chapter 3

Financial Statements, Cash Flow, and Taxes

When evaluating a company, who can you trust? The analysts at top brokerage firms rate companies, using terms such as buy, hold, or sell. Maybe you think you can trust their ratings, since these analysts are highly trained and have access to great data sources. Think again. When the market was in the middle of a long, steady decline in the early 2000s, these analysts made 7,033 buy recommendations, but only 57 sells. What could possibly cause such optimism? How about their own personal compensation and their own firms' profits, rather than their clients' best interests? Most brokerage firms are members of a corporate family that includes an investment bank. If an analyst gives a company a negative rating, the company will take its investment banking business to a banking firm that gives it a better rating. To prevent this defection, analysts are pressured to refrain from making low, offensive ratings. Indeed, analysts who don't fall in line are often fired, such as Mike Mayo, formerly of Credit Suisse First Boston, who gave honest (and subsequently shown to be accurate) negative ratings. In fact, at CSFB, the analysts actually reported to investment bankers, and internal e-mails revealed that analysts were often replaced to keep investment banking clients happy.

At Merrill Lynch, e-mail revealed an even more disturbing situation. Analysts consistently gave positive ratings to firms, but then blasted the firms in internal e-mails. For example, analysts gave one company a strong buy rating but wrote that the company was "a piece of junk" in their internal e-mails. That's actually better than the e-mail for another positively rated company, which was called a "piece of s—t." Another company was rated "Neutral in the short term/Minimum 40% appreciation long term," but e-mails stated that there was nothing interesting about the company, "except banking fees."

New York attorney general Eliot Spitzer brought action against a number of Wall Street firms, which eventually settled for $1.4 billion (but which didn't stop the many suits brought against the firms by individual investors who lost money after acting on

Sources: Jeremy Kahn, "Frank Quattrone's Heavy Hand," *Fortune*, December 30, 2002, 78; Jeremy Kahn and Nelson D. Schwartz, "A New Investor Era? Ha!" *Fortune*, November 25, 2002, 35–38; David Rynecki, "The Price of Being Right," *Fortune*, February 4, 2001, 126–141; Nelson D. Schwartz and Jeremy Kahn, "Can This Bull Run Again," *Fortune*, December 30, 2002, 68–82; and Alynda Wheat, "Hall of Shame: Merrill Lynch-to-English Dictionary," *Fortune*, April 29, 2002, 28.

the analysts' recommendations). These legal actions are getting some results. For example, CSFB has reassigned analysts so that they report to its general counsel instead of its securities division, and Morgan Stanley's analysts have actually increased the number of unfavorable ratings from 2% to over 22%.

Who can you trust? Your best bet is to learn how to analyze a company, starting with this chapter, and then trust yourself.

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The textbook's Web site contains an *Excel* file that will guide you through the chapter's calculations. The file for this chapter is ***FM12 Ch 03 Tool Kit.xls*** and we encourage you to open the file and follow along as you read the chapter.

A manager's primary goal is to maximize the value of his or her firm's stock. Value is based on the stream of cash flows the firm will generate in the future. But how does an investor go about estimating future cash flows, and how does a manager decide which actions are most likely to increase cash flows? The answers to both questions lie in a study of the financial statements that publicly traded firms must provide to investors. Here, "investors" include both institutions (banks, insurance companies, pension funds, and the like) and individuals. Thus, this chapter begins with a discussion of what the basic financial statements are, how they are used, and what kinds of financial information users need.

The value of any business asset—whether it is a *financial asset* such as a stock or a bond, or a *real (physical) asset* such as land, buildings, and equipment—depends on the usable, after-tax cash flows the asset is expected to produce. Therefore, this chapter also explains the difference between accounting income and cash flow. Finally, since it is *after-tax* cash flow that is important, this chapter provides an overview of the federal income tax system.

3.1 Financial Statements and Reports

A source for links to the annual reports of many companies is **http://www.annualreportservice.com.**

Of the various reports corporations issue to their stockholders, the **annual report** is probably the most important. Two types of information are provided in an annual report. First, there is a verbal section, often presented as a letter from the chairman, that describes the firm's operating results during the past year and then discusses new developments that will affect future operations. Second, the annual report presents four basic financial statements—the *balance sheet*, the *income statement*, the *statement of retained earnings*, and the *statement of cash flows*. Taken together, these statements give an accounting picture of the firm's operations and financial position. Detailed data are provided for the two or three most recent years, along with historical summaries of key operating statistics for the past 5 or 10 years.[1]

The quantitative and verbal materials are equally important. The financial statements report *what has actually happened* to assets, earnings, and dividends over the past few years, whereas the verbal statements attempt to explain why things turned out the way they did.

For illustrative purposes, we use data on MicroDrive Inc., a producer of disk drives for microcomputers. Formed in 1982, MicroDrive has grown steadily and has earned a reputation for being one of the best firms in the microcomputer

[1]Firms also provide less comprehensive quarterly reports. Larger firms file even more detailed statements, giving breakdowns for each major division or subsidiary, with the Securities and Exchange Commission (SEC). These reports, called *10-K reports,* are available on the SEC's Web site at **http://www.sec.gov** under the heading "EDGAR."

Corporate Valuation and Financial Statements

In Chapter 1, we told you that managers should strive to make their firms more valuable, and that the value of a firm is determined by the size, timing, and risk of its free cash flows (FCF). This chapter shows you how to use a company's financial statements to calculate FCF.

$$\text{Value} = \frac{FCF_1}{(1 + WACC)^1} + \frac{FCF_2}{(1 + WACC)^2} + \frac{FCF_3}{(1 + WACC)^3} + \cdots + \frac{FCF_\infty}{(1 + WACC)^\infty}$$

components industry. MicroDrive's earnings dropped a bit in the most recent year, and management blamed a three-month strike that kept the firm from fully utilizing a new plant that had been financed mostly with debt. However, management went on to paint a more optimistic picture for the future, stating that full operations had been resumed, that several new products had been introduced, and that profits were expected to rise sharply. Of course, the profit increase may not occur, and analysts should compare management's past statements with subsequent results when judging the credibility of the projected improvement. In any event, *the information contained in an annual report is used by investors to help form expectations about future earnings and dividends.*

SELF-TEST

What is the annual report, and what two types of information are given in it?
Why is the annual report of great interest to investors?
What four types of financial statements are typically included in the annual report?

3.2 The Balance Sheet

Table 3-1 shows MicroDrive's most recent **balance sheets,** which represent "snapshots" of its financial position on the last day of each year. Although most companies report their balance sheets only on the last day of a given period, the "snapshot" actually changes daily as inventories are bought and sold, as fixed assets are added or retired, or as bank loan balances are increased or paid down. Moreover, a retailer will have much larger inventories before Christmas than later in the spring, so balance sheets for the same company can look quite different at different times during the year.

The left side of a balance sheet lists assets, which are the "things" the company owns. They are listed in order of "liquidity," or length of time it typically takes to convert them to cash at fair market values. The right side lists the claims that various groups have against the company's value, listed in the order in which they must be paid. For example, suppliers may have a claim called "accounts payable" that is due within 30 days, banks may have claims called "notes payable" that are due within 90 days, and bondholders may have claims that are not due for 20 years or more. Stockholders come last, for two reasons. First, their claim represents ownership (or equity) and need never be "paid off." Second, they

Table 3-1

MicroDrive Inc.: December 31 Balance Sheets (Millions of Dollars)

Assets	2007	2006	Liabilities and Equity	2007	2006
Cash and equivalents	$ 10	$ 15	Accounts payable	$ 60	$ 30
Short-term investments	0	65	Notes payable	110	60
Accounts receivable	375	315	Accruals	140	130
Inventories	615	415	Total current liabilities	$ 310	$ 220
Total current assets	$1,000	$ 810	Long-term bonds	754	580
Net plant and equipment	1,000	870	Total liabilities	$1,064	$ 800
			Preferred stock (400,000 shares)	40	40
			Common stock (50,000,000 shares)	130	130
			Retained earnings	766	710
			Total common equity	$ 896	$ 840
Total assets	$2,000	$1,680	Total liabilities and equity	$2,000	$1,680

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have a residual claim in the sense that they may receive payments only if the other claimants have already been paid. The nonstockholder claims are liabilities from the stockholders' perspective. The amounts shown on the balance sheets are called **book values** since they are based on the amounts recorded by bookkeepers when assets are purchased or liabilities are issued. As you will see throughout this textbook, book values may be very different from **market values,** which are the current values as determined in the marketplace.

The following sections provide more information about specific asset, liability, and equity accounts.

Assets

Cash, short-term investments, accounts receivable, and inventories are listed as current assets, because MicroDrive is expected to convert them into cash within a year. All assets are stated in dollars, but only cash represents actual money that can be spent. Some marketable securities mature very soon, and can be converted quickly into cash at prices close to their book values. These securities are called "cash equivalents," and they are included with cash. Therefore, MicroDrive could write checks for a total of $10 million. Other types of marketable securities have a longer time until maturity, and their market values are less predictable. These securities are classified as "short-term investments."

When MicroDrive sells its products to a customer but doesn't demand immediate payment, the customer then has an obligation called an "account receivable." The $375 million shown in accounts receivable is the amount of sales for which MicroDrive has not yet been paid.

Inventories show the dollars MicroDrive has invested in raw materials, work-in-process, and finished goods available for sale. MicroDrive uses the **FIFO (first-in, first-out)** method to determine the inventory value shown on its balance sheet ($615 million). It could have used the **LIFO (last-in, first-out)** method.

During a period of rising prices, by taking out old, low-cost inventory and leaving in new, high-cost items, FIFO will produce a higher balance sheet inventory value but a lower cost of goods sold on the income statement. (This is strictly used for accounting; companies actually use older items first.) Because MicroDrive uses FIFO, and because inflation has been occurring, (1) its balance sheet inventories are higher than they would have been had it used LIFO, (2) its cost of goods sold is lower than it would have been under LIFO, and (3) its reported profits are therefore higher. In MicroDrive's case, if the company had elected to switch to LIFO, its balance sheet would have inventories of $585 million rather than $615 million, and its earnings (discussed in the next section) would have been reduced by $18 million. Thus, the inventory valuation method can have a significant effect on financial statements, which is important to know when comparing different companies.

Rather than treat the entire purchase price of a long-term asset (such as a factory, plant, or equipment) as an expense in the purchase year, accountants "spread" the purchase cost over the asset's useful life.[2] The amount they charge each year is called the **depreciation** expense. Some companies report an amount called "gross plant and equipment," which is the total cost of the long-term assets they have in place, and another amount called "accumulated depreciation," which is the total amount of depreciation that has been charged on those assets. Some companies, such as MicroDrive, only report net plant and equipment, which is gross plant and equipment less accumulated depreciation. Chapter 12 provides a more detailed explanation of depreciation methods.

Liabilities and Equity

Accounts payable, notes payable, and accruals are listed as current liabilities, because MicroDrive is expected to pay them within a year. When MicroDrive purchases supplies but doesn't immediately pay for them, it takes on an obligation called an account payable. Similarly, when MicroDrive takes out a loan that must be repaid within a year, it signs an IOU called a note payable. MicroDrive doesn't pay its taxes or its employees' wages daily, and the amount it owes on these items at any point in time is called an "accrual," or an "accrued expense." Long-term bonds are also liabilities because they, too, reflect a claim held by someone other than a stockholder.

Preferred stock is a hybrid, or a cross between common stock and debt. In the event of bankruptcy, preferred stock ranks below debt but above common stock. Also, the preferred dividend is fixed, so preferred stockholders do not benefit if the company's earnings grow. Most firms do not use much, or even any, preferred stock, so "equity" usually means "common equity" unless the words "total" or "preferred" are included.

When a company sells shares of stock, the proceeds are recorded in the common stock account.[3] Retained earnings are the cumulative amount of earnings that have not been paid out as dividends. The sum of common stock and retained earnings is called "common equity," or sometimes just equity. If a company's assets could actually be sold at their book value, and if the liabilities and preferred

[2]This is called *accrual accounting*, which attempts to match revenues to the periods in which they are earned and expenses to the periods in which the effort to generate income occurred. Students sometimes call this "a cruel rule" because it can be confusing.

