



2

Financial Statements, Taxes, and Cash Flow

THE COVID-19 CRISIS in the early part of 2020 affected many industries, perhaps none more significantly than the airline industry. The International Air Transport Association (IATA) estimated a 48 percent drop in airline traffic and a 55 percent drop in revenue for the airline industry, leading to large losses for the airlines. United, for example, lost about \$2 billion in the first quarter of 2020, and worse losses appeared to be ahead. The company expected to fly fewer passengers in the entire month of May 2020 than it did on any one day in May 2019.

Of course, global pandemics aren't the only reason companies report losses. In mid-2019, Procter & Gamble announced that it would write off nearly \$8 billion due to a decrease in the value of its Gillette brand. Two months earlier, Disney announced it would write off \$400 million of its investment in Vice Media, which at one point was valued at \$5.7 billion.

So did stockholders in the major airlines lose money because of the traffic reduction? Definitely. Did stockholders in Procter & Gamble and Disney lose money when the write-offs were announced? Probably not. Understanding why ultimately leads us to the main subject of this chapter: that all-important substance known as *cash flow*.

LEARNING OBJECTIVES

After studying this chapter, you should be able to:

- | | |
|---|--|
| L01 Describe the difference between accounting value (or <i>book value</i>) and market value. | L03 Describe the difference between average and marginal tax rates. |
| L02 Describe the difference between accounting income and cash flow. | L04 Determine a firm's cash flow from its financial statements. |

For updates on the latest happenings in finance, visit fundamentalsofcorporatefinance.blogspot.com.

In this chapter, we examine financial statements, taxes, and cash flow. Our emphasis is not on preparing financial statements. Instead, we recognize that financial statements are frequently a key source of information for financial decisions, so our goal is to briefly examine such statements and point out some of their more relevant features. We focus on what is, and what is not, cash flow.

As you read, pay particular attention to two important differences: (1) the difference between accounting value and market value and (2) the difference between accounting income and cash flow. These distinctions will be important throughout the book.

The Balance Sheet

The **balance sheet** is a snapshot of the firm. It is a convenient means of organizing and summarizing what a firm owns (its assets), what a firm owes (its liabilities), and the difference between the two (the firm's equity) at a given point in time. Figure 2.1 illustrates how the balance sheet is constructed. As shown, the left side lists the assets of the firm, and the right side lists the liabilities and equity.

ASSETS: THE LEFT SIDE

Assets are classified as either *current* or *fixed* assets. A fixed asset is one that has a relatively long life. Fixed assets can be either *tangible*, such as a truck or a computer, or *intangible*, such as a trademark or patent. A current asset has a life of less than one year. This means that the asset will convert to cash within 12 months. For example, inventory would normally be purchased and sold within a year and is classified as a current asset. Obviously, cash itself is a current asset. Accounts receivable (money owed to the firm by its customers) are also current assets.

LIABILITIES AND OWNERS' EQUITY: THE RIGHT SIDE

The firm's liabilities are the first thing listed on the right side of the balance sheet. These are classified as either *current* or *long-term*. Current liabilities, like current assets, have a life of less than one year (meaning they must be paid within the year) and are listed before long-term liabilities. Accounts payable (money the firm owes to its suppliers) are one example of a current liability.

A debt that is not due in the coming year is classified as a long-term liability. A loan that the firm will pay off in five years is one such long-term debt. Firms borrow in the long term from a variety of sources. We will tend to use the terms *bond* and *bondholders* generically to refer to long-term debt and long-term creditors, respectively.

Finally, by definition, the difference between the total value of the assets (current and fixed) and the total value of the liabilities (current and long-term) is the *shareholders' equity*, also called *common equity* or *owners' equity*. This feature of the balance sheet is intended to reflect the fact that, if the firm were to sell all its assets and use the money to pay off its debts, then whatever residual value remained would belong to the shareholders. So, the balance sheet "balances" because the value of the left side always equals the value

2.1

Excel Master



Excel Master
coverage online

balance sheet

Financial statement showing a firm's accounting value on a particular date.



Three excellent sites for company financial information are **finance.yahoo.com**, **finance.google.com**, and **www.reuters.com/finance/markets**.

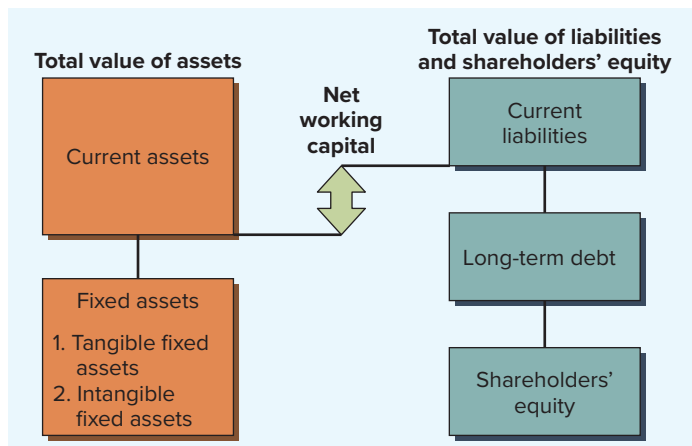


FIGURE 2.1

The Balance Sheet.
Left Side: Total Value of Assets. Right Side: Total Value of Liabilities and Shareholders' Equity.

2.1

net working capital
Current assets less current liabilities.

of the right side. That is, the value of the firm’s assets is equal to the sum of its liabilities and shareholders’ equity:¹

Assets = Liabilities + Shareholders’ equity

This is the *balance sheet identity*, or equation, and it always holds because shareholders’ equity is defined as the difference between assets and liabilities.

NET WORKING CAPITAL

As shown in Figure 2.1, the difference between a firm’s current assets and its current liabilities is called **net working capital**. Net working capital is positive when current assets exceed current liabilities. Based on the definitions of current assets and current liabilities, this means the cash that will become available over the next 12 months exceeds the cash that must be paid over the same period. For this reason, net working capital is usually positive in a healthy firm.

