Offer. As per regulation 20 (1), Upon a public announcement of an Open Offer for acquiring shares of a Target Company being made, any person, other than the acquirer who has made such public announcement, shall be entitled to make a public announcement of an Open Offer within fifteen working days of the date of the Detailed Public Statement (DPS) issued by the acquirer who has made the first public announcement.

Timing under Competing offers

Particulars	Period
Public announcement under Competing Offer	Within 15 working days of the date of DPS issued by the First Acquirer.
No Public announcement under Competing Offer or no acquisition of shares that would attract the obligation to make PA	After 15 working days of the DPS issued by the First Acquirer and until the expiry of the offer period under the said offer
Upward revision of the offer price under Competing Offer	Upto 3 working days prior to the commencement of the tendering period.
Increase in offer size by the acquirer in case of voluntary offer	Within a period of fifteen working days from the public announcement of a competing offer.
Comments of board on DLOO in respect of Competing Offer	SEBI shall provide its comments on the draft letter of offer in respect of each competing offer on the same day.
Publication of Recommendations of the committee of Independent Directors	At least two working days before the commencement of the tendering period.

Size of competing offers

As per regulation 20 (2), the minimum number of shares for competitive offer shall be determined as under:



Highlights:

- Competing offer can be made within 15 working days from the date of DPS made by the acquirer who makes the first PA. Unless the first open offer is a conditional offer, the competing offer cannot be made conditional as to the minimum level of acceptance.
- A competing offer is not regarded as a voluntary Open Offer and therefore all the provisions of SEBI (SAST) Regulations, 2011, including that of offer size, would also apply in case of Competing Offer.
- Upon PA of competing offer, an acquirer who had made a preceding offer is allowed to revise the terms of his open offer; if the terms are more beneficial to the shareholders of the target company. The upward revision of the offer price can be made any time up to three working days prior to commencement of the tendering period.
- No induction of any new director to the board of directors of the target company during the pendency of competing offers. Provided that in the event of death or incapacitation of any director, the vacancy arising therefrom may be filled by any person subject to approval of such appointment by shareholders of the target company by way of a postal ballot.

Till now, no competing offers have been made under SEBI (SAST) Regulations, 2011.

Conclusion:

To sum up it can be said that the increase in threshold limit to 25% is a welcome move and would be beneficial for the India Inc. as it would attract more Private Equity investors and would be in line with the Global M&A practices. Apart from this, the increase in offer size to 26% is in interest of the public shareholders.

9.8.4 Provision of the Indian Companies Act 2013 in relation to Mergers & Acquisitions

Section 230: Power to compromise or make arrangements with creditors and members.

- Deals with compromises and arrangements.
- Corresponds to Sections 390, 391, 393 and 394A of the Companies Act, 1956. Certain new provisions added by the Section and by the Rules are stated below,
- Sanctioning power shifted from High Court to Tribunal.
- Person (could be the Company or member or creditor or in case of a company being wound up the liquidator) who is making application for compromise, arrangement or amalgamation has to make an affidavit specifying various particulars of the company, of the proposed arrangement, details of restructuring (a valuation report and a creditors' responsibility statement to be filed in case of restructuring).

- Persons entitled to object to the scheme specified :
 - Persons holding not less than 10% of the shareholding.
 - Persons having outstanding debts amounting to not less than 5% of the total outstanding debt of the company as per latest Balance Sheet.
- Notice of meeting for considering the above proposal has to be given to Central Govt., RBI, SEBI, Competition Commission, income tax authorities, respective stock exchanges, official liquidator and such other sectorial regulator or authorities which are likely to be affected by the arrangement.
- Notices also have to be sent to all creditors, all debenture holders. Notice should include large amount of information which was not earlier required.
- The Tribunal's order sanctioning the scheme may provide for —
 - Option to preference shareholders (in case arrangement includes conversion of preference shares to equity) to obtain arrears of preference shares in cash or in equity shares.
 - Protection of any class of creditors.
- Exit offer to dissenting shareholders.
- Abatement of proceedings pending before BIFR In case of compromise or arrangement with creditors.
- Any other matter which in the opinion of the Tribunal is necessary to implement the terms of the arrangement.
- In case of variation of shareholders' rights, the provisions of Section 48 to be made applicable [This section lays down the circumstances under which shareholder's rights may be varied].
- In case arrangement includes buy back of securities, such buy back shall be in accordance with provisions of Section 68.
- In case arrangement includes takeover, offer shall be as per SEBI regulations.
- No arrangement shall be sanctioned by the Tribunal unless certificate from the Company's auditor has been furnished to the Tribunal that the accounting treatment is in conformity with the accounting standards prescribed under Section 133.
- Tribunal may dispense with meeting of creditors or class of creditors if 90% of value of such creditors or class of creditors agree by way of an affidavit to the arrangement
- For any reduction of capital included in the compromise and sanctioned by Tribunal section 66 shall not be applicable.
- For takeover of Company other than listed company any aggrieved party may make application to Tribunal.
- For Takeover of a Company other than a listed company as a result of the arrangement :
 - Takeover shall be at a price determined by registered valuer as approved by the shareholders.
 - If the company being acquired is regulated by a Special Act, approval of regulatory body established under that Act shall be obtained. [Takeover means acquisition of control or acquisition of more than 50% of the share capital of a company under a scheme under Section 230].
 - Person making takeover offer must enter into MOU with shareholders of company being acquired and MOU shall specify various details and shall be annexed to the notice of the meeting
 - Takeover shall become effective only if passed by Special resolution in general meeting of company being acquired.



- If acquired company has any term loan outstanding prior approval of lender will be required before passing special resolutions.
- All these restrictions not applicable if such takeover takes place without going through arrangement route.
- Details of offer for such takeover to be sent to all creditors, debenture holders, trustee(s) and deposit holder of company being acquired and if acquiring company is a listed company to be sent to stock exchange.
- If consideration of shares to be taken over being paid other than by cash valuation of such consideration to be done by registered valuer. The valuation report to be sent along with notice.
- Dissenting shareholders of company being acquired to be given an offer at a price determined by a registered valuer or at a negotiated price whichever is higher.
- The earlier requirement u/s. 391 of the Act of 1956 that consent of 3/4th of creditors is required for compromise with creditors is reworded to say that restructuring may be done if consented to by not less than 75 per cent of secured creditors in value [earlier it was 3/4th of all creditors]

Note: restructuring of secured creditors by CDR cell of RBI not applicable to unsecured creditors. Consent of secured creditors will bind unsecured creditors in restructuring under Companies Act]

Section 231: Power of Tribunal to enforce compromise or arrangement.

- Corresponds to Section 392 of the Companies Act, 1956.
- Unlike 1956 Act mere non workability of sanctioned scheme is not enough to wind up the company. It must be established that the company is unable to pay its debts as per the scheme.

Section 232: Merger and amalgamation of companies.

- Deals with mergers and amalgamations. Corresponds to Section 394 of the Companies Act, 1956.
- Certain new provisions added by the Section and by the Rules are listed below-
 - Divisions of Companies (i.e. demergers) mentioned specifically.
 - Tribunal may order that fees paid by transferor company on its authorized capital (if transferor company is dissolved) shall be set off against fees payable by transferee company on its authorized company post amalgamation.
- If transferor company is listed company and transferee company is unlisted Company Tribunal may order that the transferee company shall remain an unlisted company until it lists itself and if shareholders of the transferor company decide to opt out of the transferee company the Tribunal will make provision for payment of value of shares held by them and other benefits in accordance with a predetermined price formula or after a valuation is made and such price shall not be less than what is specified under SEBI regulations.
- Sending of report by Company Law Department to Court/Tribunal in cases of amalgamation abolished.
- Sending of report by Official Liquidator for purposes of dissolution that affairs of the company have not been conducted in a manner prejudicial to interests of members or to public interest abolished.
- Transferee Company no longer allowed to hold shares of itself either directly or through trust.
- If shares held by non-resident shareholders under FDI norms or other norms or laws, the allotment of shares of Transferee Company to such shareholder shall be in accordance with orders of Tribunal.
- In cases of reconstruction or amalgamation the Tribunal may order an inquiry as to the creditors of

the transferor company. The Tribunal may order the servicing of the debts and claims of any of the dissenting creditors.

- In cases of amalgamations etc. the Tribunal may call meetings of creditors or class of creditors or of members or class of members and provisions of Section 230 regarding contents of notice and service of notice to various authorities will apply.
- For the meeting to be called for the purpose of amalgamations etc. following will have to be circulated:
 - The scheme and a confirmation that the scheme has been filed with the Registrar;
 - Report to be adopted by the Boards of the merging companies explaining effects of the compromise on each class of shareholders, key managerial personnel, promoter and non promoter shareholders, the share exchange ratio and special valuation difficulties, if any;
 - If the accounts of any of the merging companies is more than six months old as on the date of meeting, a supplementary accounting statement needs to be circulated;
 - For sanctioning scheme Tribunal may order, among other things, the transfer of the employees of the transferor company to the transferee company;
 - No scheme will be sanctioned unless auditor of company (presumably transferee company) certifies that accounting treatment proposed in the scheme is in accordance with accounting standards prescribed under Section 133;
 - After order sanctioning scheme is passed, every company shall till completion of scheme file a statement every year certified by CA/CWA/CS in practice indicating whether scheme is being complied with in accordance with order of Tribunal, or not;
 - if scheme involves reduction of capital, same shall be in accordance with Section 66;
 - Tribunal given wide ranging powers to issue directions for over ruling rules, staying litigation in connection with scheme or other Order for practical implementation of the scheme;

Section 233: Merger or amalgamation of certain companies.

- New section providing for simplified procedure for amalgamation between two or more small companies or between holding company and wholly owned subsidiary and any prescribed classes of companies.
- Section applies to merger among small companies [as defined in section 2(85)] (Company with share capital not exceeding ₹50 laths or such higher amount as may be prescribed not exceeding ₹5 crores OR turnover as per last P/L a/c does not exceed ₹2 crores as such higher amounts as may be prescribed not exceeding ₹20 crores — but not a holding or subsidiary company — not a company registered under section 8, not a company or a body corporate governed by a special Act) or between a holding company and its wholly owned subsidiary company or such other class or classes of companies as may be prescribed.
- In such merger Tribunal order will not be necessary if following conditions fulfilled:
 - Notice of proposed scheme inviting objections, etc. are issued to Registrar, official liquidator or persons affected by the Scheme by either transferor or transferee company.
 - Objections and suggestions received, if any, are considered by the companies in respective general meetings and is passed by general meeting by members holding at least 90% of total number of shares.
 - Each of the companies files declaration of solvency with Registrar.
 - Scheme is approved by majority representing 9/10th in value of the creditor or class of creditors of both the companies.

- The scheme approved in the meeting will be filed with Central Govt., Registrar and official Liquidator and if Registrar and official Liquidator have no objections/suggestions, the Central Govt. will register and confirm the scheme. In case Registrar/official Liquidator has objections/suggestions to be communicated to Central Govt. within 30 days and after receipt of the same Central Government is of opinion that scheme is not in public interest or not in interest of creditors, Central Govt. may file application before Tribunal within 60 days and if Tribunal is of opinion that procedure is laid down in Section 232 will be applicable, the Tribunal may direct accordingly or the Tribunal may confirm the scheme.
- For mergers under this section the transferee company may not hold its own shares post amalgamation and transferee company may take credit towards fee paid for authorised capital by transferor company while paying its fees for enhancement of authorised capital.
- For companies covered in this section similar procedure will apply to compromises/arrangements/demergers. Companies covered in this section shall also have the option of following the procedure of Section 232.

Section 234: Merger or amalgamation of company with foreign company.

- New provision for merger of Indian Company with foreign company
- The foreign companies eligible for merger will be notified by the Central Govt. and rules in this respect will be made in consultation with RBI.
- A foreign company may also merge with an Indian company with prior approval of RBI and payment of consideration to shareholders of merging company may be made in cash or Depository Receipts or in both as per Scheme.

Section 235: Power to acquire shares of shareholders dissenting from scheme or contract approved by majority.

- Corresponds to Section 395 of the Companies Act 1956.
- The section provides for time bound (within 60 days) disbursement of purchase consideration by transferor company to its shareholders. This is a new provision.

Section 236: Purchase of minority shareholding.

- New provision for purchase of minority shareholding.
- If an acquirer or person acting in concert with such acquirer becomes owner of 90% of shares in a company by virtue of amalgamation, share exchange, conversion of security or for any other reason they shall notify the company of their intention to buy remaining shares.
- The acquirer shall offer to minority shareholders for buying their shares at a price to be determined by a registered valuer.
- The minority shareholder also may make similar offer to majority shareholders to buy out the minority stake.
- The majority shareholders shall deposit the value of the shares to be acquired in a separate bank account to be operated by the Transferor Company and money to be disbursed to minority shareholders within 60 days. The bank account will be kept open for one year for unclaimed amounts. The transferor company shall act as the transfer agent for receiving and paying price to the minority shareholder and for taking and delivering shares to majority shareholders. In absence of physical delivery by minority shareholders within time specified by company, the share certificates shall be deemed to be cancelled and Transferor Company shall be authorised to issue fresh share certificates and transfer the same and pay out the minority shareholder. In case minority shareholder has died or ceased to exist, successors/heirs can take benefit of this opportunity for a period of three years from date of majority acquisition

- In case 75% of the minority shareholders negotiate a higher price for the members, the additional compensation shall be shared with balance minority shareholders
- If, after completion of this process some residual minority shareholding is left, this section will continue to apply through company may be delisted and period in this respect as per SEBI regulations has elapsed.
- For the purposes of this section valuation shall be done -
 - For listed company as per SEM regulations and the registered valuer shall provide a proper valuation report giving basis of valuation
- For unlisted company the offer price shall be determined after taking into consideration:
 - Highest price paid by acquirer for acquisition during last 12 months.
 - Fair price of the shares after taking into consideration return on net worth, book value of shares, P.E. ratio vis-à-vis industry average and other parameters as may be considered.