[3]Companies sometimes break the total proceeds into two parts, one called "par" and the other called "paid-in-capital" or "capital surplus." For example, if a company sells shares of stock for $10, it might record $1 of par and $9 of paid-in-capital. For most purposes, the distinction between par and paid-in-capital is not important, and most companies use no-par stock.

stock were actually worth their book values, then a company could sell its assets, pay off its liabilities and preferred stock, and the remaining cash would belong to common stockholders. Therefore, common equity is sometimes called **net worth**—it's the assets net of the liabilities.

SELF-TEST

What is the balance sheet, and what information does it provide?
How is the order of the information shown on the balance sheet determined?
Why might a company's December 31 balance sheet differ from its June 30 balance sheet?
A firm has $8 million in total assets. It has $3 million in current liabilities, $2 million in long-term debt, and $1 million in preferred stock. What is the total value of common equity? ($2 million)

3.3 The Income Statement

Table 3-2 gives the **income statements** for MicroDrive, which show its financial performance over each of the last 2 years. Income statements can cover any period of time, but they are usually prepared monthly, quarterly, and annually. Unlike the balance sheet, which is a snapshot of a firm at a point in time, the income statement reflects performance during the period.

Subtracting operating costs from net sales but excluding depreciation and amortization results in **EBITDA**, which stands for earnings before interest, taxes, depreciation, and amortization. Depreciation and amortization are annual charges that reflect the estimated costs of the assets used up each year. Depreciation applies to tangible assets, such as plant and equipment, whereas amortization applies to intangible assets such as patents, copyrights, trademarks, and goodwill.[4] Because neither depreciation nor amortization is paid in cash, some analysts claim that EBITDA is a better measure of financial strength than is net income. However, as we show later in the chapter, EBITDA is not as important as free cash flow. In fact, some financial wags have stated that EBITDA really stands for "earnings before anything bad happens."

The net income available to common shareholders, which is revenues less expenses, taxes, and preferred dividends (but before paying common dividends), is generally referred to as **net income,** although it is also called **profit** or **earnings,** particularly in the news or financial press. Dividing net income by the number of shares outstanding gives earnings per share (EPS), which is often called "the bottom line." Throughout this book, unless otherwise indicated, net income means net income available to common stockholders.[5]

[4]The accounting treatment of goodwill resulting from mergers has changed in recent years. Rather than an annual charge, companies are required to periodically evaluate the value of goodwill and reduce net income only if the goodwill's value has decreased materially ("become impaired," in the language of accountants). For example, in 2002 AOL Time Warner wrote off almost $100 billion associated with the AOL merger. It doesn't take too many $100 billion expenses to really hurt net income!

[5]Companies report "comprehensive income" as well as net income. Comprehensive income is equal to net income plus several comprehensive income items. One example of comprehensive income is the unrealized gain or loss that occurs when a marketable security, classified as "available for sale," is marked-to-market. For our purposes, we assume that there are no comprehensive income items, so we present only basic income statements throughout the text. Although not required, some companies also report "pro forma income." For example, if a company incurs an expense that it doesn't expect to recur, such as the closing of a plant, it might calculate pro forma income as though it had not incurred the one-time expense. There are no hard and fast rules for calculating pro forma income, and companies report it on a voluntary basis. As a result, it is often subject to abuse, with many companies finding ingenious ways to make pro forma income higher than traditional income. The SEC and the Public Company Accounting Oversight Board (PCAOB) are taking steps to reduce deceptive uses of pro forma reporting.

Table 3-2

MicroDrive Inc.: Income Statements for Years Ending December 31
(Millions of Dollars, Except for Per-Share Data)

	2007	2006
Net sales	$3,000.0	$2,850.0
Operating costs excluding depreciation and amortization	2,616.2	2,497.0
Earnings before interest, taxes, depreciation, and amortization (EBITDA)	$ 383.8	$ 353.0
Depreciation	100.0	90.0
Amortization	0.0	0.0
Depreciation and amortization	$ 100.0	$ 90.0
Earnings before interest and taxes (EBIT, or operating income)	$ 283.8	$ 263.0
Less interest	88.0	60.0
Earnings before taxes (EBT)	$ 195.8	$ 203.0
Taxes (40%)	78.3	81.2
Net income before preferred dividends	$ 117.5	$ 121.8
Preferred dividends	4.0	4.0
Net income	$ 113.5	$ 117.8
Common dividends	$ 57.5	$ 53.0
Addition to retained earnings	$ 56.0	$ 64.8
Per-Share Data		
Common stock price	$ 23.00	$ 26.00
Earnings per share (EPS)[a]	$ 2.27	$ 2.36
Dividends per share (DPS)[a]	$ 1.15	$ 1.06
Book value per share (BVPS)[a]	$ 17.92	$ 16.80
Cash flow per share (CFPS)[a]	$ 4.27	$ 4.16

[a]There are 50,000,000 shares of common stock outstanding. Note that EPS is based on earnings after preferred dividends—that is, on net income available to common stockholders. Calculations of the most recent EPS, DPS, BVPS, and CFPS are shown below:

$$\text{Earnings per share} = \text{EPS} = \frac{\text{Net income}}{\text{Common shares outstanding}} = \frac{\$113{,}500{,}000}{50{,}000{,}000} = \$2.27.$$

$$\text{Dividends per share} = \text{DPS} = \frac{\text{Dividends paid to common stockholders}}{\text{Common shares outstanding}} = \frac{\$57{,}500{,}000}{50{,}000{,}000} = \$1.15.$$

$$\text{Book value per share} = \text{BVPS} = \frac{\text{Total common equity}}{\text{Common shares outstanding}} = \frac{\$896{,}000{,}000}{50{,}000{,}000} = \$17.92.$$

$$\text{Cash flow per share} = \text{CFPS} = \frac{\text{Net income} + \text{Depreciation} + \text{Amortization}}{\text{Common shares outstanding}} = \frac{\$213{,}500{,}000}{50{,}000{,}000} = \$4.27.$$

SELF-TEST

What is an income statement, and what information does it provide?
Why is earnings per share called "the bottom line"?
What is EBITDA?
Regarding the time period reported, how does the income statement differ from the balance sheet?
A firm has $2 million in earnings before taxes. The firm has an interest expense of $300,000 and depreciation of $200,000; it has no amortization. What is its EBITDA? ($2.5 million)

3.4 Statement of Retained Earnings

Table 3-3, the **statement of retained earnings,** shows that MicroDrive began 2007 with $710 million of retained earnings, that during the year it earned $113.5 million and paid out $57.5 in dividends, and that it plowed the difference, $56 million, back into the business. These "corporate savings" caused retained earnings to increase from $710 million at the end of 2006 to $766 million at the end of 2007.

Note that "retained earnings" represents a *claim against assets*, not an asset per se. In 2007 MicroDrive's stockholders allowed it to reinvest $56 million instead of distributing the money as dividends, and management spent this money on new assets. Thus, retained earnings as reported on the balance sheet does not represent cash and is not "available" for the payment of dividends or anything else.[6]

Table 3-3

MicroDrive Inc.: Statement of Retained Earnings for Year Ending December 31, 2007 (Millions of Dollars)

Balance of retained earnings, December 31, 2006	$710.0
Add: Net income, 2007	113.5
Less: Dividends to common stockholders	(57.5)[a]
Balance of retained earnings, December 31, 2007	$766.0

[a]Here, and throughout the book, parentheses are used to denote negative numbers.

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SELF-TEST

What is the statement of retained earnings, and what information does it provide?
Why do changes in retained earnings occur?
Explain why the following statement is true: "Retained earnings as reported on the balance sheet does not represent cash and is not 'available' for the payment of dividends or anything else."
A firm had a retained earnings balance of $3 million in the previous year. In the current year, its net income is $2.5 million. If it pays $1 million in common dividends in the current year, what is its resulting retained earnings balance? ($4.5 million)

[6]The amount reported in the retained earnings account is *not* an indication of the amount of cash the firm has. Cash (as of the balance sheet date) is found in the cash account, an asset account. A positive number in the retained earnings account indicates only that in the past the firm earned some income, but its dividends paid were less than its earnings. Even though a company reports record earnings and shows an increase in its retained earnings account, it still may be short of cash.

The same situation holds for individuals. You might own a new BMW (no loan), lots of clothes, and an expensive stereo, hence have a high net worth, but if you have only 23 cents in your pocket plus $5 in your checking account, you will still be short of cash.

3.5 Net Cash Flow

Many financial analysts focus on **net cash flow.** A business's *net cash flow* generally differs from its *accounting profit* because some of the revenues and expenses listed on the income statement were not received or paid in cash during the year. The relationship between net cash flow and net income can be expressed as follows:

$$\text{Net cash flow} = \text{Net income} - \text{Noncash revenues} + \text{Noncash charges.} \quad \textbf{(3-1)}$$

The primary examples of noncash charges are depreciation and amortization. These items reduce net income but are not paid out in cash, so we add them back to net income when calculating net cash flow. Another example of a noncash charge is deferred taxes. In some instances, companies are allowed to defer tax payments to a later date even though the tax payment is reported as an expense on the income statement. Therefore, deferred tax payments are added to net income when calculating net cash flow.[7] At the same time, some revenues may not be collected in cash during the year, and these items must be subtracted from net income when calculating net cash flow.

Typically, depreciation and amortization are by far the largest noncash items, and in many cases the other noncash items roughly net out to zero. For this reason, many analysts assume that net cash flow equals net income plus depreciation and amortization:

$$\text{Net cash flow} = \text{Net income} + \text{Depreciation and amortization.} \quad \textbf{(3-2)}$$

To keep things simple, we will generally assume that Equation 3-2 holds. However, you should remember that Equation 3-2 will not accurately reflect net cash flow in those instances where there are significant noncash items beyond depreciation and amortization.

We can illustrate Equation 3-2 with 2007 data for MicroDrive taken from Table 3-2:

$$\text{Net cash flow} = \$113.5 + \$100.0 = \$213.5 \text{ million.}$$

To illustrate depreciation's effect, suppose a machine with a life of 5 years and a zero expected salvage value was purchased in 2006 for $100,000 and placed into service in 2007. This $100,000 cost is not expensed in the purchase year; rather, it is charged against production over the machine's 5-year depreciable life. If the depreciation expense were not taken, profits would be overstated, and taxes would be too high. So, the annual depreciation charge is deducted from sales revenues, along with such other costs as labor and raw materials, to determine income. However, because the $100,000 was actually expended back in 2006, the depreciation charged against income in 2007 and subsequent years is not a cash outlay, as are labor or raw materials charges. Depreciation is a noncash charge, so it must be added back to net income to obtain the net cash flow. If we assume that all other noncash items (including amortization) sum to zero, then net cash flow is simply equal to net income plus depreciation.

[7]Deferred taxes may arise, for example, if a company uses accelerated depreciation for tax purposes but straight-line depreciation for reporting its financial statements to investors.

Financial Analysis on the Internet

A wide range of valuable financial information is available on the Internet. With just a couple of clicks, an investor can easily find the key financial statements for most publicly traded companies. Here's a partial (but by no means a complete) list of places you can go to get started:

- One of the very best sources of financial information is Thomson Financial. Go to the textbook's Web site and follow the directions to access ThomsonONE—Business School Edition. An especially useful feature is the ability to download up to 10 years of financial statements in spreadsheet form. First, enter the ticker for a company and click GO. From the top tab (in dark blue), select Financials. This will show a second row of items (in light blue). Selecting More from this row will reveal a drop-down menu. Select SEC Database Reports & Charts. This will bring up another drop-down menu which includes the ten-year balance sheets, income statements, and statement of cash flows. To download the financial statements into a spreadsheet, first select one of the statements, such as the 10YR Balance Sheet. The balance sheets will then be displayed on your browser page. To download, click on the *Excel* icon toward the right of the light blue row at the top of the ThomsonONE panel. This will bring up a dialog box that lets you download the *Excel* file to your computer.
- Try Yahoo's finance Web site, **http://finance.yahoo.com**. Here you will find updated market information along with links to a variety of interesting research sites. Enter a stock's ticker symbol, click GO, and you will see the stock's current price, along with recent news about the company. The panel on the left has links to key statistics, the company's income statement, balance sheet, statement of cash flows, and more. The Yahoo site also has a list of insider transactions, so you can tell if a company's CEO and other key insiders are buying or selling their company's stock. In addition, there is a message board where investors share opinions about the company, and there is a link to the company's filings with the Securities and Exchange Commission (SEC). Note that, in most cases, a more complete list of the SEC filings can be found at **http://www.sec.gov**.
- Other sources for up-to-date market information are **http://money.cnn.com,** and **http://www.zacks.com**. These sites also provide financial statements in standardized formats.
- Both **http://www.bloomberg.com** and **http://www.marketwatch.com** have areas where you can obtain stock quotes along with company financials, links to Wall Street research, and links to SEC filings.
- If you are looking for charts of key accounting variables (for example, sales, inventory, depreciation and amortization, and reported earnings), along with the financial statements, take a look at **http://www.smartmoney.com**.
- Another good place to look is **http://www.investor.reuters.com**. Here you can find links to analysts' research reports along with the key financial statements.
- Zacks (shown above) and **http://www.hoovers.com** each has free research available along with more detailed information provided to subscribers.