EXAMPLE 2.1 Building the Balance Sheet

A firm has current assets of \$100, net fixed assets of \$500, short-term debt of \$70, and long-term debt of \$200. What does the balance sheet look like? What is shareholders’ equity? What is net working capital?

In this case, total assets are $\$100 + \$500 = \$600$ and total liabilities are $\$70 + \$200 = \$270$, so shareholders’ equity is the difference: $\$600 - \$270 = \$330$. The balance sheet would look like this:

Assets		Liabilities and Shareholders’ Equity	
Current assets	\$100	Current liabilities	\$ 70
Net fixed assets	500	Long-term debt	200
		Shareholders’ equity	330
		Total liabilities and shareholders’ equity	600
Total assets	\$600		

Net working capital is the difference between current assets and current liabilities, or $\$100 - \$70 = \$30$.

Table 2.1 shows simplified balance sheets for the fictitious U.S. Corporation. The assets on the balance sheet are listed in order of the length of time it takes for them to convert to cash in the normal course of business. Similarly, the liabilities are listed in the order in which they would normally be paid.

The structure of the assets for a particular firm reflects the line of business the firm is in, as well as managerial decisions regarding how much cash and inventory to have on hand, the firm’s credit policy, fixed-asset acquisitions, and so on.

The liabilities side of the balance sheet primarily reflects managerial decisions about capital structure and the use of short-term debt. For example, in 2021, total long-term debt for U.S. Corporation was \$454 and total equity was $\$640 + \$1,690 = \$2,330$, so total long-term financing was $\$454 + \$2,330 = \$2,784$. (Note that, throughout, all figures are in millions of dollars.) Of this amount, $\$454/\$2,784 = .1631$, or 16.31 percent was long-term debt. This percentage reflects capital structure decisions made in the past by the management of U.S.

There are three particularly important things to keep in mind when examining a balance sheet: liquidity, debt versus equity, and market value versus book value.

¹The terms *owners’ equity*, *shareholders’ equity*, and *stockholders’ equity* are used interchangeably to refer to the equity in a corporation. The term *net worth* is also used. Variations exist in addition to these.



Disney has a good investor relations site at thewaltdisneycompany.com/investor-relations.



TABLE 2.1

Balance Sheets

U.S. CORPORATION 2020 and 2021 Balance Sheets (in millions)					
Assets			Liabilities and Owners' Equity		
	2020	2021		2020	2021
Current assets			Current liabilities		
Cash	\$ 104	\$ 221	Accounts payable	\$ 232	\$ 266
Accounts receivable	455	688	Notes payable	196	123
Inventory	553	555	Total	\$ 428	\$ 389
Total	\$ 1,112	\$ 1,464			
Fixed assets					
Net plant and equipment	\$ 1,644	\$ 1,709	Long-term debt	\$ 408	\$ 454
			Owners' equity		
			Common stock and paid-in surplus	\$ 600	\$ 640
			Retained earnings	1,320	1,690
			Total	\$ 1,920	\$ 2,330
Total assets	\$ 2,756	\$ 3,173	Total liabilities and owners' equity	\$ 2,756	\$ 3,173

LIQUIDITY

Liquidity refers to the speed and ease with which an asset can be converted to cash. Gold is a relatively liquid asset; a custom manufacturing facility is not. Liquidity actually has two dimensions: ease of conversion versus loss of value. Any asset can be converted to cash quickly if we cut the price enough. A highly liquid asset is therefore one that can be quickly sold without significant loss of value. An illiquid asset is one that cannot be quickly converted to cash without a substantial price reduction.

Assets are normally listed on the balance sheet in order of decreasing liquidity, meaning that the most liquid assets are listed first. Current assets are relatively liquid and include cash and assets we expect to convert to cash over the next 12 months. Accounts receivable, for example, represent amounts not yet collected from customers on sales already made. Naturally, we hope these will convert to cash in the near future. Inventory is probably the least liquid of the current assets, at least for many businesses.

Fixed assets are, for the most part, relatively illiquid. These consist of tangible things such as buildings and equipment that don't convert to cash at all in normal business activity (they are, of course, used in the business to generate cash). Intangible assets, such as a trademark, have no physical existence but can be very valuable. Like tangible fixed assets, they won't ordinarily convert to cash and are generally considered illiquid.

Liquidity is valuable. The more liquid a business is, the less likely it is to experience financial distress (that is, difficulty in paying debts or buying needed assets). Unfortunately, liquid assets are generally less profitable to hold. Cash holdings are the most liquid of all investments, but they sometimes earn no return at all—they just sit there. There is therefore a trade-off between the advantages of liquidity and forgone potential profits.

The COVID-19 pandemic highlighted the importance of liquidity. In late 2019, large tech companies such as Apple and Microsoft were being criticized for their huge cash stockpiles. Such companies looked pretty smart when government-imposed lockdowns in the spring of 2020 sent the economy into a tailspin. Well-known companies such as rental car giant Hertz and retailer J.C. Penney went bankrupt as they ran out of cash and could no longer operate.



Annual and quarterly financial statements (and lots more) for most public U.S. corporations can be found in the EDGAR database at www.sec.gov.

generally accepted accounting principles (GAAP)

The common set of standards and procedures by which audited financial statements are prepared.



The home page for the Financial Accounting Standards Board (FASB) is www.fasb.org.

DEBT VERSUS EQUITY

To the extent that a firm borrows money, it usually gives first claim to the firm's cash flow to creditors. Equity holders are entitled to only the residual value, the portion left after creditors are paid. The value of this residual portion is the shareholders' equity in the firm, which is the value of the firm's assets less the value of the firm's liabilities:

$$\text{Shareholders' equity} = \text{Assets} - \text{Liabilities}$$

This is true in an accounting sense because shareholders' equity is defined as this residual portion. More important, it is true in an economic sense: If the firm sells its assets and pays its debts, whatever cash is left belongs to the shareholders.

