



CHAPTER

3

FINANCIAL STATEMENTS, CASH FLOW, AND TAXES

Doing Your Homework with Financial Statements

Suppose you are a small investor who knows a little about finance and accounting. Could you compete successfully against large institutional investors with armies of analysts, high-powered computers, and state-of-the-art trading strategies?

The answer, according to one Wall Street legend, is a resounding yes! Peter Lynch, who had an outstanding track record as manager of the \$10 billion Fidelity Magellan fund and then went on to become the best-selling author of *One Up on Wall Street* and *Beating the Street*, has long argued that small investors can beat the market by using common sense and information available to all of us as we go about our day-to-day lives.

For example, a college student may be more adept at scouting out the new and interesting products that will become tomorrow's success stories than is an investment banker who works 75 hours a week in a New York office. Parents of young children are likely to know which baby foods will succeed or which diapers are best. Couch potatoes may have the best feel for which tortilla chips have the brightest future or whether a new remote control is worth its price.

The trick is to find a product that will boom, yet whose manufacturer's stock is undervalued. If this sounds too easy, you are right. Lynch argues that once you have discovered a good product, you still have a lot of homework to do. This involves combing through the vast amount of financial information that companies regularly provide. It also requires taking a closer and more critical look at how the company conducts its business—Lynch refers to this as “kicking the tires.”

To illustrate his point, Lynch relates his experience with Dunkin' Donuts. As a consumer, Lynch was impressed with the quality of the product. This impression led him to take a closer look at the company's financial statements and operations. He liked what he saw, and Dunkin' Donuts became one of the best investments in his portfolio.

The next two chapters discuss what financial statements are and how they are analyzed. Once you have identified a good product as a possible investment, the principles discussed in these chapters will help you “kick the tires.”

Fidelity

Putting Things In Perspective

A manager's primary goal is to maximize the value of his or her firm's stock. Value is based on the firm's future cash flows. But how does an investor estimate future cash flows, and how does a manager decide which actions are most likely to increase those 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 like you.

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. As we discussed in Chapter 1, the value of any business asset—whether it's 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, the chapter also explains the difference between accounting income and cash flow. Finally, because it is *after-tax* cash flow that is important, the chapter provides an overview of the federal income tax system.

Much of the material in the chapter deals with concepts covered in basic accounting courses. However, the information is important enough to warrant a review. Accounting is used to "keep score," and if a firm's managers do not know the score, they won't know if their actions are appropriate. If you took midterm exams but were not told how you were doing, you would have a difficult time improving your grades. The same thing holds in business. If a firm's managers—whether they are in marketing, personnel, production, or finance—do not understand financial statements, they will not be able to judge the effects of their actions, and that will make it hard for the firm to be successful. Only accountants need to know how to *make* financial statements, but everyone involved with business needs to know how to *interpret* and *use* them. Our focus is on interpretation and use.

3.1 A BRIEF HISTORY OF ACCOUNTING AND FINANCIAL STATEMENTS

Financial statements are pieces of paper with numbers written on them, but it is important to also think about the real assets behind those numbers. If you understand how and why accounting began, and how financial statements are used, you can better visualize what is going on and why accounting information is so important.

Thousands of years ago, individuals (or families) were self-contained, meaning that they gathered their own food, made their own clothes, and built their own shelters. Then specialization began—some people became good at making pots, others at making arrowheads, others at making clothing, and so on.



Are you interested in learning more about the history of accounting? If so, take a tour through the "History of Accounting" organized by the Association of Chartered Accountants in the United States and located at http://www.acaus.org/acc_his.html.

As specialization began, so did trading, initially in the form of barter. At first, each artisan worked alone, and trade was strictly local. Eventually, though, master craftsmen set up small factories and employed workers, money (first in the form of clamshells and later gold) began to be used, and trade expanded beyond the local area. As these developments occurred, a primitive form of banking began, with wealthy merchants lending profits from past dealings to enterprising factory owners who needed capital to expand or to young traders who needed money to buy wagons, ships, and merchandise.

When the first loans were made, lenders could physically inspect borrowers' assets and judge the likelihood that the loans would be repaid. Eventually, though, things became more complex—borrowers were developing larger factories, traders were acquiring fleets of ships and wagons, and loans were being made to develop distant mines and trading posts. As this occurred, it became increasingly difficult for lenders to personally inspect the assets that backed their loans, so they needed a way to verify that borrowers actually had the assets they claimed to have. Also, some investments were made on a share-of-the-profits basis, and that meant that profits had to be determined. At the same time, factory owners and large merchants needed reports to see how effectively their managers were operating the businesses, and governments needed information for use in assessing taxes. For all these reasons, a need arose for financial statements, for accountants to prepare those statements, and for auditors to verify the accuracy of the accountants' work.

The economic system has grown enormously since its beginning, and accounting has become quite complex. However, the original reasons for financial statements still apply: Bankers and investors need accounting information to make intelligent decisions, managers need it to operate their businesses efficiently, and taxing authorities need it to assess taxes in a reasonable way.

It should be intuitively clear that it is not easy to translate physical assets into numbers, as accountants must do when they construct financial statements. The numbers shown in the assets section of a balance sheet generally represent the historical costs of the assets, less depreciation. However, inventories may be spoiled, obsolete, or even missing; fixed assets such as machinery and buildings may have higher or lower values than their depreciated historical costs; and accounts receivable may be uncollectible. On the liabilities side, some legitimate claims may not even appear on the balance sheet—obligations to pay retirees' medical costs are a good example. Similarly, some costs as reported on the income statement may be understated, as would be true if a plant with a useful life of 10 years were being depreciated over 40 years. When you examine a set of financial statements, you should keep in mind that a physical reality lies behind the numbers, and you should also realize that the translation from physical assets to "correct" numbers is far from precise.