Once you have accumulated all of this information, you may be looking for sites that provide opinions regarding the direction of the overall market and views regarding individual stocks. Two popular sites in this category are The Motley Fool's Web site, **http://www.fool.com**, and the Web site for The Street.com, **http://www.thestreet.com**.

SELF-TEST

Differentiate between net cash flow and accounting profit.
In accounting, the emphasis is on net income. What is emphasized in finance, and why is that item emphasized?
A firm has net income of $5 million. Assuming that depreciation of $1 million is its only noncash expense, what is the firm's net cash flow? ($6 million)

3.6 Statement of Cash Flows

Even if a company reports a large net income during a year, the *amount of cash* reported on its year-end balance sheet may be the same or even lower than its beginning cash. The reason is that its net income can be used in a variety of ways, not just kept as cash in the bank. For example, the firm may use its net income to pay dividends, to increase inventories, to finance accounts receivable, to invest in fixed assets, to reduce debt, or to buy back common stock. Indeed, the company's *cash position* as reported on its balance sheet is affected by a great many factors, including the following:

1. **Net income before preferred dividends.** Other things held constant, a positive net income will lead to more cash in the bank. However, as we discuss below, other things generally are not held constant.
2. **Noncash adjustments to net income.** To calculate cash flow, it is necessary to adjust net income to reflect noncash revenues and expenses, such as depreciation and deferred taxes, as shown above in the calculation of net cash flow.
3. **Changes in working capital.** Increases in current assets other than cash, such as inventories and accounts receivable, decrease cash, whereas decreases in these accounts increase cash. For example, if inventories are to increase, the firm must use some of its cash to acquire the additional inventory. Conversely, if inventories decrease, this generally means the firm is selling inventories and not replacing all of them, hence generating cash. On the other hand, if payables increase, the firm has received additional credit from its suppliers, which saves cash, but if payables decrease, this means it has used cash to pay off its suppliers. Therefore, increases in current liabilities such as accounts payable increase cash, whereas decreases in current liabilities decrease cash.
4. **Investments**. If a company invests in fixed assets or short-term financial investments, this will reduce its cash position. On the other hand, if it sells some fixed assets or short-term investments, this will increase cash.
5. **Security transactions and dividend payments**. If a company issues stock or bonds during the year, the funds raised will increase its cash position. On the other hand, if the company uses cash to buy back outstanding stock or to pay off debt, or if it pays dividends to its shareholders, this will reduce cash.

Each of the above factors is reflected in the **statement of cash flows,** which summarizes the changes in a company's cash position. The statement separates activities into three categories, plus a summary section:

1. **Operating activities,** which includes net income, depreciation, changes in current assets and liabilities other than cash, short-term investments, and short-term debt.
2. **Investing activities,** which includes investments in or sales of fixed assets and short-term financial investments.
3. **Financing activities,** which includes raising cash by issuing short-term debt, long-term debt, or stock. Also, because both dividends paid and cash used to buy back outstanding stock or bonds reduce the company's cash, such transactions are included here.

Accounting texts explain how to prepare the statement of cash flows, but the statement is used to help answer questions such as these: Is the firm generating enough cash to purchase the additional assets required for growth? Is the firm generating any extra cash that can be used to repay debt or to invest in new products? Such information is useful both for managers and investors, so the statement of cash flows is an important part of the annual report.

MicroDrive Inc.: Statement of Cash Flows for 2007
(Millions of Dollars)

e-resource

See ***FM12 Ch 03 Tool Kit.xls*** for all details.

	Cash Provided or Used
Operating Activities	
Net income before preferred dividends	$117.5
Adjustments:	
Noncash adjustments:	
Depreciation[a]	100.0
Due to changes in working capital:[b]	
Increase in accounts receivable	(60.0)
Increase in inventories	(200.0)
Increase in accounts payable	30.0
Increase in accruals	10.0
Net cash provided by operating activities	($ 2.5)
Investing Activities	
Cash used to acquire fixed assets[c]	($230.0)
Sale of short-term investments	$ 65.0
Net cash provided by investing activities	($165.0)
Financing Activities	
Increase in notes payable	$ 50.0
Increase in bonds outstanding	174.0
Payment of preferred and common dividends	(61.5)
Net cash provided by financing activities	$162.5
Summary	
Net change in cash	($ 5.0)
Cash at beginning of year	15.0
Cash at end of year	$ 10.0

[a]Depreciation is a noncash expense that was deducted when calculating net income. It must be added back to show the correct cash flow from operations.
[b]An increase in a current asset *decreases* cash. An increase in a current liability *increases* cash. For example, inventories increased by $200 million and therefore reduced cash by a like amount.
[c]The net increase in fixed assets is $130 million; however, this net amount is after a deduction for the year's depreciation expense. Depreciation expense would have to be added back to find the increase in gross fixed assets. From the company's income statement, we see that the 2007 depreciation expense is $100 million; thus, expenditures on fixed assets were actually $230 million.

Table 3-4 shows MicroDrive's statement of cash flows as it would appear in the company's annual report. The top section shows cash generated by and used in operations—for MicroDrive, operations provided net cash flows of *minus* $2.5 million. This subtotal, the minus $2.5 million net cash flow provided by operating activities, is in many respects the most important figure in any of the financial statements. Profits as reported on the income statement can be "doctored" by such tactics as depreciating assets too slowly, not recognizing bad debts promptly, and the like. However, it is far more difficult to simultaneously doctor profits and the working capital accounts. Therefore, it is not uncommon for a company to report positive net income right up to the day it declares bankruptcy. In such cases, however, the net cash flow from operations almost always began to deteriorate much earlier, and analysts who kept an eye on cash flow could have predicted trouble. Therefore, if you are ever analyzing a company and are pressed for time, look first at the trend in net cash flow provided by operating activities, because it will tell you more than any other number.

The second section shows investing activities. MicroDrive purchased fixed assets totaling $230 million and sold $65 million of short-term investment, for a net cash flow from investing activities of *minus* $165 million.

The third section, financing activities, includes borrowing from banks (notes payable), selling new bonds, and paying dividends on common and preferred stock. MicroDrive raised $224 million by borrowing, but it paid $61.5 million in preferred and common dividends. Therefore, its net inflow of funds from financing activities was $162.5 million.

In the summary, where all of these sources and uses of cash are totaled, we see that MicroDrive's cash outflows exceeded its cash inflows by $5 million during 2007; that is, its net change in cash was a *negative* $5 million.

MicroDrive's statement of cash flows should be worrisome to its managers and to outside analysts. The company had a $2.5 million cash shortfall from operations, it spent an additional $230 million on new fixed assets, and it paid out another $61.5 million in dividends. It covered these cash outlays by borrowing heavily and by liquidating $65 million of short-term investments. Obviously, this situation cannot continue year after year, so something will have to be done. Later in the chapter we consider some of the actions MicroDrive's financial staff might recommend to ease the cash flow problem.[8]

SELF-TEST

What types of questions does the statement of cash flows answer?
Identify and briefly explain the three different categories of activities shown in the statement of cash flows.
A firm has inventories of $2 million for the previous year and $1.5 million for the current year. What impact does this have on net cash provided by operations? (Increase of $500,000)

3.7 Modifying Accounting Data for Managerial Decisions

Thus far in the chapter we have focused on financial statements as they are presented in the annual report. However, these statements are designed more for use by creditors and tax collectors than for managers and stock analysts. Therefore, certain modifications are needed for use in corporate decision making.

[8]For a more detailed discussion of financial statement analysis, see Lyn M. Fraser and Aileen Ormiston, *Understanding Financial Statements*, 8th ed. (Upper Saddle River, NJ: Prentice-Hall, 2007).

In the following sections we discuss how financial analysts combine stock prices and accounting data to make the statements more useful.

Operating Assets and Total Net Operating Capital

Different firms have different financial structures, different tax situations, and different amounts of nonoperating assets. These differences affect traditional accounting measures such as the rate of return on equity. They can cause two firms, or two divisions within a single firm, that actually have similar operations to appear to be operated with different efficiency. This is important, because if managerial compensation systems are to function properly, operating managers must be judged and compensated for those things that are under their control, not on the basis of things outside their control. Therefore, to judge managerial performance, we need to compare managers' ability to generate *operating income* (*EBIT*) with the *operating assets* under their control.

The first step in modifying the traditional accounting framework is to divide total assets into two categories, **operating assets,** which consist of the assets necessary to operate the business, and **nonoperating assets,** which include cash and short-term investments above the level required for normal operations, investments in subsidiaries, land held for future use, and the like. Moreover, operating assets are further divided into **operating current assets,** such as inventory, and **long-term operating assets,** such as plant and equipment. Obviously, if a manager can generate a given amount of profit and cash flow with a relatively small investment in operating assets, then the amount of capital investors must put up is reduced and the rate of return on that capital increases.

Most capital used in a business is supplied by investors—stockholders, bondholders, and lenders such as banks. Investors must be paid for the use of their money, with payment coming as interest in the case of debt and as dividends plus capital gains in the case of stock. So, if a company buys more assets than it actually needs, and thus raises too much capital, then its capital costs will be unnecessarily high.

Must all of the capital used to acquire assets be obtained from investors? The answer is no, because some of the funds are provided as a normal consequence of operations. For example, some funds will come from suppliers and be reported as *accounts payable*, while other funds will come as *accrued wages and accrued taxes*, which amount to short-term loans from workers and tax authorities. Such funds are called **operating current liabilities.** Therefore, if a firm needs $100 million of assets, but it has $10 million of accounts payable and another $10 million of accrued wages and taxes, then its *investor-supplied capital* would be only $80 million.

Net operating working capital is defined as operating current assets minus operating current liabilities. In other words, net operating working capital is the working capital acquired with investor-supplied funds. Here is the definition in equation form:

$$\text{Net operating working capital} = \text{Operating current assets} - \text{Operating current liabilities}. \quad (3\text{-}3)$$

Now think about how these concepts can be used in practice. First, all companies must carry some cash to "grease the wheels" of their operations. Companies continuously receive checks from customers and write checks to suppliers, employees, and so on. Because inflows and outflows do not coincide perfectly, a company must keep some cash in its bank account. In other words, some cash is required to conduct operations. The same is true for most other current assets, such as inventory and accounts receivable, which are required for normal operations. However, any short-term securities the firm holds generally result from investment decisions made by the treasurer, and they are not used in the core operations. Therefore, short-term investments are normally excluded when calculating net operating working capital.[9]

Some current liabilities—especially accounts payable and accruals—arise in the normal course of operations. Moreover, each dollar of such current liabilities is a dollar that the company does not have to raise from investors to acquire current assets. Therefore, to calculate net operating working capital, we deduct these operating current liabilities from the operating current assets. Other current liabilities that charge interest, such as notes payable to banks, are treated as investor-supplied capital and thus are not deducted when calculating net working capital.

If you are ever uncertain about an item, ask yourself whether it is a natural consequence of operations or if it is a discretionary choice, such as a particular method of financing, or an investment in a financial asset. If it is discretionary, it is not an operating asset or liability.