Section 237: Power of Central Government to provide for amalgamation of companies in public Interest.

Corresponding to Section 396 of the Companies Act 1956. Power to hear appeal against compensation assessed by Central Govt. now with Tribunal.

Section 238: Registration of offer of schemes involving transfer of shares.

Corresponding to Section 395(4A) of Companies Act 1956. Power to hear appeal now with Tribunal.

Section 239: Preservation of books and papers of amalgamated companies. Corresponding to Section 396A of Companies Act 1956.

Section 240: liability of officers in respect of offences committed prior to merger, amalgamation, etc.

- New provision for liability of officers In default of transferor company prior to merger, amalgamation or acquisition.
- In the books of resulting company similar treatment with shares issued credited to share capital account.
- A CA certificate to be submitted to Tribunal that above accounting treatment has been followed.

For the purpose of Section 230 to 240 demergers have been defined to mean transfer, pursuant to scheme of arrangement by a demerged company of one or more of its undertakings to any resulting company against transfer of shares subject to conditions in section 2(19AA) of Income Tax Act.

- Accounting treatment for demerger will be in line with Section 2(19AA) of the Income Tax Act till accounting standard is prescribed for demerger; and
- In the books of demerged company
 - Assets and liabilities shall be transferred at book values without considering revaluations or write-off carried out during last two years;
 - Difference between assets and liabilities to be credited or debited to capital reserves/ goodwill.

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 thirty 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 (b) 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 relating to the sovereign functions of the Government including all activities carried on by the departments of the central Government dealing with atomic energy, currency, defence 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 publication 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 violation 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 of 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 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, 2011 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, 2013.

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 learned 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 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 acquirer is unable or unwilling reasonably to adjust its own activity to ensure a smooth takeover. This might happen in a typical situation where acquired company has a better data 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 offertory 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

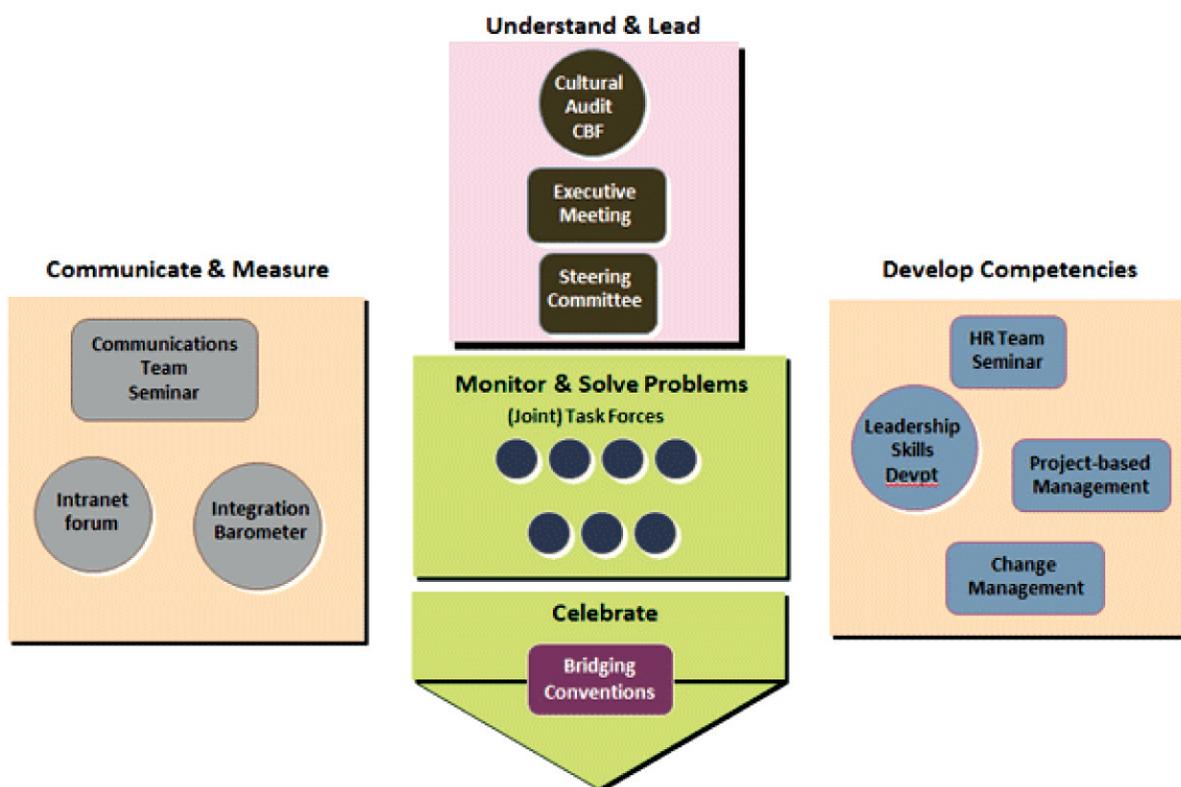
Once the closing is completed, it's time to drive and lead the integration process. Questions at this moment include: How do we design and manage this common project? What processes do we put in place to lead the integration? How do we who will take which role? How do we develop new processes? How do 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).

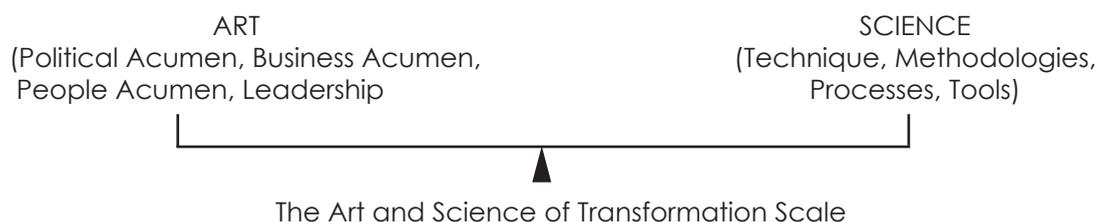
On the positive side, there are examples of successful mergers between organizations that either have similar cultural backgrounds and histories, or have worked hard to ensure a successful integration by addressing cultural and people-related factors. Into the first category falls the example of equipment 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 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. 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.



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 below Figure. 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

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 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, 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 modeling (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.

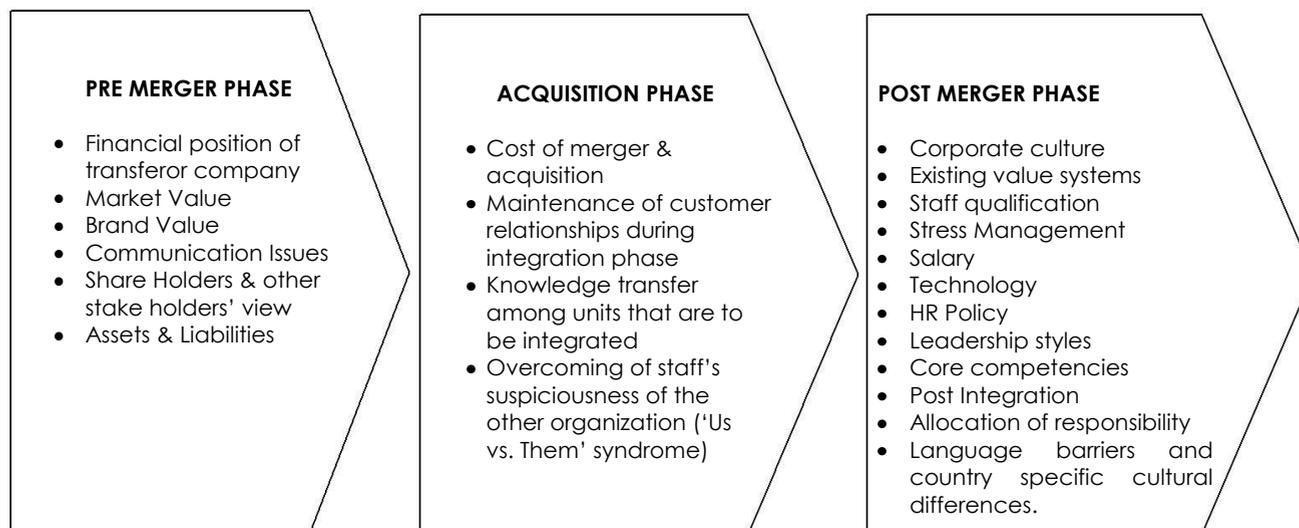
The amalgamation of the Transferor Bank with the Transferee Bank was in accordance with the provisions of the Scheme formulated pursuant to Section 44A of the Banking Regulation Act, 1949, Reserve Bank of India's guidelines for merger/amalgamation of private sector banks dated May 11, 2005, and in accordance 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.

9.12 TYPES OF EXIT STRATEGIES AND THEIR IMPLICATIONS

9.12.1 Strategy

The term 'strategy' is derived from the Greek word *strategeos* 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:

- Performing a situation analysis, self-evaluation and competitor analysis: both internal and external; both micro-environmental and macro-environmental.
- 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.
- 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, which 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 the acquirer has to earn 20% returns.

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 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.

9.12.7 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) 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 consensus 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 assignment vs. everyone in this company is a salesmen (or cost controller, or product quality improver, etc.).
- (viii) Learn from customer's vs. we know what is best for customers.

(4) 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.

(5) 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, supplier 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 product Families.
- (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.

(6) 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.

9.12.8 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 core 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.

9.12.9 Reasons for Strategic Success and Failure

Common Strategic traps :

Strategy Ground Result

- (a) Desire to move an acquisition policy or “aggressive acquisition policy”.
- (b) A policy of this kind begets unrelated and messy situation that lead to “Conglomerates” at best and at worst a debilitating complexity that can be lethal.
- (c) 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.
- (d) More investment, more details to be resolved, unforeseen technical
- (e) Attractive past experience
- (f) Purchase of obsolete concept- particularly past performance of ageing firms.
- (g) Quest for complementarities
- (h) Synergy may be illusory and may drive away the company from their core business to related but highly dangerous area.
- (i) Inability to walk away
- (j) 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 risks 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	<ol style="list-style-type: none"> 1. Difference in growth rate of earnings of two companies will not be highlighted. 2. Gains in earnings arising out of merger are not considered to determine Exchange Ratio. 	<ol style="list-style-type: none"> 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:

- (i) The purchase price premium
- (ii) The exchange ratio
- (iii) The number of new shares issued by the acquiring company.
- (iv) Post-merger EPS of the combined firms
- (v) Pre-merger EPS of the Acquiring company
- (vi) Pre-merger P/E ratio
- (vii) Post-merger share price
- (viii) 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:

- (i) Purchase price premium = Offer price for Target company stock / Target company Market price per share = $90/60 = 1.5$
- (ii) 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.
- (iii) New shares issued by acquiring company = shares of Target Company x Exchange ratio
 $= 20,000 \times 1.8 = 36,000$.
- (iv) Post-merger EPS of the combined companies = Combined earning/ total number of share.



$$\begin{aligned}\text{Combined earnings} &= (2,50,000 + 72,500) \\ &= ₹3,22,500\end{aligned}$$

$$\begin{aligned}\text{Total shares outstanding of the new entity} \\ &= 1,10,000 + 36,000 = 1,46,000 \\ &= ₹3,22,500 \div 1,46,000 = ₹2.209\end{aligned}$$

(v) Pre-merger EPS of the acquiring company

$$\begin{aligned}&= \text{earnings} / \text{Number of shares} \\ &= 2,50,000 / 1,10,000 = ₹2.273\end{aligned}$$

(vi) Pre-merger P/E = Pre-merger market price per share / Pre-merger earnings per share

$$= 50 / 2.273 = 22.00$$

(vii) Post-merger share price = Post-merger EPS x Pre-merger P/E

$$= 2.209 \times 22.00 = ₹48.60 \text{ (as compared to ₹50 Pre-merger)}$$

(viii) Post-merger Equity Ownership Distribution

Target Company = Number of new shares / Total number of shares

$$= 36,000 / 1,46,000 = 0.2466 \text{ or } 24.66\%$$

Acquiring company = $100 - 24.66 = 75.34\%$

Comment – The acquisition results in a ₹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 3.

R Ltd is intending to acquire S Ltd. (by merger) and the following information are 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

(i) What is the present EPS of both the companies?

(ii) 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)?

(iii) What should be the exchange ratio if S Ltd. wants to ensure the same earnings to members as before the merger took place?