As mentioned previously, it is important for accountants to be able to generate financial statements, while others involved in the business need to know how to interpret them. To be effective, both investors and general managers must have a working knowledge of financial statements and what they reveal. Providing this background is the purpose of this chapter.

Annual Report

A report issued annually by a corporation to its stockholders. It contains basic financial statements as well as management's analysis of the firm's past operations and future prospects.

3.2 FINANCIAL STATEMENTS AND REPORTS

The **annual report** is the most important report corporations issue to stockholders, and it contains two types of information. 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 report provides four basic financial statements—the *balance sheet*, the *income statement*, the *statement of cash flows*, and the *statement of retained earnings*. 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 and what might happen in the future.

For illustrative purposes, we use data for Allied Food Products, a processor and distributor of a wide variety of staple foods, to discuss the basic financial statements. Allied was formed in 1978, when several regional firms merged, and it has grown steadily while earning a reputation as one of the best firms in its industry. Allied's earnings dropped a bit in 2005, to \$117.5 million versus \$121.8 million in 2004. Management reported that the drop resulted from losses associated with a drought as well as increased costs due to a three-month strike. However, management then went on to paint a more optimistic picture for the future, stating that full operations had been resumed, that several unprofitable businesses had been eliminated, and that 2006 profits were expected to rise sharply. Of course, an increase in profitability may not occur, and analysts should compare management's past statements with subsequent results. In any event, *the information contained in an annual report can be used to help forecast future earnings and dividends*. Therefore, investors are very much interested in this report.

We should note that Allied's financial statements are relatively simple and straightforward. It finances with only debt and common stock—no preferred stock, convertibles, and no complex derivative securities. It has had no acquisitions that resulted in goodwill that must be carried on the balance sheet. And all of its assets are used in its basic business operations, hence no nonoperating assets must be stripped out to analyze its operating performance. We deliberately chose such a company because this is an introductory text, and as such we want to explain the basics of financial analysis, not wander into an arcane accounting discussion that is best left to accounting and security analysis courses. We point out some of the pitfalls that can be encountered when trying to interpret accounting statements, but we leave it to advanced courses to cover the intricacies of accounting.



What is the annual report, and what two types of information does it provide?

What four financial statements are typically included in the annual report?

Why is the annual report of great interest to investors?



For an excellent example of a corporate annual report, take a look at 3M's annual report, found at <http://www.3m.com/index.jhtml>. Then, click on investor relations at the bottom of the screen and then you can find 3M's most recent annual report in Adobe Acrobat format. A source for links to many companies' annual reports is <http://www.annualreportservice.com>.

¹ Firms also provide quarterly reports, but these are much less comprehensive. In addition, 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 made available to stockholders upon request to a company's corporate secretary. Finally, many larger firms also publish *statistical supplements*, which give financial statement data and key ratios for the last 10 to 20 years, and these reports are available on the World Wide Web.

3.3 THE BALANCE SHEET

Balance Sheet

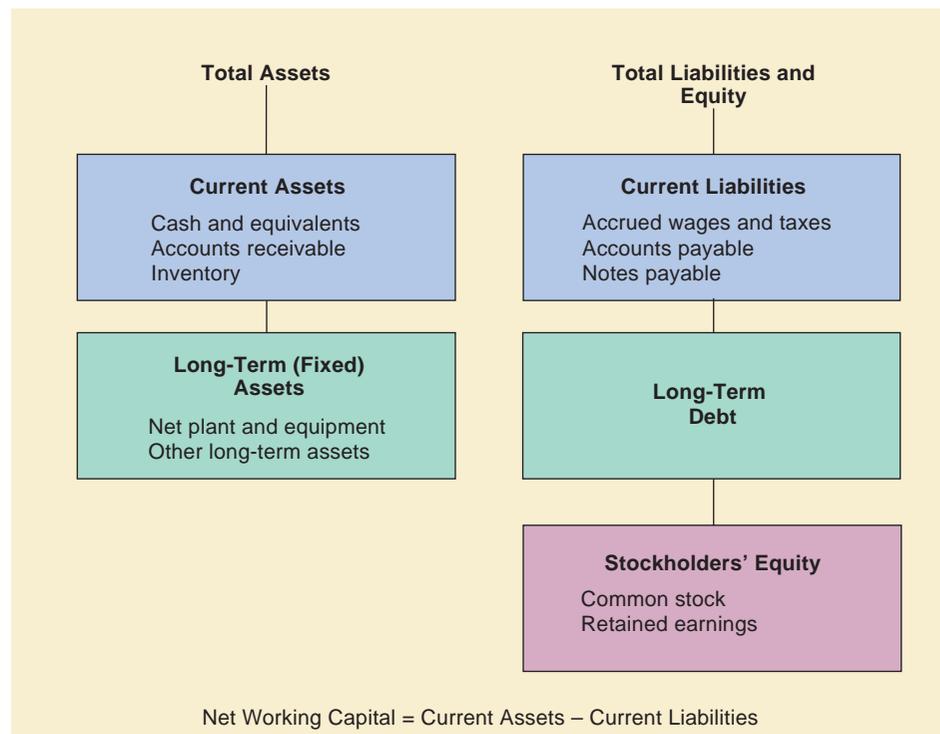
A statement of the firm's financial position at a specific point in time.

The balance sheet represents a “snapshot” of the firm’s position at a specific point in time. Figure 3-1 provides a simple illustration of a typical **balance sheet**. The left side of the statement shows the assets that the company owns. The right side shows the firm’s liabilities and equity, which represent claims against the assets.

