

PART ONE

Overview of Corporate Finance

- 1 Introduction to Corporate Finance
- >> 2 Financial Statements, Taxes, and Cash Flow

Financial Statements, Taxes, and Cash Flow

In 2004, Cisco Systems, a manufacturer of computer networking equipment, announced it would take a charge of \$567 million against earnings for the reporting period ending in January 2004. Cisco 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 modify the way in which they handled the accounting for financial interests they had in other companies.

So, did stockholders in Cisco Systems lose \$567 million as the result of an accounting rule change? 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.

THE BALANCE SHEET

2.1

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-hand side lists the assets of the firm, and the right-hand side lists the liabilities and equity.

Assets: The Left-Hand 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) is also a current asset.

Liabilities and Owners' Equity: The Right-Hand Side

The firm's liabilities are the first thing listed on the right-hand 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) is one example of a current liability.

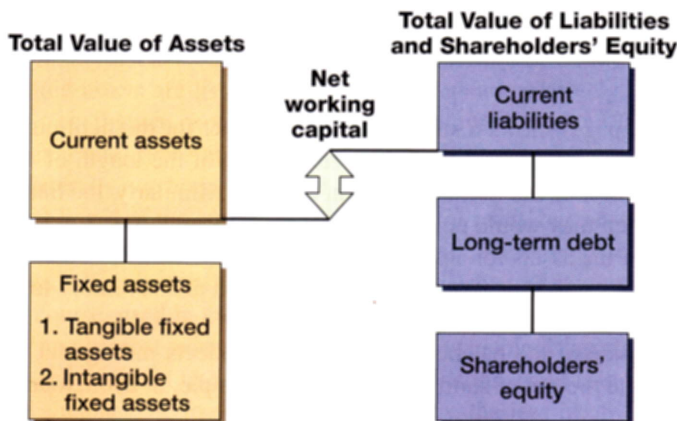
A debt that is not due in the coming year is classified as a long-term liability. A loan that the firm will pay off in five years is one such long-term debt. Firms borrow in the long term from a variety of sources. We will tend to use the terms *bond* and *bondholders* generically to refer to long-term 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 of its assets and use the money to pay off its debts, then whatever residual value remained would belong to the shareholders.

balance sheet

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

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



<< FIGURE 2.1

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

So, the balance sheet “balances” because the value of the left-hand side always equals the value of the right-hand 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.

Net Working Capital

net working capital
Current assets less current liabilities.

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 that the cash that will become available over the next 12 months exceeds the cash that must be paid over that 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 thus look like:

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 liabilities and shareholders' equity	<u>\$600</u>
Total assets	<u>\$600</u>		

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

Table 2.1 (next page) 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 that 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 2005, total long-term debt

 Disney has a good investor relations site at disney.go.com.

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

U.S. CORPORATION 2004 and 2005 Balance Sheets (\$ in millions)					
Assets			Liabilities and Owners' Equity		
	2004	2005		2004	2005
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	<u>\$1,112</u>	<u>\$1,403</u>			
Fixed assets			Long-term debt	\$ 408	\$ 454
Net plant and equipment	<u>\$1,644</u>	<u>\$1,709</u>	Owners' equity		
			Common stock and paid-in surplus	600	640
			Retained earnings	1,320	1,629
			Total	<u>\$1,920</u>	<u>\$2,269</u>
Total assets	<u>\$2,756</u>	<u>\$3,112</u>	Total liabilities and owners' equity	<u>\$2,756</u>	<u>\$3,112</u>

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.

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 those assets that we expect to convert to cash over the next 12 months. Accounts receivable, for example, represents 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

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.



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.

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 only entitled to 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 Cisco. 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 that 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

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.

of the firm. Indeed, many of the most valuable assets that 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 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 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?

THE INCOME STATEMENT

2.2

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 a before and an after picture. Table 2.2 gives a simplified income statement for U.S. Corporation.