Solution:

(i) $\text{EPS} = \text{total earnings} / \text{No. of equity shares}$

$$\text{EPS}_{\text{R LTD}} = 2,50,000 / 50,000 = ₹5$$

$$\text{EPS}_{\text{S LTD}} = 90,000 / 30,000 = ₹3$$

- (ii) 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]

$$\text{The new EPS of R Ltd after merger} = \frac{\text{₹}3,40,000}{70,000} = \text{₹}4.86$$

- (iii) 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 4

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:

- (i) $P/E = \text{Market Price} / \text{EPS}$. Therefore we have, $\text{Market price} = P/E \times \text{EPS}$

$$\text{A Ltd.'s Market Price} = 10 \times 1.875 = \text{₹}18.75$$

$$\text{B Ltd.'s Market Price} = 5 \times 1.25 = \text{₹}6.25$$

- (ii) 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

(iii) If the P/E of A Ltd. changes to 7.5, then the market price is given by
= 7.5 × ₹1.875 = ₹14.0625

(iv) Yes. The market value decreases. i.e. = A Ltd.'s market Value = 4.0 lakhs × ₹ 14.0625
= ₹56.25 Lakhs.

(v) General Formula for exchange ratio = $\frac{\text{MPS of Target Firm}}{\text{MPS of acquiring Firm}} = \frac{6.25}{14.0625} = 0.44$

Illustration 5.

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:

- Price earnings ratios
- 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:

(i) 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 (MPS ÷ EPS)	30	37	23

(ii) Calculation of EPS of A Ltd. after acquisition of B Ltd. and C Ltd.

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) (MPS × No. of Eq. Share)	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 6.

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) (MPS ÷ EPS)	12.50	12.50

- Current market price of ABC Ltd., if P/E ratio is 8** = ₹ 1 × 8 = ₹ 8

$$\text{Exchange ratio} = ₹ 25/8 = 3.125$$

$$\text{Post merger EPS of XYZ Ltd.} = \frac{₹ 4,00,000 + ₹ 1,00,000}{2,00,000 + (1,00,000 / 3.125)} = \frac{₹ 5,00,000}{2,32,000} = 2.16$$

- 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 7.

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) Merger took place on relative EPS of two companies; therefore both companies maintain their EPS and no impact on EPS of shareholders of both companies.

(b) Impact on Shareholders of Company X

(₹)

EPS before merger	4.000
EPS after merger	4.125
Increase in EPS	0.125

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 8.

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:**(i) Calculation of Swap ratio:**

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

- We have general formula given by:

$$EPS_{AB} = \frac{(E_A + E_B)}{[S_A + S_B (ER_A)]}$$

$$\text{Therefore, EPS of Mark Limited after acquisition} = \frac{200 + 40}{20 + 10 \times 0.2} = \frac{240}{22} = ₹10.91$$

- 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
- Market Value of the merged firm
= Total number of outstanding shares x market price
= (20 + 2) lacs x ₹109.10 = ₹2400.2 lacs
- 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 9.

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 earning 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)

= ₹44.44 – ₹66.66

= ₹(-22.22) i.e. negative PVGO

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 10

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.

Note: $22\% = (\text{Average of 8th and 9th year} \div \text{No. of Firms}) \times 100$

$$\text{i.e. } \left\{ \left(\frac{8+9}{2} \right) \div 38 \right\} \times 100 = \frac{8.5}{38} \times 100 = 22\% \text{ Approx.}$$

Illustration 11.

Following are the financial statement for A Ltd. and B 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 –

- 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.
- Estimate future EPS growth rates for each firm.
- 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?
- 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.
- Based on a 0.4:1 exchange ratio, and assuming that A's pre-merger P/E ratio will continue after the merger, estimates 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	(N)	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
BVPS	(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)

$$(b) \text{ Intrinsic value based} = \frac{\text{₹ } 200}{\text{₹ } 400} = 0.5:1 \text{ (upper limit)}$$

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**	—

Note:

* 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 of B Ltd. = ₹ 12.375 – ₹ 9.36 = ₹ 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	(ii)	19.05	12.12	19.05
MPS	(i) × (ii) (₹)	400	150	446.00
MPS Accretion (Dilution)	(₹)	46	28.40***	

Note:

₹

MPS claim per old share	(₹ 446 × 0.4)	178.40
Less : MPS per old share		150.00
MPS accretion of B Ltd.		28.40

Illustration 12.

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

$$= ₹13 × 60,000$$

$$= ₹7,80,000$$

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 13.

Fat Ltd. wants to acquire Lean Ltd., the balance sheet of Lean Ltd. as on 31.03.2014 is as follows :

Liabilities	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-current Assets:	
(a) Share Capital		(a) Fixed Assets	
(i) 60,000 Equity Shares of ₹10 each	6,00,000	(i) Tangible Assets:	
		— Plant and Equipment	11,00,000
(b) Reserve & Surplus			
(i) Retained Earnings	2,00,000		
(2) Non-Curret Liabilities:		(2) Current Assets:	
Long Term Borrowings - 12% Debenture	2,00,000	(a) Inventories	1,70,000
		(b) Trade Receivables	
		— Sundry Debtors	30,000
		(c) Cash and Cash Equivalents	20,000
(3) Curret Liabilities:			
(a) Trade Payables - Sundry Creditors	3,20,000		
Total	13,20,000	Total	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 $\left(\frac{60,000}{2} \times ₹ 15\right)$	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 14.

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:

(i) 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 = $\frac{₹ 13,00,000}{2,40,000} = ₹ 5.42$

(ii) 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

$$= 2,00,000 + 60,000 = 2,60,000 \text{ shares}$$

$$\text{EPS (after merger)} = \frac{₹ (10,00,000 + 3,00,000)}{2,60,000 \text{ shares}} = ₹ 5$$

Total earnings in A Ltd. available to new shareholders of B Ltd.

$$= 60,000 \times 5 = ₹ 3,00,000$$

Illustration 15.

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 :

- (i) Calculate the swap ratio and also calculate Promoters holding percentage after acquisition.
- (ii) What is the EPS of X Ltd. after acquisition of Y Ltd?
- (iii) 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.
- (iv) Calculate free float market capitalization of the merged fair.

Solution:

Calculation of 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**

$$\text{EPS} \quad 5 : 20 \text{ i.e., } 1 : 4 \text{ i.e., } 4 \times 40\% = 1.6$$

$$\text{Book value} \quad 40 : 30 \text{ i.e., } 1 : 0.8 \text{ i.e., } 0.8 \times 25\% = 0.2$$

$$\text{Market price} \quad 50 : 100 \text{ i.e., } 1 : 2 \text{ i.e., } 2 \times 35\% = 0.7$$

$$\text{Total} = \underline{2.5}$$

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 × 2.5 = 18.75 lakh shares.

Promoters holding = 4.75 lakh shares + (5 × 2.5) lakh shares

$$= 17.25 \text{ lakh shares}$$

$$\text{So promoters holding percentage} = \frac{17.25}{28.75} \times 100 = 60\%$$

Total no. of shares = 10 lakhs + 18.75 lakhs = 28.75 lakhs

$$(ii) \text{ EPS} = \frac{\text{Total profit}}{\text{No. of shares}} = \frac{50 \text{ lakh} + 150 \text{ lakh}}{28.75 \text{ lakh}} = ₹ 6.956$$

$$(iii) \text{ Expected market price} = \text{EPS} \times \text{P/E} = 6.956 \times 10 = ₹ 69.56$$

$$\text{Market capitalization} = ₹ 69.56 \times 28.75 \text{ lakh shares} = ₹ 1999.85 \text{ lakh}$$

$$(iv) \text{ Free float of market capitalization} = ₹ 69.56 \times (28.75 \times 40\%)$$

$$= ₹ 799.94 \text{ lakh}$$

Illustration 16.

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. 1.4.2014. Details of Fortune India Ltd. as on 31.3.2014 and of Fortune Pharma Ltd. as on 1.4.2014 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 & Abuances	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 :

- Transfer of Liabilities and Assets at Book value.
- Estimated profit for the year 2014-15 is ₹ 11,400 lakh for Fortune India Ltd. and ₹ 1,470 lakh for Fortune Pharma Ltd.
- Estimated Market price of Fortune Pharma Ltd. is ₹ 24.50 per share.
- Average P/E ratio of FMCG sector is 42 and Pharma sector is 25, which is to be expected for both the companies.

Calculate :

- The Ratio in which shares of Fortune Pharma are to be issued to the shareholders of Fortune India Ltd.
- Expected Market price of Fortune India Ltd.
- 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



(i) **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.

(ii) **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

(iii) **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 17.

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 is ₹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 (Net Profit ÷ EPS)	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 18.

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?

$$\text{EPS} = ₹ 36,00,000 \div 12,50,000 = ₹ 2.88$$

$$\text{P/E ratio} = 10$$

$$\text{Market price per share} = ₹ 2.88 \times 10 = ₹ 28.80$$

∴ Hence, shareholders will be better off than before the merger situation.

Illustration 19.

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	₹ 4000 lakhs
Number of shares outstanding	200 lakhs	1000 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. adversely affected by 10%?
- Determine the market value of the merged firm.
- Calculate gain/loss for shareholders of the two independent companies after acquisition.

Solution:

EPS before acquisition

$$\text{Sun Ltd.} = ₹ 2000 \text{ lakhs} / 200 \text{ lakh} = ₹ 10$$

$$\text{Moon Ltd.} = ₹ 4000 \text{ lakhs} / 1000 \text{ lakh} = ₹ 4$$

Market price of shares before acquisition

$$\text{Sun Ltd.} = ₹ 10 \times 10 = ₹ 100$$

$$\text{Moon Ltd.} = ₹ 4 \times 5 = ₹ 20$$

- Swap ratio based on current market price

$$= \frac{₹ 20}{₹ 100} = 0.2 \text{ i.e., } 1 \text{ share of Sun Ltd. for } 5 \text{ shares of Moon Ltd.}$$

$$\text{Number of shares to be issued} = 1000 \text{ lakhs} \times 0.20 \text{ lakh} = 200 \text{ lakhs}$$

- EPS after acquisitions

$$= \frac{₹ 2000 \text{ lakhs} + ₹ 4000 \text{ lakhs}}{₹ 200 \text{ lakhs} + ₹ 200 \text{ lakhs}} = ₹ 15$$

- Expected market price per shares of Sun Ltd. after an acquisition assuming P/E ratio of Sun Ltd. is adversely affected by 10%.

$$\text{EPS of Sun Ltd.} = ₹ 15$$

$$\text{P/E of Sun Ltd.} = 10 - 10\% \text{ of } 10 = 9 \text{ times}$$

$$\therefore \text{Market price per share of Sun Ltd.} = \text{EPS} \times \text{P/E ratio}$$

$$= 15 \times 9$$

$$= ₹ 135$$

(iv)	Market value of merged firm = ₹ 135 × 400 lakhs shares	= ₹ 54,000 lakhs
(v)	Gain from the Merger Post merger market value of merged firm	= ₹ 54,000 lakhs
	Less : Pre merger market value Sun Ltd. 200 lakhs × ₹ 100 = 20,000 crores	
	Moon Ltd. 1000 lakhs × ₹ 20 = 20,000 crores	= ₹ 40,000 lakhs
	Gain from merger	= ₹ 14,000 lakhs

Gain to shareholders of Sun Ltd. and Moon Ltd.

Particulars	Sun Ltd.	Moon Ltd.
Post merger value (₹ 135 × 200)	27,000	
(₹ 135 × 200)		27,000
Less : Pre merger value	20,000	2,000
Gain to shareholders	7,000	7,000

Illustration 20.

The Shareholders of A Co. have voted in favor of a buyout offer from B Co. 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

(i) 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?

(ii) 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:

(i) 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: $P/E = \text{₹}79.41 / \text{₹}5.132 = 15.48$

(ii) 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 × market price of A Co. i.e. = 60000×25 [MPS = P/E × 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:

$$\text{Cost} = (1/3) (60,000) (\text{₹}79.4118) = \text{₹}15,88,236.$$

The difference is synergy i.e. ₹88,236.

Illustration 21.

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 31.3.2014, 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 31.3.2014. XY Ltd's Balance Sheet as at 31.3.2014 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
31.3.15	After tax earnings for equity	105
31.3.16	Do	120
31.3.17	Do	125
31.3.18	Do	120
31.3.19	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 (a) Aggregate of discounted cash flows at 8% and (b) Net assets value.

Present value factors at 8% for years

$$1 - 5 : \quad 0.93 \quad 0.86 \quad 0.79 \quad 0.74 \quad 0.68$$

You are required to :

- (i) Calculate the total value of the business of XY Ltd.
- (ii) The number of shares to be issued by AB Ltd. and
- (iii) 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:

$$\frac{\text{₹ } (570 + 430)}{2} \quad \text{₹ } 500$$

Value of XY Ltd. based on future cash flow capitalization

$$(105 \times 0.93) + (120 \times 0.86) + (125 \times 0.79) + (120 \times 0.74) + (300 \times 0.68) \quad \text{₹ } 592.40 \text{ lakhs}$$

Value of XY Ltd. based on net assets (350 – 100) ₹ 250 lakhs

$$\text{Average value } \frac{592.40 + 250}{2} \quad \text{₹ } 421.20 \text{ lakhs}$$

(ii) No. of shares in AB Ltd. to be issued $\frac{421.2 \text{ lakhs}}{500}$ 84240 (Approx)

(iii) Basis of allocation of shares

Fully paid equivalent shares in XY Ltd. 250 lakhs

Distribution to fully paid shareholders $84240 \times \frac{20}{25}$ 67392

Distribution to partly paid shareholders $84240 \times \frac{5}{25}$ 16848

Illustration 22.