As Figure 3-1 indicates, assets are divided into two major categories: current and long term. Current assets include cash plus other items that should be converted to cash within one year, and they include cash and equivalents, accounts receivable, and inventory.² Long-term assets are those whose useful lives exceed one year, and they include physical assets such as plant and equipment and intellectual property such as patents and copyrights. Plant and equipment is generally reported net of accumulated depreciation. Allied’s long-term assets consist entirely of net plant and equipment, and we often refer to them as “net fixed assets” for convenience.

The claims against assets are of two types—liabilities (or money the company owes creditors) and stockholders’ equity, which represents ownership

FIGURE 3-1 A Typical Balance Sheet



² Allied and most other companies hold some cash in bank checking accounts, and they also hold short-term, interest-bearing securities that can be sold and thus converted to cash immediately with a simple telephone call. Those securities are reported as “cash equivalents” and are included with checking account balances for financial reporting purposes. If a company has other marketable securities, they will be shown as “Marketable securities” in the Current Assets section if they mature in less than a year; otherwise, they will be shown in the Long-Term Assets section.

much like a homeowner's equity, which is the value of the house less the amount of any outstanding mortgage loan. Corporate liabilities are further divided into two major categories: current liabilities and long-term debt. Current liabilities are obligations that are due to be paid off within a year, and they include accounts payable, accruals (the total of accrued wages and accrued taxes), and notes payable that are due within one year. Long-term debt includes long-term loans and bonds that have maturities longer than a year.

Allied's stockholders' equity section is divided into two accounts—"common stock" and "retained earnings." The amount shown as common stock is, essentially, the amount of cash that stockholders paid to the company when it originally issued stock for use in acquiring assets. The **retained earnings** account is built up over time as the firm "saves" a part of its earnings rather than paying them all out as dividends. The breakdown of the stockholders' equity accounts is important for some purposes but not for others. For example, a potential stockholder might want to know whether the company actually earned the funds reported in its equity account or whether they came mainly from selling stock. A potential creditor, on the other hand, would be primarily interested in the total equity provided by the firm's owners and not with its source. We generally aggregate the two stockholders' equity accounts and call this sum **common equity**, or **net worth**.

Notice that the balance sheet items are listed in order of their "liquidity," or the length of time it takes to convert them to cash (current assets) or their expected useful lives (fixed assets). Similarly, the claims are listed in the order in which they must be paid: Accounts payable must generally be paid within 30 days, notes payable within 90 days, and so on, down to the stockholders' equity accounts, which represent ownership and need never be "paid off." A firm needs enough cash and other liquid assets to pay its bills as they come due, so its lenders, suppliers, and bond rating agencies keep an eye on its liquidity. **Net working capital**, which is defined as current assets minus current liabilities, is a frequently used measure of liquidity.

Table 3-1 shows Allied's year-end balance sheets for 2005 and 2004. From the 2005 statement we see that it had \$2 billion of assets—half current and half long term. The \$2 billion of assets were financed by \$310 million of current liabilities, \$750 million of long-term debt, and \$940 million of common equity represented by 50 million shares outstanding. Its 2005 net working capital was \$690 million (the \$1 billion of current assets less the \$310 million of current liabilities). Comparing the balance sheets for 2005 and 2004, we see that Allied's assets grew by \$320 million, or slightly more than 19 percent.

Several additional points about the balance sheet are worth noting:

1. *Cash and equivalents versus other assets.* Although the assets are all stated in dollar terms, only the cash and equivalents account represents actual spendable money. Accounts receivable represent credit sales that have not yet been collected. Inventories show the investment in raw materials, work-in-process, and finished goods. Finally, net plant and equipment reflects the amount Allied paid for its fixed assets, less accumulated depreciation. Allied has \$10 million of cash and equivalents, hence it can write checks totaling that amount (versus current liabilities of \$310 million due within a year). The noncash assets should generate cash over time, but they do not represent cash in hand, and the cash they would bring if they were sold today could be higher or lower than their values as reported on the balance sheet.
2. *Inventory accounting.* Allied uses the FIFO (first-in, first-out) method to determine the inventory value shown on its balance sheet (\$615 million), but it could have used LIFO (last-in, first-out) or an average cost method. During a period of rising prices, by assuming that old, low-cost inventory is sold first and new, high-cost items are kept in stock, FIFO results in a relatively high

Retained Earnings

That portion of the firm's earnings that has been saved rather than paid out as dividends.

Common Equity (Net Worth)

The capital supplied by common stockholders: common stock, paid-in capital, retained earnings, and, occasionally, certain reserves.

Net Working Capital

Defined as current assets minus current liabilities. It is a frequently used measure of liquidity.

TABLE 3-1

*Allied Food Products: December 31 Balance Sheets
(Millions of Dollars)*

	2005	2004
<i>Assets</i>		
Cash and equivalents	\$ 10	\$ 80
Accounts receivable	375	315
Inventories	<u>615</u>	<u>415</u>
Total current assets	\$1,000	\$ 810
Net plant and equipment	<u>1,000</u>	<u>870</u>
Total assets	<u>\$2,000</u>	<u>\$1,680</u>
<i>Liabilities and Equity</i>		
Accounts payable	\$ 60	\$ 30
Notes payable	110	60
Accruals	<u>140</u>	<u>130</u>
Total current liabilities	\$ 310	\$ 220
Long-term bonds	<u>750</u>	<u>580</u>
Total debt	\$1,060	\$ 800
Common stock (50,000,000 shares)	130	130
Retained earnings	<u>810</u>	<u>750</u>
Total common equity	<u>\$ 940</u>	<u>\$ 880</u>
Total liabilities and equity	<u>\$2,000</u>	<u>\$1,680</u>

$$\text{Book value per share} = \$940/50 = \$18.80$$

Notes:

1. The bonds have a sinking fund requirement of \$20 million a year. Sinking funds are discussed in Chapter 7, but in brief, a sinking fund is used to help ensure the repayment of long-term debt. Thus, Allied was required to pay off \$20 million of its mortgage bonds during 2005. We include the current portion of the long-term debt in notes payable, but in a more detailed balance sheet it would be shown as a separate item under current liabilities.
2. Also, note that a relatively few firms use preferred stock, which we discuss in Chapter 9. Preferred can take several different forms, but it is generally like debt in the sense that it pays a fixed amount each year. However, it is like common stock in the sense that a failure to pay the preferred dividend does not expose the firm to bankruptcy. If a firm does use preferred, it is shown on the balance sheet between Total debt and Common stock. There is no set rule on how preferred should be treated when financial ratios are calculated—it could be considered as debt or as equity—but as long as one is consistent in the treatment, either choice is appropriate.

balance sheet inventory value, a low cost of goods sold on the income statement, and thus relatively high reported profits. (This is strictly accounting; companies actually use older items first.) Allied uses FIFO, and because inflation is present, (a) its balance sheet inventories are higher than they would have been had it used LIFO, (b) its cost of goods sold is lower than it would have been under LIFO, and (c) its reported profits are higher. In Allied's case, if the company had used LIFO in 2005, its balance sheet figure for inventories would have been \$585 million rather than \$615 million, and its earnings (which will be 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. This is important when an analyst is comparing different companies, and the method used must be reported in the notes to the financial statements.

3. *Other sources of funds.* Most companies (including Allied) finance their assets with a combination of current liabilities, long-term debt, and common

equity. As we noted earlier, some companies also use hybrid (combination) securities such as preferred stock, convertible bonds, and long-term leases. Preferred stock is a hybrid between common stock and debt, while convertible bonds are debt securities that give the bondholder an option to exchange bonds for shares of common stock. In the event of bankruptcy, preferred stock ranks below debt but above common stock. When a firm has issued preferred stock, its total equity includes common equity plus preferred stock. Most firms do not use any preferred stock, and those that do generally do not use much of it. Therefore, when we use the term “equity,” we mean “common equity” unless otherwise noted.

4. *Depreciation methods.* Most companies prepare two sets of financial statements—one for tax purposes and one for stockholder reporting. Generally, they use the most accelerated depreciation method permitted under the law for tax purposes but straight line for stockholder reporting. Accelerated depreciation results in high depreciation charges, thus low taxable income and therefore relatively low taxes, whereas straight-line depreciation results in lower depreciation charges and high reported profits.³ Thus, accelerated depreciation results in lower taxes in the current year while straight line results in relatively high reported profits. However, Allied is a relatively conservative company, and it uses accelerated depreciation for both stockholder reporting and tax purposes. Had Allied elected to use straight-line depreciation for stockholder reporting, its 2005 depreciation expense would have been \$25 million less, so the \$1 billion shown for “net plant” on its balance sheet would have been \$25 million higher. More importantly, its reported net income also would have been higher.
5. *Market values versus book values.* Companies use generally accepted accounting principles (GAAP) to determine the values reported on their balance sheets. In most cases, these accounting numbers (often referred to as *book values*) are different from the corresponding market values. For example, Allied purchased its headquarters building in Chicago in 1979. Under GAAP, the company must report the value of this asset at its historical cost (what it originally paid for the asset in 1979) less accumulated depreciation. Given that Chicago real estate prices have increased over the past 25 years, the current market value of the building is much higher than its book value. Other assets might also differ substantially from their values as based on historical costs.

The book and market values of liabilities are normally fairly close to one another, but this is not always true. When a company issues long-term debt, the balance sheet reflects its par value. As we demonstrate in Chapter 7, if interest rates change after debt was issued, its market value will be different from its book value.

Finally, the book value of the company’s common equity is simply the reported book value of the assets minus the book value of the liabilities. Looking at Table 3-1, we see that the book value of Allied’s common equity was \$940 million in 2005. Because there were 50 million shares outstanding, the book value per share was \$18.80. By contrast, the market value of the company’s common stock is its current price, \$23, multiplied by the number of shares outstanding, or $\$23 \times 50 = \$1,150$ million. As is true for most companies in 2006, shareholders are willing to pay more than book value for the firm’s stock in part because the values of its fixed assets have increased due

³ Depreciation charges over an asset’s life are equal to the asset’s cost basis. Accelerated depreciation results in relatively high depreciation in the early years, hence low taxes, then lower depreciation and higher taxes later in the asset’s life. This is advantageous due to the time value of money.

to inflation and in part because shareholders expect the company's future earnings to grow. Allied, like most other companies, has learned how to make investments that are expected to add to future profits. Apple Computer provides an excellent example of this "growth opportunity" phenomenon. When Apple first introduced the iPod, its balance sheet showed very little value for this product, but investors recognized that it was a great product and would lead to high profits in spite of its low book value. They then bid Apple's stock up well above its book value.

6. *The time dimension.* The balance sheet may be thought of as a snapshot of the firm's financial position *at a point in time*—for example, on December 31, 2005. Thus, we see that on December 31, 2004, Allied had \$80 million of cash and equivalents, but that balance fell to \$10 million by year-end 2005. The balance sheet changes every day as inventories are increased or decreased, as fixed assets are added or retired, as bank loans are increased or decreased, and so on. Companies whose business is seasonal experience especially large balance sheet changes over the year. For example, Allied's inventories are low just before the harvest season, but they are high just after the fall crops have been harvested and processed. Similarly, most retailers have large inventories just before Christmas but low inventories and high accounts receivable just after Christmas. Therefore, firms' balance sheets change during the year, depending on the date at which the statement is constructed.