The use of debt in a firm's capital structure is called *financial leverage*. The more debt a firm has (as a percentage of assets), the greater is its degree of financial leverage. As we discuss in later chapters, debt acts like a lever in the sense that using it can greatly magnify both gains and losses. So, financial leverage increases the potential reward to shareholders, but it also increases the potential for financial distress and business failure.

MARKET VALUE VERSUS BOOK VALUE

The values shown on the balance sheet for the firm's assets are *book values* and generally are not what the assets are actually worth. Under **generally accepted accounting principles (GAAP)**, audited financial statements in the United States mostly show assets at *historical cost*. In other words, assets are "carried on the books" at what the firm paid for them, no matter how long ago they were purchased or how much they are worth today.

For current assets, market value and book value might be somewhat similar because current assets are bought and converted into cash over a relatively short span of time. In other circumstances, the two values might differ quite a bit. Moreover, for fixed assets, it would be purely a coincidence if the actual market value of an asset (what the asset could be sold for) were equal to its book value. A railroad might own enormous tracts of land purchased a century or more ago. What the railroad paid for that land could be hundreds or thousands of times less than what the land is worth today. The balance sheet would nonetheless show the historical cost.

The difference between market value and book value is important for understanding the impact of reported gains and losses. For example, from time to time, accounting rule changes take place that lead to reductions in the book value of certain types of assets. However, a change in accounting rules all by itself has no effect on what the assets in question are really worth. Instead, the market value of an asset depends on things like its riskiness and cash flows, neither of which have anything to do with accounting.

The balance sheet is potentially useful to many different parties. A supplier might look at the size of accounts payable to see how promptly the firm pays its bills. A potential creditor would examine the liquidity and degree of financial leverage. Managers within the firm can track things like the amount of cash and the amount of inventory the firm keeps on hand. Uses such as these are discussed in more detail in Chapter 3.

Managers and investors will frequently be interested in knowing the value of the firm. This information is not on the balance sheet. The fact that balance sheet assets are listed at cost means that there is no necessary connection between the total assets shown and the value of the firm. Indeed, many of the most valuable assets a firm might have—good management, a good reputation, talented employees—don't appear on the balance sheet at all.

Similarly, the shareholders' equity figure on the balance sheet and the true value of the stock need not be related. For example, in late 2019, the book value of IBM's equity was about \$17.6 billion, while the market value was \$129 billion. At the same time, Alphabet's book value was \$172 billion, while the market value was \$831 billion.

For financial managers, then, the accounting value of the stock is not an especially important concern; it is the market value that matters. Henceforth, whenever we speak of the value of an asset or the value of the firm, we will normally mean its *market value*. So, for example, when we say the goal of the financial manager is to increase the value of the stock, we mean the market value of the stock.

Market Value versus Book Value

EXAMPLE 2.2

The Klingon Corporation has net fixed assets with a book value of \$700 and an appraised market value of about \$1,000. Net working capital is \$400 on the books, but approximately \$600 would be realized if all the current accounts were liquidated. Klingon has \$500 in long-term debt, both book value and market value. What is the book value of the equity? What is the market value?

We can construct two simplified balance sheets, one in accounting (book value) terms and one in economic (market value) terms:

KLINGON CORPORATION Balance Sheets Market Value versus Book Value					
Assets			Liabilities and Shareholders' Equity		
	Book	Market		Book	Market
Net working capital	\$ 400	\$ 600	Long-term debt	\$ 500	\$ 500
Net fixed assets	700	1,000	Shareholders' equity	600	1,100
	<u>\$1,100</u>	<u>\$1,600</u>		<u>\$1,100</u>	<u>\$1,600</u>

In this example, shareholders' equity is actually worth almost twice as much as what is shown on the books. The distinction between book and market values is important precisely because book values can be so different from true economic value.

Concept Questions

- 2.1a** What is the balance sheet identity?
- 2.1b** What is liquidity? Why is it important?
- 2.1c** What do we mean by financial leverage?
- 2.1d** Explain the difference between book value and market value. Which is more important to the financial manager? Why?

The Income Statement

The **income statement** measures performance over some period of time, usually a quarter or a year. The income statement equation is:

$$\text{Revenues} - \text{Expenses} = \text{Income}$$

If you think of the balance sheet as a snapshot, then you can think of the income statement as a video recording covering the period between before and after pictures. Table 2.2 gives a simplified income statement for U.S. Corporation.

income statement

Financial statement summarizing a firm's performance over a period of time.

2.2

2.2

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Excel Master coverage online



TABLE 2.2

Income Statement

U.S. CORPORATION 2021 Income Statement (in millions)	
Net sales	\$ 1,509
Cost of goods sold	750
Depreciation	65
Earnings before interest and taxes	\$ 694
Interest paid	70
Taxable income	\$ 624
Taxes (21%)	131
Net income	\$ 493
Dividends	\$ 123
Addition to retained earnings	370

The first thing reported on an income statement would usually be revenue and expenses from the firm's principal operations. Subsequent parts include, among other things, financing expenses such as interest paid. Taxes paid are reported separately. The last item is *net income* (the so-called bottom line). Net income is often expressed on a per-share basis and called *earnings per share* (EPS).

As indicated, U.S. Corporation paid cash dividends of \$123. The difference between net income and cash dividends, \$370, is the addition to retained earnings for the year. This amount is added to the cumulative retained earnings account on the balance sheet. If you look back at the two balance sheets for U.S. Corporation, you'll see that retained earnings did go up by this amount: $\$1,320 + 370 = \$1,690$.

EXAMPLE 2.3

Calculating Earnings and Dividends per Share

Suppose U.S. had 200 million shares outstanding at the end of 2021. Based on the income statement in Table 2.2, what was EPS? What were dividends per share?