We can apply these definitions to MicroDrive, using the balance sheet data given in Table 3-1. Here is the net operating working capital for 2007:

$$\begin{aligned}\text{Net operating working capital} &= (\text{Cash} + \text{Accounts receivable} + \text{Inventories}) \\ &\quad - (\text{Accounts payable} + \text{Accruals}) \\ &= (\$10 + \$375 + \$615) - (\$60 + \$140) \\ &= \$800 \text{ million.}\end{aligned}$$

MicroDrive's total net operating capital at year-end 2007 was the sum of its net operating working capital and its operating long-term assets (which consist only of net plant and equipment):

$$\begin{aligned}\text{Total net operating capital} &= (\text{Net operating working capital}) \\ &\quad + (\text{Operating long-term assets}) \\ &= \$800 + \$1{,}000 \\ &= \$1{,}800 \text{ million.}\end{aligned} \tag{3-4}$$

For the previous year, net operating working capital was

$$\begin{aligned}\text{Net operating working capital} &= (\$15 + \$315 + \$415) - (\$30 + \$130) \\ &= \$585 \text{ million.}\end{aligned}$$

[9]If the marketable securities are held as a substitute for cash, and therefore reduce the cash requirements, then they may be classified as part of operating working capital. Generally, though, large holdings of marketable securities are held as a reserve for some contingency or else as a temporary "parking place" for funds prior to an acquisition, a major capital investment program, or the like.

Adding the $870 million of fixed assets, its total operating capital at year-end 2006 was

$$\begin{aligned}\text{Total net operating capital} &= \$585 + \$870\\ &= \$1{,}455 \text{ million.}\end{aligned}$$

Notice that we have defined total net operating capital as the sum of net operating working capital and operating long-term assets. In other words, our definition is in terms of operating assets and liabilities. However, we can also calculate total net operating capital by adding up the funds provided by investors, such as notes payable, long-term bonds, preferred stock, and common equity. For MicroDrive, the total capital provided by investors at year-end 2006 was $60 + $580 + $40 + $840 = $1,520 million. Of this amount, $65 million was tied up in short-term investments, which are not directly related to MicroDrive's operations. Therefore, only $1,520 − $65 = $1,455 million of investor-supplied capital was used in operations. Notice that this is exactly the same value as calculated above. This shows that we can calculate total net operating capital either from net operating working capital and operating long-term assets or from the investor-supplied funds. We usually base our calculations upon the first definition since it is possible to perform this calculation for a division, whereas it is not possible to do so using the definition based on investor-supplied capital.

We use the terms total net operating capital, operating capital, net operating assets, and capital to mean the same thing. Unless we specifically say "investor-supplied capital," we are referring to total net operating capital.

MicroDrive increased its operating capital to $1,800 from $1,455 million, or by $345 million, during 2007. Furthermore, most of this increase went into working capital, which rose from $585 to $800 million, or by $215 million. This 37% increase in net operating working capital versus a sales increase of only 5% (from $2,850 to $3,000 million) should set off warning bells in your head: Why did MicroDrive tie up so much additional cash in working capital? Is the company gearing up for a big increase in sales, or are inventories not moving and receivables not being collected? We will address these questions in detail in Chapter 4, when we cover ratio analysis.

Net Operating Profit After Taxes (NOPAT)

If two companies have different amounts of debt, hence different amounts of interest charges, they could have identical operating performances but different net incomes—the one with more debt would have a lower net income. Net income is certainly important, but it does not always reflect the true performance of a company's operations or the effectiveness of its operating managers. A better measurement for comparing managers' performance is **net operating profit after taxes,** or **NOPAT,** which is the amount of profit a company would generate if it had no debt and held no financial assets. NOPAT is defined as follows:[10]

$$\text{NOPAT} = \text{EBIT}(1 - \text{Tax rate}). \qquad \textbf{(3-5)}$$

[10]For firms with a more complicated tax situation, it is better to define NOPAT as follows: NOPAT = (Net income before preferred dividends) + (Net interest expense)(1 − Tax rate). Also, if firms are able to defer paying some of their taxes, perhaps by the use of accelerated depreciation, then NOPAT should be adjusted to reflect the taxes that the company actually paid on its operating income. See P. Daves, M. Ehrhardt, and R. Shrieves, *Corporate Valuation: A Guide for Managers and Investors* (Mason, OH: Thomson South-Western, 2004) for a detailed explanation of these and other adjustments. Also see Tim Koller, Marc Goedhart, and David Wessels, *Valuation: Measuring and Managing the Value of Companies* (Hoboken, N.J.: John Wiley & Sons, Inc., 2005) and G. Bennett Stewart, *The Quest for Value* (New York: Harper Collins, 1991).

Financial Bamboozling: How to Spot It

Recent accounting frauds by Enron, WorldCom, Xerox, Merck, Arthur Andersen, Tyco, and many others have shown that analysts can no longer blindly assume that a firm's published financial statements are the best representation of its financial position. Clearly, many companies were "pushing the envelope" if not outright lying in an effort to make their companies look better.

A recent *Fortune* article points out that there are only three basic ways to manipulate financial statements: moving earnings from the future to the present, avoiding taxes, or hiding debt. For example, suppose one telecom firm (think WorldCom or Global Crossing) sold the right to use parts of its fiber-optic network for 10 years to another telecom firm for $100 million. The seller would immediately record revenues of $100 million. The buyer, however, could spread the expense over 10 years and report an expense of only $10 million this year. The buyer would simultaneously sell similar rights to the original seller for $100 million. This way, no cash changes hands, both companies report an extra $100 million in revenue, but each reports a cost of only $10 million. Thus, both companies "created" an extra $90 million in pre-tax profits, without doing anything. Of course, both companies will have to report an extra $10 million expense each year for the remaining 9 years, but they have each boosted short-term profits and thus this year's executive bonuses. To boost earnings next year, all they have to do is play the same game, but on a bigger scale.

For hiding debt, it's hard to beat Enron's special purpose entities (SPEs). These SPEs owed hundreds of millions of dollars, and it turned out that Enron was responsible for this debt, even though it never showed up on Enron's financial statements.

How can you spot bamboozling? Here are some tips. When companies have lots of write-offs or charges for restructuring, it could be that they are planning on managing earnings in the future. In other words, they sandbag this year to pad next year's earnings. Beware of serial acquirers, especially if they use their own stock to buy other companies. This can increase reported earnings, but it often erodes value since the acquirer usually pays a large premium for the target. Watch out for companies that depreciate their assets much slower than others in the industry (this is shown in the financial statement's footnotes). This causes their current earnings to look larger than their competitors', even though they aren't actually performing any better. Perhaps the best evidence of bamboozling is if earnings are consistently growing faster than cash flows, which almost always indicates a financial scam.

Sources: Geoffrey Colvin, "Bamboozling: A Field Guide," *Fortune*, July 8, 2002, 51; and Shawn Tully, "Don't Get Burned," *Fortune*, February 18, 2002, 87–90.

Using data from the income statements of Table 3-2, MicroDrive's 2007 NOPAT is found to be

$$\text{NOPAT} = \$283.8\,(1 - 0.4) = \$283.8\,(0.6) = \$170.3 \text{ million.}$$

This means MicroDrive generated an after-tax operating profit of $170.3 million, a little better than its previous NOPAT of $263(0.6) = $157.8 million. However, the income statements in Table 3-2 show that MicroDrive's earnings per share actually declined. This decrease in EPS was caused by an increase in interest expense, and not by a decrease in operating profit. Moreover, the balance sheets in Table 3-1 show an increase in debt. But why did MicroDrive increase its debt? As we just saw, its investment in operating capital increased dramatically during 2007, and that increase was financed primarily with debt.

Free Cash Flow

Earlier in this chapter, we defined net cash flow as net income plus noncash adjustments, which typically means net income plus depreciation. Note, though,

that cash flows cannot be maintained over time unless depreciated fixed assets are replaced, so management is not completely free to use net cash flows however it chooses. Therefore, we now define another term, **free cash flow (FCF),** which is the cash flow actually available for distribution to investors *after the company has made all the investments in fixed assets and working capital necessary to sustain ongoing operations*.

When you studied income statements in accounting, the emphasis was probably on the firm's net income, which is its **accounting profit.** However, the value of a company's operations is determined by the stream of cash flows that the operations will generate now and in the future. To be more specific, the value of operations depends on all the future expected free cash flows (FCF), defined as after-tax operating profit minus the amount of new investment in working capital and fixed assets necessary to sustain the business. Thus, free cash flow represents the cash that is actually available for distribution to investors. *Therefore, the way for managers to make their companies more valuable is to increase free cash flow*.

Calculating Free Cash Flow

As shown earlier in the chapter, MicroDrive had $1,455 million of total net operating capital at the end of 2006, but $1,800 million at the end of 2007. Therefore, during 2007, it made a **net investment in operating capital** of

$$\text{Net investment in operating capital} = \$1{,}800 - \$1{,}455 = \$345 \text{ million.}$$

MicroDrive's free cash flow in 2007 was

$$\begin{aligned} \text{FCF} &= \text{NOPAT} - \text{Net investment in operating capital} \\ &= \$170.3 - \$345 \\ &= -\$174.7 \text{ million.} \end{aligned} \tag{3-6}$$

Net fixed assets rose from $870 to $1,000 million, or by $130 million. However, MicroDrive reported $100 million of depreciation, so its gross investment in fixed assets was $130 + $100 = $230 million for the year. With this background, we find the **gross investment in operating capital** as follows:

$$\begin{aligned} \text{Gross investment in operating capital} &= \text{Net investment in operating capital} + \text{Depreciation} \\ &= \$345 + \$100 = \$445 \text{ million.} \end{aligned} \tag{3-7}$$

Because depreciation is a noncash expense, some analysts calculate **operating cash flow** as

$$\text{Operating cash flow} = \text{NOPAT} + \text{Depreciation.} \tag{3-8}$$

MicroDrive's most recent operating cash flow is

$$\text{Operating cash flow} = \text{NOPAT} + \text{Depreciation} = \$170.3 + \$100 = \$270.3.$$

An algebraically equivalent expression for free cash flow in terms of operating cash flow and gross investment in operating capital is

$$\begin{aligned}\text{FCF} &= \text{Operating cash flow} - \text{Gross investment in operating capital} \\ &= (\$170.3 + \$100) - \$445 \\ &= -\$174.7 \text{ million.}\end{aligned} \tag{3-9}$$

Equations 3-6 and 3-9 are equivalent because depreciation is added to both NOPAT and net investment in Equation 3-6 to arrive at Equation 3-9. We usually use Equation 3-6, because it saves us this step.

The Uses of FCF

Recall that free cash flow (FCF) is the amount of cash that is available for distribution to all investors, including both shareholders and debtholders. There are five good uses for FCF:

1. Pay interest to debtholders, keeping in mind that the net cost to the company is the after-tax interest expense.
2. Repay debtholders, that is, pay off some of the debt.
3. Pay dividends to shareholders.
4. Repurchase stock from shareholders.
5. Buy short-term investments or other nonoperating assets.

Recall that the company does not have to use FCF to acquire operating assets since, by definition, FCF already takes into account the purchase of all operating assets needed to support growth. Unfortunately, there is evidence to suggest that some companies with high FCF tend to make unnecessary investments that don't add value, such as paying too much to acquire some other company. Thus, high FCF can cause waste if managers fail to act in the best interest of shareholders. As discussed in Chapter 1, this is called an agency cost, since managers are hired as agents to act on behalf of stockholders. We discuss agency costs and ways to control them in Chapter 15, where we discuss value-based management and corporate governance, and in Chapter 16, where we discuss the choice of capital structure.

In practice, most companies combine these five uses in such a way that the net total is equal to FCF. For example, a company might pay interest and dividends, issue new debt, and also sell some of its marketable securities. Some of these activities are cash outflows (for example, paying interest and dividends) and some are cash inflows (for example, issuing debt and selling marketable securities), but the net cash flow from these five activities is equal to FCF.

FCF and Corporate Value

FCF is the amount of cash available for distribution to investors, and, as a result, the value of a company depends on the present value of its expected future FCFs,

discounted at the company's weighted average cost of capital (WACC). Subsequent chapters will develop the tools needed to forecast FCFs and evaluate their risk. Chapter 15 ties all this together with a model that is used to calculate the value of a company. Even though you do not yet have all the tools to apply the model, it's important that you understand this basic concept: *FCF is the cash available for distribution to investors. Therefore, the value of a firm primarily depends on its expected future FCFs.*

Evaluating FCF, NOPAT, and Operating Capital

Even though MicroDrive had a positive NOPAT, its very high investment in operating assets resulted in a negative free cash flow. Because free cash flow is what is available for distribution to investors, not only was there nothing for investors, but investors actually had to provide *additional* money to keep the business going. Investors provided most of this new money as debt.