What is the balance sheet, and what information does it provide?

How is the order of the items shown on the balance sheet determined?

A company has \$2 million of cash and equivalents, \$2 million of inventory, \$3 million of accounts receivable, \$3 million of accounts payable, \$1 million of accruals, and \$2 million of notes payable. What is its net working capital? (\$1 million)

Why might Allied's December 31 balance sheet differ from its June 30 statement?

3.4 THE INCOME STATEMENT

Income Statement

A report summarizing the firm's revenues and expenses during an accounting period, generally a quarter or a year.

Table 3-2 gives Allied's 2005 and 2004 **income statements**. Net sales are shown at the top of the statement, after which operating costs, interest, and taxes are subtracted to obtain the net income available to common shareholders, which is generally referred to as "net income." Earnings and dividends per share are given at the bottom of the income statement. Earnings per share (EPS) is called "the bottom line," denoting that of all the items on the income statement, EPS is generally the most important to stockholders. Allied earned \$2.35 per share in 2005, down from \$2.44 in 2004, but it still increased the dividend from \$1.06 to \$1.15.⁴

Note that different firms have different financial structures, different tax situations, and different amounts of nonoperating assets. These differences can cause two companies with similar operations to report different levels of net income. For example, suppose two companies have identical operations—their sales, operating costs, and assets are identical. However, one finances with debt

⁴ Companies must report "comprehensive income" as well as net income. Comprehensive income is equal to net income adjusted to include several additional items, such as unrealized gains or losses on marketable securities, classified as available for sale, when they are marked-to-market. For our purposes in this introductory text, we assume that there are no such items.

TABLE 3-2

Allied Food Products: Income Statements for Years Ending December 31 (Millions of Dollars, Except for Per-Share Data)

	2005	2004
Net sales	\$3,000.0	\$2,850.0
Operating costs except depreciation ^a	<u>2,616.2</u>	<u>2,497.0</u>
Earnings before interest, taxes, and depreciation (EBITDA) ^b	\$ 383.8	\$ 353.0
Depreciation	<u>100.0</u>	<u>90.0</u>
Earnings before interest and taxes (EBIT)	\$ 283.8	\$ 263.0
Less interest	<u>88.0</u>	<u>60.0</u>
Earnings before taxes (EBT)	\$ 195.8	\$ 203.0
Taxes	<u>78.3</u>	<u>81.2</u>
Net income	<u>\$ 117.5</u>	<u>\$ 121.8</u>
Common dividends	\$ 57.5	\$ 53.0
Addition to retained earnings	\$ 60.0	\$ 68.8
<i>Per-share data:</i>		
Common stock price	\$ 23.00	\$ 26.00
Earnings per share (EPS) ^c	\$ 2.35	\$ 2.44
Dividends per share (DPS) ^c	\$ 1.15	\$ 1.06
Book value per share (BVPS) ^c	\$ 18.80	\$ 17.60
Cash flow per share (CFPS) ^c	\$ 4.35	\$ 4.24

Notes:

^a Operating costs include lease payments of \$28 million.

^b Allied has no amortization charges.

^c Allied has 50 million shares of common stock outstanding. Note that EPS is based on net income available to common stockholders. Calculations of EPS, DPS, BVPS, and CFPS for 2005 are as follows:

$$\text{Earnings per share} = \text{EPS} = \frac{\text{Net income}}{\text{Common shares outstanding}} = \frac{\$117,500,000}{50,000,000} = \$2.35$$

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

$$\text{Book value per share} = \text{BVPS} = \frac{\text{Total common equity}}{\text{Common shares outstanding}} = \frac{\$940,000,000}{50,000,000} = \$18.80$$

$$\text{Cash flow per share} = \text{CFPS} = \frac{\text{Net income} + \text{Depreciation} + \text{Amortization}}{\text{Common shares outstanding}} = \frac{\$217,500,000}{50,000,000} = \$4.35$$

If a firm has options or convertibles outstanding, or if it recently issued new common stock, then EPS calculations become a bit more complicated. See any financial accounting text for a discussion.

and the other uses only common equity. Despite the fact their operating performances are identical, the company with no debt (and therefore no interest expense) would report higher net income because no interest is deducted from its operating income. Consequently, if you want to compare companies' operating performances, it is essential to focus on their earnings before deducting taxes and interest payments. This is called *earnings before interest and taxes (EBIT)*, and it is often referred to as *operating income*:

$$\text{EBIT} = \text{Sales revenues} - \text{Operating costs} \quad (3-1)$$

From Allied's income statement, we see that its operating income increased from \$263.0 million in 2004 to \$283.8 million in 2005, yet the company's 2005 net

Depreciation

The charge to reflect the cost of assets used up in the production process. Depreciation is not a cash outlay.

Tangible Assets

Physical assets such as plant and equipment.

Amortization

A noncash charge similar to depreciation except that it is used to write off the costs of intangible assets.

Intangible Assets

Assets such as patents, copyrights, trademarks, and goodwill.

EBITDA

Earnings before interest, taxes, depreciation, and amortization.

income declined. This discrepancy occurred because Allied increased its debt in 2005, and the increased interest expense reduced its net income despite its higher operating income.