From the income statement, we see that U.S. had a net income of \$493 million for the year. Total dividends were \$123 million. Because 200 million shares were outstanding, we can calculate earnings per share, or EPS, and dividends per share as follows:

$$\begin{aligned}
 \text{Earnings per share} &= \text{Net income} / \text{Total shares outstanding} \\
 &= \$493 / 200 = \$2.46 \text{ per share} \\
 \text{Dividends per share} &= \text{Total dividends} / \text{Total shares outstanding} \\
 &= \$123 / 200 = \$0.615 \text{ per share}
 \end{aligned}$$

When looking at an income statement, the financial manager needs to keep three things in mind: GAAP, cash versus noncash items, and time and costs.

GAAP AND THE INCOME STATEMENT

An income statement prepared using GAAP will show revenue when it accrues. This is not necessarily when the cash comes in. The general rule (the *recognition* or *realization principle*) is to recognize revenue when the earnings process is virtually complete and the value of an exchange of goods or services is known or can be reliably determined. In practice, this principle usually means that revenue is recognized at the time of sale, which need not be the same as the time of collection.

Expenses shown on the income statement are based on the *matching principle*. The basic idea here is to first determine revenues as described previously and then match those revenues with the costs associated with producing them. So, if we manufacture a product and then sell it on credit, the revenue is realized at the time of sale. The production and other costs associated with the sale of that product will likewise be recognized at that time. Once again, the actual cash outflows may have occurred at some different time.

As a result of the way revenues and expenses are realized, the figures shown on the income statement may not be at all representative of the actual cash inflows and outflows that occurred during a particular period.

NONCASH ITEMS

A primary reason that accounting income differs from cash flow is that an income statement contains **noncash items**. The most important of these is *depreciation*. Suppose a firm purchases an asset for \$5,000 and pays in cash. Obviously, the firm has a \$5,000 cash outflow at the time of purchase. However, instead of deducting the \$5,000 as an expense, an accountant might depreciate the asset over a five-year period.

If the depreciation is straight-line and the asset is written down to zero over that period, then $\$5,000/5 = \$1,000$ will be deducted each year as an expense.² The important thing to recognize is that this \$1,000 deduction isn't cash—it's an accounting number. The actual cash outflow occurred when the asset was purchased.

The depreciation deduction is another application of the matching principle in accounting. The revenues associated with an asset generally occur over some length of time. So, the accountant seeks to match the expense of purchasing the asset with the benefits produced from owning it.

As we will see, for the financial manager, the actual timing of cash inflows and outflows is critical in coming up with a reasonable estimate of market value. For this reason, we need to learn how to separate the cash flows from the noncash accounting entries. In reality, the difference between cash flow and accounting income can be pretty dramatic. For example, consider the case of General Electric, which reported a net loss of \$9.47 billion for the third quarter of 2019. Sounds bad, but GE also reported a *positive* cash flow of \$650 million, a difference of about \$10.1 billion! Of course, sometimes this relationship can work in the other direction, especially for a growing company. For example, when Netflix reported its annual earnings in 2019, it reported positive net income of \$1.2 billion, but a negative cash flow of \$2.9 billion. Netflix was spending heavily on buying and making content, resulting in the negative cash flows.

TIME AND COSTS

It is often useful to think of the future as having two distinct parts: the short run and the long run. These are not precise time periods. The distinction has to do with whether costs are fixed or variable. In the long run, all business costs are variable. Given sufficient time, assets can be sold, debts can be paid, and so on.

If our time horizon is relatively short, however, some costs are effectively fixed—they must be paid no matter what (property taxes, for example). Other costs, such as wages to laborers and payments to suppliers, are still variable. As a result, even in the short run, the firm can vary its output level by varying expenditures in these areas.

The distinction between fixed and variable costs is important, at times, to the financial manager, but the way costs are reported on the income statement is not a good guide to which costs are which. The reason is that, in practice, accountants tend to classify costs as either product costs or period costs.

noncash items

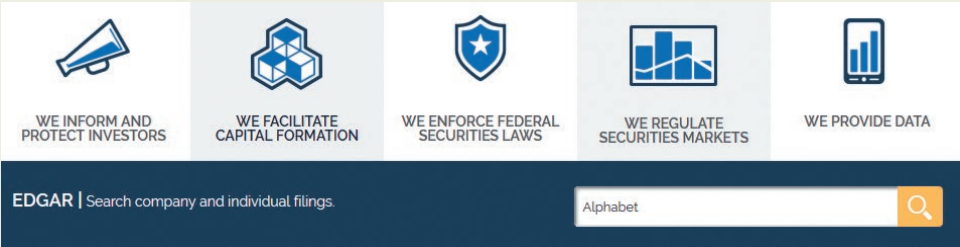
Expenses charged against revenues that do not directly affect cash flow, such as depreciation.

²By *straight-line*, we mean that the depreciation deduction is the same every year. By *written down to zero*, we mean that the asset is assumed to have no value at the end of five years. Depreciation is discussed in more detail in Chapter 10.

WORK THE WEB



The U.S. Securities and Exchange Commission (SEC) requires that most public companies file regular reports, including annual and quarterly financial statements. The SEC has a public site named EDGAR that makes these free reports available at www.sec.gov. We went to “Search EDGAR” and looked up Alphabet:



Here is a partial view of what we found:

Alphabet Inc. CIK#: 0001652044 (see all company filings)
SIC: 7370 - SERVICES-COMPUTER PROGRAMMING, DATA PROCESSING, ETC.
State location: CA | State of Inc.: DE | Fiscal Year End: 1231
(Office of Technology)
Get [insider transactions](#) for this issuer.
Get [insider transactions](#) for this reporting owner.

