

FINANCIAL STATEMENTS, TAXES, AND CASH FLOW

2

In April 2006, Merrill Lynch announced it would take a charge of \$1.2 billion against first quarter earnings. Merrill Lynch was not alone; many other companies were also forced to adjust their reported earnings. Performance wasn't the issue. Instead a change in accounting rules forced companies to report costs associated with certain types of employee compensation and benefits. Of course, changes in accounting rules are not the only reason companies report charges against earnings. In February 2006, for example, entertainment company CBS reported a write-down of its broadcasting assets in the amount

of \$9.4 billion. The company also reported a charge of \$18 billion in the same quarter in the previous year.

So did stockholders in Merrill Lynch lose \$1.2 billion just because an accounting rule was changed? Did stockholders in CBS lose almost \$30 billion? In both cases, the answer is probably not. Understanding why ultimately leads us to the main subject of this chapter: that all-important substance known as *cash flow*.

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 pay special attention to some of the practical details of 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.

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SLIDE 2.1 Key Concepts and Skills

SLIDE 2.2 Chapter Outline

2.1 The Balance Sheet

CRITICAL THINKING QUESTIONS 1, 3, 5

PROBLEMS 1, 5, 16, 17, 25

balance sheet

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

SLIDE 2.3 Balance Sheet



Two excellent sites for company financial information are finance.yahoo.com and money.cnn.com.

LECTURE TIP: IM 2.1 links balance sheet values and the decisions of financial managers.

FIGURE 2.1

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

SLIDE 2.4

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

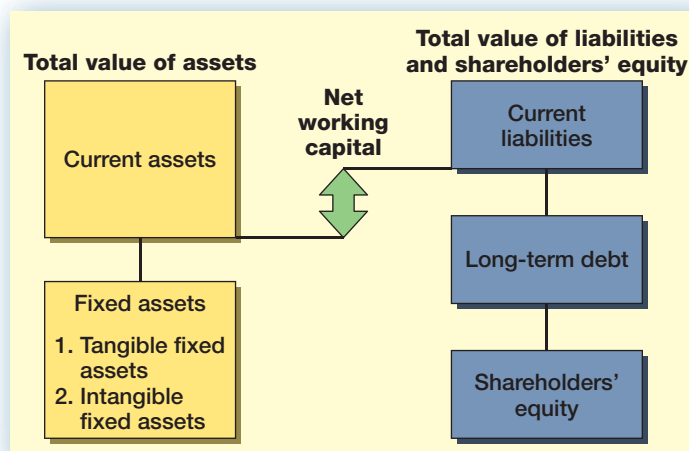
Assets are classified as either *current* or *fixed*. A fixed asset is one that has a relatively long life. Fixed assets can be either *tangible*, such as a truck or a computer, or *intangible*, such as a trademark or patent. A current asset has a life of less than one year. This means that the asset will convert to cash within 12 months. For example, inventory would normally be purchased and sold within a year and is thus 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



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

$$\text{Assets} = \text{Liabilities} + \text{Shareholders' equity} \quad [2.1]$$

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

CONCEPT Q
ANSWER 2.1a

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.

net working capital
Current assets less current liabilities.

SLIDE 2.5 Net Working Capital and Liquidity

Building the Balance Sheet **EXAMPLE 2.1**

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	<u>500</u>	Long-term debt	200
		Shareholders' equity	<u>330</u>
Total assets	<u>\$600</u>	Total liabilities and shareholders' equity	<u>\$600</u>

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

Table 2.1 shows a simplified balance sheet 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 and also managerial decisions about how much cash and inventory to have and about credit policy, fixed asset acquisition, 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 2007, total long-term debt for U.S. was \$454 and total equity was $\$640 + 1,629 = \$2,269$, so total long-term financing was $\$454 + 2,269 = \$2,723$. (Note that, throughout, all figures are in millions of dollars.) Of this amount, $\$454/2,723 = 16.67\%$ was long-term debt. This percentage reflects capital structure decisions made in the past by the management of U.S.

LECTURE TIP: See IM 2.1 for tips on explaining the crucial concepts of shareholders' equity and retained earnings.



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.

TABLE 2.1

Balance Sheets

SLIDE 2.6

U.S. CORPORATION 2006 and 2007 Balance Sheets (\$ in millions)					
Assets			Liabilities and Owner's Equity		
	2006	2007		2006	2007
Current assets			Current liabilities		
Cash	\$ 104	\$ 160	Accounts payable	\$ 232	\$ 266
Accounts receivable	455	688	Notes payable	196	123
Inventory	553	555	Total	\$ 428	\$ 389
Total	\$1,112	\$1,403			
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	1,629
			Total	\$1,920	\$2,269
Total assets	\$2,756	\$3,112	Total liabilities and owners' equity	\$2,756	\$3,112

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.

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. For example, 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.

CONCEPT Q ANSWER 2.1b



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.

LECTURE TIP: IM 2.1 provides tips on helping students conceptualize the importance of liquidity and the opportunity costs of holding excess cash.

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 just 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 generally 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. For example, 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, to open the chapter, we discussed the huge charges against earnings taken by CBS. What actually happened is that these charges were the result of accounting rule changes that led 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 early 2006, the book value of IBM's equity was

CONCEPT Q
ANSWER 2.1b

CONCEPT Q
ANSWER 2.1c

SLIDE 2.7 Market versus Book Value

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.

ETHICS NOTE: It is often useful to remind students of the degree of latitude within GAAP. Ethical accountants can arrive at substantially different asset and liability values in a given situation. However, ethical accountants will seek to most-fairly represent the firm's financial condition.

CONCEPT Q
ANSWER 2.1d

LECTURE TIP: See IM 2.1 for additional ways to emphasize the difference between historical cost and market value.

about \$33 billion, while the market value was \$129 billion. At the same time, Microsoft's book value was \$44 billion, while the market value was \$282 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.