Taking a closer look at the income statement, we see that depreciation and amortization are important components of operating costs.⁵ Recall from accounting that **depreciation** is an annual charge against income that reflects the estimated dollar cost of the capital equipment and other **tangible assets** that were used up in the production process. **Amortization** amounts to the same thing, except represents the decline in value of **intangible assets** such as patents, copyrights, trademarks, and goodwill. Because they are so similar, depreciation and amortization are generally lumped together for purposes of financial analysis on the income statement and for other purposes. They both write off, or allocate, the costs of assets over their useful lives.

Even though depreciation and amortization are reported as costs on the income statements, they are not cash expenses—cash was spent in the past, when the assets being written off were acquired, but no cash is paid out to cover depreciation. Therefore, managers, security analysts, and bank loan officers who are concerned with the amount of cash a company is generating often calculate **EBITDA**, defined as earnings before interest, taxes, depreciation, and amortization. Allied has no amortization charges, so the depreciation and amortization on the income statement shown in Table 3-2 is all depreciation. In 2005, EBITDA was \$383.8 million. Subtracting the \$100 million of depreciation from EBITDA left the company with \$283.8 million of operating income (EBIT). After subtracting \$88 million in interest and \$78.3 million in taxes, Allied had \$117.5 million in net income.

While the balance sheet can be thought of as a snapshot in time, the income statement reports on operations *over a period of time*, for example, during the calendar year 2005. Allied's 2005 sales were \$3 billion, and its net income was \$117.5 million. Income statements can cover any period of time, but most companies prepare them monthly, quarterly, and annually. The quarterly and annual statements are released to investors, while the monthly statements are used internally for planning and control purposes, comparing actual results with forecasted (or "budgeted") results. If revenues drop below or costs rise above the forecasted levels, management should find out why and take corrective steps before the problem becomes serious.



What is an income statement, and what information does it provide?

Why is earnings per share called "the bottom line"?

Differentiate between amortization and depreciation.

What are EBIT, operating income, and EBITDA?

Which is like a snapshot of the firm's operations—the balance sheet or the income statement—and which is more like a movie? Explain.

⁵ Industrial companies like Allied generally have few intangible assets, hence little if any amortization. High-tech companies like Microsoft, which spend billions developing new products, and media companies, when they produce movies like *The Aviator*, do have sizable intangible assets, hence amortization is important for them. Actually, life would be simpler, and financial statements just as informative, if the accountants just applied the term "depreciation" to the periodic write-off of all assets, tangible and intangible alike. But until they change, we must continue using both terms.

We should note that prior to 2002 amortization was very important for companies that engaged in mergers. If a company pays more than book value when it acquires another firm, the excess is called "goodwill." Prior to 2002, firms were required to amortize goodwill, and the annual amortization charge reduced reported income by a like amount. After 2002, GAAP no longer required that goodwill be amortized, and that greatly reduced amortization charges for companies in general.

3.5 NET CASH FLOW

As we discussed in Chapter 1, management's goal should be to maximize the stock price. Because the value of any asset, including a share of stock, depends on the cash flows the asset is expected to produce, this means that managers should strive to maximize the cash flows available to investors over the long run. A business's **net cash flow** differs from its **accounting profit** because some of the revenues and expenses listed on the income statement are not paid in cash during the year.

Allied and many other companies have zero noncash revenues, and depreciation and amortization are the only noncash charges.⁶ Under these conditions, the relationship between net cash flow and net income can be expressed as follows:

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

We can illustrate Equation 3-2 with Allied's 2005 data from Table 3-2:

$$\text{Net cash flow} = \$117.5 + \$100.0 = \$217.5 \text{ million}$$

Depreciation is an important source of cash for Allied and most other companies, and it is important that you understand its financial implications. We discuss depreciation in more depth in Chapter 12, but for a quick illustration, suppose a machine with a life of five years and a zero salvage value was purchased in 2005 for \$100,000 and placed in service in 2006. The \$100,000 purchase price was paid in cash in 2005, but it does not show up as an expense in 2005; rather, a portion of it is charged as a cost of production over each year of the machine's life. If the \$100,000 were taken as an expense in 2005, then profits in that year would be understated, but profits in each of the following five years would be overstated. So, under accrual accounting rules an annual depreciation charge is deducted from sales revenues when determining income in 2006 through 2010. However, the \$100,000 cost of the machine was actually paid in cash in 2005, and the depreciation charged against income from 2006 through 2010 does not involve a cash payment. *Because depreciation is a noncash charge, it must be added back to net income to obtain net cash flow.* If we assume that all other noncash items sum to zero, Equation 3-2 will hold and net cash flows are equal to net income plus depreciation and amortization.



How do we estimate net cash flow, and how does it differ from accounting profit?

In accounting, the emphasis is on net income. In finance, the primary emphasis is on cash flow. Why is this so?

3.6 STATEMENT OF CASH FLOWS

Its net cash flow represents the cash a business generates in a given year. However, the fact that a company generates a high cash flow does not necessarily mean that the cash reported on its balance sheet is also high. Cash flow is not

Net Cash Flow

The actual net cash, as opposed to accounting profit (net income), that a firm generates during a specified period.

Accounting Profit

A firm's net income as reported on its income statement.

⁶ Allied and most other companies have little if any noncash revenues, but this item can be important for construction companies that work on multiyear projects, report income on a percentage of completion basis, and then are paid only after the project is completed. Also, if a company has a substantial amount of deferred taxes, which means that taxes actually paid are less than that reported in the income statement, then this amount could also be added to net income when estimating the net cash flow. Other adjustments could also be made, but a discussion of these details would go beyond the scope of this text and is best left for advanced finance and accounting courses.

normally used just to build up the cash account. Rather, it is used in a variety of ways, including paying dividends, increasing inventories, financing accounts receivable, investing in fixed assets, retiring debt, and buying back common stock.