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Filings	Format	Description	Filing Date	File/Film Number
8-K	Documents Interactive Data	Current report, item 8.01 Acc-no: 0001652044-19-000025 (34 Act) Size: 230 KB	2019-09-06	001-37580 191080294
S-8	Documents	Securities to be offered to employees in employee benefit plans Acc-no: 0001193125-19-202759 (33 Act) Size: 70 KB	2019-07-26	333-232836 19975548
10-Q	Documents Interactive Data	Quarterly report [Sections 13 or 15(d)] Acc-no: 0001652044-19-000023 (34 Act) Size: 13 MB	2019-07-26	001-37580 19975414
8-K	Documents	Current report, items 2.02 and 9.01 Acc-no: 0001652044-19-000021 (34 Act) Size: 486 KB	2019-07-25	001-37580 19974430
8-K	Documents	Current report, items 5.02, 5.07, and 9.01 Acc-no: 0001193125-19-178962 (34 Act) Size: 148 KB	2019-06-21	001-37580 19912420
PX14A6G	Documents	Notice of exempt solicitation submitted by non-management Acc-no: 0001085146-19-001758 (34 Act) Size: 25 KB	2019-06-19	001-37580 19905801
PX14A6G	Documents	Notice of exempt solicitation submitted by non-management Acc-no: 0001214659-19-004265 (34 Act) Size: 32 KB	2019-06-19	001-37580 19905661
DEFA14A	Documents	Additional definitive proxy soliciting materials and Rule 14(a)(12) material Acc-no: 0001193125-19-175837 (34 Act) Size: 45 KB	2019-06-19	001-37580 19904808

The two reports we look at the most are the 10-K, which is the annual report filed with the SEC, and the 10-Q. The 10-K includes the list of officers and their salaries, financial statements for the previous fiscal year, and an explanation by the company of the financial results. The 10-Q is a smaller report that includes the financial statements for the quarter.

Questions

- As you can imagine, electronic filing of documents with the SEC has not been around for very long. Go to www.sec.gov and find the filings for General Electric. What is the date of the oldest 10-K available on the website for General Electric? Look up the 10-K forms for IBM and Apple to see if the year of the first electronic filing is the same for these companies.
- Go to www.sec.gov and find out when the following forms are used: Form DEF 14A, Form 8-K, and Form 6-K.

Product costs include such things as raw materials, direct labor expense, and manufacturing overhead. These are reported on the income statement as costs of goods sold, but they include both fixed and variable costs. Similarly, period costs are incurred during a particular time period and might be reported as selling, general, and administrative

expenses. Once again, some of these period costs may be fixed and others may be variable. The company president's salary, for example, is a period cost and is probably fixed, at least in the short run.

The balance sheets and income statement we have been using thus far are hypothetical. Our nearby *Work the Web* box shows how to find actual balance sheets and income statements online for almost any company. Also, with the increasing globalization of business, there is a clear need for accounting standards to become more comparable across countries. Accordingly, in recent years, U.S. accounting standards have become more closely tied to International Financial Reporting Standards (IFRS). In particular, the Financial Accounting Standards Board (FASB), which is in charge of U.S. GAAP policies, and the International Accounting Standards Board (IASB), which is in charge of IFRS policies, have been working toward a convergence of policies since 2002. Although GAAP and IFRS have become similar in important ways, as of early 2020, it appears that a full convergence of accounting policies is off the table, at least for now.

Concept Questions

- 2.2a** What is the income statement equation?
- 2.2b** What are the three things to keep in mind when looking at an income statement?
- 2.2c** Why is accounting income not the same as cash flow? Give two reasons.

Taxes

Taxes can be one of the largest cash outflows a firm experiences. For example, for the fiscal year 2019, Southwest Airlines' earnings before taxes were about \$2.96 billion. Its tax bill, including all taxes paid worldwide, was a whopping \$657 million, or about 22 percent of its pretax earnings. Also for fiscal year 2019, Walmart had a taxable income of \$20.12 billion, and the company paid \$4.92 billion in taxes—an average tax rate of 24 percent.

The size of a company's tax bill is determined by the tax code, an often amended set of rules. In this section, we examine corporate tax rates and how taxes are calculated. If the various rules of taxation seem a little bizarre or convoluted to you, keep in mind that the tax code is the result of political, not economic, forces. As a result, there is no reason why it has to make economic sense.

CORPORATE TAX RATES

After the passage of the Tax Cuts and Jobs Act of 2017, the federal corporate tax rate in the United States became a flat 21 percent. However, tax rates on other forms of business such as proprietorships, partnerships, and LLCs did not become flat. To illustrate some important points about taxes for such entities, we take a look at personal tax rates in Table 2.3. As shown, in 2020, there are seven tax brackets, ranging from 10 percent to a high of 37 percent, down from 39.6 percent in 2017.

AVERAGE VERSUS MARGINAL TAX RATES

In making financial decisions, it is frequently important to distinguish between average and marginal tax rates. Your **average tax rate** is your tax bill divided by your taxable income—in other words, the percentage of your income that goes to pay taxes. Your



For more information about IFRS, check out the website www.ifrs.org.

2.3

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average tax rate

Total taxes paid divided by total taxable income.

**TABLE 2.3**
**Personal Tax Rates
for 2020 (Unmarried
Individuals)**
marginal tax rate

Amount of tax payable on the next dollar earned.



The IRS has a great website!
Check out www.irs.gov.

Taxable Income	Tax Rate
\$ 0– 9,875	10%
9,875– 40,125	12
40,125– 85,525	22
85,525–163,300	24
163,300–207,350	32
207,350–518,400	35
518,400+	37

marginal tax rate is the rate of the extra tax you would pay if you earned one more dollar. The percentage tax rates shown in Table 2.3 are all marginal rates. Put another way, the tax rates in Table 2.3 apply to the part of income in the indicated range only, not all income.