EXAMPLE 2.2

Market Value versus Book Value

LECTURE TIP: See IM 2.1 for an extension of this example to the case where fixed assets have market values lower than their cost.

LECTURE TIP: What is the difference between "market capitalization" and "enterprise value"? What distinguishes a "small-cap" firm from a "mid-cap" firm? See IM 2.1 for the answers!

SLIDE 2.8 Example 2.2 Klingon Corporation

LECTURE TIP: IM 2.1 ties this discussion to the concept of "marking to market."

The Klingon Corporation has 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 accounting value and market value. Which is more important to the financial manager? Why?

2.2 The Income Statement

CRITICAL THINKING QUESTION 2

PROBLEMS 2–4, 15, 19, 25

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

$$\text{Revenues} - \text{Expenses} = \text{Income} \quad [2.2]$$

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.

U.S. CORPORATION 2007 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	212
Net income	\$ 412
Dividends	\$103
Addition to retained earnings	309

TABLE 2.2

Income Statement

CONCEPT Q
ANSWER 2.2a

SLIDE 2.10

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. paid cash dividends of \$103. The difference between net income and cash dividends, \$309, 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: $\$1,320 + 309 = \$1,629$.

SLIDE 2.9 Income
Statement

income statement

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

LECTURE TIP: See IM 2.2 for tips on relating the income statement to financial managers' decisions.

Calculating Earnings and Dividends per Share

EXAMPLE 2.3

Suppose U.S. had 200 million shares outstanding at the end of 2007. 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 \$412 million for the year. Total dividends were \$103 million. Because 200 million shares were outstanding, we can calculate earnings per share, or EPS, and dividends per share as follows:

$$\begin{aligned}\text{Earnings per share} &= \text{Net income} / \text{Total shares outstanding} \\ &= \$412 / 200 = \$2.06 \text{ per share}\end{aligned}$$

$$\begin{aligned}\text{Dividends per share} &= \text{Total dividends} / \text{Total shares outstanding} \\ &= \$103 / 200 = \$0.515 \text{ per share}\end{aligned}$$

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.

CONCEPT Q
ANSWER 2.2b

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.

CONCEPT Q
ANSWER 2.2c

ETHICS NOTE: See IM 2.2 for several real-world examples of questionable accounting practices and their consequences.

noncash items

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

CONCEPT Q ANSWER 2.2c

LECTURE TIP: See IM 2.2 for a discussion of economic life, useful life, and GAAP.

LECTURE TIP: Further distinctions between fixed and variable costs are discussed in IM 2.2.

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 simply another application of the matching principle in accounting. The revenues associated with an asset would 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, so 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, let's go back to the case of CBS, which we discussed at the beginning of the chapter. For the fourth quarter of 2005, CBS reported a net loss of \$9.1 billion. Sounds bad; but CBS also reported a *positive* cash flow of \$727 million, a difference of about \$9.8 billion! The reason is that the deduction taken to reflect a decrease in the value of CBS's assets was purely an accounting adjustment and had nothing to do with the cash flow the company generated for the period.

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.

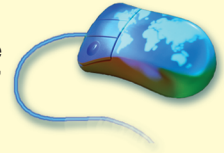
If our time horizon is relatively short, however, some costs are effectively fixed—they must be paid no matter what (property taxes, for example). Other costs such as wages to laborers and payments to suppliers are still variable. As a result, even in the short run, the firm can vary its output level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

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 for Company Filings," "Companies & Other Filers," and entered "Sun Microsystems":



SLIDE 2.11

EDGAR Company Search

From this page, you can search the EDGAR database for company information, including real-time filings. If more than one company name matches your search keyword(s), you will be presented with a list of possible matches from which to pick. Company filings are available for 1993 through 2006.

Enter your search information:

Company name:

or **CIK** or Ticker Symbol: (Central Index Key)
(Tickers for 9400 largest publicly traded companies)

or File Number:

or **State**: (two-letter abbreviation)

and/or **SIC**:

and Ownership Forms 3, 4, and 5? Include Exclude Only

Here is partial view of what we got:

SUN MICROSYSTEMS, INC. (0000709519)
 SIC: 3571 - Electronic Computers
 State location: CA | State of Inc.: DE | Fiscal Year End: 0630
 formerly: SUN MICROSYSTEMS INC (filings through 2005-02-14)

Business Address
 4150 NETWORK CIRCLE
 SANTA CLARA CA 95054
 6509601300

Mailing Address
 4150 NETWORK CIRCLE
 SANTA CLARA CA 95054

To limit filing results, enter form type or date (as 2002/05/23).
 Form Type:
 Prior to:

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40 Entries

Key to Descriptions
[Paper] Paper filings are available by film number from the [SEC Public Reference Room](#).
[Cover] Filing contains an SEC-released cover letter or correspondence.

Form	Formats	Description	Filing Date	File Number
8-K	[html text] 32 KB	Current report, items 1.01, 5.02, and 9.01	2006-02-24	000-15086
4	[html text] 7 KB	Statement of changes in beneficial ownership of securities	2006-02-24	
4	[html text] 24 KB	Statement of changes in beneficial ownership of securities	2006-02-22	
3	[html text] 3 KB	Initial statement of beneficial ownership of securities	2006-02-22	
4	[html text] 5 KB	Statement of changes in beneficial ownership of securities	2006-02-22	
SC 13G/A	[html text] 9 KB	[Amend] Statement of acquisition of beneficial ownership by individuals	2006-02-10	005-39044
SC 13G	[html text] 48 KB	Statement of acquisition of beneficial ownership by individuals	2006-02-10	005-39044
4	[html text] 22 KB	Statement of changes in beneficial ownership of securities	2006-02-06	
10-Q	[html text] 1 MB	Quarterly report [Sections 13 or 15(d)]	2006-02-03	000-15086
S-8	[html text] 181 KB	Securities to be offered to employees in employee benefit plans	2006-02-03	333-131507
S-8 POS	[html text] 24 KB	Securities to be offered to employees in employee benefit plans, post-effective amendments	2006-02-03	333-114551
SC 13G	[html text] 55 KB	Statement of acquisition of beneficial ownership by individuals	2006-02-03	005-39044

As of the date of this search, EDGAR had 340 corporate filings by Sun Microsystems available for download. 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 for the financial results. The 10-Q is a smaller report that includes the financial statements for the quarter.

which costs are which. The reason is that, in practice, accountants tend to classify costs as either product costs or period costs.