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 :

(i) When merger is financed by cash.

(ii) When merger is financed by stock and X Ltd. agrees to exchange 2,50,000 shares in exchange of shares in Y Ltd.

Solution:

(i) Cost of merger (when merger is financed by cash)

$$= \text{Cash} - \text{True / Intrinsic value of Y Ltd.}$$

$$\therefore \text{₹ } (70,00,000 - 54,00,000) = \text{₹ } 16,00,000$$

If cost of merger becomes negative then shareholders of X Ltd. will get benefited by acquiring Y Ltd. in terms of market value.

- (ii) Cost of merger (when merger is financed by exchange of shares in X Ltd. to the shareholders of Y Ltd.)

$$\text{Cost of merger} = PV_{xy} - PV_y$$

PV_{xy} = Value of X Ltd. that Y Ltd's shareholders get.

PV_y = 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 :

- (1) When the cost of merger is calculated on the cash consideration, then cost of merger is unaffected by the merger gains.
- (2) 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 23.

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

- (i) The value of the two firms before the merger
- (ii) The value of the combined firm with synergy effect

Solution:

(i) Value of the Firms before the Merger

Calculation of Free Cash Flow to each of the Firm

$$\begin{aligned} \text{Free cash flow to RAJJAN} &= \text{EBIT} (1 - \text{tax rate}) \\ &= 2,00,000 (1 - 0.4) = ₹1,20,000 \end{aligned}$$

$$\begin{aligned} \text{Free cash flow to REKHA} &= \text{EBIT} (1 - \text{tax rate}) \\ &= 1,60,000 (1 - 0.4) = ₹96,000 \end{aligned}$$

Value of the two firms independently

$$\begin{aligned} \text{Value of RAJJAN} &= [1,20,000 (1.06)] / (0.10 - 0.06) \\ &= ₹31,80,000 \end{aligned}$$

$$\begin{aligned} \text{Value of REKHA} &= [96,000 (1.08)] / (0.12 - 0.08) \\ &= ₹25,92,000 \end{aligned}$$

In the absence of synergy the combined firm value is:

$$\begin{aligned} \text{Combined Firm Value with No Synergy} \\ &= 31,80,000 + 25,92,000 \\ &= ₹57,72,000 \end{aligned}$$

(ii) Value of the Firm with Synergy

On combining the two firm the cost of goods sold is reduced firm 70% to 65% of revenues. The revenue of the combined firm = 8,00,000 + 4,00,000 = ₹12,00,000

$$\begin{aligned} \text{Cost of goods sold} &= 65\% \text{ of revenues} \\ &= 0.65 \times 12,00,000 = ₹7,80,000 \end{aligned}$$

$$\begin{aligned} \text{Weighted average cost of capital for the combined firm} \\ &= 10\% [31,80,000 / 57,72,000] + 12\% [25,92,000 / 57,72,000] \\ &= 0.0551 + 0.0539 = 0.109 \end{aligned}$$

Or 11% approximately

$$\begin{aligned} \text{Weighted average expected growth rate for the combined firm} \\ &= 6\% [31,80,000 / 57,72,000] + 8\% [25,92,000 / 57,72,000] \\ &= 0.033 + 0.0359 = 0.0689 \end{aligned}$$

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

$$\begin{aligned} \text{Value of the Firm without Synergy} \\ &[2,16,000 (1.07)] / 0.11 - 0.07 = ₹57,78,000 \end{aligned}$$

$$\begin{aligned} \text{Value of the firm with Synergy} \\ &= [2,52,000 (1.07)] / 0.11 - 0.07 = ₹67,41,000. \end{aligned}$$

Illustration 24.

Q Ltd. wants to acquire R Ltd. and has offered a swap ratio of 1:2 (0.5 shares for every one share of R 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:

- (i) The number of equity shares to be issued by Q Ltd. for acquisition of R Ltd.
- (ii) What is the EPS of Q Ltd. after the acquisition?
- (iii) Determine the equivalent earnings per share of R Ltd.
- (iv) What is the expected market price per share of Q Ltd. after the acquisition, assuming its PE multiple remains unchanged?
- (v) 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 x 0.5 = 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

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, e.g. 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 reliability. 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
<ul style="list-style-type: none"> * Know-how * Education * Vocational qualification * Work related knowledge * Occupational assessments * Work related competencies * Entrepreneurial élan, innovativeness, pro-active and reactive abilities, changeabilities 	<ul style="list-style-type: none"> * Brands * Customers * Customer loyalty * Company names * Backlog orders * Distribution channels * Business collaborations * Licensing agreements * Favourable contracts * Franchising agreements
<p>Organisational (Structural) Capital Intellectual Property</p> <ul style="list-style-type: none"> * Patents * Copyrights * Design rights * Trade secrets * Trademarks * Service marks 	<p>Infrastructure assets</p> <ul style="list-style-type: none"> * Management philosophy * Corporate culture * Management processes * Information systems * Networking systems * Financial relations

Knowledge Companies:

The term knowledge companies or knowledge intensive companies are 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 have 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, which 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:

- (i) Calculate average pre-tax earnings
- (ii) Calculate average year-end tangible asset (from balance sheet)
- (iii) Return on assets (ROA) = Average pre-tax earnings/Average year-end tangible assets
- (iv) Benchmark/compare the ROA against the industry's average ROA. If a company's ROA > Industry ROA proceed to step 5.
- (v) Excess return = Pre-tax earnings - [industry - average ROA × company's average tangible assets]
- (vi) $(1-t) \times \text{excess return} = \text{premium attributable to IA}$ (where t = average income tax rate and IA = intangible assets)
- (vii) 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 use 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 shareholder 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 renew 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.

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.

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.

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.



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.

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.

ABOUT THE AUTHORS

Maylun Bucklew works at the Ernst Young Center For Information Technology and Strategy in Boston, Massachusetts. Lief Edvinsson is the Director of Intellectual Capital at Skandia AFS in Stockholm, Sweden.

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 engineers.



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 valuers.

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 2013-14 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-

- (i) run by Dr. D Ganguly as if he is continuing as before, and
- (ii) run by Dr. M Chatterjee assuming that she has bought the practice from Dr. D Ganguly.
- (iii) Cash flow in year 1 = (Revenue – Operating Expenses) (1-Tax rate)

$$\begin{aligned}
 &= [10,00,000(1.04) - (3,00,000 + 1,00,000 + 80,000 + 90,000) (1.04)] (1 - 0.35) \\
 &= [10,40,000 - 5,92,800] \times (0.65) \\
 &= ₹ 2,90,680.
 \end{aligned}$$

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:

$$\text{Value of practice} = CF [1 - (1+g)^n / (1+r)^n] / (r-g) \quad \text{or} \quad CF \left[\frac{1 - \frac{(1+g)^n}{(1+r)^n}}{(r-g)} \right]$$

$$= ₹ 2,90,680 [1 - \{(1.04)^{10} / (1.10)^{10}\}] (0.10 - 0.04)$$

$$= ₹ 2,90,680 [\{(1.10)^{10} - (1.04)^{10} \} / (1.10)^{10}] (0.06)$$

$$= ₹ 2,90,680 [(2.5937 - 1.4802) / 2.5937] (0.06)$$

$$= ₹ 2,90,680 [1.1135 / 2.5937] / (0.06)$$

$$= ₹ 2,90,680 (0.4293 / 0.06)$$

$$= ₹ 2,90,680 \times 7.155$$

$$= ₹ 20,79,815.40$$

$$\begin{aligned}
 \text{(ii) Similarly cash flow in year 1 under Dr. Chatterjee,} \\
 &= ₹[750000 \times (1.04)^{-1} - 592800] \times 0.65 \\
 &= ₹187200 \times 0.65 \\
 &= ₹121680
 \end{aligned}$$

$$\begin{aligned}
 \text{Value of practice of Dr. Chatterjee} &= ₹121680 \times 7.155 \\
 &= ₹8,70,620.40
 \end{aligned}$$

The difference of ₹12,09,195 is attributable as the value of Dr. D. Ganguly the key person.

Dr. Chatterjee should offer ₹ 8,70,620 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 heavy machinery costing ₹ 20 crores on 1st January 2013. The machinery was delivered at buyer's cost at the factory of ABC Ltd. on 1st May 2013. 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, 2013.

But on 1st August, 2013 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, 2014. During the period (Aug-Dec, 2013) 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 1-5-13 to 31-7-13) = 92 days	60,49,315*
	20,65,44,315

$$* (20,00,00,000) \times 0.75 \times 0.16 \times (92/365)$$

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 × 0.75 × 0.16 × (153/365)] (1-8-13 to 31-12-13) = 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 prolong 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.	31,92,000	
Profit & Loss A/C	Dr.	4,13,000*	
To Machinery (old) A/C			20,65,000
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 January, 2012 ₹ 200 lakhs which they revalued upward by 10% in the year 2012, it appears that a 5% down word 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, 2014.

Solution:

	₹ In lakhs
Determination of cost ₹ In lakhs	
W.D.V as on 1-1-2012	200.00
Add: revaluation profit	<u>20.00</u>
	220.00
Less: depreciation for 2012	<u>33.00</u>
W.DV on 1-1-2013	187.00
Less: Depreciation for 2013	<u>28.05</u>
W.DV on 1-1-2014	158.95
Less revaluation loss	<u>7.95</u>
	151.00
Less: depreciation for 2014	<u>22.65</u>
W.DV on 31-12-2014	<u>128.35</u>

So the value of the machine as on 31-12-2014 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 2011-12 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 2013-2014. The company treated it as income and credited to profit and loss account during 2013-2014.

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 1.1.13 and the same was fully financed by foreign currency loan (U.S. Dollars) payable in three annual equal installments. Exchange rates were 1 Dollar = ₹ 60.00 and ₹ 62.50 as on 1.1.13 and 31.12.13 respectively. First installment was paid on 31.12.13. 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 / ₹ 60 = 50 lakhs US Dollars

Exchange difference = 50 lacs US Dollars x (62.50 – 60.00)

= ₹ 125.00 lacs

(including exchange loss on payment of first installment)

Therefore, entire loss due to exchange differences amounting ₹ 125.00 lacs should be charged to profit and loss account for the year.

Illustration 8.

A conveyor system was capitalized on 01-01-13 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 2013-2014 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.

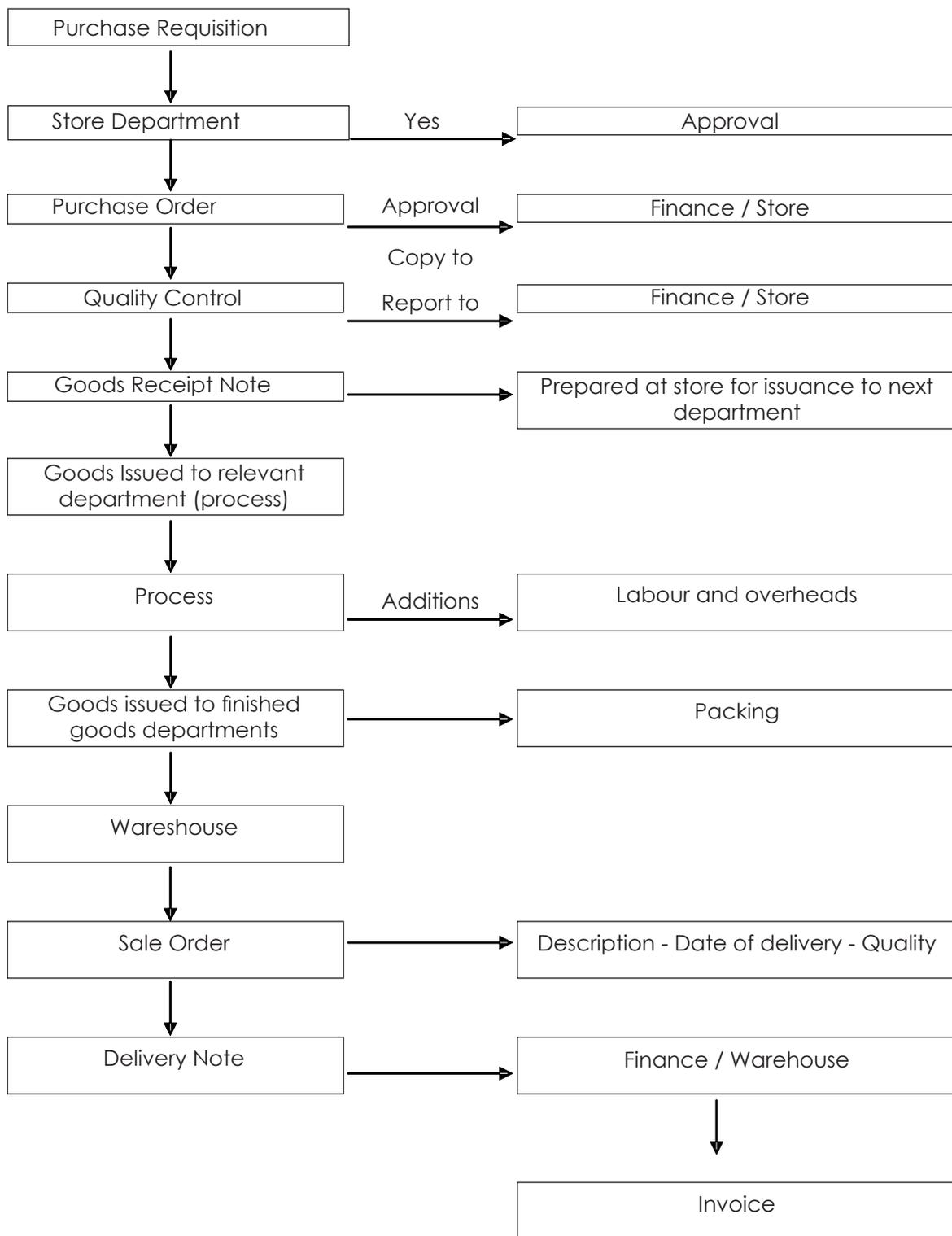
Work in Process Inventory: Goods that have started through the manufacturing process but have not yet been finished. They are priced as the sum of (1) the materials thus issued for them plus (2) the conversion costs incurred on these items up to the end of the accounting period.