Is a negative free cash flow always bad? The answer is, "Not necessarily; it depends on why the free cash flow was negative." If FCF was negative because NOPAT was negative, that is a bad sign, because then the company is probably experiencing operating problems. However, many high-growth companies have positive NOPAT but negative free cash flow because they are making large investments in operating assets to support growth. There is nothing wrong with profitable growth, even if it causes negative cash flows.

One way to determine whether growth is profitable is by examining the **return on invested capital (ROIC),** which is the ratio of NOPAT to total operating capital. If the ROIC exceeds the rate of return required by investors, then a negative free cash flow caused by high growth is nothing to worry about. Chapter 15 discusses this in detail.

To calculate the ROIC, we first calculate NOPAT and operating capital. The return on invested capital (ROIC) is a performance measure that indicates how much NOPAT is generated by each dollar of operating capital:

$$\text{ROIC} = \frac{\text{NOPAT}}{\text{Operating capital}}. \tag{3-10}$$

If ROIC is greater than the rate of return investors require, which is the weighted average cost of capital (WACC), then the firm is adding value.

As noted earlier, a negative current FCF is not necessarily bad, provided it is due to high growth. For example, during the late 1990s Home Depot had negative FCF due to its rapid growth, but it also had a very high ROIC, and this high ROIC resulted in a high market value for the stock.

MicroDrive had an ROIC in 2007 of 9.46% ($170.3/$1,800 = 0.0946). Is this enough to cover its cost of capital? We'll answer that question in the next section.

SELF-TEST

What is net operating working capital? Why does it exclude most short-term investments and also notes payable?

What is total net operating capital? Why is it important for managers to calculate a company's capital requirements?

Why is NOPAT a better performance measure than net income?

What is free cash flow? Why is it important?

A firm's total net operating capital for the previous year was $2 million. For the current year, its total net operating capital is $2.5 million and its NOPAT is $1.2 million. What is its free cash flow for the current year? ($700,000)

3.8 MVA and EVA

Neither traditional accounting data nor the modified data discussed in the preceding section incorporates stock prices, even though the primary goal of management is to maximize the firm's stock price. Financial analysts have therefore developed two additional performance measures, MVA, or Market Value Added, and EVA, or Economic Value Added. These concepts are discussed in this section.[11]

Market Value Added (MVA)

The primary goal of most firms is to maximize shareholders' wealth. This goal obviously benefits shareholders, but it also helps to ensure that scarce resources are allocated efficiently, which benefits the economy. Shareholder wealth is maximized by maximizing the *difference* between the market value of the firm's stock and the amount of equity capital that was supplied by shareholders. This difference is called the **Market Value Added (MVA):**

$$\begin{aligned} \text{MVA} &= \text{Market value of stock} - \text{Equity capital supplied by shareholders} \\ &= (\text{Shares outstanding})(\text{Stock price}) - \text{Total common equity}. \end{aligned} \tag{3-11}$$

For an updated estimate of Coca-Cola's MVA, go to **http://finance.yahoo.com**, enter KO, and click GO. This shows the market value of equity, called Mkt Cap. To get the book value of equity, select Balance Sheet from the left panel.

To illustrate, consider Coca-Cola. In May 2006, its total market equity value was $104.8 billion, while its balance sheet showed that stockholders had put up only $16.4 billion. Thus, Coca-Cola's MVA was $104.8 − $16.4 = $88.4 billion. This $88.4 billion represents the difference between the money that Coca-Cola's stockholders have invested in the corporation since its founding—including retained earnings—versus the cash they could get if they sold the business. The higher its MVA, the better the job management is doing for the firm's shareholders.

Sometimes MVA is defined as the total market value of the company minus the total amount of investor-supplied capital:

$$\begin{aligned} \text{MVA} &= \text{Total market value} - \text{Total investor supplied capital} \\ &= (\text{Market value of stock} + \text{Market value of debt}) \\ &\quad - \text{Total investor supplied capital}. \end{aligned} \tag{3-11a}$$

For most companies, the total amount of investor-supplied capital is the sum of equity, debt, and preferred stock. We can calculate the total amount of investor-supplied capital directly from their reported values in the financial statements. The total market value of a company is the sum of the market values of common equity, debt, and preferred stock. It is easy to find the market value of equity, since stock prices are readily available, but it is not always easy to find the market value of debt. Hence, many analysts use the value of debt that is reported in the financial statements, the debt's book value, as an estimate of its market value.

[11]The concepts of EVA and MVA were developed by Joel Stern and Bennett Stewart, co-founders of the consulting firm Stern Stewart & Company. Stern Stewart copyrighted the terms "EVA" and "MVA," so other consulting firms have given other names to these values. Still, EVA and MVA are the terms most commonly used in practice.

For Coca-Cola, the total amount of reported debt was about $5.7 billion, and Coca-Cola had no preferred stock. Using this as an estimate of the market value of debt, Coke's total market value was $104.8 + $5.7 = $110.5 billion. The total amount of investor-supplied funds was $16.4 + $5.7 = $22.1 billion. Using these total values, the MVA was $110.5 − $22.1 = $88.4 billion. Note that this is the same answer that we got using the previous definition of MVA. Both methods will give the same result if the market value of debt is approximately equal to its book value.

Economic Value Added (EVA)

Whereas MVA measures the effects of managerial actions since the very inception of a company, **Economic Value Added (EVA)** focuses on managerial effectiveness in a given year. The basic EVA formula is as follows:

$$\begin{aligned} \text{EVA} &= \text{Net operating profit after taxes (NOPAT)} \\ &\quad - \text{After-tax dollar cost of capital used to support operations} \\ &= \text{EBIT}(1 - \text{Tax rate}) - (\text{Total net operating capital})(\text{WACC}). \end{aligned} \tag{3-12}$$

We can also calculate EVA in terms of ROIC:

$$\text{EVA} = (\text{Operating capital})(\text{ROIC} - \text{WACC}). \tag{3-13}$$

As this equation shows, a firm adds value—that is, has a positive EVA—if its ROIC is greater than its WACC. If WACC exceeds ROIC, then new investments in operating capital will reduce the firm's value.

EVA is an estimate of a business's true economic profit for the year, and it differs sharply from accounting profit.[12] EVA represents the residual income that remains after the cost of *all* capital, including equity capital, has been deducted, whereas accounting profit is determined without imposing a charge for equity capital. As we discuss in Chapter 10, equity capital has a cost, because funds provided by shareholders could have been invested elsewhere, where they would have earned a return. Shareholders give up the opportunity to invest elsewhere when they provide capital to the firm. The return they could earn elsewhere in investments of equal risk represents the cost of equity capital. This cost is an *opportunity cost* rather than an *accounting cost*, but it is quite real nevertheless.

Note that when calculating EVA we do not add back depreciation. Although it is not a cash expense, depreciation is a cost since worn-out assets must be replaced, and it is therefore deducted when determining both net income and EVA. Our calculation of EVA assumes that the true economic depreciation of the company's fixed assets exactly equals the depreciation used for accounting and tax purposes. If this were not the case, adjustments would have to be made to obtain a more accurate measure of EVA.

[12]The most important reason EVA differs from accounting profit is that the cost of equity capital is deducted when EVA is calculated. Other factors that could lead to differences include adjustments that might be made to depreciation, to research and development costs, to inventory valuations, and so on. These other adjustments also can affect the calculation of investor-supplied capital, which affects both EVA and MVA. See Stewart, *The Quest for Value*, cited in footnote 10.

Table 3-5

MVA and EVA for MicroDrive, Inc. (Millions of Dollars)

	2007	2006
MVA Calculation		
Price per share	$ 23.0	$ 26.0
Number of shares (millions)	50.0	50.0
Market value of equity = Share price (Number of shares)	$1,150.0	$1,300.0
Book value of equity	$ 896.0	$ 840.0
MVA = Market value − Book value	$ 254.0	$ 460.0
EVA Calculation		
EBIT	$ 283.8	$ 263.0
Tax rate	40%	40%
NOPAT = EBIT(1 − T)	$ 170.3	$ 157.8
Total investor-supplied operating capital[a]	$1,800.0	$1,455.0
Weighted average cost of capital, WACC (%)	11.0%	10.8%
Dollar cost of capital = Operating capital (WACC)	$ 198.0	$157.1
EVA = NOPAT − Dollar cost of capital	($ 27.7)	$ 0.7
ROIC = NOPAT/Operating capital	9.46%	10.85%
ROIC − Cost of capital = ROIC − WACC	(1.54%)	0.05%
EVA = (Operating capital)(ROIC − WACC)	($ 27.7)	$ 0.7

[a]Investor-supplied operating capital equals the sum of notes payable, long-term debt, preferred stock, and common equity, less short-term investments. It could also be calculated as total liabilities and equity minus accounts payable, accruals, and short-term investments. It is also equal to total net operating capital.

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EVA measures the extent to which the firm has increased shareholder value. Therefore, if managers focus on EVA, this will help to ensure that they operate in a manner that is consistent with maximizing shareholder wealth. Note too that EVA can be determined for divisions as well as for the company as a whole, so it provides a useful basis for determining managerial performance at all levels. Consequently, EVA is being used by an increasing number of firms as the primary basis for determining managerial compensation.

Table 3-5 shows how MicroDrive's MVA and EVA are calculated. The stock price was $23 per share at year-end 2007, down from $26 per share the previous year. Its WACC, which is the percentage after-tax cost of capital, was 10.8% in 2006 and 11.0% in 2007, and its tax rate was 40%. Other data in Table 3-5 were given in the basic financial statements provided earlier in the chapter.

Note first that the lower stock price and the higher book value of equity (due to retaining earnings during 2007) combined to reduce the MVA. The 2007 MVA is still positive, but $460 − $254 = $206 million of stockholders' value was lost during the year.

EVA for 2006 was just barely positive, and in 2007 it was negative. Operating income (NOPAT) rose, but EVA still declined, primarily because the amount of capital rose more sharply than NOPAT—by about 26% versus 8%—and the cost of this additional capital pulled EVA down.

Sarbanes-Oxley and Financial Fraud

Investors need to be cautious when they review financial statements. While companies are required to follow GAAP, managers still have quite a lot of discretion in deciding how and when to report certain transactions. Consequently, two firms in exactly the same operating situation may report financial statements that convey different impressions about their financial strength. Some variations may stem from legitimate differences of opinion about the correct way to record transactions. In other cases, managers may choose to report numbers in a way that helps them present either higher earnings or more stable earnings over time. As long as they follow GAAP, such actions are not illegal, but these differences make it harder for investors to compare companies and gauge their true performances.

Unfortunately, there have also been cases where managers overstepped the bounds and reported fraudulent statements. Indeed, a number of high-profile executives have faced criminal charges because of their misleading accounting practices. For example, in June 2002 it was discovered that WorldCom (now called MCI) had committed the most massive accounting fraud of all time by recording over $7 billion of ordinary operating costs as capital expenditures, thus overstating net income by the same amount.

WorldCom's published financial statements fooled most investors—investors bid the stock price up to $64.50, and banks and other lenders provided the company with more than $30 billion of loans. Arthur Andersen, the firm's auditor, was faulted for not detecting the fraud. WorldCom's CFO and CEO were convicted and Arthur Andersen went bankrupt. But that didn't help the investors who relied on the published financial statements.

In response to these and other abuses, Congress passed the Sarbanes-Oxley Act of 2002. One of its provisions requires both the CEO and the CFO to sign a statement certifying that the "financial statements and disclosures fairly represent, in all material respects, the operations and financial condition" of the company. This will make it easier to haul off in handcuffs a CEO or CFO who has been misleading investors. Whether this will prevent future financial fraud remains to be seen.

Recall also that net income fell, but not nearly so dramatically as the decline in EVA. Net income does not reflect the amount of equity capital employed, but EVA does. Because of this omission, net income is not as useful as EVA for setting corporate goals and measuring managerial performance.