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.

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.

2.3 Taxes

PROBLEMS 6, 7, 18, 24

SLIDE 2.12 Taxes

LECTURE TIP: A good example of the convolutions of the tax code is the "Case of the Vanishing and Reappearing Investment Tax Credit." See IM 2.3 for details.

Taxes can be one of the largest cash outflows a firm experiences. For example, for the fiscal year 2005, Wal-Mart's earnings before taxes were about \$17.4 billion. Its tax bill, including all taxes paid worldwide, was a whopping \$5.8 billion, or about 33 percent of its pretax earnings. Also for fiscal year 2005, ExxonMobil had a taxable income of \$59.4 billion, and the company paid \$23.3 billion in taxes, an average tax rate of 39 percent.

The size of a company's tax bill is determined through 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

Corporate tax rates in effect for 2007 are shown in Table 2.3. A peculiar feature of taxation instituted by the Tax Reform Act of 1986 and expanded in the 1993 Omnibus Budget Reconciliation Act is that corporate tax rates are not strictly increasing. As shown, corporate tax rates rise from 15 percent to 39 percent, but they drop back to 34 percent on income over \$335,000. They then rise to 38 percent and subsequently fall to 35 percent.

According to the originators of the current tax rules, there are only four corporate rates: 15 percent, 25 percent, 34 percent, and 35 percent. The 38 and 39 percent brackets arise because of "surcharges" applied on top of the 34 and 35 percent rates. A tax is a tax is a tax, however, so there are really six corporate tax brackets, as we have shown.

average tax rate

Total taxes paid divided by total taxable income.

marginal tax rate

Amount of tax payable on the next dollar earned.

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 **marginal tax rate** is the rate of the extra tax you would pay if you earned one more dollar.

Taxable Income	Tax Rate
\$ 0 – 50,000	15%
50,001 – 75,000	25
75,001 – 100,000	34
100,001 – 335,000	39
335,001 – 10,000,000	34
10,000,001 – 15,000,000	35
15,000,001 – 18,333,333	38
18,333,334 +	35

TABLE 2.3
Corporate Tax Rates

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 a simple example. Suppose our corporation has a taxable income of \$200,000. What is the tax bill? Using Table 2.3, we can figure our tax bill:

$$\begin{aligned}
 .15(\$ 50,000) &= \$ 7,500 \\
 .25(\$ 75,000 - 50,000) &= 6,250 \\
 .34(\$100,000 - 75,000) &= 8,500 \\
 .39(\$200,000 - 100,000) &= \underline{39,000} \\
 &= \underline{\underline{\$61,250}}
 \end{aligned}$$

Our total tax is thus \$61,250.

In our example, what is the average tax rate? We had a taxable income of \$200,000 and a tax bill of \$61,250, so the average tax rate is $\$61,250/200,000 = 30.625\%$. What is the marginal tax rate? If we made one more dollar, the tax on that dollar would be 39 cents, so our marginal rate is 39 percent.

CONCEPT Q
ANSWER 2.3a



Deep in the Heart of Taxes	EXAMPLE 2.4
<p>Algernon, Inc., has a taxable income of \$85,000. What is its tax bill? What is its average tax rate? Its marginal tax rate?</p> <p>From Table 2.3, we see that the tax rate applied to the first \$50,000 is 15 percent; the rate applied to the next \$25,000 is 25 percent; and the rate applied after that up to \$100,000 is 34 percent. So Algernon must pay $.15 \times \\$50,000 + .25 \times 25,000 + .34 \times (85,000 - 75,000) = \\$17,150$. The average tax rate is thus $\\$17,150/85,000 = 20.18\%$. The marginal rate is 34 percent because Algernon's taxes would rise by 34 cents if it had another dollar in taxable income.</p>	<p>SLIDE 2.13 Example: Marginal versus Average Rates</p>

Table 2.4 summarizes some different taxable incomes, marginal tax rates, and average tax rates for corporations. Notice how the average and marginal tax rates come together at 35 percent.

With a *flat-rate* tax, there is only one tax rate, so the rate is the same for all income levels. With such a tax, the marginal tax rate is always the same as the average tax rate. As it stands now, corporate taxation in the United States is based on a modified flat-rate tax, which becomes a true flat rate for the highest incomes.

In looking at Table 2.4, notice that the more a corporation makes, the greater is the percentage of taxable income paid in taxes. Put another way, under current tax law, the

LECTURE TIP: The relevance of the marginal rate and the average rate in different circumstances is stressed in IM 2.3.

CONCEPT Q
ANSWER 2.3b

TABLE 2.4

Corporate Taxes and Tax Rates

(1) Taxable Income	(2) Marginal Tax Rate	(3) Total Tax	(3)/(1) Average Tax Rate
\$ 45,000	15%	\$ 6,750	15.00%
70,000	25	12,500	17.86
95,000	34	20,550	21.63
250,000	39	80,750	32.30
1,000,000	34	340,000	34.00
17,500,000	38	6,100,000	34.86
50,000,000	35	17,500,000	35.00
100,000,000	35	35,000,000	35.00

LECTURE TIP: Students might find this quote interesting. “While it was possible to enact legislation to get rid of clutter in the tax code, history shows it is very difficult to maintain that simplification in the face of constant demands to raise revenue.” (Hank Gutman, former chief of staff for Congress’s Joint Tax Committee)

LECTURE TIP: A provocative article titled “Abolish the Corporate Income Tax” appeared in *The Wall Street Journal*. IM 2.3 summarizes it and offers suggestions for discussion.

average tax rate never goes down, even though the marginal tax rate does. As illustrated, for corporations, average tax rates begin at 15 percent and rise to a maximum of 35 percent.