TABLE 2.2 >>

U.S. CORPORATION 2005 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	

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

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'll look back at the two balance sheets for U.S. Corporation, you'll see that retained earnings did go up by this amount: $\$1,320 + 309 = \$1,629$.

EXAMPLE 2.3 >> Calculating Earnings and Dividends per Share

Suppose that U.S. had 200 million shares outstanding at the end of 2005. 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.

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 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 very 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, auto manufacturer Ford Motor Company reported a net loss of \$793 million in the fourth quarter of 2003. Sounds bad, but Ford also reported *positive* cash flow of \$1.6 billion, a difference of over \$2 billion! The reason the difference is so huge is that Ford had particularly big non-cash deductions related to a restructuring of its operations, among other things.

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.

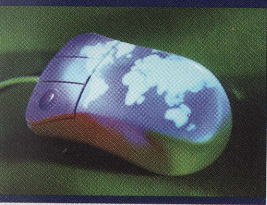
The distinction between fixed and variable costs is important, at times, to the financial manager, but the way costs are reported on the income statement is not a good guide as to

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 for Company Filings,” “Companies & Other Filers,” and entered “Sun Microsystems”



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U.S. Securities and Exchange Commission

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Company name:

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or State: (two-letter abbreviation)

and/or SIC: (Standard Industrial Classification Code)

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

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:

Ownership? Include Exclude Only

Form	Formats	Description	Filing Date	File Number
SC 13G	[html][text] 9 KB	Statement of acquisition of beneficial ownership by individuals	2004-02-13	005-39044
10-Q	[html][text] 927 KB	Quarterly report [Sections 13 or 15(d)]	2004-02-05	000-15086
S-8	[html][text] 95 KB	Securities to be offered to employees in employee benefit plans	2004-01-16	333-111968
8-K	[html][text] 491 KB	Current report, items 12 and 7	2004-01-15	000-15086
8-K	[html][text] 9 KB	Current report, item 5	2003-12-17	000-15086
4	[html][text] 5 KB	Statement of changes in beneficial ownership of securities	2003-12-12	
4	[html][text] 4 KB	Statement of changes in beneficial ownership of securities	2003-11-17	
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4	[html][text] 5 KB	Statement of changes in beneficial ownership of securities	2003-11-17	

As of the date of this search, EDGAR had 80 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.

TAXES

2.3

Taxes can be one of the largest cash outflows that a firm experiences. For example, for the fiscal year 2003, Wal-Mart's earnings before taxes were about \$12.7 billion. Its tax bill, including all taxes paid worldwide, was a whopping \$4.5 billion, or about 35 percent of its pretax earnings. The size of the 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 2004 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 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

average tax rate
Total taxes paid divided
by total taxable income.

TABLE 2.3 >>

Corporate Tax Rates

	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

marginal tax rate

Amount of tax payable on the next dollar earned.

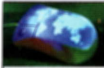
marginal tax rate is the rate of the extra tax you would pay if you earned one more dollar. The percentage tax rates shown in Table 2.3 are all marginal rates. Put another way, the tax rates in Table 2.3 apply to the part of income in the indicated range only, not all income.

The difference between average and marginal tax rates can best be illustrated with 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 as:

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

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.



The IRS has a great web

site! (www.irs.gov)

EXAMPLE 2.4 >> Deep in the Heart of Taxes

Algernon, Inc., has a taxable income of \$85,000. 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 \$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.

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

(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

<< TABLE 2.4

Corporate Taxes and Tax Rates

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.

It will normally be the marginal tax rate that 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 once 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.

CASH FLOW

2.4

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.

There is no standard financial statement that 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.

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.

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.

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 since 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:

U.S. CORPORATION 2005 Operating Cash Flow	
Earnings before interest and taxes	\$694
+ Depreciation	65
– Taxes	<u>212</u>
Operating cash flow	<u><u>\$547</u></u>

U.S. Corporation thus had a 2005 operating cash flow of \$547.

Operating cash flow is an important number because it tells us, on a very basic level, whether or not 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 $\$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 2004, 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 2005 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	<u>65</u>
Net capital spending	<u>\$ 130</u>

This $\$130$ is the net capital spending for 2005.