Here is a quick summary to the key factors that affect a company's cash balance:

1. *Cash flow.* Other things held constant, a positive net cash flow leads to more cash in the bank. However, other things are generally not held constant, and cash flow is used for other things.
2. *Changes in working capital.* Increases in working capital (inventories and receivables) are paid for with cash, so such increases decrease cash. On the other hand, decreases in working capital increase cash. For example, if inventories are to increase, the firm must use cash to purchase the additional inventory, whereas if inventories decrease, this generally means the firm is selling inventories and not replacing them, hence generating cash. Similarly, increases in current liabilities such as accounts payable increase cash, whereas decreases in payables reduce it. This occurs because, if payables increase, the firm has received additional credit from its suppliers, which saves cash, while if payables decrease, the firm has used cash to pay its suppliers.
3. *Fixed assets.* If a company invests in fixed assets, its cash position is reduced, whereas if it sells fixed assets, this increases cash.
4. *Security transactions and dividend payments.* If a company issues stock or bonds during the year, the funds raised will enhance its cash position. On the other hand, if it uses cash to pay off outstanding debt, to buy back some of its stock, or to pay dividends to shareholders, this will reduce cash.

Each of these 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:

1. *Operating activities*, which include net income, depreciation, and changes in working capital other than cash and short-term debt.
2. *Investing activities*, which include purchases or sales of fixed assets.
3. *Financing activities*, which include raising cash by issuing short-term debt, long-term debt, or stock, or using cash to pay dividends or to buy back outstanding stock or bonds.

Accounting texts explain how to prepare the statement of cash flows; however, in finance we're concerned with questions the statement can answer: Is the firm generating enough cash to acquire the assets needed to support its growth? Is it generating any extra cash that can be used to repay debt or to invest in new products? Will internally generated cash be sufficient, or will the company have to issue more common stock? This type of information is useful for both managers and investors, so the statement of cash flows is an important instrument. This statement, along with the cash budget, is used to help forecast a company's cash position.

Table 3-3 shows Allied's statement of cash flows as it would appear in the company's annual report. The top section is most important, as it shows the cash flows that were generated by and used in operations. Allied's operations *lost* cash flow—it was *minus* \$2.5 million. This indicates that the company, in the normal course of business, was running a cash deficit. Its day-to-day operations brought in \$257.5 million, but the increase in receivables and inventories more than offset this inflow, resulting in a *negative* \$2.5 million cash flow from operations. Successful companies have large, positive cash flows from operations, as this is what gives them value. Allied clearly had an operating problem in 2005.

Statement of Cash Flows

A statement reporting the impact of a firm's operating, investing, and financing activities on cash flows over an accounting period.

TABLE 3-3

Allied Food Products: Statement of Cash Flows for 2005 (Millions of Dollars)

	2005
I. OPERATING ACTIVITIES	
Net Income before dividends	\$117.5
<i>Additions (Sources of Cash)</i>	
Depreciation and amortization ^a	100.0
Increase in accounts payable	30.0
Increase in accruals	10.0
<i>Subtractions (Uses of Cash)</i>	
Increase in accounts receivable	(60.0)
Increase in inventories	(200.0)
Net cash provided by operating activities	(\$ 2.5)
II. LONG-TERM INVESTING ACTIVITIES	
Cash used to acquire fixed assets ^b	(\$230.0)
III. FINANCING ACTIVITIES	
Increase in notes payable	\$ 50.0
Increase in bonds	170.0
Payment of dividends	(57.5)
Net cash provided by financing activities	<u>\$162.5</u>
Net decrease in cash and equivalents	(\$ 70.0)
Cash and equivalents at beginning of the year	<u>80.0</u>
IV. CASH AND EQUIVALENTS AT END OF THE YEAR	<u><u>\$ 10.0</u></u>

Notes:

- ^a Depreciation and amortization are noncash charges, so they must be added back to net income to show the actual cash flow from operations.
- ^b The net increase in fixed assets was \$130 million, but this is a net amount after deducting the year's depreciation expense. Depreciation must be added to the \$130 million to show the actual amount spent to purchase fixed assets. From the income statement, we see that the 2005 depreciation expense was \$100 million, so we show expenditures on fixed assets as \$230 million.

The second section shows Allied's long-term investing activities. The company purchased fixed assets totaling \$230 million; this was the only long-term investment it made during 2005.

When we add the results of Sections I and II, we see that Allied had a cash deficit of \$232.5 million in 2005. How was that deficit financed? This information is provided in Section III, Financing Activities. Here we see that Allied borrowed from banks (notes payable) and issued new bonds to bring in a total of \$220 million, but it paid out \$57.5 million in dividends to its stockholders, resulting in a net inflow of \$162.5 million from financing activities.

Allied's deficit from operations and investment activities totaled \$232.5 million, and it raised a net \$162.5 million from financing activities, leaving a net deficit of \$70 million. How was this \$70 million shortfall covered? It was covered by drawing down the cash and equivalents account. The company started the year with \$80 million of cash and cash equivalents (marketable securities), ended the year with only \$10 million, hence used \$70 million of its initial cash holdings to cover its operating deficit and fixed assets investments.