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.

There is one last thing to notice about the tax code as it affects corporations. It’s easy to verify that the corporate tax bill is just a flat 35 percent of taxable income if our taxable income is more than \$18.33 million. Also, for the many midsize corporations with taxable incomes in the range of \$335,000 to \$10,000,000, the tax rate is a flat 34 percent. Because we will normally be talking about large corporations, you can assume that the average and marginal tax rates are 35 percent unless we explicitly say otherwise.

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** Do the wealthiest corporations receive a tax break in terms of a lower tax rate? Explain.

2.4 Cash Flow

CRITICAL THINKING QUESTIONS 4, 6–10

PROBLEMS 8–14, 19–23, 26

SLIDE 2.14 The Concept of 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 simply mean the difference between the number of dollars that came in and the number that went out. For example, 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):

$$\text{Cash flow from assets} = \text{Cash flow to creditors} + \text{Cash flow to stockholders} \quad [2.3]$$

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.

CONCEPT Q
ANSWER 2.4a

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.

SLIDE 2.15 Cash Flow from Assets

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 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.

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. 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 \$212 in taxes because these were paid in cash. The result is operating cash flow:

operating cash flow

Cash generated from a firm’s normal business activities.

SLIDE 2.16 Example: U.S. Corporation—Part I

CONCEPT Q
ANSWER 2.4b

U.S. CORPORATION 2007 Operating Cash Flow	
Earnings before interest and taxes	\$694
+ Depreciation	65
– Taxes	212
Operating cash flow	<u>\$547</u>

U.S. Corporation thus had a 2007 operating cash flow of \$547.

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.

CONCEPT Q
ANSWER 2.4c

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 $\$412 + 65 = \477 .

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 \$547 operating cash flow we calculated and this \$477 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 \$547 operating cash flow was reinvested in the firm. We consider spending on fixed assets first.

Capital Spending Net capital spending is just money spent on fixed assets less money received from the sale of fixed assets. At the end of 2006, 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 2007 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	\$ 130

This \$130 is the net capital spending for 2007.

Could net capital spending be negative? The answer is yes. This would happen if the firm sold off 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. For example, going back to the balance sheets in Table 2.1, we see that at the end of 2007, U.S. had current assets of \$1,403. At the end of 2006, current assets were \$1,112; so, during the year, U.S. invested $\$1,403 - 1,112 = \291 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 just to take the difference between the beginning and ending net working capital (NWC) figures. Net working capital at the end of 2007 was $\$1,403 - 389 = \$1,014$. Similarly, at the end of 2006, net working capital was $\$1,112 - 428 = \684 . Given these figures, we have the following:

Ending NWC	\$1,014
– Beginning NWC	684
Change in NWC	\$ 330

Net working capital thus increased by \$330. Put another way, U.S. Corporation had a net investment of \$330 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., we have:

U.S. CORPORATION 2007 Cash Flow from Assets	
Operating cash flow	\$547
– Net capital spending	130
– Change in NWC	330
Cash flow from assets	<u>\$ 87</u>

From the cash flow identity given earlier, we know that this \$87 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 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. 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 2007 Cash Flow to Creditors	
Interest paid	\$70
– Net new borrowing	46
Cash flow to creditors	<u>\$24</u>

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 \$103. 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

SLIDE 2.17 Example: U.S. Corporation—Part II

cash flow to creditors

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

cash flow to stockholders

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

TABLE 2.5

Cash Flow Summary

SLIDE 2.18

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	

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 2007 Cash Flow to Stockholders	
Dividends paid	\$103
– Net new equity raised	40
Cash flow to stockholders	\$ 63

The cash flow to stockholders for 2007 was thus \$63.

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 \$87. Cash flow to creditors and stockholders is $\$24 + 63 = \87 , so everything checks out. Table 2.5 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. The following serves as an excellent reminder of why doing so is a good idea, unless the firm's owners wish to end up in the "Po" house:

LECTURE TIP: IM 2.4 provides a discussion of textbook financial statements versus real-world financial statements.

QUOTH THE BANKER, "WATCH CASH FLOW"

Once upon a midnight dreary as I pondered weak and weary
Over many a quaint and curious volume of accounting lore,
Seeking gimmicks (without scruple) to squeeze through
some new tax loophole,
Suddenly I heard a knock upon my door,
Only this, and nothing more.

Then I felt a queasy tingling and I heard the cash a-jingling
As a fearsome banker entered whom I'd often seen before.
His face was money-green and in his eyes there could be seen
Dollar-signs that seemed to glitter as he reckoned up the score.
"Cash flow," the banker said, and nothing more.

I had always thought it fine to show a jet black bottom line.
But the banker sounded a resounding, "No."
Your receivables are high, mounting upward toward the sky;

Write-offs loom. What matters is cash flow.”

He repeated, “Watch cash flow.”

Then I tried to tell the story of our lovely inventory
Which, though large, is full of most delightful stuff.
But the banker saw its growth, and with a mighty oath
He waved his arms and shouted, “Stop! Enough!
Pay the interest, and don’t give me any guff!”

Next I looked for noncash items which could add ad infinitum
To replace the ever-outward flow of cash,
But to keep my statement black I’d held depreciation back,
And my banker said that I’d done something rash.
He quivered, and his teeth began to gnash.

When I asked him for a loan, he responded, with a groan,
That the interest rate would be just prime plus eight,
And to guarantee my purity he’d insist on some security—
All my assets plus the scalp upon my pate.
Only this, a standard rate.

Though my bottom line is black, I am flat upon my back,
My cash flows out and customers pay slow.
The growth of my receivables is almost unbelievable:
The result is certain—unremitting woe!
And I hear the banker utter an ominous low mutter,
“Watch cash flow.”

Herbert S. Bailey Jr.