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 2005, U.S. had current assets of $\$1,403$. At the end of 2004, 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 2005 was $\$1,403 - 389 = \$1,014$. Similarly, at the end of 2004, net working capital was $\$1,112 - 428 = \684 . So, given these figures, we have:

Ending NWC	\$1,014
– Beginning NWC	<u>684</u>
Change in NWC	<u>\$ 330</u>

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 2005 Cash Flow from Assets	
Operating cash flow	\$547
– Net capital spending	130
– Change in NWC	<u>330</u>
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 on “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

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.

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. Net cash flow to creditors is thus:

U.S. CORPORATION 2005 Cash Flow to Creditors	
Interest paid	\$70
– Net new borrowing	<u>46</u>
Cash flow to creditors	<u>\$24</u>

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

<< TABLE 2.5

Cash Flow Summary

I. The cash flow identity

$$\begin{aligned} \text{Cash flow from assets} &= \text{Cash flow to creditors (bondholders)} \\ &+ \text{Cash flow to stockholders (owners)} \end{aligned}$$

II. Cash flow from assets

$$\begin{aligned} \text{Cash flow from assets} &= \text{Operating cash flow} \\ &- \text{Net capital spending} \\ &- \text{Change in net working capital (NWC)} \end{aligned}$$

where:

$$\begin{aligned} \text{Operating cash flow} &= \text{Earnings before interest and taxes (EBIT)} \\ &+ \text{Depreciation} - \text{Taxes} \\ \text{Net capital spending} &= \text{Ending net fixed assets} - \text{Beginning net fixed assets} \\ &+ \text{Depreciation} \\ \text{Change in NWC} &= \text{Ending NWC} - \text{Beginning NWC} \end{aligned}$$

III. Cash flow to creditors (bondholders)

$$\text{Cash flow to creditors} = \text{Interest paid} - \text{Net new borrowing}$$

IV. Cash flow to stockholders (owners)

$$\text{Cash flow to stockholders} = \text{Dividends paid} - \text{Net new equity raised}$$

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 has sold. During the year, this account rose by \$40, so \$40 in net new equity was raised. Given this, we have:

U.S. CORPORATION 2005 Cash Flow to Stockholders	
Dividends paid	\$103
– Net new equity raised	<u>40</u>
Cash flow to stockholders	<u><u>\$ 63</u></u>

The cash flow to stockholders for 2005 was thus \$63.

The last thing we need to do is to verify that the cash flow identity holds to be sure that 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.

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. Copyright © 1975 by the Xerox Corporation.

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 go ahead and create an income statement. We can then pick up the numbers we need. Dole Cola's income statement is given here:

DOLE COLA 2005 Income Statement	
Net sales	\$600
Cost of goods sold	300
Depreciation	<u>150</u>
Earnings before interest and taxes	\$150
Interest paid	<u>30</u>
Taxable income	\$120
Taxes	<u>41</u>
Net income	<u>\$ 79</u>
Dividends	\$30
Addition to retained earnings	49

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:

DOLE COLA 2005 Operating Cash Flow	
Earnings before interest and taxes	\$150
+ Depreciation	150
– Taxes	<u>41</u>
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 will 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 that 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 that Dole Cola started the year with \$2,130 in current assets and \$1,620 in current liabilities, and that 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:

DOLE COLA 2005 Cash Flow from Assets	
Operating cash flow	\$259
– Net capital spending	400
– Change in NWC	<u>40</u>
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, then 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 2005 Cash Flow to Stockholders	
Dividends paid	\$30
– Net new equity raised	<u>0</u>
Cash flow to stockholders	<u><u>\$30</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 $\$30$, 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 2005 Cash Flow to Creditors	
Interest paid	\$ 30
– Net new borrowing	<u>– 241</u>
Cash flow to creditors	<u><u>–\$211</u></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 you to some of the basics of financial statements, taxes, and cash flow. In it, we saw that:

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 marginal tax rate paid by the corporations with the largest incomes is 35 percent.
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 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 2005 and balance sheets for 2004 and 2005. 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 2005. Use a 35 percent tax rate throughout. You can check your answers against ours, found in the following section.