We will have more to say about both MVA and EVA later in the book, but we can close this section with two observations. First, there is a relationship between MVA and EVA, but it is not a direct one. If a company has a history of negative EVAs, then its MVA will probably be negative, and vice versa if it has a history of positive EVAs. However, the stock price, which is the key ingredient in the MVA calculation, depends more on expected future performance than on historical performance. Therefore, a company with a history of negative EVAs could have a positive MVA, provided investors expect a turnaround in the future.

The second observation is that when EVAs or MVAs are used to evaluate managerial performance as part of an incentive compensation program, EVA is the measure that is typically used. The reasons are (1) EVA shows the value added during a given year, whereas MVA reflects performance over the company's entire life, perhaps even including times before the current managers were born, and (2) EVA can be applied to individual divisions or other units of a large corporation, whereas MVA must be applied to the entire corporation.

SELF-TEST

Define "Market Value Added (MVA)" and "Economic Value Added (EVA)."
How does EVA differ from accounting profit?
A firm has $100 million in total net operating capital. Its return on invested capital is 14% and its weighted average cost of capital is 10%. What is its EVA? ($400,000)

3.9 The Federal Income Tax System

The value of any financial asset (including stocks, bonds, and mortgages), as well as most real assets such as plants or even entire firms, depends on the stream of cash flows produced by the asset. Cash flows from an asset consist of *usable* income plus depreciation, and usable income means income *after taxes*. The following sections describe the key features of corporate and individual taxation.

Corporate Income Taxes

The corporate tax structure, shown in Table 3-6, is relatively simple. The **marginal tax rate** is the rate paid on the last dollar of income, while the **average tax rate** is the average rate paid on all income. To illustrate, if a firm had $65,000 of taxable income, its tax bill would be

$$\begin{aligned}\text{Taxes} &= \$7{,}500 + 0.25(\$65{,}000 - \$50{,}000)\\ &= \$7{,}500 + \$3{,}750 = \$11{,}250.\end{aligned}$$

Its marginal rate would be 25%, and its average tax rate would be $11,250/$65,000 = 17.3%. Note that corporate income above $18,333,333 has an average and marginal tax rate of 35%.[13]

Interest and Dividend Income Received by a Corporation Interest income received by a corporation is taxed as ordinary income at regular corporate tax rates. *However, 70% of the dividends received by one corporation from another is excluded from taxable income, while the remaining 30% is taxed at the ordinary tax rate.*[14] Thus, a corporation earning more than $18,333,333 and paying a 35% marginal tax rate would pay only (0.30)(0.35) = 0.105 = 10.5% of its dividend income as taxes, so its effective tax rate on dividends received would be 10.5%. If this firm had $10,000 in pre-tax dividend income, its after-tax dividend income would be $8,950:

$$\begin{aligned}\text{After-tax income} &= \text{Before-tax income} - \text{Taxes}\\ &= \text{Before-tax income} - (\text{Before-tax income})(\text{Effective tax rate})\\ &= \text{Before-tax income}(1 - \text{Effective tax rate})\\ &= \$10{,}000[1 - (0.30)(0.35)]\\ &= \$10{,}000(1 - 0.105) = \$10{,}000(0.895) = \$8{,}950.\end{aligned}$$

[13]Prior to 1987, many large, profitable corporations such as General Electric and Boeing paid no income taxes. The reasons for this were as follows: (1) expenses, especially depreciation, were defined differently for calculating taxable income than for reporting earnings to stockholders, so some companies reported positive profits to stockholders but losses—hence no taxes—to the Internal Revenue Service; and (2) some companies that did have tax liabilities used various tax credits to offset taxes that would otherwise have been payable. This situation was effectively eliminated in 1987.

The principal method used to eliminate this situation is the Alternative Minimum Tax (AMT). Under the AMT, both corporate and individual taxpayers must figure their taxes in two ways, the "regular" way and the AMT way, and then pay the higher of the two. The AMT is calculated as follows: (1) Figure your regular taxes. (2) Take your taxable income under the regular method and then add back certain items, especially income on certain municipal bonds, depreciation in excess of straight-line depreciation, certain research and drilling costs, itemized or standard deductions (for individuals), and a number of other items. (3) The income determined in (2) is defined as AMT income, and it must then be multiplied by the AMT tax rate to determine the tax due under the AMT system. An individual or corporation must then pay the higher of the regular tax or the AMT tax. In 2006, there were two AMT tax rates for individuals (26% and 28%, depending on the level of AMT income and filing status). Most corporations have an AMT of 20%. However, there is no AMT for very small companies, defined as those that have had average sales of less than $7.5 million for the last 3 years.

[14]The size of the dividend exclusion actually depends on the degree of ownership. Corporations that own less than 20% of the stock of the dividend-paying company can exclude 70% of the dividends received; firms that own more than 20% but less than 80% can exclude 80% of the dividends; and firms that own more than 80% can exclude the entire dividend payment. We will, in general, assume a 70% dividend exclusion.

Table 3-6

Corporate Tax Rates as of January 2006

If a Corporation's Taxable Income Is	It Pays This Amount on the Base of the Bracket	Plus this Percentage on the Excess over the Base	Average Tax Rate at Top of Bracket
Up to $50,000	$0	15%	15.0%
$50,000–$75,000	$7,500	25	18.3
$75,000–$100,000	$13,750	34	22.3
$100,000–$335,000	$22,250	39	34.0
$335,000–$10,000,000	$113,900	34	34.0
$10,000,000–$15,000,000	$3,400,000	35	34.3
$15,000,000–$18,333,333	$5,150,000	38	35.0
Over $18,333,333	$6,416,667	35	35.0

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If the corporation pays its own after-tax income out to its stockholders as dividends, the income is ultimately subjected to *triple taxation:* (1) the original corporation is first taxed, (2) the second corporation is then taxed on the dividends it received, and (3) the individuals who receive the final dividends are taxed again. This is the reason for the 70% exclusion on intercorporate dividends.

If a corporation has surplus funds that can be invested in marketable securities, the tax factor favors investment in stocks, which pay dividends, rather than in bonds, which pay interest. For example, suppose GE had $100,000 to invest, and it could buy either bonds that paid interest of $8,000 per year or preferred stock that paid dividends of $7,000. GE is in the 35% tax bracket; therefore, its tax on the interest, if it bought bonds, would be 0.35($8,000) = $2,800, and its after-tax income would be $5,200. If it bought preferred (or common) stock, its tax would be 0.35[(0.30)($7,000)] = $735, and its after-tax income would be $6,265. Other factors might lead GE to invest in bonds, but the tax factor certainly favors stock investments when the investor is a corporation.[15]

Interest and Dividends Paid by a Corporation A firm's operations can be financed with either debt or equity capital. If it uses debt, it must pay interest on this debt, whereas if it uses equity, it is expected to pay dividends to the equity investors (stockholders). The interest *paid* by a corporation is deducted from its operating income to obtain its taxable income, but dividends paid are not deductible. Therefore, a firm needs $1 of pre-tax income to pay $1 of interest, but if it is in the 40% federal-plus-state tax bracket, it must earn $1.67 of pre-tax income to pay $1 of dividends:

$$\text{Pre-tax income needed to pay \$1 of dividends} = \frac{\$1}{1 - \text{Tax rate}} = \frac{\$1}{0.60} = \$1.67.$$

[15]This illustration demonstrates why corporations favor investing in lower-yielding preferred stocks over higher-yielding bonds. When tax consequences are considered, the yield on the preferred stock, [1 − 0.35(0.30)](7.0%) = 6.265%, is higher than the yield on the bond, (1 − 0.35)(8.0%) = 5.2%. Also, note that corporations are restricted in their use of borrowed funds to purchase other firms' preferred or common stocks. Without such restrictions, firms could engage in *tax arbitrage*, whereby the interest on borrowed funds reduces taxable income on a dollar-for-dollar basis, but taxable income is increased by only $0.30 per dollar of dividend income. Thus, current tax laws reduce the 70% dividend exclusion in proportion to the amount of borrowed funds used to purchase the stock.

Table 3-7

Apex Corporation: Calculation of $12 Million Loss Carryback and Amount Available for Carryforward

	Past Year 2005	Past Year 2006	Current Year 2007
Original taxable income	$2,000,000	$2,000,000	−$12,000,000
Carryback credit	2,000,000	2,000,000	
Adjusted profit	$ 0	$ 0	
Taxes previously paid (40%)	800,000	800,000	
Difference = Tax refund due	$ 800,000	$ 800,000	
Total tax refund received			$1,600,000
Amount of loss carryforward available			
Current loss			−$12,000,000
Carryback losses used			4,000,000
Carryforward losses still available			−$8,000,000

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See ***FM12 Ch 03 Tool Kit.xls*** for all details.

Working backward, if a company has $1.67 in pre-tax income, it must pay $0.67 in taxes [(0.4)($1.67) = $0.67]. This leaves it with after-tax income of $1.00.

Of course, it is generally not possible to finance exclusively with debt capital, and the risk of doing so would offset the benefits of the higher expected income. *Still, the fact that interest is a deductible expense has a profound effect on the way businesses are financed—our corporate tax system favors debt financing over equity financing*. This point is discussed in more detail in Chapters 10 and 16.

Corporate Capital Gains Before 1987, corporate long-term capital gains were taxed at lower rates than corporate ordinary income, so the situation was similar for corporations and individuals. Under current law, however, corporations' capital gains are taxed at the same rates as their operating income.

Corporate Loss Carryback and Carryforward Ordinary corporate operating losses can be carried back (**carryback**) to each of the preceding 2 years and forward (**carryforward**) for the next 20 years and used to offset taxable income in those years. For example, an operating loss in 2007 could be carried back and used to reduce taxable income in 2005 and 2006, and forward, if necessary, and used in 2008, 2009, and so on, to the year 2027. After carrying back 2 years, any remaining loss is typically carried forward first to the next year, then to the one after that, and so on, until losses have been used up or the 20-year carryforward limit has been reached.[16]

To illustrate, suppose Apex Corporation had $2 million of *pre-tax* profits (taxable income) in 2005 and 2006, and then, in 2007, Apex lost $12 million. Also, assume that Apex's federal-plus-state tax rate is 40%. As shown in Table 3-7, the company would use the carryback feature to recompute its taxes for 2005, using

[16]In the wake of the terrorist attacks on the World Trade Center and Pentagon on September 11, 2001, Congress temporarily changed the carryback provision in the Tax Code. The new provision allows operating losses incurred in tax years ending in 2001 or 2002 to be carried back 5 years rather than the normal 2 years. This provision is set to expire before this edition goes to print, so we will use a 2-year carryback provision in all of the examples.

$2 million of the 2007 operating losses to reduce the 2005 pre-tax profit to zero. This would permit it to recover the taxes paid in 2005. Therefore, in 2007 Apex would receive a refund of its 2005 taxes because of the loss experienced in 2007. Because $10 million of the unrecovered losses would still be available, Apex would repeat this procedure for 2006. Thus, in 2007 the company would pay zero taxes for 2007 and also would receive a refund for taxes paid in 2005 and 2006. Apex would still have $8 million of unrecovered losses to carry forward, subject to the 20-year limit. This $8 million could be used to offset future taxable income. The purpose of this loss treatment is to avoid penalizing corporations whose incomes fluctuate substantially from year to year.

Improper Accumulation to Avoid Payment of Dividends Corporations could refrain from paying dividends and thus permit their stockholders to avoid personal income taxes on dividends. To prevent this, the Tax Code contains an **improper accumulation** provision that states that earnings accumulated by a corporation are subject to penalty rates *if the purpose of the accumulation is to enable stockholders to avoid personal income taxes*. A cumulative total of $250,000 (the balance sheet item "retained earnings") is by law exempted from the improper accumulation tax for most corporations. This is a benefit primarily to small corporations.

The improper accumulation penalty applies only if the retained earnings in excess of $250,000 are *shown by the IRS to be unnecessary to meet the reasonable needs of the business*. A great many companies do indeed have legitimate reasons for retaining more than $250,000 of earnings. For example, earnings may be retained and used to pay off debt, to finance growth, or to provide the corporation with a cushion against possible cash drains caused by losses. How much a firm should be allowed to accumulate for uncertain contingencies is a matter of judgment. We shall consider this matter again in Chapter 18, which deals with corporate dividend policy.