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 (SOFP)

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 jewellery, custom-made furniture; and bar codes and scanners is 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 9.

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 10.

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 11.

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	10,000
	4,10,000
Less: net sales (450000-11250)	4,38,750
	(28,750)
Add: gross profits (438750x 20%)	87,750
Closing stock	59,000

Illustration 12.

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, 2013.

Sales	₹ 9,45,000
General Administrative cost	₹ 25,000
Opening stock 100000 litres @ ₹ 3per 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, 2013 under FIFO, weighted and LIFO methods of pricing of issues [quantity of closing stock (100000 + 30000) 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 30.6.2013.

** Under Weighted Average method, the Weighted Average rate is to be calculated or follows:
 $100000 \text{ Litres} \times ₹3 + 200000 \text{ litres} \times ₹2.85$
 $= ₹ 2.90 (100000+200000) \text{ litres}$

*** Under Lifo method, new lots are exhausted except purchased on 30.06.13 and old lots are kept in hand on 30.06.13

Illustration 13.**Closing Stock Valuation of Budgeted Raw Material Purchases**

Quarter	1 st	2 nd	3 rd	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:

Quarter	Day	Consumption				Kg.
		Production per day qty. of RM per unit of production				
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 14.

The XYZ Machineries Ltd. requests you to ascertain the amount at which the inventory should be included in the financial statement for the year 2013-14. 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 2013-14.
- 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, 2014 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 2013-14 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 31-03-2014)

	₹	₹
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 x 15%)		<u>135000</u> 765000
Add: Realisable value of remaining selected items		<u>167348</u>
		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 x 4,500 less 10% selling expenses)	<u>24300</u>	<u>169050</u>
Value of all items of inventory (as on 31-3-14)		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= (asset-liabilities)/ 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. The 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, an 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 15.

X Ltd. has the following portfolio of investment on 31st march 2014

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 16.

Navaratna Ltd. furnishes the following particulars about their investment in shares of Samay Ltd. for the year 2013-14

Balance of shares held on 1 st April 2013	₹ 262000	(10000 shares of ₹ 10 each)
Purchased 2000 shares on 1 st July 2014	₹ 60000	
Sold 500 shares on 1 st August 2013 @ ₹ 35 per share cum dividend	₹ 17500	
Navaratna Ltd. declared final dividend for 2012-13 on 1 st September 2013.	20%	
Received 1:5 bonus shares on 1 st February, 2014.		

Brokerage for each transaction is 2%. Find out cost of shares held by Navaratna Ltd. as on 31st March 2014.

Solution:**Statement of cost**

Date	Particulars	Amount (₹)	Amount (₹)
1-4-13	Balance (10000 shares)		2,62,000
1-7-13	Purchased (2000 shares):		
	Cost (cum-div)	60,000	
	Add brokerage	<u>1,200</u>	
		61,200	
	Less: Dividend for 2012-13	<u>4,000</u>	
			57200
1-8-13	Sold (500 shares cum div)		
	Sale proceeds	17,500	
	Less: brokerage 2%	<u>350</u>	
		17,150	
	Less: Dividend for 2012-13	<u>1,000</u>	
	Cost of sales (500 × 319200/12,000)		(13300)
1-2-14	Bonus shares (1:5) i.e. (11,500 × 1/5)		Nil
	Cost of Investment		3,05,900

** Cost of investment a 305900

* Cost of sales is computed on aversge cost basis.

** Bonus shares are free and hence nothing is shown in amount column.

Treatment of dividend received:

Dividend received from Samay Ltd. during 2013-14

(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

(receved by the new buyer)

1,000

Dividend received to be shown in Profit & Loss A/c

20,000

Profit on sale of investment:

Sale proceds of 500 shares (net of brokerage) 17,150

Less: Dividend for 2012-13 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:

- (i) The real risk-free rate of return, plus
- (ii) The expected rate of inflation, plus
- (iii) 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 (β).

Valuation with Temporary Supernormal Growth:

If you expect a company to experience rapid growth for some period of time:

- Find the present value of each dividend during the supernormal growth period separately.
- Find the present value of the remaining dividends when constant growth can be assumed.
- 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 17.

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 18.

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.

$$\begin{aligned} \text{Perpetuity} &= P_0 = (\text{Div}_1 / r) \\ &= \text{EPS}_1 / r = [\text{Assumes all earnings are paid to shareholders}] \end{aligned}$$

Constant Growth DDM - A version of the dividend growth model in which dividends grow at a constant rate (Gordon Growth Model).

Illustration 19.

(Continued of Illustration 18.)

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 20.

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 21.

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:

$$PV \text{ (horizon value)} = \frac{1}{(1.1)^6} \left(\frac{1.59}{.10 - .06} \right) = 22.4$$

$$PV \text{ (FCF)} = \frac{-.80}{1.1} - \frac{.96}{(1.1)^2} - \frac{1.15}{(1.1)^3} - \frac{1.39}{(1.1)^4} - \frac{.20}{(1.1)^5} - \frac{.23}{(1.1)^6} = -3.6$$

$$\begin{aligned} PV \text{ (business)} &= PV(\text{FCF}) + PV(\text{horizon value}) \\ &= -3.6 + 22.4 \\ &= ₹18.8 \end{aligned}$$

SHARES**Illustration 22.**

Z Ltd. has an issued and paid-up capital of 50,000 shares of ₹ 100 each. The company declared a dividend of ₹ 12.50 lakhs during the last five years and expects to maintain the same level of dividends in the future. The control and ownership of the company is lying in the few hands of Directors and their family members. The average dividend yield for listed companies in the same line of business is 18%.

Calculate the value of 3,000 shares in the company.

Solution:

$$\text{Dividend per share} = \frac{\text{₹}12,50,000}{50,000} = \text{₹}25$$

$$\text{Dividend yield} = 18\%$$

$$\text{Value per share} = \frac{2.5}{0.18} = \text{₹}138.90$$

$$\text{Value of 3,000 shares} = 3,000 \text{ shares} \times \text{₹}138.90 = \text{₹}4,16,700.$$

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

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets: (Tangible):	
Equity Share Capital of ₹ 10 each	2,00,000	– Land and Building	5,00,000
(b) Reserve & Surplus		– Plant and Machinery	2,75,000
– Revenue Reserve	5,95,000	– Motor Vehicles	55,000
(2) Non-Current Liabilities:		(b) Other Non-Current Assets	
Long Term Borrowings		– Preliminary Expenses	2,000
– Secured Loan against Land & Building	1,50,000	(2) Current Assets:	
(3) Current Liabilities:		(a) Inventories	1,33,000
(a) Trade Payables – Sundry Creditors	1,35,000	(b) Trade Receivables	
(b) Short Term Provision		– Sundry Debtors	1,45,000
– Provision for Taxation	45,000	(c) Cash and Cash Equivalents	15,000
Total	11,25,000	Total	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 ÷ 5 = ₹93,936		13,63,256 ÷ 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 x 9.22 times = ₹43.33		₹4.54 x 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 ÷ PE Ratio	(1 ÷ 9.22) = 10.85%	(1 ÷ 9.22) = 10.85%
c. Capitalized Value of Projected Earnings (a ÷ b)	₹8,65,770	₹8,37,641
d. Value per share = (c ÷ 20,000 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 –

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital (₹ 100 each)		(a) Fixed Assets	
(i) 4,500 Equity Shares	4,50,000	(i) Tangible Assets:	
(ii) 1,500 6% Preference Shares	1,50,000	– Freehold Properties	3,75,000
(b) Reserve & Surplus		– Plant and Machinery	1,50,000
– P & L Account	7,50,000	(ii) Intangible Assets:	
(2) Non-Current Liabilities:		– Goodwill	1,50,000
Long Term Borrowings - 5% Debenture	3,00,000	(b) Non-Current Investments	
(3) Current Liabilities:		– Quoted (Return 10% on cost)	3,00,000
(a) Trade Payables – Sundry Creditors	2,39,250	(2) Current Assets:	
Total	18,89,250	(a) Inventories	2,70,000
		(b) Trade Receivables	
		– Sundry Debtors	2,99,250
		(c) Cash and Cash Equivalent	3,45,000
		Total	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-

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
(i) 5,000 Equity Shares of ₹100 each	5,00,000	(i) Tangible Assets:	
(ii) 3,000 12% Preference Shares of ₹100	3,00,000	– Land and Building	3,20,000
(b) Reserve & Surplus		– Plant and Machinery	4,60,000
(i) General Reserve	3,00,000	(9,40,000 – Acc Depn 4,80,000)	
(ii) P & L Account	3,60,000	(b) Non-Current Investments	
(1,20,000 b/f + 4,80,000 CY Profit – 2,40,000 Prov for Tax)		– 6% Govt. Securities (at cost)	1,60,000
(2) Current Liabilities:		(c) Other Non-Current Assets	
(a) Trade Payables – Sundry Creditors	2,10,000	– Preliminary Expenses	60,000
(b) Short Term Provision		(2) Current Assets:	
(i) Provision for Taxation	2,40,000	(a) Inventories	4,50,000
		(b) Trade Receivables	
		– Book Debts	3,80,000
		(c) Cash and Cash Equivalents	80,000
Total	19,10,000	Total	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-

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
(i) Equity Share of ₹ 10 each	5,00,000	(i) Tangible Assets:	
(ii) 9% Preference Shares of ₹10 each fully paid up	2,00,000	– Leasehold Property	90,000
(b) Reserve & Surplus		(1,60,000 – Depn 70,000)	
(i) General Reserve	1,00,000	– Plant and Machinery	2,25,000
(ii) P & L Account	2,20,250	(2,50,000 – Depn 25,000)	
(2) Current Liabilities:		(ii) Intangible Assets:	
(a) Short Term Borrowings – Bank Loan	1,00,000	– Goodwill	1,75,000
(b) Trade Payables – Sundry Creditors	49,750	(b) Non-Current Investments	4,00,000
		(2) Current Assets:	
		(a) Inventories	82,500
		(b) Trade Receivables	
		– Sundry Debtors	40,500
		(c) Cash and Cash Equivalent	1,57,000
Total	11,70,000	Total	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:

- 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.
- 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.
- An expense Creditor ₹3,750 of the current year has been omitted from being recorded in the books.
- 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.
- 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.
- 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 ÷ 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 x 10% ÷ 90%)			4,500
Adjusted Profits	77,400	89,900	81,400
Average Adjusted Trading Profits = (77,400 + 89,900 + 81,400) ÷ 3			82,900
Less: Preference Dividends (8% of ₹2,00,000)			(16,000)
Equity Earnings = Future Maintainable Earnings			66,900
Goodwill = 3 x Average Profit ₹66,900			2,00,700

Notes:

- In the absence of tax rates, tax effects are ignored on the above adjustments.
- Loss in value of stock is assumed to have taken place during the last financial year.
- 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, 2014:

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.