	2004	2005
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					
2004 and 2005 Balance Sheets					
	2004	2005		2004	2005
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 assets	<u>\$9,549</u>	<u>\$10,079</u>	Total liabilities and shareholders' equity	<u>\$9,549</u>	<u>\$10,079</u>

The income statement is straightforward:

MARA CORPORATION	
2005 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	
2005 Operating Cash Flow	
Earnings before interest and taxes	\$ 922
+ Depreciation	952
- Taxes	<u>\$ 254</u>
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	<u>952</u>
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	<u>1,202</u>
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 2005 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, so:

MARA CORPORATION 2005 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 2005 Cash Flow to Stockholders	
Dividends paid	\$ 250
– Net new equity raised	1,077
Cash flow to stockholders	<u>–\$ 827</u>

As a check, notice that cash flow from assets (\$390) does equal 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 is it that the revenue and cost figures shown on a standard income statement may 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 was negative for a particular period. Is this necessarily a good sign or a bad sign?

7. **Operating Cash Flow** Suppose a company's operating cash flow was negative for several years running. Is this necessarily a good sign or a bad sign?
8. **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?
9. **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?
10. **Firm Values** Referring back to the Cisco example used at the beginning of the chapter, note that we suggested that Cisco's stockholders probably didn't suffer as a result of the reported loss. What do you think was the basis for our conclusion?

Questions and Problems

BASIC

(Questions 1–13)



1. **Building a Balance Sheet** Swedish Pucks AB has current assets of 35,000 kroner, net fixed assets of 161,000 kroner, current liabilities of 30,100 kroner, and long-term debt of 91,000 kroner. What is the value of the shareholders' equity account for this firm? How much is net working capital?



2. **Building an Income Statement** Papa Roach Exterminators, Inc., has sales of \$527,000, costs of \$280,000, depreciation expense of \$38,000, interest expense of \$15,000, and a tax rate of 35 percent. What is the net income for this firm?
3. **Dividends and Retained Earnings** Suppose the firm in Problem 2 paid out \$48,000 in cash dividends. What is the addition to retained earnings?



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?
5. **Market Values and Book Values** Taipei Widgets purchased new machinery three years ago for 7 million Taiwanese dollars. The machinery can be sold to an outside firm today for TWD 3.2 million. Taipei's current balance sheet shows net fixed assets of TWD 4,000,000, current liabilities of TWD 2,200,000, and net working capital of TWD 900,000. If all the current assets were liquidated today, the company would receive TWD 2.8 million cash. What is the book value of Taipei's assets today? What is the market value?



6. **Calculating Taxes** The Herrera Co. had \$273,000 in 2005 taxable income. Using the rates from Table 2.3 in the chapter, calculate the company's 2005 income taxes.

7. **Tax Rates** In Problem 6, what is the average tax rate? What is the marginal tax rate?



8. **Calculating OCF** Ranney NV has sales of €13,500, costs of €5,400, 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?

9. **Calculating Net Capital Spending** Gordon Driving School's 2004 balance sheet showed net fixed assets of \$4.2 million, and the 2005 balance sheet showed net fixed assets of \$4.7 million. The company's 2005 income statement showed a depreciation expense of \$925,000. What was Gordon's net capital spending for 2005?
10. **Calculating Additions to NWC** The 2004 balance sheet of Cape Town Records, showed current assets of ZAR 9,400 and current liabilities of ZAR 5,600. The 2005 balance sheet showed current assets of ZAR 10,240 and current liabilities of ZAR 8,400. What was the company's 2005 change in net working capital, or NWC?