Source: Reprinted from the January 13, 1975, issue of *Publishers Weekly*, published by R. R. Bowker, a Xerox company.
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To which we can only add, “Amen.”

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 34 percent. Dividends were \$30. (All figures are in 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 2007 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	41
Net income	<u>\$ 79</u>
Dividends	\$30
Addition to retained earnings	49

SLIDES 2.19–2.20
provide another cash flow
example.

Net income for Dole was thus \$79. We now have all the numbers we need. Referring back to the U.S. Corporation example and Table 2.5, we have this:

DOLE COLA 2007 Operating Cash Flow	
Earnings before interest and taxes	\$150
+ Depreciation	150
– Taxes	41
Operating cash flow	<u>\$259</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 \$2,260 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 $\$2,260 - 1,710 = \550 . The addition to NWC was thus $\$550 - 510 = \40 . Putting together all the information for Dole, we have the following:

DOLE COLA 2007 Cash Flow from Assets	
Operating cash flow	\$259
– Net capital spending	400
– Change in NWC	40
Cash flow from assets	<u>–\$181</u>

Dole had a cash flow from assets of $-\$181$. Net income was positive at \$79. 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. For example, 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 just equal to the cash dividend paid:

DOLE COLA 2007 Cash Flow to Stockholders	
Dividends paid	\$30
– Net new equity raised	0
Cash flow to stockholders	<u>\$30</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 $\$30$, so cash flow to creditors must be equal to $-\$181 - 30 = -\211 :

$$\begin{aligned} \text{Cash flow to creditors} + \text{Cash flow to stockholders} &= -\$181 \\ \text{Cash flow to creditors} + \$30 &= -\$181 \\ \text{Cash flow to creditors} &= -\$211 \end{aligned}$$

Because we know that cash flow to creditors is $-\$211$ and interest paid is $\$30$ (from the income statement), we can now determine net new borrowing. Dole must have borrowed $\$241$ during the year to help finance the fixed asset expansion:

DOLE COLA 2007 Cash Flow to Creditors	
Interest paid	\$ 30
– Net new borrowing	– 241
Cash flow to creditors	<u>–\$211</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

2.5

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

SLIDE 2.21 Quick Quiz

- 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.
- 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.
- Marginal and average tax rates can be different, and it is the marginal tax rate that is relevant for most financial decisions.
- The marginal tax rate paid by the corporations with the largest incomes is 35 percent.
- 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 not to confuse operating costs with financing costs. Most of all, it is important not to confuse book values with market values, or accounting income with cash flow.

CHAPTER REVIEW AND SELF-TEST PROBLEM

- 2.1 Cash Flow for Mara Corporation** This problem will give you some practice working with financial statements and figuring cash flow. Based on the following information for Mara Corporation, prepare an income statement for 2007 and balance sheets for 2006 and 2007. Next, following our U.S. Corporation examples in the chapter, calculate cash flow from assets, cash flow to creditors, and cash flow to stockholders for Mara for 2007. Use a 35 percent tax rate throughout. You can check your answers against ours, found in the following section.

	2006	2007
Sales	\$4,203	\$4,507
Cost of goods sold	2,422	2,633
Depreciation	785	952
Interest	180	196
Dividends	225	250
Current assets	2,205	2,429
Net fixed assets	7,344	7,650
Current liabilities	1,003	1,255
Long-term debt	3,106	2,085

ANSWER TO CHAPTER REVIEW AND SELF-TEST PROBLEM

- 2.1** In preparing the balance sheets, remember that shareholders' equity is the residual. With this in mind, Mara's balance sheets are as follows:

MARA CORPORATION 2006 and 2007 Balance Sheets					
	2006	2007		2006	2007
Current assets	\$2,205	\$ 2,429	Current liabilities	\$1,003	\$ 1,255
Net fixed assets	<u>7,344</u>	<u>7,650</u>	Long-term debt	3,106	2,085
			Equity	<u>5,440</u>	<u>6,739</u>
			Total liabilities and shareholders' equity	<u>\$9,549</u>	<u>\$10,079</u>
Total assets	<u>\$9,549</u>	<u>\$10,079</u>			

The income statement is straightforward:

MARA CORPORATION 2007 Income Statement	
Sales	\$4,507
Cost of goods sold	2,633
Depreciation	<u>952</u>
Earnings before interest and taxes	\$ 922
Interest paid	<u>196</u>
Taxable income	\$ 726
Taxes (35%)	<u>254</u>
Net income	<u>\$ 472</u>
Dividends	\$250
Addition to retained earnings	222

Notice that we've used an average 35 percent tax rate. Also notice that the addition to retained earnings is just net income less cash dividends.

We can now pick up the figures we need to get operating cash flow:

MARA CORPORATION 2007 Operating Cash Flow	
Earnings before interest and taxes	\$ 922
+ Depreciation	952
– Taxes	254
Operating cash flow	<u>\$1,620</u>

Next, we get the net capital spending for the year by looking at the change in fixed assets, remembering to account for depreciation:

Ending net fixed assets	\$7,650
– Beginning net fixed assets	7,344
+ Depreciation	952
Net capital spending	<u>\$1,258</u>

After calculating beginning and ending NWC, we take the difference to get the change in NWC:

Ending NWC	\$1,174
– Beginning NWC	1,202
Change in NWC	<u>–\$ 28</u>

We now combine operating cash flow, net capital spending, and the change in net working capital to get the total cash flow from assets:

MARA CORPORATION 2007 Cash Flow from Assets	
Operating cash flow	\$1,620
– Net capital spending	1,258
– Change in NWC	–28
Cash flow from assets	<u>\$ 390</u>

To get cash flow to creditors, notice that long-term borrowing decreased by \$1,021 during the year and that interest paid was \$196:

MARA CORPORATION 2007 Cash Flow to Creditors	
Interest paid	\$ 196
– Net new borrowing	–1,021
Cash flow to creditors	<u>\$ 1,217</u>

Finally, dividends paid were \$250. To get net new equity raised, we have to do some extra calculating. Total equity was up by $\$6,739 - \$5,440 = \$1,299$. Of this

increase, \$222 was from additions to retained earnings, so \$1,077 in new equity was raised during the year. Cash flow to stockholders was thus:

MARA CORPORATION 2007 Cash Flow to Stockholders	
Dividends paid	\$ 250
– Net new equity raised	<u>1,077</u>
Cash flow to stockholders	<u>–\$ 827</u>

As a check, notice that cash flow from assets (\$390) equals cash flow to creditors plus cash flow to stockholders ($\$1,217 - 827 = \390).