The difference between average and marginal tax rates can best be illustrated with an example. Suppose you are single and had a taxable income of \$100,000 in 2020. What was your tax bill? Using Table 2.3, we can figure your tax bill:

$$\begin{aligned}
 .10(\$9,875) &= \$ 987.50 \\
 .12(\$40,125 - 9,875) &= 3,630.00 \\
 .22(\$85,525 - 40,125) &= 9,988.00 \\
 .24(\$100,000 - 85,525) &= 3,474.00 \\
 &\underline{\underline{\$18,079.50}}
 \end{aligned}$$

Your total tax was \$18,079.50.

In our example, what is the average tax rate? You had a taxable income of \$100,000 and a tax bill of \$18,079.50, so the average tax rate is $\$18,079.50/\$100,000 = .1808$, or 18.08 percent. What is the marginal tax rate? If you made one more dollar, the tax on that dollar would be 24 cents, so your marginal rate is 24 percent.

EXAMPLE 2.4
Deep in the Heart of Taxes

Algernon, a small proprietorship owned by an unmarried individual, has a taxable income of \$80,000. What is its tax bill? What is its average tax rate? Its marginal tax rate?

From Table 2.3, we see that the tax rate applied to the first \$9,875 is 10 percent; the rate applied to the next \$30,250 is 12 percent; and the rate applied after that up to \$80,000 is 22 percent. So Algernon must pay $.10 \times \$9,875 + .12 \times \$30,250 + .22 \times (\$80,000 - 40,125) = \$13,390$. The average tax rate is thus $\$13,390/\$80,000 = .1674$, or 16.74 percent. The marginal rate is 22 percent because Algernon's taxes would rise by 22 cents if it had another dollar in taxable income.

Normally the marginal tax rate is relevant for financial decision making. The reason is that any new cash flows will be taxed at that marginal rate. Because financial decisions usually involve new cash flows or changes in existing ones, this rate will tell us the marginal effect of a decision on our tax bill.

Before moving on, we should note that the tax rates we have discussed in this section relate to federal taxes only. Overall tax rates can be higher if state, local, and any other taxes are considered.

Concept Questions

- 2.3a** What is the difference between a marginal and an average tax rate?
- 2.3b** What was the impact of the Tax Cuts and Jobs Act of 2017 on corporate tax rates?

Cash Flow

At this point, we are ready to discuss perhaps one of the most important pieces of financial information that can be gleaned from financial statements: cash flow. By *cash flow*, we mean the difference between the number of dollars that came in and the number of dollars that went out. If you were the owner of a business, you might be very interested in how much cash you actually took out of your business in a given year. How to determine this amount is one of the things we discuss next.

No standard financial statement presents this information in the way that we wish. We will therefore discuss how to calculate cash flow for U.S. Corporation and point out how the result differs from that of standard financial statement calculations. There is a standard financial accounting statement called the *statement of cash flows*, but it is concerned with a somewhat different issue that should not be confused with what is discussed in this section. The accounting statement of cash flows is discussed in Chapter 3.

From the balance sheet identity, we know that the value of a firm's assets is equal to the value of its liabilities plus the value of its equity. Similarly, the cash flow from the firm's assets must equal the sum of the cash flow to creditors and the cash flow to stockholders (or owners):

$$\text{Cash flow from assets} = \text{Cash flow to creditors} + \text{Cash flow to stockholders}$$

This is the *cash flow identity*. It says that the cash flow from the firm's assets is equal to the cash flow paid to suppliers of capital to the firm. What it reflects is the fact that a firm generates cash through its various activities, and that cash is either used to pay creditors or paid out to the owners of the firm. We discuss the various things that make up these cash flows next.

CASH FLOW FROM ASSETS

Cash flow from assets involves three components: operating cash flow, capital spending, and change in net working capital. **Operating cash flow** refers to the cash flow that results from the firm's day-to-day activities of producing and selling. Expenses associated with the firm's financing of its assets are not included because they are not operating expenses.

As we discussed in Chapter 1, some portion of the firm's cash flow is reinvested in the firm. *Capital spending* refers to the net spending on fixed assets (purchases of fixed assets less sales of fixed assets). Finally, *change in net working capital* is measured as the net change in current assets relative to current liabilities for the period being examined and represents the amount spent on net working capital. The three components of cash flow are examined in more detail next.

Operating Cash Flow To calculate operating cash flow (OCF), we want to calculate revenues minus costs, but we don't want to include depreciation because it's not a cash outflow, and we don't want to include interest because it's a financing expense. We do want to include taxes because taxes are (unfortunately) paid in cash.

2.4

Excel Master



2.3

cash flow from assets

The total of cash flow to creditors and cash flow to stockholders, consisting of the following: operating cash flow, capital spending, and change in net working capital.

operating cash flow

Cash generated from a firm's normal business activities.

If we look at U.S. Corporation's income statement (Table 2.2), we see that earnings before interest and taxes (EBIT) are \$694. This is almost what we want because it doesn't include interest paid. However, we need to make two adjustments. First, recall that depreciation is a noncash expense. To get cash flow, we first add back the \$65 in depreciation because it wasn't a cash deduction. The other adjustment is to subtract the \$131 in taxes because these were paid in cash. The result is operating cash flow:

U.S. CORPORATION 2021 Operating Cash Flow	
Earnings before interest and taxes	\$694
+ Depreciation	65
– Taxes	131
Operating cash flow	<u>\$628</u>

U.S. Corporation had a 2021 operating cash flow of \$628.

Operating cash flow is an important number because it tells us, on a very basic level, whether a firm's cash inflows from its business operations are sufficient to cover its everyday cash outflows. For this reason, a negative operating cash flow is often a sign of trouble.

There is an unpleasant possibility of confusion when we speak of operating cash flow. In accounting practice, operating cash flow is often defined as net income plus depreciation. For U.S. Corporation, this would amount to $\$493 + 65 = \558 .

The accounting definition of operating cash flow differs from ours in one important way: Interest is deducted when net income is computed. Notice that the difference between the \$628 operating cash flow we calculated and this \$558 is \$70, the amount of interest paid for the year. This definition of cash flow thus considers interest paid to be an operating expense. Our definition treats it properly as a financing expense. If there were no interest expense, the two definitions would be the same.