Consolidated Corporate Tax Returns If a corporation owns 80% or more of another corporation's stock, it can aggregate income and file one consolidated tax return; thus, the losses of one company can be used to offset the profits of another. (Similarly, one division's losses can be used to offset another division's profits.) No business ever wants to incur losses (you can go broke losing $1 to save 35¢ in taxes), but tax offsets do help make it more feasible for large, multidivisional corporations to undertake risky new ventures or ventures that will suffer losses during a developmental period.

Taxes on Overseas Income Many U.S. corporations have overseas subsidiaries, and those subsidiaries must pay taxes in the countries where they operate. Often, foreign tax rates are lower than U.S. rates. As long as foreign earnings are reinvested overseas, no U.S. tax is due on those earnings. However, when foreign earnings are repatriated to the U.S. parent, they are taxed at the applicable U.S. rate, less a credit for taxes paid to the foreign country. As a result, U.S. corporations such as IBM, Coca-Cola, and Microsoft have been able to defer billions of dollars of taxes. This procedure has stimulated overseas investments by U.S. multinational firms—they can continue the deferral indefinitely, but only if they reinvest the earnings in their overseas operations.[17]

[17]This is a contentious political issue. U.S. corporations argue that our tax system is similar to systems in the rest of the world, and if they were taxed immediately on all overseas earnings they would be at a competitive disadvantage vis-à-vis their global competitors. Others argue that taxation encourages overseas investments at the expense of domestic investments, contributing to the jobs outsourcing problem and also to the federal budget deficit.

Taxation of Small Businesses: S Corporations

The Tax Code provides that small businesses that meet certain restrictions as spelled out in the code may be set up as corporations and thus receive the benefits of the corporate form of organization—especially limited liability—yet still be taxed as proprietorships or partnerships rather than as corporations. These corporations are called **S corporations.** ("Regular" corporations are called C corporations.) If a corporation elects S corporation status for tax purposes, all of the business's income is reported as personal income by its stockholders, on a pro rata basis, and thus is taxed at the rates that apply to individuals. This is an important benefit to the owners of small corporations in which all or most of the income earned each year will be distributed as dividends, because then the income is taxed only once, at the individual level.

Personal Taxes

Web Extension 3A provides a more detailed treatment of individual taxation, but the key elements are presented here. **Ordinary income** consists primarily of wages or profits from a proprietorship or partnership, plus investment income. For the 2006 tax year, individuals with less than $7,550 of taxable income are subject to a federal income tax rate of 10%. For those with higher income, tax rates increase and go up to 35%, depending on the level of income. This is called a **progressive tax,** because the higher one's income, the larger the percentage paid in taxes.

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See ***Web Extension 3A*** for details concerning personal taxation.

As noted above, individuals are taxed on investment income as well as earned income, but with a few exceptions and modifications. For example, interest received from most state and local government bonds, called **municipals** or **"munis,"** is not subject to federal taxation. However, interest earned on most other bonds or lending is taxed as ordinary income. This means that a lower-yielding muni can provide the same after-tax return as a higher-yielding corporate bond. For a taxpayer in the 35% marginal tax bracket, a muni yielding 5.5% provides the same after-tax return as a corporate bond with a pre-tax yield of 8.46%: $8.46\%(1 - 0.35) = 5.5\%$.

Assets such as stocks, bonds, and real estate are defined as capital assets. If you own a capital asset and its price goes up, then your wealth increases, but you are not liable for any taxes on your increased wealth until you sell the asset. If you sell the asset for more than you originally paid, the profit is called a **capital gain;** if you sell it for less, then you suffer a **capital loss.** The length of time you owned the asset determines the tax treatment. If held for less than one year, then your gain or loss is simply added to your other ordinary income. If held for more than a year, then gains are called *long-term capital gains* and are taxed at a lower rate. See ***Web Extension 3A*** for details, but the long-term capital gains rate is 15% for most situations.

Under the 2003 tax law changes, dividends are now taxed as though they were capital gains. As stated earlier, corporations may deduct interest payments but not dividends when computing their corporate tax liability, which means that dividends are taxed twice, once at the corporate level and again at the personal level. This differential treatment motivates corporations to use debt relatively heavily, and to pay small (or even no) dividends. The 2003 tax law did not eliminate the differential treatment of dividends and interest payments from the corporate perspective, but it did make the tax treatment of dividends more similar to that of capital gains from investors' perspectives. To see this, consider a company that doesn't pay a dividend but instead reinvests the cash it could have paid. The

company's stock price should increase, leading to a capital gain, which would be taxed at the same rate as the dividend. Of course, the stock price appreciation isn't actually taxed until the stock is sold, whereas the dividend is taxed in the year it is paid, so dividends will still be more costly than capital gains for many investors.

Finally, note that the income of both S corporations and noncorporate businesses is reported as income by the firms' owners. Since there are far more S corporations, partnerships, and proprietorships than C corporations (which are subject to the corporate tax), individual tax considerations play an important role in business finance.

SELF-TEST

If a corporation has $85,000 in taxable income, what is its tax liability? ($17,150)
Explain the difference between marginal tax rates and average tax rates.
What is a municipal bond, and how are these bonds taxed?
What are capital gains and losses, and how are they taxed?
How does the federal income tax system treat dividends received by a corporation versus those received by an individual?
What is the difference in the tax treatment of interest and dividends paid by a corporation? Does this factor favor debt or equity financing?
Briefly explain how tax loss carryback and carryforward procedures work.

Summary

The primary purposes of this chapter were (1) to describe the basic financial statements, (2) to present some background information on cash flows, and (3) to provide an overview of the federal income tax system. The key concepts covered are listed below.

- The four basic statements contained in the **annual report** are the balance sheet, the income statement, the statement of retained earnings, and the statement of cash flows. Investors use the information provided in these statements to form expectations about the future levels of earnings and dividends, and about a firm's riskiness.
- The **balance sheet** shows assets on the left-hand side and liabilities and equity, or claims against assets, on the right-hand side. (Sometimes assets are shown at the top and claims at the bottom of the balance sheet.) The balance sheet may be thought of as a snapshot of the firm's financial position at a particular point in time.
- The **income statement** reports the results of operations over a period of time, and it shows earnings per share as its "bottom line."
- The **statement of retained earnings** shows the change in retained earnings between balance sheet dates. Retained earnings represent a claim against assets, not assets per se.
- The **statement of cash flows** reports the effect of operating, investing, and financing activities on cash flows over an accounting period.
- **Net cash flow** differs from **accounting profit** because some of the revenues and expenses reflected in accounting profits may not have been received or paid out in cash during the year. Depreciation is typically the largest noncash item, so net cash flow is often expressed as net income plus depreciation. Investors are at least as interested in a firm's projected net cash flow as in reported earnings because it is cash, not paper profit, that is paid out as dividends and plowed back into the business to produce growth.
- **Operating current assets** are the current assets that are used to support operations, such as cash, inventory, and accounts receivable. They do not include

- **Operating current liabilities** are the current liabilities that occur as a natural consequence of operations, such as accounts payable and accruals. They do not include notes payable or any other short-term debts that charge interest.
- **Net operating working capital** is the difference between operating current assets and operating current liabilities. Thus, it is the working capital acquired with investor-supplied funds.
- **Operating long-term assets** are the long-term assets used to support operations, such as net plant and equipment. They do not include any long-term investments that pay interest or dividends.
- **Total net operating capital** (which means the same as **operating capital** and **net operating assets**) is the sum of net operating working capital and operating long-term assets. It is the total amount of capital needed to run the business.
- **NOPAT** is net operating profit after taxes. It is the after-tax profit a company would have if it had no debt and no investments in nonoperating assets. Because it excludes the effects of financial decisions, it is a better measure of operating performance than is net income.
- **Free cash flow (FCF)** is the amount of cash flow remaining after a company makes the asset investments necessary to support operations. In other words, FCF is the amount of cash flow available for distribution to investors, *so the value of a company is directly related to its ability to generate free cash flow*. It is defined as NOPAT minus the net investment in operating capital.
- **Market Value Added (MVA)** represents the difference between the total market value of a firm and the total amount of investor-supplied capital. If the market values of debt and preferred stock equal their values as reported on the financial statements, then MVA is the difference between the market value of a firm's stock and the amount of equity its shareholders have supplied.
- **Economic Value Added (EVA)** is the difference between after-tax operating profit and the total dollar cost of capital, including the cost of equity capital. EVA is an estimate of the value created by management during the year, and it differs substantially from accounting profit because no charge for the use of equity capital is reflected in accounting profit.
- The value of any asset depends on the stream of **after-tax cash flows** it produces. Tax rates and other aspects of our tax system are changed by Congress every year or so.
- Interest income received by a corporation is taxed as **ordinary income;** however, 70% of the dividends received by one corporation from another are excluded from **taxable income.**
- Because interest paid by a corporation is a **deductible expense** while dividends are not, our tax system favors debt over equity financing.
- Ordinary corporate operating losses can be **carried back** to each of the preceding 2 years and **forward** for the next 20 years and used to offset taxable income in those years.
- **S corporations** are small businesses that have the limited-liability benefits of the corporate form of organization yet are taxed as a partnership or a proprietorship.
- In the United States, tax rates are **progressive**—the higher one's income, the larger the percentage paid in taxes.
- Assets such as stocks, bonds, and real estate are defined as **capital assets.** If a capital asset is sold for more than its cost, the profit is called a **capital gain.** If the asset is sold for a loss, it is called a **capital loss.** Assets held for more than a year provide **long-term gains** or **losses.**
- Dividends are taxed as though they were capital gains.

Questions

(3-1) Define each of the following terms:
a. Annual report; balance sheet; income statement
b. Common stockholders' equity, or net worth; retained earnings
c. Statement of retained earnings; statement of cash flows
d. Depreciation; amortization; EBITDA
e. Operating current assets; operating current liabilities; net operating working capital; total net operating capital
f. Accounting profit; net cash flow; NOPAT; free cash flow
g. Market Value Added; Economic Value Added
h. Progressive tax; taxable income; marginal and average tax rates
i. Capital gain or loss; tax loss carryback and carryforward
j. Improper accumulation; S corporation

(3-2) What four statements are contained in most annual reports?

(3-3) If a "typical" firm reports $20 million of retained earnings on its balance sheet, could its directors declare a $20 million cash dividend without any qualms whatsoever?

(3-4) Explain the following statement: "While the balance sheet can be thought of as a snapshot of the firm's financial position *at a point in time*, the income statement reports on operations *over a period of time*."

(3-5) What is operating capital, and why is it important?

(3-6) Explain the difference between NOPAT and net income. Which is a better measure of the performance of a company's operations?

(3-7) What is free cash flow? Why is it the most important measure of cash flow?

(3-8) If you were starting a business, what tax considerations might cause you to prefer to set it up as a proprietorship or a partnership rather than as a corporation?

Self-Test Problem Solution Appears in Appendix A

(ST-1) Net income, Cash Flow, and EVA

Last year Cole Furnaces had $5,000,000 in operating income (EBIT). The company had a net depreciation expense of $1,000,000 and an interest expense of $1,000,000; its corporate tax rate was 40%. The company has $14,000,000 in operating current assets and $4,000,000 in operating current liabilities; it has $15,000,000 in net plant and equipment. It estimates that it has an after-tax cost of capital of 10%. Assume that Cole's only noncash item was depreciation.
a. What was the company's net income for the year?
b. What was the company's net cash flow?
c. What was the company's net operating profit after taxes (NOPAT)?
d. Calculate net operating working capital and total net operating capital for the current year.

e. If total net operating capital in the previous year was $24,000,000, what was the company's free cash flow (FCF) for the year?
f. What was the company's Economic Value Added (EVA)?

Problems Answers Appear in Appendix B

Note: By the time this book is published, Congress might have changed rates and/or other provisions of current tax law—as noted in the chapter, such changes occur fairly often. Work all problems on the assumption that the information in the chapter is applicable.

Easy Problems 1–6

(3-1) Personal After-Tax Yield

An investor recently purchased a corporate bond which yields 9%. The investor is in the 36% combined federal and state tax bracket. What is the bond's after-tax yield?

(3-2) Personal After-Tax Yield

Corporate bonds issued by Johnson Corporation currently yield 8%. Municipal bonds of equal risk currently yield 6%. At what tax rate would an investor be indifferent between these two bonds?