- (i) What is the rate you would pay to the Equity Shares of each Company ?
 - (a) If you are buying a small lot.
 - (b) If you are buying controlling interest shares.
- (ii) If you plan to Invest only in preference shares which company's preference shares would you prefer ?
- (iii) 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:

$$\frac{\text{Profit after tax}}{\text{Preference Dividend}} \times 100$$

$$\text{Company A: } \frac{\text{₹ } 3,00,000}{\text{₹ } 60,000} = 5 \text{ times}$$

$$\text{Company B: } \frac{\text{₹ } 3,00,000}{\text{₹ } 40,000} = 7.5 \text{ times}$$

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:

$$\text{Company A: } \text{₹ } \frac{2.1}{18} \times 100 = \text{₹ } 11.67$$

$$\text{Company B: } \text{₹ } \frac{2.34}{18} \times 100 = \text{₹ } 13.00$$

Working Notes:

1. Computation of earning per share and dividend per share (companies distribute 80% of profits)

	Company A	Company B
Profit after 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 –

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
(i) Equity Share Capital (₹10)		(i) Tangible Assets:	
– ₹10 paid up per share	3,00,000	– Buildings	2,00,000
– ₹5 paid up per share	2,00,000	– Plant and Machinery	4,00,000
(ii) 9% Preference Shares Capital (₹100)	1,00,000	(2) Current Assets:	
(b) Reserve & Surplus	3,00,000	(a) Inventories	2,50,000
(2) Current Liabilities:		(b) Trade Receivables	
(a) Trade Payables – Sundry Creditors	2,00,000	– Sundry Debtors	2,10,000
		(c) Cash and Cash Equivalents	40,000
Total	11,00,000	Total	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-

- Controlling interest is transferred;
- 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 ÷ 70,000)	₹17.14
Value per Partly Paid Share (₹17.14 - 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 x 16%) ÷ 10%			₹16.00
For Partly Paid Up Share: (₹5 x 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, 2014:

Balance Sheet

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
(i) 4,00,000 Equity shares of ₹ 10 each	40,00,000	(i) Tangible Assets:	
(ii) 13.5% Redeemable preference shares of ₹ 100 each fully paid	20,00,000	— Building	24,00,000
(b) Reserve & Surplus		— Machinery	22,00,000
(i) General Reserve	16,00,000	— Furniture	10,00,000
(ii) P & L Account	3,20,000	— Vehicles	18,00,000
(2) Non-Current Liabilities:		(ii) Intangible Assets:	
Long Term Borrowings		— Goodwill	4,00,000
— Secured Loan against Fixed Assets	12,00,000	(b) Non-Current Investments	16,00,000
(3) Current Liabilities:		(c) Other Non-Current Assets	
(a) Trade Payables		— Preliminary Expenses	2,00,000
— Sundry Creditors	6,00,000	(2) Current Assets:	
— Bills Payable	31,00,000	(a) Inventories	11,00,000
Total	1,28,20,000	(b) Trade Receivables	
		— Sundry Debtors	18,00,000
		(c) Cash and Cash Equivalents	3,20,000
		Total	1,28,20,000

Further information:

- (i) Return on capital employed is 20% in similar businesses.
- (ii) 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.
- (iii) Trade investments were purchased on 1.4.2013. 50% of non-Trade Investments were purchased on 1.4.2012 and the rest on 1.4.2011. Non-Trade Investments yielded 15% return on cost.
- (iv) In 2011-2012 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.
- (v) In 2012-2013 furniture with a book value of ₹ 1,00,000 was sold for ₹ 60,000.
- (vi) 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: 2010-2011 ₹ 16,00,000, -2011-2012 ₹ 18,00,000, 2012-2013 ₹ 21,00,000, 2013-2014 ₹ 22,00,000.
- (vii) 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**

- (i) Capital employed

	₹	₹
Fixed Assets		
Building	24,00,000	
Machinery (₹ 22,00,000 + ₹ 1,45,800)	23,45,800	
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

	2010-11 ₹	2011-12 ₹	2012-13 ₹	2013-14 ₹
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 (2010-2011 to 2013-2014) 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

$$\text{Value of equity share} = \frac{\text{Net assets available to equity shareholders}}{\text{Number of equity shares}}$$

$$= \frac{\text{₹ } 78,04,276}{4,00,000} = \text{₹ } 19.51$$

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, 2014 was as follows:

	₹
Equity Capital 18,000 Shares of ₹100 each	18,00,000
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>

$$\begin{aligned} \text{Yield on shares} &= \frac{\text{Yield on shares}}{\text{Equity share capital}} \times 100 \\ &= \frac{₹ 1,68,600}{₹ 18,00,000} \times 100 = 9.37\% \end{aligned}$$

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

$$= \frac{\text{Actual yield}}{\text{Expected yield}} \times \text{Paid up value of share}$$

$$= \frac{9.37}{16} \times 100 = ₹ 58.56$$

- * 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 which total expenditure on human resources is to be amortized. Lastly value of human resource increase but through this treatment capital cost decrease 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 some 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 excising 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 evaluation HRs of the organisation. However this approach adopts 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 a particular employee, 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 employee 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 employee = ₹ 12,50,000 + ₹ 250,000

Additional profit = expected profit – Actual profit
 = ₹ 15,00,000 – ₹ 11,00,000
 = ₹ 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 an individual's expected service tenure in the organisation or at a particular level or position but on a group basis, it is easier to ascertain the percentage of people in a particular group likely either to leave the firm during each of the fourth-coming 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 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

Age	Unskilled		Semi-skilled		Skilled		Total	
	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.

The Balance Sheets of R Ltd. for the years ended on 31.3.2012, 31.3.2013 and 31.3.2014 are as follows:

Liabilities	31.3.2012 ₹	31.3.2013 ₹	31.3.2014 ₹
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
Total	70,80,000	79,20,000	88,80,000
Assets	31.3.2012 ₹	31.3.2013 ₹	31.3.2014 ₹
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
Total	70,80,000	79,20,000	88,80,000

Actual valuation wore as under:

Particulars	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 2012-2013 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, 2012 was ₹ 20 lakhs.

The goodwill shown on 31.3.2012 was purchased on 1.4.2012 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 31.3.2014.

Solution:

Note:

- (i) Since goodwill has been paid for, it is taken as part of capital employed. Capital employed at the end of each year is shown.
- (ii) Assumed that the building and machinery figure as revalued is after considering depreciation.

	31.3.2012 ₹	31.3.2013 ₹	31.3.2014 ₹
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
Total	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:

	31.3.2012 ₹	31.3.2013 ₹	31.3.2014 ₹
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: 12½% Normal Return	9,00,000	9,12,500	10,00,000
Super Profit	5,00,000	8,47,500	11,20,000

$$\text{Average super profits} = (\text{₹}5,00,000 + \text{₹}8,47,500 + \text{₹}11,20,000) / 3$$

$$= 24,67,500 / 3 = \text{₹}8,22,500$$

$$\text{Goodwill} = 5 \text{ years purchase} = \text{₹}8,22,500 \times 5 = \text{₹}41,12,500.$$

Total Net Assets (31/3/2014)	₹ 84,80,000
Less: Goodwill	₹ 12,00,000
	₹ 72,80,000
Add: Goodwill	₹ 41,12,500
Value of Business	₹ 1,13,92,500

Illustration 35.

Find out the average capital employed of ND Ltd. From its Balance Sheet as at 31st March, 2014:

Equity and Liability	₹ in lakhs	Assets	₹ in lakhs
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
(i) Equity Share Capital of ₹ 10 each	50.00	(i) Tangible Assets:	
(ii) 9% Preference Shares fully paid up	10.00	– Land and Building	25.00
(b) Reserve & Surplus		– Plant and Machinery	80.25
(i) General Reserve	12.00	– Furniture and Fixtures	5.50
(ii) Profit and Loss A/c	20.00	– Vehicles	5.00
(2) Non-Current Liabilities:		(b) Non-Current Investments	10.00
Long Term Borrowings		(c) Other Non-Current Assets	
(i) 16% Debentures	5.00	– Preliminary Expenses	0.50
(ii) 16% Term Loan	18.00	(2) Current Assets:	
(iii) Cash Credit	13.30	(a) Inventories	6.75
(3) Current Liabilities:		(b) Trade Receivables	
(a) Trade Payables – Sundry Creditors	2.70	– Sundry Debtors	4.90
(b) Short Term Provision		(c) Cash and Cash Equivalent	10.40
– Provision for Taxation(Net)	6.40		
– Proposed Dividend			
Equity Shares	10.00		
Preference Shares	0.90		
Total	148.30	Total	148.30

Non-trade investments were 20% of the total investments.

Balances as on 1.4.2013 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
Closing Capital Employed		100.40
Capital Employed as on 31.03.2014		
Less: ½ of profit earned:		
Increase in reserve balance	5.50	
Increase in Profit & Loss A/c	11.30	
Proposed Dividend	10.90	
Profit earned during the year	27.70	
50% of Profit earned during the year i.e. 27.70 x ½		13.85
Average capital employed		86.55

Illustration 36.

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 2014

Equity and Liability	₹	Assets	₹
(1) Shareholder's Funds:		(1) Non- Current Assets:	
(a) Share Capital		(a) Fixed Assets :	
Equity Share Capital of	10,00,000	(i) Tangible Land &	
₹10 each		Building	3,00,000
(b) Reserve & Surplus	4,00,000	Plant & Machinery	8,00,000
(2) Current Liabilities:		(ii) Intangible - Goodwill	1,00,000
(a) Trade Payable – Sundry	3,00,000	(b) Non-Current Investment	1,00,000
Creditors		(2) Current Assets:	
		(a) Inventories	2,00,000
		(b) Trade Receivables - Debtors	1,50,000
		(c) Cash & Cash Equivalents	50,000
	17,00,000		17,00,000

Profit before tax for 2013-14 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 super 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, 2014	(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, 2014		
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 37.

Marico Ltd. acquired 100% of Sun Ltd. for ₹ 2,000 (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:

- If brand value is ignored

Purchase consideration	2000
Less: net assets acquired (500+380)	880
Goodwill	1120

- If brand value is considered

Purchase consideration	2000
Less: Net assets acquired (500 + 120 + 380)	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:

- Difficulty in measuring brand ; and
- 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 38.

Given below is the Balance Sheet of Sandip Ltd as on 31.03.2014 (₹ Lakhs)

Equity and Liability	₹ in lakhs	Assets	₹ in lakhs
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets - Tangible Assets	72.00
Equity Share Capital of ₹10 each	50.00	(b) Non-Current Investments	12.00
(b) Reserve & Surplus		(Non Trade)	
(i) Reserve	32.00	(2) Current Assets:	
(ii) P & L Account	3.00	(a) Inventories	7.80
(2) Current Liabilities:		(b) Trade Receivables - Sundry Debtors	6.20
(a) Trade Payables – Sundry Creditors	8.20	(c) Cash and Cash Equivalents	5.20
(b) Short Term Provision - Proposed Dividend	10.00		
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
2010	42.00	2.20	-	-
2011	39.00	2.30	1.67	0.62
2012	44.00	2.50	0.32	-
2013	42.00	2.60	1.42	-
2014	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	2010	2011	2012	2013	2014
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 before 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 2014 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%	138.80
Less: Closing Capital Employed Less Proposed Dividend = 83.00-10.00	73.00
Goodwill using Capitalization Method	65.80

(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 39.

The following are the summarized Balance Sheets of two Companies, R Ltd and S Ltd as on 31.03.2014

Equity and Liability	R Ltd	S Ltd	Assets	R Ltd	S Ltd
(1) Shareholders Fund:			(1) Non-Current Assets:		
(a) Share Capital			(a) Fixed Assets		
Equity Share Capital of ₹ 10 each	15,00,000	10,00,000	(i) Tangible Assets:	17,00,000	14,00,000
(b) Reserve & Surplus – Reserve	3,00,000	2,00,000	(ii) Intangible Assets:		
			– Goodwill	2,00,000	1,00,000
(2) Non-Current Liabilities:			(2) Current Assets:	8,00,000	6,00,000
Long Term Borrowings – 10% Debenture	6,00,000	4,00,000			
(3) Current Liabilities:					
Trade Payables – Sundry Creditors	3,00,000	5,00,000			
Total	27,00,000	21,00,000	Total	27,00,000	21,00,000

Additional Information:

1. 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

2. Average Annual Profits for three years before charging Debenture Interest = R Ltd ₹4,50,000; S Ltd ₹3,10,000.
3. 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.
4. 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% × 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 x 10%/4,00,000 x 10%]	(60,000)	(40,000)
Less: Claim / Expenses not recorded	-	(10,000)
Less: Depreciation on Increase in Value of Fixed Assets [(21L – 17L) x 10%]	(40,000)	----
Add: Depreciation on Decrease in value of Fixed Assets [(14L - 12L) x 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 40.

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, 2014

Equity and Liability	₹ in lakhs	Assets	₹ in lakhs
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
Equity Share Capital of ₹ 10 each	5,000	(i) Tangible Assets:	
(b) Reserve & Surplus		– Land and Building	1,850
(i) Capital Reserve	260	– Plant and Machinery	3,760
(i) General Reserve	2,543	– Furniture and Fixtures	1,015
(ii) Surplus i.e. credit balance of Profit and Loss (appropriation) A/c	477	(ii) Intangible Assets:	
(2) Current Liabilities:		– Goodwill	310
(a) Trade Payables – Sundry Creditors	568	– Patent and Trade Marks	32
(b) Short Term Provision		(b) Non-Current Investments	
– Provision for Taxation(Net)	750	– 9% Non Trade Investment	600
– Proposed Dividend (2012-2013)	22	(c) Other Non-Current Assets	
		– Preliminary Expenses	20
		(2) Current Assets:	
		(a) Inventories	873
		(b) Trade Receivables	
		– Sundry Debtors	614
		(c) Cash and Cash Equivalents	546
Total	9,620	Total	9,620

The profits before tax of the four years have been as follows:

Year ended 31st March	Profit before tax ₹ in lakhs
2010	3,190
2011	2,500
2012	3,108
2013	2,900

The rate of income tax for the accounting year 2009-10 was 40%. Thereafter it has been 38% for all the years so far. But for the accounting year 2013-2014 it will be 35%.

In the accounting year 2009-2010, the company earned an extraordinary income of ₹ 1 crore due to a special foreign contract. In August, 2010 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, 2011.

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 2013-2014.