CONCEPTS REVIEW AND CRITICAL THINKING QUESTIONS

- Liquidity** What does liquidity measure? Explain the trade-off a firm faces between high liquidity and low liquidity levels.
- Accounting and Cash Flows** Why might the revenue and cost figures shown on a standard income statement not be representative of the actual cash inflows and outflows that occurred during a period?
- Book Values versus Market Values** In preparing a balance sheet, why do you think standard accounting practice focuses on historical cost rather than market value?
- Operating Cash Flow** In comparing accounting net income and operating cash flow, name two items you typically find in net income that are not in operating cash flow. Explain what each is and why it is excluded in operating cash flow.
- Book Values versus Market Values** Under standard accounting rules, it is possible for a company's liabilities to exceed its assets. When this occurs, the owners' equity is negative. Can this happen with market values? Why or why not?
- Cash Flow from Assets** Suppose a company's cash flow from assets is negative for a particular period. Is this necessarily a good sign or a bad sign?
- Operating Cash Flow** Suppose a company's operating cash flow has been negative for several years running. Is this necessarily a good sign or a bad sign?
- Net Working Capital and Capital Spending** Could a company's change in NWC be negative in a given year? (*Hint: Yes.*) Explain how this might come about. What about net capital spending?
- Cash Flow to Stockholders and Creditors** Could a company's cash flow to stockholders be negative in a given year? (*Hint: Yes.*) Explain how this might come about. What about cash flow to creditors?
- Firm Values** Referring back to the Merrill Lynch example used at the beginning of the chapter, note that we suggested that Merrill Lynch's stockholders probably didn't suffer as a result of the reported loss. What do you think was the basis for our conclusion?
- Enterprise Value** A firm's *enterprise value* is equal to the market value of its debt and equity, less the firm's holdings of cash and cash equivalents. This figure is particularly relevant to potential purchasers of the firm. Why?
- Earnings Management** Companies often try to keep accounting earnings growing at a relatively steady pace, thereby avoiding large swings in earnings from period

to period. They also try to meet earnings targets. To do so, they use a variety of tactics. The simplest way is to control the timing of accounting revenues and costs, which all firms can do to at least some extent. For example, if earnings are looking too low this quarter, then some accounting costs can be deferred until next quarter. This practice is called *earnings management*. It is common, and it raises a lot of questions. Why do firms do it? Why are firms even allowed to do it under GAAP? Is it ethical? What are the implications for cash flow and shareholder wealth?



QUESTIONS AND PROBLEMS

The *Questions and Problems* sections in this book are available in Homework Manager. Please see the preface for more information.

BASIC




(Questions 1–13)

1. **Building a Balance Sheet** Predator Pucks, Inc., has current assets of \$4,000, net fixed assets of \$22,500, current liabilities of \$3,400, and long-term debt of \$6,800. What is the value of the shareholders' equity account for this firm? How much is net working capital? \$16,300; \$600
2. **Building an Income Statement** Mama Roach Exterminators, Inc., has sales of \$634,000, costs of \$305,000, depreciation expense of \$46,000, interest expense of \$29,000, and a tax rate of 35 percent. What is the net income for this firm? \$165,100
✗
3. **Dividends and Retained Earnings** Suppose the firm in Problem 2 paid out \$86,000 in cash dividends. What is the addition to retained earnings? \$79,100
✗
4. **Per-Share Earnings and Dividends** Suppose the firm in Problem 3 had 30,000 shares of common stock outstanding. What is the earnings per share, or EPS, figure? What is the dividends per share figure? EPS = \$5.50
DPS = \$2.87
✗
5. **Market Values and Book Values** Klingon Widgets, Inc., purchased new cloaking machinery three years ago for \$7 million. The machinery can be sold to the Romulans today for \$3.7 million. Klingon's current balance sheet shows net fixed assets of \$2.6 million, current liabilities of \$1.3 million, and net working capital of \$410,000. If all the current assets were liquidated today, the company would receive \$1.8 million cash. What is the book value of Klingon's assets today? What is the market value? Book value = \$4,310,000
Market value = \$5,500,000
6. **Calculating Taxes** The Baryla Co. had \$325,000 in 2007 taxable income. Using the rates from Table 2.3 in the chapter, calculate the company's 2007 income taxes. \$110,000
✗
7. **Tax Rates** In Problem 6, what is the average tax rate? What is the marginal tax rate? Average rate = 33.85%
Marginal rate = 39%
8. **Calculating OCF** Prather, Inc., has sales of \$14,200, costs of \$5,600, depreciation expense of \$1,200, and interest expense of \$680. If the tax rate is 35 percent, what is the operating cash flow, or OCF? \$6,248
✗
9. **Calculating Net Capital Spending** Kahne Driving School's 2006 balance sheet showed net fixed assets of \$4.6 million, and the 2007 balance sheet showed net fixed assets of \$5.2 million. The company's 2007 income statement showed a depreciation expense of \$875,000. What was net capital spending for 2007? \$1,475,000
10. **Calculating Additions to NWC** The 2006 balance sheet of Rock 'N' Roll Records, Inc., showed current assets of \$1,400 and current liabilities of \$870. The 2007 balance sheet showed current assets of \$1,650 and current liabilities of \$920. What was the company's 2007 change in net working capital, or NWC? \$200