To finish our calculation of cash flow from assets for U.S. Corporation, we need to consider how much of the \$628 operating cash flow was reinvested in the firm. We consider spending on fixed assets first.

Capital Spending Net capital spending is money spent on fixed assets less money received from the sale of fixed assets. At the end of 2020, net fixed assets for U.S. Corporation (Table 2.1) were \$1,644. During the year, U.S. wrote off (depreciated) \$65 worth of fixed assets on the income statement. So, if the firm didn't purchase any new fixed assets, net fixed assets would have been $\$1,644 - 65 = \$1,579$ at year's end. The 2021 balance sheet shows \$1,709 in net fixed assets, so U.S. must have spent a total of $\$1,709 - 1,579 = \130 on fixed assets during the year:

Ending net fixed assets	\$1,709
– Beginning net fixed assets	1,644
+ Depreciation	65
Net capital spending	<u>\$ 130</u>

This \$130 is the net capital spending for 2021.

Could net capital spending be negative? The answer is yes. This would happen if the firm sold more assets than it purchased. The *net* here refers to purchases of fixed assets net of any sales of fixed assets. You will often see capital spending called CAPEX, which is an acronym for capital expenditures. It usually means the same thing.

Change in Net Working Capital In addition to investing in fixed assets, a firm will also invest in current assets. Going back to the balance sheets in Table 2.1, we see that, at the end of 2021, U.S. had current assets of \$1,464. At the end of 2020, current assets were \$1,112; so, during the year, U.S. invested $\$1,464 - \$1,112 = \$352$ in current assets.

As the firm changes its investment in current assets, its current liabilities will usually change as well. To determine the change in net working capital, the easiest approach is to take the difference between the beginning and ending net working capital (NWC) figures. Net working capital at the end of 2021 was $\$1,464 - \$389 = \$1,075$. Similarly, at the end of 2020, net working capital was $\$1,112 - \$428 = \$684$. Given these figures, we have the following:

Ending NWC	\$1,075
– Beginning NWC	684
Change in NWC	<u>\$ 391</u>

Net working capital thus increased by \$391. Put another way, U.S. Corporation had a net investment of \$391 in NWC for the year. This change in NWC is often referred to as the “addition to” NWC.

Conclusion Given the figures we’ve come up with, we’re ready to calculate cash flow from assets. The total cash flow from assets is given by operating cash flow less the amounts invested in fixed assets and net working capital. So, for U.S. Corporation, we have:

U.S. CORPORATION 2021 Cash Flow from Assets	
Operating cash flow	\$628
– Net capital spending	130
– Change in NWC	<u>391</u>
Cash flow from assets	<u>\$107</u>

From the cash flow identity given earlier, we know that this \$107 cash flow from assets equals the sum of the firm’s cash flow to creditors and its cash flow to stockholders. We consider these next.

It wouldn’t be at all unusual for a growing corporation to have a negative cash flow. As we see next, a negative cash flow means that the firm raised more money by borrowing and selling stock than it paid out to creditors and stockholders during the year.

A Note about “Free” Cash Flow Cash flow from assets sometimes goes by a different name, **free cash flow**. Of course, there is no such thing as “free” cash (we wish!). Instead the name refers to cash that the firm is free to distribute to creditors and stockholders because it is not needed for working capital or fixed asset investments. We will stick with “cash flow from assets” as our label for this important concept because, in practice, there is some variation in exactly how free cash flow is computed; different users calculate it in different ways. Nonetheless, whenever you hear the phrase “free cash flow,” you should understand that what is being discussed is cash flow from assets or something quite similar.

free cash flow

Another name for cash flow from assets.

cash flow to creditors

A firm’s interest payments to creditors less net new borrowing.

cash flow to stockholders

Dividends paid out by a firm less net new equity raised.

CASH FLOW TO CREDITORS AND STOCKHOLDERS

The cash flows to creditors and stockholders represent the net payments to creditors and owners during the year. Their calculation is similar to that of cash flow from assets. **Cash flow to creditors** is interest paid less net new borrowing; **cash flow to stockholders** is dividends paid less net new equity raised.

Cash Flow to Creditors Looking at the income statement in Table 2.2, we see that U.S. Corporation paid \$70 in interest to creditors. From the balance sheets in Table 2.1, we see that long-term debt rose by $\$454 - 408 = \46 . So U.S. Corporation paid out \$70 in interest, but it borrowed an additional \$46. Thus, net cash flow to creditors is:

U.S. CORPORATION 2021 Cash Flow to Creditors	
Interest paid	\$70
– Net new borrowing	46
Cash flow to creditors	\$24

Cash flow to creditors is sometimes called *cash flow to bondholders*; we will use these terms interchangeably.

Cash Flow to Stockholders From the income statement, we see that dividends paid to stockholders amounted to \$123. To get net new equity raised, we need to look at the common stock and paid-in surplus account. This account tells us how much stock the company has sold. During the year, this account rose by \$40, so \$40 in net new equity was raised. Given this, we have the following:

U.S. CORPORATION 2021 Cash Flow to Stockholders	
Dividends paid	\$123
– Net new equity raised	40
Cash flow to stockholders	\$ 83

The cash flow to stockholders for 2021 was \$83.

The last thing we need to do is to verify that the cash flow identity holds to be sure we didn’t make any mistakes. From the previous section, we know that cash flow from assets is \$107. Cash flow to creditors and stockholders is $\$24 + 83 = \107 , so everything checks out. Table 2.4 contains a summary of the various cash flow calculations for future reference.

As our discussion indicates, it is essential that a firm keep an eye on its cash flow. Always remember, net income is an opinion, cash is a fact.

AN EXAMPLE: CASH FLOWS FOR DOLE COLA

This extended example covers the various cash flow calculations discussed in the chapter. It also illustrates a few variations that may arise.