Solution:**(1) Capital employed as on 31st March, 2014 Refer to 'Note')**

		₹ in lakhs
Land and Buildings		1,850
Plant and Machinery		3,760
Furniture and Fixtures		1,015
Patents and Trade Marks		32
Stock		873
Debtors		614
Cash and Cash Equivalents		546
		8,690
Less: Trade creditors	568	
Provision for taxation (net)	22	590
		8100

(2) Future maintainable profit**(₹ in lakhs)**

	2009-2010	2010-2011	2011-2012	2012-2013
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
	3,090	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	2,885
Less: Additional remuneration to directors		50
Less: Income tax @ 35%(approx.)		<u>992</u> (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 × ₹ 223 lakhs = ₹ 669 lakhs

Note:

In the above solution, goodwill has been calculated on the basis of closing capital employed (i.e. on 31st March, 2014). 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, 2014. 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, 2014.



Illustration 41.

The following Balance Sheet of X Ltd. is given:

Balance Sheet of X Ltd. as on 31st March, 2014

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets	
Equity Share Capital of ₹ 10 each	50,00,000	(i) Tangible Assets:	
(b) Reserve & Surplus		– Land and Building	32,00,000
P & L Appropriation Account	21,20,000	– Plant and Machinery	28,00,000
(2) Current Liabilities:		(ii) Intangible Assets:	
(a) Short Term Borrowings – Bank O/D	18,60,000	– Goodwill	4,00,000
(b) Trade Payables		(2) Current Assets:	
– Sundry Creditors	21,10,000	(a) Inventories	32,00,000
(c) Short Term Provision		(b) Trade Receivables	
– Provision for Taxation	5,10,000	– Sundry Debtors	20,00,000
Total	1,16,00,000	Total	1,16,00,000

In 1995 when the company commenced operation the paid up capital was same. The Loss/Profit for each of the last 5 years was - years 2009-2010 - Loss (₹ 5,50,000); 2010-2011 ₹ 9,82,000; 2011-2012 ₹ 11,70,000; 2012-2013 ₹ 14,50,000; 2013-2014 ₹ 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 2013-2014 the Income-tax rate of 45% should be taken into consideration. 10% dividend in 2010-2011 and 2011-2012 and 15% dividend in 2012-2013 and 2013-2014 have been paid. Market price of shares of the company on 31st March, 2014 is ₹ 125. With effect from 1st April, 2014 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) ₹
2010-2011	9,82,000	1	9,82,000
2011-2012	11,70,000	2	23,40,000
2012-2013	14,50,000	3	43,50,000
2013-2014	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>11,75,400</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
		1,12,00,000
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
		74,70,000
Less: Half of the profit (after tax) for the year i.e. ₹ 17,00,000 x ½		8,50,000
		66,20,000

(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)	23,23,800



Illustration 42.

Given below is the Balance Sheet as on 31st March of Khan Limited for the past three years. (Amount in ₹000's)

Equity and Liability	2011	2012	2013	Assets	2011	2012	2013
(1) Shareholders Fund:				(1) Non-Current Assets:			
(a) Share Capital	500	600	700	Fixed Assets:			
(b) Reserve & Surplus				(i) Tangible Assets			
(i) General Reserve	100	150	150	Gross Block	1,500	1,700	1,900
(ii) P & L Account	100	150	---	Less: Depreciation	400	500	650
				Net Block	1,100	1,200	1,250
(2) Non-Current Liabilities:				(2) Current Assets:			
Long Term Borrowings				(a) Inventories	250	450	500
— 12% Debenture	400	600	700	(b) Trade			
				Receivables			
(3) Current Liabilities:				— Sundry debtors	200	350	400
(a) Short Term Borrowings				(c) Cash and Cash			
— Bank O/D	200	250	300	Equivalents	25	120	100
(b) Trade Payables							
— Sundry Creditors	100	200	400				
(c) Short Term Provision							
— Provision for Taxation	100	50	---				
— Proposed Dividend	75	120	---				
Total	1,575	2,120	2,250	Total	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 2012-13.
- 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 2011 – 2012, 2012–2013 and 2013 – 2014 where as Capital Employed on 31.03.2013 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	2011-12	2012-13
Retained Earnings (Closing Less Opening)	50	(150)
Add: Appropriation to General Reserve (Closing Less Opening)	50	-
Proposed Dividend	120	-
Provision for Tax made during the year	50	-
Current Year Profit / (Loss)	270	(150)
Add: Depreciation (Closing Accumulated Depreciation Less Opening)	100	150
Operating Profit Before Working Capital Changes	370	-
Adjustment for Working Capital Items:		
Stock	(200)	(50)
Sundry Debtors	(150)	(50)
Creditors	100	200
Previous Year Tax Liability Paid in Current Year	(100)	(50)
Cash Generated from Operating Activities	20	50

2. Computation of Projected Cash Earnings

Particulars	₹000's
Cash Earnings for Financial Year 2012-13	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
2011-2012	20	1	20
2012-2013	50	2	100
2013-2014	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 31.03.2013	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 43.

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 at 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 44.

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)

Equity and Liability	₹	Assets	₹
(1) Shareholders Fund:		(1) Non-Current Assets:	
(a) Share Capital		(a) Fixed Assets: (i) Tangible Assets:	
Equity Share Capital of ₹ 10 each	1,500	Gross	1,500
(b) Reserve & Surplus - General Reserve	500	Less: Depreciation	<u>500</u>
			1,000
(2) Non-Current Liabilities:		(b) Non-Current Investments	
Long Term Borrowings		– Trade	300
– 12% Term Loan from Bank	500	– Non-Trade	90
(3) Current Liabilities:		(2) Current Assets:	
(a) Trade Payables – Sundry Creditors	210	(a) Inventories	350
(b) Short Term Provision		(b) Trade Receivables	
(i) Provision for Taxation	10	– Overseas Debtors (1\$ = ₹ 42)	420
(ii) Proposed Dividend	140	– Indian Debtors	400
		(c) Cash and Cash Equivalents	300
Total	2,860	Total	2,860

Additional Information:

- 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.
- Current Year Depreciation changed on Historical Cost was ₹100 Lakhs. Current Cost of Fixed Assets is determined at ₹2,000 Lakhs.
- 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.
- 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%.

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 = Current Depreciation ÷ Opening bal. = 100 ÷ 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 x 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 Lakhs ÷ ₹42.00)	\$10.00 Lakhs
Exchange Gain [\$10.00 Lakhs x (₹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 Lakhs - ₹150 Lakhs]	350.00	
Proposed Dividend	140.00	490.00
Add back: Tax $\frac{₹490.00 \text{ lakhs}}{100\% - \text{Tax Rate of } 30\%} = \text{Tax Rate of } 30\%$		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 Lakhs x 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 45.

The following is the extract from the Balance Sheets of Popular Ltd.:

Equity and Liability	As at 31.3.13	As at 31.3.14	Assets	As at 31.3.13	As at 31.3.14
(1) Shareholders Fund:			(1) Non-Current Assets:		
(a) Share Capital			(a) Fixed Assets	550	650
Equity Share Capital of ₹ 10 each	500	500	(b) Non-Current Investments		
(b) Reserve & Surplus			– 10% Investment	250	250
(i) General Reserve	400	425			
(ii) P & L Account	50	80	(2) Current Assets:		
(2) Non-Current Liabilities:			(a) Inventories	260	300
Long Term Borrowings			(b) Trade Receivables		
– 18% Term Loan	180	165	– Sundry Debtors	170	110
(3) Current Liabilities:			(c) Cash and Cash Equivalents	46	43
(a) Trade Payables – Creditors	35	45			
(b) Short Term Provision					
(i) Provision for Taxation	11	13			
(ii) Proposed Dividend	100	125			
Total	1,276	1,353	Total	1,276	1353

Additional information:

- (i) Replacement values of Fixed assets were ₹1,100 lakhs on 31.3.13 and ₹1,250 lakhs on 31.3.2014 respectively.
- (ii) Rate of depreciation adopted on Fixed assets was 5% p.a.
- (iii) 50% of the stock is to be valued at 120% of its book value,
- (iv) 50% of investments were trade investments.
- (v) Debtors on 31st March, 2014 included foreign debtors of \$35,000 recorded in the books at ₹35 per U.S. Dollar. The closing exchange rate was \$1 = ₹39.
- (vi) Creditors on 31st March, 2014 included foreign creditors of \$60,000 recorded in the books at \$1 = ₹33. The closing exchange rate was \$1 = ₹39.
- (vii) Profits for the year 2013-14 included ₹60 lakhs of government subsidy which was not likely to recur.
- (viii) ₹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.
- (ix) Future maintainable profits (pre-tax) are likely to be higher by 10%.
- (x) Tax rate during 2013-14 was 50%, effective future tax rate will be 40%.
- (xi) Normal rate of return expected is 15%.

One of the directors of the company Sherjahan, 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. Future Maintainable Profit**

₹ in Lakhs

Increase in General Reserve	25	
Increase in Profit and Loss Account	30	
Proposed Dividends	<u>125</u>	
Profit After Tax		<u>180</u>
Pre-Tax Profit = $\frac{180}{1-0.5}$		360
Less: Non-Trading investment income (10% of ₹125)	12.50	
Subsidy	60.00	
Exchange Loss on creditors [$\$ 0.6 \text{ lakhs} \times (\text{₹}39 - \text{₹}33)$]	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>106.10</u>
		253.90
Add: Exchange Gain on Debtors [$\$ 0.35 \text{ lakhs} \times (\text{₹}39 - \text{₹}35)$]	1.40	
Research and development expenses written off	125.00	
Stock Adjustment (30-26)	<u>4.00</u>	<u>130.40</u>
		384.30
Add: Expected increase of 10%		<u>38.43</u>
Future Maintainable Profit before Tax		422.73
Less: Tax @ 40% (40% of ₹ 422.73)		<u>169.09</u>
Future Maintainable Profit		<u>253.64</u>

2. Calculation of Capital employed (CE)

₹ in lakhs

	As on 31.3.13	As on 31.3.14
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	<u>46.00</u>	<u>43.00</u>
Total (A)	<u>1727.00</u>	<u>1859.40</u>
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)	<u>226.00</u>	<u>226.60</u>
Capital employed (A – B)	<u>1501.00</u>	<u>1632.80</u>

$$\begin{aligned} \text{Average Capital employed at current value} &= \frac{\text{CE as on 31.3.2013} + \text{CE as on 31.3.2014}}{2} \\ &= \frac{1501 + 1632.80}{2} = 1566.90 \text{ Lakhs}^* \end{aligned}$$

* Average capital employed can also be calculated in the following manner :

Closing capital employed as on 31.3.2014	₹ 1,632.80 lakhs
Less: ½ of actual post tax profit for 2013-2014	<u>₹ 90.00 lakhs</u>
Average capital employed	<u>₹ 1,542.80 lakhs</u>

3. Valuation of Goodwill

₹ in lakhs

(i) According to Capitalisation of Future Maintainable Profit Method

Capitalised value of Future Maintainable Profit

$$= \frac{253.64}{15} \times 100$$

1690.93

Less: Average capital employed

1566.90

Value of Goodwill

124.03

Or

(ii) According to Capitalisation of Super Profit Method

Future Maintainable Profit

253.64

Less: Normal Profit @15% on average capital employed

(1566.90 x 15%)

235.03

Super Profit

18.61

Capitalised value of super profit $\frac{18.61}{15} \times 100$ i.e., Goodwill

124.06

Goodwill exists, hence director's fear is not valid.

Leverage Effect on Goodwill

₹ in lakhs

Future Maintainable Profit on equity fund

253.64

Future Maintainable Profit on Long-term Trading Capital employed

Future Maintainable Profit After Tax

253.64

Add: Interest on Long-term Loan (Term Loan)

14.85

268.49

(After considering Tax) $165 \times 18\% = 29.7 \times \frac{50}{100}$

Average capital employed (Equity approach)

1566.90

Add – 18% Term Loan (180+165)/2	<u>172.50</u>
Average capital employed (Long-term Fund approach)	<u>1739.40</u>
Value of Goodwill	
(A) Equity Approach	
Capitalised value of Future Maintainable Profit = $\frac{253.64}{15} \times 100$	1690.93
Less: Average capital employed	<u>1566.90</u>
Value of Goodwill	<u>124.03</u>
(B) Long-Term Fund Approach	
Capitalised value of Future Maintainable Profit = $\frac{268.49}{12} \times 100$	2237.42
Less: Average capital employed	<u>1739.40</u>
Value of Goodwill	<u>498.02</u>

Comments on Leverage effect of Goodwill:

Adverse Leverage effect on goodwill is 373.99 lakhs (i.e., ₹498.02 - 124.03). 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 the business that owns the brand.

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.

Brand Value = Replacement Brand Cost.

- (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 46.

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

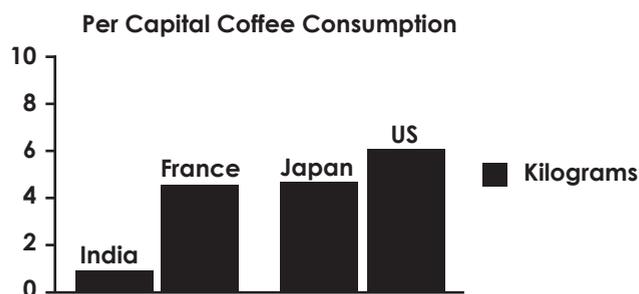
Case Study Keywords

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 47.