(3-3) Income Statement

Little Books Inc. recently reported $3 million of net income. Its EBIT was $6 million, and its tax rate was 40%. What was its interest expense? [Hint: Write out the headings for an income statement and then fill in the known values. Then divide $3 million net income by (1–T) = 0.6 to find the pre-tax income. The difference between EBIT and taxable income must be the interest expense. Use this same procedure to work some of the other problems.]

(3-4) Income Statement

Pearson Brothers recently reported an EBITDA of $7.5 million and net income of $1.8 million. It had $2.0 million of interest expense, and its corporate tax rate was 40%. What was its charge for depreciation and amortization?

(3-5) Net Cash Flow

Kendall Corners Inc. recently reported net income of $3.1 million and depreciation of $500,000. What was its net cash flow? Assume it had no amortization expense.

(3-6) Statement of Retained Earnings

In its most recent financial statements, Newhouse Inc. reported $50 million of net income and $810 million of retained earnings. The previous retained earnings were $780 million. How much in dividends was paid to shareholders during the year?

Intermediate Problems 7–11

(3-7) Corporate Tax Liability

The Talley Corporation had a taxable income of $365,000 from operations after all operating costs but before (1) interest charges of $50,000, (2) dividends received of $15,000, (3) dividends paid of $25,000, and (4) income taxes. What are the firm's income tax liability and its after-tax income? What are the company's marginal and average tax rates on taxable income?

(3-8) Corporate Tax Liability

The Wendt Corporation had $10.5 million of taxable income.
a. What is the company's federal income tax bill for the year?
b. Assume the firm receives an additional $1 million of interest income from some bonds it owns. What is the tax on this interest income?

c. Now assume that Wendt does not receive the interest income but does receive an additional $1 million as dividends on some stock it owns. What is the tax on this dividend income?

(3-9) Corporate After-Tax Yield

The Shrieves Corporation has $10,000 that it plans to invest in marketable securities. It is choosing among AT&T bonds, which yield 7.5%, state of Florida muni bonds, which yield 5%, and AT&T preferred stock, with a dividend yield of 6%. Shrieves's corporate tax rate is 35%, and 70% of the dividends received are tax exempt. Find the after-tax returns on both securities.

(3-10) Cash Flows

The Moore Corporation has operating income (EBIT) of $750,000. The company's depreciation expense is $200,000. Moore is 100% equity financed, and it faces a 40% tax rate. What is the company's net income? What is its net cash flow?

(3-11) Income and Cash Flow Analysis

The Berndt Corporation expects to have sales of $12 million. Costs other than depreciation are expected to be 75% of sales, and depreciation is expected to be $1.5 million. All sales revenues will be collected in cash, and costs other than depreciation must be paid for during the year. Berndt's federal-plus-state tax rate is 40%. Berndt has no debt.

a. Set up an income statement. What is Berndt's expected net cash flow?
b. Suppose Congress changed the tax laws so that Berndt's depreciation expenses doubled. No changes in operations occurred. What would happen to reported profit and to net cash flow?
c. Now suppose that Congress, instead of doubling Berndt's depreciation, reduced it by 50%. How would profit and net cash flow be affected?
d. If this were your company, would you prefer Congress to cause your depreciation expense to be doubled or halved? Why?

Challenging Problems 12–13

(3-12) Free Cash Flows

You have just obtained financial information for the past 2 years for Bridgewater Equine Corporation. Answer the following questions.

a. What is the net operating profit after taxes (NOPAT) for 2007?
b. What are the amounts of net operating working capital for both years?
c. What are the amounts of total net operating capital for both years?
d. What is the free cash flow for 2007?
e. How can you explain the large increase in dividends in 2007?

Bridgewater Equine Corporation: Income Statements for Year Ending December 31 (Millions of Dollars)

	2007	2006
Sales	$1,200.0	$1,000.0
Operating costs excluding depreciation	1,020.0	850.0
Depreciation	30.0	25.0
Earnings before interest and taxes	$ 150.0	$ 125.0
Less interest	21.7	20.2
Earnings before taxes	$ 128.3	$ 104.8
Taxes (40%)	51.3	41.9
Net income available to common stockholders	$ 77.0	$ 62.9
Common dividends	$ 60.5	$ 4.4

Bridgewater Equine Corporation: Balance Sheets as of December 31 (Millions of Dollars)

	2007	2006
Assets		
Cash and equivalents	$ 12.0	$ 10.0
Short-term investments	0.0	0.0
Accounts receivable	180.0	150.0
Inventories	180.0	200.0
Total current assets	$372.0	$360.0
Net plant and equipment	300.0	250.0
Total assets	$672.0	$610.0
Liabilities and Equity		
Accounts payable	$108.0	$90.0
Notes payable	67.0	51.5
Accruals	72.0	60.0
Total current liabilities	$247.0	$201.5
Long-term bonds	150.0	150.0
Total liabilities	$397.0	$351.5
Common stock (50 million shares)	50.0	50.0
Retained earnings	225.0	208.5
Common equity	$275.0	$258.5
Total liabilities and equity	$672.0	$610.0

(3-13)
Loss Carryback and Carryforward

The Bookbinder Company has made $150,000 before taxes during each of the last 15 years, and it expects to make $150,000 a year before taxes in the future. However, in 2007 the firm incurred a loss of $650,000. The firm will claim a tax credit at the time it files its 2007 income tax return, and it will receive a check from the U.S. Treasury. Show how it calculates this credit, and then indicate the firm's tax liability for each of the next 5 years. Assume a 40% tax rate on *all* income to ease the calculations.

FM
e-resource

Spreadsheet Problem

(3-14)
Build a Model: Financial Statements, EVA, and MVA

Start with the partial model in the file ***FM12 Ch 03 P14 Build a Model.xls*** at the textbook's Web site. Cumberland Industries' most recent balance sheets (in thousands of dollars) are shown below and in the partial model in the file:

	2007	2006
Cash	$ 91,450	$ 74,625
Short-term investments	11,400	15,100
Accounts receivable	103,365	85,527
Inventories	38,444	34,982
Total current assets	$244,659	$210,234
Net fixed assets	67,165	42,436
Total assets	$311,824	$252,670
Accounts payable	$ 30,761	$23,109
Accruals	30,477	22,656
Notes payable	16,717	14,217
Total current liabilities	$ 77,955	$59,982
Long-term debt	76,264	63,914
Total liabilities	$154,219	$123,896
Common stock	100,000	90,000
Retained earnings	57,605	38,774
Total common equity	$157,605	$128,774
Total liabilities and equity	$311,824	$252,670

a. The company's sales for 2007 were $455,150,000, and EBITDA was 15% of sales. Furthermore, depreciation amounted to 11% of net fixed assets, interest charges were $8,575,000, the state-plus-federal corporate tax rate was 40%, and Cumberland pays 40% of its net income out in dividends. Given this information, construct Cumberland's 2007 income statement. (Hint: Start with the partial model in the file.)
b. Next, construct the firm's statement of retained earnings for the year ending December 31, 2007, and then its 2007 statement of cash flows.
c. Calculate net operating working capital, total net operating capital, net operating profit after taxes, and free cash flow for 2007.
d. Calculate the firm's EVA and MVA for 2007. Assume that Cumberland had 10 million shares outstanding, that the year-end closing stock price was $17.25 per share, and its after-tax cost of capital (WACC) was 12%.

Cyberproblem

Please go to the textbook's Web site to access any Cyberproblems.

Mini Case

Donna Jamison, a graduate of the University of Tennessee with 4 years of banking experience, was recently brought in as assistant to the chairman of the board of Computron Industries, a manufacturer of electronic calculators.

The company doubled its plant capacity, opened new sales offices outside its home territory, and launched an expensive advertising campaign. Computron's results were not satisfactory, to put it mildly. Its board of directors, which consisted of its president and vice-president plus its major stockholders (who were all local businesspeople), was most upset when directors learned how the expansion was going. Suppliers were being paid late and were unhappy, and the bank was complaining about the deteriorating situation and threatening to cut off credit. As a result, Al Watkins, Computron's president, was informed that changes would have to be made, and quickly, or he would be fired. Also, at the board's insistence Donna Jamison was brought in and given the job of assistant to Fred Campo, a retired banker who was Computron's chairman and largest stockholder. Campo agreed to give up a few of his golfing days and to help nurse the company back to health, with Jamison's help.

Jamison began by gathering financial statements and other data.

Balance Sheets	**2006**	**2007**
Assets		
Cash	$ 9,000	$ 7,282
Short-term investments	48,600	20,000
Accounts receivable	351,200	632,160
Inventories	715,200	1,287,360
Total current assets	$1,124,000	$1,946,802
Gross fixed assets	491,000	1,202,950
Less: Accumulated depreciation	146,200	263,160
Net fixed assets	$344,800	$ 939,790
Total assets	$1,468,800	$2,886,592
Liabilities and Equity		
Accounts payable	$ 145,600	$ 324,000
Notes payable	200,000	720,000
Accruals	136,000	284,960
Total current liabilities	$ 481,600	$1,328,960
Long-term debt	323,432	1,000,000
Common stock (100,000 shares)	460,000	460,000
Retained earnings	203,768	97,632
Total equity	$ 663,768	$ 557,632
Total liabilities and equity	$1,468,800	$2,886,592

Income Statements	2006	2007
Sales	$3,432,000	$5,834,400
Cost of goods sold	2,864,000	4,980,000
Other expenses	340,000	720,000
Depreciation	18,900	116,960
Total operating costs	$3,222,900	$5,816,960
EBIT	$ 209,100	$17,440
Interest expense	62,500	176,000
EBT	$ 146,600	($ 158,560)
Taxes (40%)	58,640	(63,424)
Net income	$ 87,960	($ 95,136)
Other Data		
Stock price	$ 8.50	$ 6.00
Shares outstanding	100,000	100,000
EPS	$ 0.880	($ 0.951)
DPS	$ 0.220	$ 0.110
Tax rate	40%	40%

Statement of Retained Earnings, 2007	
Balance of retained earnings, 12/31/2006	$ 203,768
Add: Net income, 2007	(95,136)
Less: Dividends paid, 2007	(11,000)
Balance of retained earnings, 12/31/2007	$ 97,632

Statement of Cash Flows, 2007	
Operating Activities	
Net income	($ 95,136)
Adjustments:	
Noncash adjustments:	
Depreciation	116,960
Changes in working capital:	
Change in accounts receivable	(280,960)
Change in inventories	(572,160)
Change in accounts payable	178,400
Change in accruals	148,960
Net cash provided by operating activities	($ 503,936)

Statement of Cash Flows, 2007—continued	2007
Investing Activities	
Cash used to acquire fixed assets	($ 711,950)
Change in short-term investments	28,600
Net cash provided by investing activities	($ 683,350)
Financing Activities	
Change in notes payable	520,000
Change in long-term debt	676,568
Change in common stock	—
Payment of cash dividends	(11,000)
Net cash provided by financing activities	$1,185,568
Summary	
Net change in cash	($ 1,718)
Cash at beginning of year	9,000
Cash at end of year	$ 7,282

Assume that you are Jamison's assistant, and you must help her answer the following questions for Campo.

a. What effect did the expansion have on sales and net income? What effect did the expansion have on the asset side of the balance sheet? What effect did it have on liabilities and equity?
b. What do you conclude from the statement of cash flows?
c. What is free cash flow? Why is it important? What are the five uses of FCF?
d. What are operating current assets? What are operating current liabilities? How much net operating working capital and total net operating capital does Computron have?
e. What are Computron's net operating profit after taxes (NOPAT) and free cash flow (FCF)?
f. Calculate Computron's return on invested capital. Computron has a 10% cost of capital (WACC). Do you think Computron's growth added value?
g. Jamison also has asked you to estimate Computron's EVA. She estimates that the after-tax cost of capital was 10% in both years.
h. What happened to Computron's Market Value Added (MVA)?
i. Assume that a corporation has $100,000 of taxable income from operations plus $5,000 of interest income and $10,000 of dividend income. What is the company's federal tax liability?
j. Assume that you are in the 25% marginal tax bracket and that you have $5,000 to invest. You have narrowed your investment choices down to California bonds with a yield of 7% or equally risky ExxonMobil bonds with a yield of 10%. Which one should you choose and why? At what marginal tax rate would you be indifferent to the choice between California and ExxonMobil bonds?