- \$80,000** 11. **Cash Flow to Creditors** The 2006 balance sheet of Maria's Tennis Shop, Inc., showed long-term debt of \$3.1 million, and the 2007 balance sheet showed long-term debt of \$3.3 million. The 2007 income statement showed an interest expense of \$280,000. What was the firm's cash flow to creditors during 2007?
- \$225,000** 12. **Cash Flow to Stockholders** The 2006 balance sheet of Maria's Tennis Shop, Inc., showed \$860,000 in the common stock account and \$6.9 million in the additional paid-in surplus account. The 2007 balance sheet showed \$885,000 and \$7.7 million in the same two accounts, respectively. If the company paid out \$600,000 in cash dividends during 2007, what was the cash flow to stockholders for the year?
- \$450,000** 13. **Calculating Total Cash Flows** Given the information for Maria's Tennis Shop, Inc., in Problems 11 and 12, suppose you also know that the firm's net capital spending for 2007 was \$760,000, and that the firm reduced its net working capital investment by \$165,000. What was the firm's 2007 operating cash flow, or OCF?

INTERMEDIATE

(Questions 14–22)

-  14. **Calculating Total Cash Flows** Bedrock Gravel Corp. shows the following information on its 2007 income statement: sales = \$162,000; costs = \$93,000; other expenses = \$5,100; depreciation expense = \$8,400; interest expense = \$16,500; taxes = \$14,820; dividends = \$9,400. In addition, you're told that the firm issued \$7,350 in new equity during 2007 and redeemed \$6,400 in outstanding long-term debt.
- a. \$49,080
b. \$22,900
c. \$2,050
d. \$3,730
- a. What is the 2007 operating cash flow?
b. What is the 2007 cash flow to creditors?
c. What is the 2007 cash flow to stockholders?
d. If net fixed assets increased by \$12,000 during the year, what was the addition to NWC?
- \$7,238** 15. **Using Income Statements** Given the following information for Mama Mia Pizza Co., calculate the depreciation expense: sales = \$34,000; costs = \$16,000; addition to retained earnings = \$4,300; dividends paid = \$1,200; interest expense = \$2,300; tax rate = 35 percent.
- 
- \$339,000** 16. **Preparing a Balance Sheet** Prepare a 2007 balance sheet for Haltiwanger Corp. based on the following information: cash = \$210,000; patents and copyrights = \$720,000; accounts payable = \$430,000; accounts receivable = \$149,000; tangible net fixed assets = \$2,900,000; inventory = \$265,000; notes payable = \$180,000; accumulated retained earnings = \$1,865,000; long-term debt = \$1,430,000.
17. **Residual Claims** Clapper's Clippers, Inc., is obligated to pay its creditors \$6,100 during the year.
- a. \$600
b. \$0
- a. What is the market value of the shareholders' equity if assets have a market value of \$6,700?
b. What if assets equal \$5,900?
18. **Marginal versus Average Tax Rates** (Refer to Table 2.3.) Corporation Growth has \$82,000 in taxable income, and Corporation Income has \$8,200,000 in taxable income.
- a. What is the tax bill for each firm?
b. Suppose both firms have identified a new project that will increase taxable income by \$10,000. How much in additional taxes will each firm pay? Why is this amount the same?
-  19. **Net Income and OCF** During 2007, Raines Umbrella Corp. had sales of \$840,000. Cost of goods sold, administrative and selling expenses, and depreciation expenses

- a. $\text{Tax}_{\text{Growth}} = \$16,130$
 $\text{Tax}_{\text{Income}} = \$2,788,000$
 b. \$3,400

were \$625,000, \$120,000, and \$130,000, respectively. In addition, the company had an interest expense of \$85,000 and a tax rate of 35 percent. (Ignore any tax loss carry-back or carryforward provisions.)

- a. What is Raines's net income for 2007? a. -\$120,000
 - b. What is its operating cash flow? b. \$95,000
 - c. Explain your results in (a) and (b).
- 20. Accounting Values versus Cash Flows** In Problem 19, suppose Raines Umbrella Corp. paid out \$30,000 in cash dividends. Is this possible? If spending on net fixed assets and net working capital was zero, and if no new stock was issued during the year, what do you know about the firm's long-term debt account? Increased by \$20,000
- 21. Calculating Cash Flows** Brewer Industries had the following operating results for 2007: sales = \$15,200; cost of goods sold = \$11,400; depreciation expense = \$2,700; interest expense = \$520; dividends paid = \$600. At the beginning of the year, net fixed assets were \$9,100, current assets were \$3,200, and current liabilities were \$1,800. At the end of the year, net fixed assets were \$9,700, current assets were \$3,850, and current liabilities were \$2,100. The tax rate for 2007 was 34 percent.
- a. What is net income for 2007? a. \$383
 - b. What is the operating cash flow for 2007? b. \$3,603
 - c. What is the cash flow from assets for 2007? Is this possible? Explain. c. -\$47
 - d. If no new debt was issued during the year, what is the cash flow to creditors? What is the cash flow to stockholders? Explain and interpret the positive and negative signs of your answers in (a) through (d). d. \$520; -\$567
- 22. Calculating Cash Flows** Consider the following abbreviated financial statements for Parrothead Enterprises:

PARROTHEAD ENTERPRISES 2006 and 2007 Partial Balance Sheets				
	Assets		Liabilities and Owners' Equity	
	2006	2007	2006	2007
Current assets	\$ 725	\$ 785	Current liabilities	\$ 290 \$ 325
Net fixed assets	2,990	3,600	Long-term debt	1,580 1,680

PARROTHEAD ENTERPRISES 2007 Income Statement	
Sales	\$9,200
Costs	4,290
Depreciation	820
Interest paid	234