- 11. Cash Flow to Creditors** The 2004 balance sheet of Anna's Tennis Shop showed long-term debt of 2.8 million rubles, and the 2005 balance sheet showed long-term debt of 3.1 million rubles. The 2005 income statement showed an interest expense of 340,000 rubles. What was the firm's cash flow to creditors during 2005?
- 12. Cash Flow to Stockholders** The 2004 balance sheet of Anna's Tennis Shop showed 820,000 rubles in the common stock account and 6.8 million rubles in the additional paid-in surplus account. The 2005 balance sheet showed 855,000 rubles and 7.6 million rubles in the same two accounts, respectively. If the company paid out 600,000 rubles in cash dividends during 2005, what was the cash flow to stockholders for the year?
- 13. Calculating Total Cash Flows** Given the information for Anna's Tennis Shop in Problems 11 and 12, suppose you also know that the firm's net capital spending for 2005 was 760,000 rubles, and that the firm reduced its net working capital investment by 165,000 rubles. What was the firm's 2005 operating cash flow, or OCF?
- 14. Calculating Total Cash Flows** Bedrock Gravel Corp. shows the following information on its 2005 income statement: sales = \$145,000; costs = \$86,000; other expenses = \$4,900; depreciation expense = \$7,000; interest expense = \$15,000; taxes = \$12,840; dividends = \$8,700. In addition, you're told that the firm issued \$6,450 in new equity during 2005, and redeemed \$6,500 in outstanding long-term debt.
- What is the 2005 operating cash flow?
 - What is the 2005 cash flow to creditors?
 - What is the 2005 cash flow to stockholders?
 - If net fixed assets increased by \$5,000 during the year, what was the addition to NWC?
- 15. Using Income Statements** Given the following information, in rupees for Delhi Engineering, calculate the depreciation expense: sales = 290,000; costs = 125,000; addition to retained earnings = 42,000; dividends paid = 10,000; interest expense = 15,000; tax rate = 35 percent.
- 16. Preparing a Balance Sheet** Prepare a 2005 balance sheet for Tim's Couch Corp. based on the following information: cash = \$175,000; patents and copyrights = \$720,000; accounts payable = \$430,000; accounts receivable = \$140,000; tangible net fixed assets = \$2,900,000; inventory = \$265,000; notes payable = \$180,000; accumulated retained earnings = \$1,240,000; long-term debt = \$1,430,000.
- 17. Residual Claims** Lagos Fruit is obligated to pay its creditors 320,000 Nigerian nairas during the year.
- What is the market value of the shareholders' equity if assets have a market value of NGN 418,500?
 - What if assets equal NGN 279,000?
- 18. Marginal versus Average Tax Rates** (Refer to Table 2.3.) Corporation Growth has \$85,000 in taxable income, and Corporation Income has \$8,500,000 in taxable income.
- What is the tax bill for each firm?
 - 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 2005, Sun Shade Partners, a Saudi Arabian firm, had sales of 1,950,000 riyals. Cost of goods sold, administrative and selling expenses, and depreciation expenses were SAR 1,430,000, SAR 920,000, and SAR 515,000, respectively. In addition, the company had an interest expense of SAR 500,000 and a tax rate of 35 percent. (Ignore any tax loss carry-back or carry-forward provisions.)

INTERMEDIATE

(Questions 14–22)



- a. What is Sun Shade's net income for 2005?
 - b. What is its operating cash flow?
 - c. Explain your results in (a) and (b).
20. **Accounting Values versus Cash Flows** In Problem 19, suppose Sun Shade Partners paid out SAR 200,000 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?
21. **Calculating Cash Flows** Cusic Industries had the following operating results for 2005: sales = \$12,800; cost of goods sold = \$10,400; depreciation expense = \$1,900; interest expense = \$450; dividends paid = \$500. 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 2005 was 34 percent.
- a. What is net income for 2005?
 - b. What is the operating cash flow for 2005?
 - c. What is the cash flow from assets for 2005? Is this possible? Explain.
 - 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).
22. **Calculating Cash Flows** Consider the following abbreviated financial statements for Parrothead Enterprises, a Brazilian operating company:

PARROTHEAD ENTERPRISES 2004 and 2005 Partial Balance Sheets				
Assets			Liabilities and Owners' Equity	
	2004	2005	2004	2005
Current assets	BRL 650	BRL 705	Current liabilities	BRL 265
Net fixed assets	2,900	3,400	Long-term debt	1,500
				BRL 290
				1,720

PARROTHEAD ENTERPRISES 2005 Income Statement	
Sales	BRL 8,600
Costs	4,150
Depreciation	800
Interest paid	216

- a. What is owners' equity for 2004 and 2005?
 - b. What is the change in net working capital for 2005?
 - c. In 2005, Parrothead Enterprises purchased BRL 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.)
 - d. During 2005, Parrothead Enterprises raised BRL 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?
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 $FA_{end} - FA_{beg}$.
24. **Tax Rates** Refer to the corporate marginal tax rate information in Table 2.3.
- a. 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?

CHALLENGE

(Questions 23–26)

- b. 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?
- c. 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):

	2004	2005
Sales	\$4,018	\$4,312
Depreciation	577	578
Cost of goods sold	1,382	1,569
Other expenses	328	274
Interest	269	309
Cash	2,107	2,155
Accounts receivable	2,789	3,142
Short-term notes payable	407	382
Long-term debt	7,056	8,232
Net fixed assets	17,669	18,091
Accounts payable	2,213	2,146
Inventory	4,959	5,096
Dividends	490	539

25. **Financial Statements** Draw up an income statement and balance sheet for this company for 2004 and 2005.
26. **Calculating Cash Flow** For 2005, calculate the cash flow from assets, cash flow to creditors, and cash flow to stockholders.



www.mhhe.com/edumarketinsight

S&P Problems

- Marginal and Average Tax Rates** Download the annual income statements for Sharper Image (SHRP). Looking back at Table 2.3, what is the marginal income tax rate for Sharper Image? Using the total income tax and the pretax income numbers calculate the average tax rate for Sharper Image. Is this number greater than 35 percent? Why or why not?
- Net Working Capital** Find the annual balance sheets for American Electric Power (AEP) and HJ Heinz (HNZ). Calculate the net working capital for each company. Is American Electric Power's net working capital negative? If so, does this indicate potential financial difficulty for the company? What about Heinz?
- Per Share Earnings and Dividends** Find the annual income statements for Harley Davidson (HDI), Hawaiian Electric Industries (HE) and Time Warner (TWX). What are the earnings per share (EPS Basic from operations) for each of these companies? What are the dividends per share for each company? Why do these companies pay out a different portion of income in the form of dividends?



4. **Cash Flow Identity** Download the annual balance sheets and income statements for Landry's Seafood Restaurants (LNY). Using the most recent year calculate the cash flow identity for Landry Seafood. Explain your answer.

What's On the Web?



- 2.1. **Change in Net Working Capital** Find the most recent abbreviated balance sheets for General Dynamics at finance.yahoo.com. Enter the ticker symbol "GD," follow the "Research" link, and the "Financials" link. 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. Follow the "Investor Information" link and 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?

>> MINI-CASE

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. Since the initial investment was relatively small, and the company has only made surfboards 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:

	2004	2005
Cost of goods sold	\$84,310	\$106,450
Cash	12,165	18,380
Depreciation	23,800	26,900
Interest expense	5,180	5,930
Selling and administrative expenses	16,580	21,640
Accounts payable	21,500	24,350
Fixed assets	105,000	134,000
Sales	165,390	201,600
Accounts receivable	8,620	11,182
Notes payable	9,800	10,700
Long-term debt	53,000	61,000
Inventory	18,140	24,894
New equity	0	10,000

Sunset Boards currently pays out 30 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 2004 and 2005.
2. A balance sheet for 2004 and 2005.
3. Operating cash flow for each year.
4. Cash flow from assets for 2005.
5. Cash flow to creditors for 2005.
6. Cash flow to stockholders for 2005.

Questions

1. How would you describe Sunset Boards' cash flows for 2005? Write up a brief discussion.
2. In light of your discussion in the previous question, what do you think about Tad's expansion plans?