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 48.

The following financial share data pertaining to TECHNO LTD an IT company is made available to you :

Year ended March 31st	2014	2013	2012
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	2014	2013	2012
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
Weight Average Profits = $\frac{1927.80 + 631.38 + 179.98}{3 + 2 + 1}$ (₹)	456.53		
Remuneration of Capital [5% of Average capital employed] (i.e. 1112×5%)	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 Crore



Illustration 49.

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 50.

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 a day 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 edit 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 rise or fall, 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 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 51.

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:

$$= \text{Unlevered beta} \left[1 + (1 - \text{tax rate}) \left(\frac{\text{Debt}}{\text{Equity}} \right) \right]$$

$$\text{Levered beta} = 0.62 \left[1 + (1 - 0.38) \left(\frac{0.6}{0.4} \right) \right]$$

$$= 1.20$$

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%.

Estimating cash flows on the building

We used the operating information specified earlier to estimate the cash flows prior to debt payments on the building for the next five years in the following table.

	Base Year/ Assumption	1	2	3	4	5	Terminal Year
Building space (square feet)		5,28,357	5,28,357	5,28,357	5,28,357	5,28,357	
Occupancy		95%	95.50%	96.00%	96.50%	97%	
Rent/square foot	₹ 28.07	₹ 28.91	₹ 29.78	₹ 30.67	₹ 31.59	₹ 32.54	
Rental income		₹ 1,45,12,115	₹ 1,50,26,149	₹ 1,55,57,965	₹ 1,61,08,166	₹ 1,66,77,377	₹ 1,71,77,698
Garage income	₹ 8,00,000	₹ 8,24,000	₹ 8,48,720	₹ 8,74,182	₹ 9,00,407	₹ 9,27,419	₹ 9,55,242
Reimbursement revenue	10.00%	₹ 3,53,735	₹ 3,64,347	₹ 3,75,277	₹ 3,86,536	₹ 3,98,132	₹ 4,10,076
Credit loss	2.50%	₹ 3,62,803	₹ 3,75,654	₹ 3,88,949	₹ 4,02,704	₹ 4,16,934	₹ 4,29,442
Total revenues		₹ 1,53,27,047	₹ 1,58,63,563	₹ 1,64,18,475	₹ 1,69,92,404	₹ 1,75,85,993	₹ 1,81,13,573
Expenses							
Real estate taxes	₹ 5.24	₹ 28,79,334	₹ 29,94,508	₹ 31,14,288	₹ 32,38,860	₹ 33,68,414	₹ 34,69,466
Ground rent	₹ 15,00,000	₹ 15,00,000	₹ 15,00,000	₹ 15,00,000	₹ 15,00,000	₹ 15,00,000	₹ 15,45,000
Other expenses	₹ 6.50	₹ 35,37,350	₹ 36,43,471	₹ 37,52,775	₹ 38,65,358	₹ 39,81,319	₹ 41,00,758
Management fee	₹ 3,00,000	₹ 3,09,000	₹ 3,18,270	₹ 3,27,818	₹ 3,37,653	₹ 3,47,782	₹ 3,58,216
Total expenses		₹ 82,25,684	₹ 84,56,248	₹ 86,94,881	₹ 89,41,870	₹ 91,97,515	₹ 94,73,440
Operating income before depreciation		₹ 71,01,363	₹ 74,07,314	₹ 77,23,594	₹ 80,50,534	₹ 83,88,478	₹ 86,40,133
Depreciation	₹ 20,00,000	₹ 20,00,000	₹ 20,00,000	₹ 20,00,000	₹ 20,00,000	₹ 20,00,000	₹ 20,60,000
Operating income		₹ 51,01,363	₹ 54,07,314	₹ 57,23,594	₹ 60,50,534	₹ 63,88,478	₹ 65,80,133
Taxes	38%	₹ 19,38,518	₹ 20,54,779	₹ 21,74,966	₹ 22,99,203	₹ 24,27,622	₹ 25,00,450
Operating income after taxes		₹ 31,62,845	₹ 33,52,535	₹ 35,48,628	₹ 37,51,331	₹ 39,60,857	₹ 40,79,682
+ Depreciation		₹ 20,00,000	₹ 20,00,000	₹ 20,00,000	₹ 20,00,000	₹ 20,00,000	₹ 20,60,000
-Capital maintenance and leasehold improvement	₹ 15,00,000	₹ 15,45,000	₹ 15,91,350	₹ 16,39,091	₹ 16,88,263	₹ 17,38,911	₹ 20,60,000
Cash flow to firm		₹ 36,17,845	₹ 37,61,185	₹ 39,09,538	₹ 40,63,068	₹ 42,21,946	₹ 40,79,682

= $FCFF_6 / \text{Cost of capital} - \text{Expected growth rate}$

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 52.

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 (₹1,553 - ₹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:

$$FCF_t = (1 - n_t) PGI_t - C_t - CAPEX_t \quad \dots\dots\dots 3$$

where

n_t = 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 $(1 - n_t)$, 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.

$$TV_T = \frac{FCF_{T+1}}{k - \bar{g}} = \frac{(FCF_T + FCF_{T-1} + FCF_{T-2}) (1 + \bar{g})}{3} \frac{1}{k_U - \bar{g}} \dots\dots\dots 4$$

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:

$$d_{r_t} = \alpha(b - r_t)dt + \sigma r_t dW_t \dots\dots\dots 7$$

where

d_{r_t} = increment in the interest rate at time t

α = 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:

$$\Delta r = \alpha (b - r) \Delta t + \sigma e \Delta t \dots\dots\dots 8$$

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:

$$R(t, T) = A(t, T) + B(t, T)rt \quad \dots\dots\dots 9$$

$$A(t, T) = \left[\frac{2\gamma e^{(\alpha+\gamma)(T-t)/2}}{(\gamma + \alpha)(e^{\gamma(T-t)} - 1) + 2\gamma} \right]^{2\alpha b/\sigma^2} \quad \dots\dots\dots 10$$

$$B(t, T) = \frac{2(e^{\gamma(T-t)} - 1)}{(\gamma + \alpha)(e^{\gamma(T-t)} - 1) + 2\gamma} \quad \dots\dots\dots 11$$

rt = short-term interest rate at time t

$$\gamma = \sqrt{\alpha^2 + 2\alpha^2} \quad \dots\dots\dots 12$$

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:

$$P = p_1 + p_2 \quad \dots\dots\dots 13$$

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:

$$TP = w(\text{building quality}) * P(\text{building quality}) + w(\text{location}) * P(\text{location}) + w(\text{age}) * P(\text{age}) \dots\dots\dots 14$$

where w is the weight and P the number of points.

The value of p_2 is then calculated as:

$$p_2 = (100 - TP) / 100 \dots\dots\dots 15$$

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:

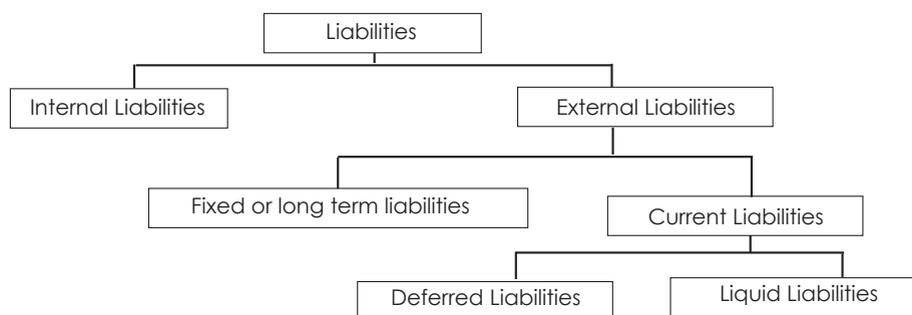
Historical Cost: The value of liabilities are recorded at the amount of proceeds received in exchange for the obligation, or in some situation, at the amount of cash or cash equivalents expected to be paid to satisfy the liabilities in the normal course of business.

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 Overdraft

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-2	A	F2	Lower medium grade			
A3		A-		A-					
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-					
B1		B+		B+		Highly speculative			
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 many 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

Valuation of Assets and Liabilities

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 53.

(a) At April 30, 2013, 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 × .06 × 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, 2014. 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, 2014.

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 54.

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, 1995

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
10-1-94	4000	4088	88	9078	90922
4-1-95	4000	4091	91	8987	91013
10-1-95	4000	4096	96	8891	91109

Illustration 55.

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% = cost of capital.

NPV = $-30447 + -18268 + \dots + -18268 + 12179$

$$1 + \frac{1}{(1.09)} + \frac{1}{(1.09)^2} + \frac{1}{(1.09)^3} + \frac{1}{(1.09)^4} + \frac{1}{(1.09)^5}$$

$$= 30447 - (18268 \times 3.24) + (12179 \times 0.65) = 81,719$$

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

$$\text{NPV} = -32892/1 + -17091/(1+.09) + -18218/(1+.09)^2 + -19513/(1+.09)^3 + -21121/(1+.09)^4 + 10157/(1+.09)^5 - 0$$

$$= (-) 87335$$

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

$$\text{NPV} = -x/1 + -0.6x/(1+.09)^2 + -0.6x/(1+.09)^3 + -0.6x/(1+.09)^4 + 0.4x/(1+.09)^5 - 0$$

$$= -x(0.6 \times 3.124) + 0.4x \times 0.65 = -2.684x$$

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, 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 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. 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. 5 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 56.

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:

(a) Value of the Firm, when Dividends are paid:

(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,

$$\Delta nP_1 = (E - nD_1) \quad (4)$$

$$= ₹ 5,00,000 - (₹ 2,50,000 - ₹ 1,25,000) = ₹ 3,75,000$$

(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 $nP_0 = \frac{(n - \Delta n)P_1 - 1 + E}{(1 + k_e)} = \left[\frac{25,000}{1} + \frac{75,000}{21} \right] (₹ 105) - ₹ 5,00,000 + ₹ 2,50,000$

$$= \frac{₹ 27,50,000}{1.10} = ₹ 25,00,000$$

(b) Value of the Firm, When Dividends are not Paid:

(i) Price per share at the end of the year1, $₹ 100 = \frac{P_1}{110}$ or $110 = P_1$

(ii) Amount required to be raised from the issue of new shares.

$$\Delta nP_1 = (₹ 5,00,000 - ₹ 2,50,000) = ₹ 2,50,000$$

(iii) Number of additional shares to be issued

$$= \frac{₹ 2,50,000}{₹ 110} = \frac{25,000}{11} \text{ Shares}$$

(iv) Value of the Firm

$$= \left[\frac{25,000}{1} + \frac{25,000}{11} \right] (₹ 110) - ₹ 5,00,000 + ₹ 2,50,000$$

$$= \frac{₹ 27,50,000}{1.10} - ₹ 25,00,000$$

Thus, whether dividends are paid or not, value of the firm remains the same

The above example clearly demonstrates that the shareholders are indifferent between the retention of profits and the payment of dividend.

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 57.

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 cost of production is less than net realisable value, 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 AS 4, 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 58.

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)	₹ 24,000
(+) Raw Material (900 × 9.50)	₹ 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;

- Estimating the future cash inflows and outflows arising from continuing use of the asset and from its ultimate disposal; and
- applying the appropriate discount rate to these future cash flows.

Illustration 59.

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	0.909	3636
2014	6,000	0.826	4956
2015	6,000	0.751	4506
2016	8,000	0.683	5464
2017	4,000	0.620	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 60.

PQR Ltd. is having a Machine carrying amount of which is ₹ 100 lakhs as on 31.3.2014. 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)
2015	52
2016	34
2017	32
2018	28
2019	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 31.12.2014 is ₹ 55 lakhs.

Solution:

Present Value of future cash flow

Year	Future cash flows	Discount @ 15%	DCF
2015	52	0.870	45.24
2016	34	0.756	25.704
2017	32	0.658	21.056
2018	28	0.572	16.016
2019	32	0.497	15.904
Total			123.92



Present Value of residual price on 31.03.2019: ₹5 × 0.497 = ₹ 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 rates 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 61.

On February 1,2013 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 31.01.2014 in exchange for payment of ₹ 1,04,000 in cash i.e.,₹ 104 per share on 31.01.2014. The contract will be settled in net cash

- (i) Fair value of forward on 01.02.2013: Nil
- (ii) Fair value of forward on 31.12 2013: ₹ 6,300
- (iii) Fair value of forward as on 31.01.2014: ₹ 2,000.

Give journal entries on the basis that net amount settled in cash.

Solution:

01.02.2013

No entry is required because fair value of derivatives is zero and no cash is paid or received.

31.12.2013

Debit forward asset and credit 'gain' by ₹6,300

31.01.2014

Loss account to be debited and forward asset to be credited by ₹ 4,300

31.01.2014

Debit cash and credit forward asset by ₹ 2,000

Illustration 62.

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.



The Institute of Cost Accountants of India

(Statutory body under an Act of Parliament)

CMA Bhawan, 12, Sudder Street, Kolkata 700016

Phones: +91-33-2252 1031 / 1034 / 1035 / 1602 / 2252 / 1492

Fax: +91-33-22527993, +91-33-22522872

Website: www.icmai.in