- a. What is owners' equity for 2006 and 2007? a. 2006: \$1,845
 - b. What is the change in net working capital for 2007? 2007: \$2,380
 - c. In 2007, Parrothead Enterprises purchased \$1,500 in new fixed assets. How much in fixed assets did Parrothead Enterprises sell? What is the cash flow from assets for the year? (The tax rate is 35 percent.) b. \$25
 - d. During 2007, Parrothead Enterprises raised \$300 in new long-term debt. How much long-term debt must Parrothead Enterprises have paid off during the year? What is the cash flow to creditors? c. \$70; \$2,105
- 23. Net Fixed Assets and Depreciation** On the balance sheet, the net fixed assets (NFA) account is equal to the gross fixed assets (FA) account (which records the acquisition cost of fixed assets) minus the accumulated depreciation (AD) account (which records the total depreciation taken by the firm against its fixed assets). Using the fact that $NFA = FA - AD$, show that the expression given in the chapter for net capital spending, $NFA_{end} - NFA_{beg} + D$ (where D is the depreciation expense during the year), is equivalent to $FA_{end} - FA_{beg}$. d. \$200; \$134
- CHALLENGE**
(Questions 23–26)

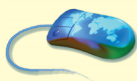
- 24. Tax Rates** Refer to the corporate marginal tax rate information in Table 2.3.
- Why do you think the marginal tax rate jumps up from 34 percent to 39 percent at a taxable income of \$100,001, and then falls back to a 34 percent marginal rate at a taxable income of \$335,001?
 - Compute the average tax rate for a corporation with exactly \$335,001 in taxable income. Does this confirm your explanation in part (a)? What is the average tax rate for a corporation with exactly \$18,333,334? Is the same thing happening here?
 - The 39 percent and 38 percent tax rates both represent what is called a tax “bubble.” Suppose the government wanted to lower the upper threshold of the 39 percent marginal tax bracket from \$335,000 to \$200,000. What would the new 39 percent bubble rate have to be?

Use the following information for Taco Swell, Inc., for Problems 25 and 26 (assume the tax rate is 34 percent):

	2006	2007
Sales	\$ 4,822	\$ 5,390
Depreciation	692	723
Cost of goods sold	1,658	1,961
Other expenses	394	343
Interest	323	386
Cash	2,528	2,694
Accounts receivable	3,347	3,928
Short-term notes payable	488	478
Long-term debt	8,467	10,290
Net fixed assets	21,203	22,614
Accounts payable	2,656	2,683
Inventory	5,951	6,370
Dividends	588	674

- 25. Financial Statements** Draw up an income statement and balance sheet for this company for 2006 and 2007.
- 26. Calculating Cash Flow** For 2007, calculate the cash flow from assets, cash flow to creditors, and cash flow to stockholders.

WEB EXERCISES



- 2.1. Change in Net Working Capital** Find the most recent abbreviated balance sheets for General Dynamics (GD) at finance.yahoo.com. Using the two most recent balance sheets, calculate the change in net working capital. What does this number mean?
- 2.2. Book Values versus Market Values** The home page for Coca-Cola Company can be found at www.coca-cola.com. Locate the most recent annual report, which contains a balance sheet for the company. What is the book value of equity for Coca-Cola? The market value of a company is the number of shares of stock outstanding times the price per share. This information can be found at finance.yahoo.com using the ticker symbol for Coca-Cola (KO). What is the market value of equity? Which number is more relevant for shareholders?
- 2.3. Cash Flows to Stockholders and Creditors** Cooper Tire and Rubber Company provides financial information for investors on its Web site at www.coopertires.com.

Find the most recent annual report. Using the consolidated statements of cash flows, calculate the cash flow to stockholders and the cash flow to creditors.

- 2.4. Average and Marginal Tax Rates** Find the most recent income statement for IBM at www.ibm.com. What is the marginal tax rate for IBM? What is the average tax rate for IBM? Is the average tax rate 35 percent? Why or why not?

MINICASE

Cash Flows and Financial Statements at Sunset Boards, Inc.

Sunset Boards is a small company that manufactures and sells surfboards in Malibu. Tad Marks, the founder of the company, is in charge of the design and sale of the surfboards, but his background is in surfing, not business. As a result, the company's financial records are not well maintained.

The initial investment in Sunset Boards was provided by Tad and his friends and family. Because the initial investment was relatively small, and the company has made surfboards only for its own store, the investors haven't required detailed financial statements from Tad. But thanks to word of mouth among professional surfers, sales have picked up recently, and Tad is considering a major expansion. His plans include opening another surfboard store in Hawaii, as well as supplying his "sticks" (surfer lingo for boards) to other sellers.

Tad's expansion plans require a significant investment, which he plans to finance with a combination of additional funds from outsiders plus some money borrowed from banks. Naturally, the new investors and creditors require more organized and detailed financial statements than Tad has previously prepared. At the urging of his investors, Tad has hired financial analyst Christina Wolfe to evaluate the performance of the company over the past year.

After rooting through old bank statements, sales receipts, tax returns, and other records, Christina has assembled the following information:

	2006	2007
Cost of goods sold	\$96,952	\$122,418
Cash	13,990	21,137
Depreciation	27,370	30,936
Interest expense	5,950	6,820
Selling and administrative expenses	19,067	24,886
Accounts payable	24,725	28,003
Fixed assets	120,750	147,115
Sales	190,199	231,840
Accounts receivable	9,913	12,859
Notes payable	11,270	12,305
Long-term debt	60,950	70,150
Inventory	20,861	28,628
New equity	0	12,000

Sunset Boards currently pays out 50 percent of net income as dividends to Tad and the other original investors, and has a 20 percent tax rate. You are Christina's assistant, and she has asked you to prepare the following:

1. An income statement for 2006 and 2007.
2. A balance sheet for 2006 and 2007.
3. Operating cash flow for each year.
4. Cash flow from assets for 2007.
5. Cash flow to creditors for 2007.
6. Cash flow to stockholders for 2007.

QUESTIONS

1. How would you describe Sunset Boards' cash flows for 2007? Write a brief discussion.
2. In light of your discussion in the previous question, what do you think about Tad's expansion plans?