Operating Cash Flow During the year, Dole Cola, Inc., had sales and cost of goods sold of \$600 and \$300, respectively. Depreciation was \$150 and interest paid was \$30. Taxes were calculated at a straight 21 percent. Dividends were \$36. (All figures are in



TABLE 2.4

Cash Flow Summary

I. The cash flow identity
Cash flow from assets = Cash flow to creditors (bondholders) + Cash flow to stockholders (owners)
II. Cash flow from assets
Cash flow from assets = Operating cash flow – Net capital spending – Change in net working capital (NWC)
where:
Operating cash flow = Earnings before interest and taxes (EBIT) + Depreciation – Taxes
Net capital spending = Ending net fixed assets – Beginning net fixed assets + Depreciation
Change in NWC = Ending NWC – Beginning NWC
III. Cash flow to creditors (bondholders)
Cash flow to creditors = Interest paid – Net new borrowing
IV. Cash flow to stockholders (owners)
Cash flow to stockholders = Dividends paid – Net new equity raised

millions of dollars.) What was operating cash flow for Dole? Why is this different from net income?

The easiest thing to do here is to create an income statement. We can then pick up the numbers we need. Dole Cola's income statement is given here:

DOLE COLA 2021 Income Statement	
Net sales	\$600
Cost of goods sold	300
Depreciation	150
Earnings before interest and taxes	\$150
Interest paid	30
Taxable income	\$120
Taxes	25
Net income	<u>\$ 95</u>
Dividends	\$ 36
Addition to retained earnings	59

Net income for Dole was \$95. We now have all the numbers we need. Referring back to the U.S. Corporation example and Table 2.4, we have this:

DOLE COLA 2021 Operating Cash Flow	
Earnings before interest and taxes	\$150
+ Depreciation	150
– Taxes	25
Operating cash flow	<u>\$275</u>

As this example illustrates, operating cash flow is not the same as net income because depreciation and interest are subtracted out when net income is calculated. If you recall our earlier discussion, we don't subtract these out in computing operating cash flow because depreciation is not a cash expense and interest paid is a financing expense, not an operating expense.

Net Capital Spending Suppose beginning net fixed assets were \$500 and ending net fixed assets were \$750. What was the net capital spending for the year?

From the income statement for Dole, we know that depreciation for the year was \$150. Net fixed assets rose by \$250. Dole thus spent \$250 along with an additional \$150, for a total of \$400.

Change in NWC and Cash Flow from Assets Suppose Dole Cola started the year with \$2,130 in current assets and \$1,620 in current liabilities, and the corresponding ending figures were \$2,276 and \$1,710. What was the change in NWC during the year? What was cash flow from assets? How does this compare to net income?

Net working capital started out as $\$2,130 - \$1,620 = \$510$ and ended up at $\$2,276 - \$1,710 = \$566$. The addition to NWC was $\$566 - \$510 = \$56$. Putting together all the information for Dole, we have the following:

DOLE COLA 2021 Cash Flow from Assets	
Operating cash flow	\$275
– Net capital spending	400
– Change in NWC	56
Cash flow from assets	<u><u>–\$181</u></u>

Dole had a cash flow from assets of $-\$181$. Net income was positive at \$95. Is the fact that cash flow from assets was negative a cause for alarm? Not necessarily. The cash flow here is negative primarily because of a large investment in fixed assets. If these are good investments, the resulting negative cash flow is not a worry.

Cash Flow to Stockholders and Creditors We saw that Dole Cola had cash flow from assets of $-\$181$. The fact that this is negative means that Dole raised more money in the form of new debt and equity than it paid out for the year. Suppose we know that Dole didn't sell any new equity for the year. What was cash flow to stockholders? To creditors?

Because it didn't raise any new equity, Dole's cash flow to stockholders is equal to the cash dividend paid:

DOLE COLA 2021 Cash Flow to Stockholders	
Dividends paid	\$36
– Net new equity raised	0
Cash flow to stockholders	<u><u>\$36</u></u>

Now, from the cash flow identity, we know that the total cash paid to creditors and stockholders was $-\$181$. Cash flow to stockholders is \$36, so cash flow to creditors must be equal to $-\$181 - \$36 = -\$217$:

$$\begin{aligned}
 \text{Cash flow to creditors} + \text{Cash flow to stockholders} &= -\$181 \\
 \text{Cash flow to creditors} + \$36 &= -\$181 \\
 \text{Cash flow to creditors} &= -\$217
 \end{aligned}$$

Because we know that cash flow to creditors is $-\$217$ and interest paid is \$30 (from the income statement), we can now determine net new borrowing. Dole must have borrowed \$247 during the year to help finance the fixed asset expansion:

DOLE COLA 2021 Cash Flow to Creditors	
Interest paid	\$30
– Net new borrowing	– 247
Cash flow to creditors	<u>–\$217</u>

Concept Questions

- 2.4a** What is the cash flow identity? Explain what it says.
- 2.4b** What are the components of operating cash flow?
- 2.4c** Why is interest paid not a component of operating cash flow?

Summary and Conclusions

This chapter has introduced some of the basics of financial statements, taxes, and cash flow:

1. The book values on an accounting balance sheet can be very different from market values. The goal of financial management is to maximize the market value of the stock, not its book value.
2. Net income as it is computed on the income statement is not cash flow. A primary reason is that depreciation, a noncash expense, is deducted when net income is computed.
3. Marginal and average tax rates can be different, and it is the marginal tax rate that is relevant for most financial decisions.
4. The tax rate paid by corporations is a flat tax of 21 percent, although state and local taxes can increase this rate.
5. There is a cash flow identity much like the balance sheet identity. It says that cash flow from assets equals cash flow to creditors and stockholders.

The calculation of cash flow from financial statements isn't difficult. Care must be taken in handling noncash expenses, such as depreciation, and operating costs must not be confused with financing costs. Most of all, it is important not to confuse book values with market values or accounting income with cash flow.

2.5