Allied's statement of cash flows should worry its managers and investors. It was able to cover the operating deficit and the investments by heavy borrowing and by drawing down its stockpile of cash and equivalents, but that obviously can't continue on into the future. In the long run, Section I should show good

Massaging the Cash Flow Statement

Profits as reported on the income statement can be “massaged” by changes in depreciation methods, inventory valuation procedures, and so on, but “cash is cash,” so management can’t mess with the cash flow statement, right? Nope—wrong. A recent article in *The Wall Street Journal* described how Ford, General Motors, and several other companies overstated their operating cash flows, the most interesting section of the cash flow statement. Indeed, GM reported more than twice as much cash from operations as it really had, \$7.6 billion versus a true \$3.5 billion. When GM sold cars to a dealer on credit, it created an account receivable, which should be shown in the “Operating Activities” section as a use of cash. However, GM classified these receivables as loans to dealers and reported them as a financing activity. That decision more than doubled the reported cash flow from operations. It didn’t effect the end-of-year cash, but it made operations look stronger than they really were.

If Allied Foods, in Table 3-3, had done this, the \$60 million increase in receivables, which is correctly shown as a use of cash, would have been shifted to the “Financing Activities” section, causing Allied’s cash provided by operations to rise from $-\$2.5$ million to $+\$57.5$ million. That would have made Allied look better to investors and credit analysts, but it would have been just smoke, mirrors, and accounting.

GM’s treatment was uncovered by Professor Charles Mulford of Georgia Tech. The SEC then sent GM a letter that basically required GM to change its procedures. The company issued a statement that it thought at the time it was acting in accordance with GAAP, but that it would reclassify its accounts in the future. GM’s action was certainly not in the league of WorldCom’s or Enron’s, but it does show that companies sometimes do things to make their statements look better than they really are.

Source: Diya Gullapalli, “Little Campus Lab Shakes Big Firms,” *The Wall Street Journal*, March 1, 2005, p. C3.

operating cash flows; Section II should show spending on fixed assets that is about equal to depreciation charges (to replace worn out fixed assets) plus a bit more to support growth; and Section III should show relatively little net borrowing along with a “reasonable” amount of dividends (for an average company, dividends amount to about 50 percent of net income). Finally, Section IV should show a reasonably stable cash and equivalents balance from year to year. These conditions obviously do not hold for Allied, so something should be done to right the ship. We will go into this more deeply in Chapter 4, when we move on to a more detailed financial analysis of the financial statements.

Statement of Retained Earnings

A statement reporting how much of the firm’s earnings were retained in the business rather than paid as dividends. The balance sheet number reported for retained earnings is the sum of the annual retained earnings for each year of the firm’s history.



What is the statement of cash flows, and what are some questions it is designed to answer?

If a company has high cash flows, does this mean that its cash and equivalents will also be high? Explain.

Identify and briefly explain the three types of activities shown in the statement of cash flows.

3.7 STATEMENT OF RETAINED EARNINGS

The change in retained earnings between balance sheet dates is reported in the **statement of retained earnings**. Table 3-4 shows that Allied earned \$117.5 million during 2005, paid out \$57.5 million in common dividends, and plowed \$60

TABLE 3-4

Allied Food Products: Statement of Retained Earnings for Year Ending December 31, 2005 (Millions of Dollars)

	2005
Balance of Retained Earnings, December 31, 2004	\$750.0
Add: Net Income, 2005	117.5
Less: Dividends to common stockholders	<u>(57.5)^a</u>
Balance of Retained Earnings, December 31, 2005	<u>\$810.0</u>

Note:

^a Here, and throughout the book, parentheses are sometimes used to denote negative numbers.

million back into the business. Thus, the balance sheet item “Retained earnings” increased from \$750 million at year-end 2004 to \$810 million at year-end 2005.

Note that “retained earnings” represents a *claim against assets*, not assets per se. Moreover, firms retain earnings for reinvestment in the business, which means investing in plant and equipment, in inventories, and so on, *not* to pile up cash in a bank account. Changes in retained earnings occur because common stockholders allow management to reinvest funds that otherwise could be distributed as dividends. *Thus, the retained earnings account reported on the balance sheet does not represent cash and is not “available” for dividends or anything else.*⁷



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: “The retained earnings account reported on the balance sheet does not represent cash and is not ‘available’ for dividend payments or anything else.”

3.8 USES AND LIMITATIONS OF FINANCIAL STATEMENTS

The financial statements provide investors with a lot of useful information. You can look through the statements and answer a number of important questions such as these: How large is the company? Is it growing? Is it making or losing money? Does it have a high percentage of current assets versus fixed assets? To what extent does the firm use debt or equity to finance its assets? Does it rely more on short-term or long-term debt? Has it issued any new debt or equity in recent years? Has it made significant capital expenditures in recent years? Does it have a lot of cash on hand or is a shortage looming, and has the cash balance been rising or falling over time?

⁷ The amount reported in the retained earnings account is *not* an indication of the 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 the firm has in the past earned some income and not paid out all of those earnings as dividends. Even though a company reports record earnings and shows an increase in retained earnings, 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 had only 23 cents in your pocket plus \$5 in your checking account, you would still be short of cash.

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 find the key financial statements for most publicly traded companies.

Suppose you are considering the purchase of Disney stock, and you want to analyze its recent performance. Here's a partial (but by no means a complete) list of places you could go to get started:

- One source is Yahoo!'s finance Web site, **finance.yahoo.com**.^a Here you will find updated market information along with links to a variety of interesting research sites. Enter a stock's ticker symbol, click on Go, and you will see the stock's current price, along with recent news about the company. Click on Key Statistics and you will find a report on the company's key financial ratios. Links to the company's financials (income statement, balance sheet, and statement of cash flows) can also be found. 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 the 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 also that, in most cases, a more complete listing of SEC filings can be found at **www.sec.gov** or at **www.edgar-online.com**.
- Another Web site with similar information is MSN Money (**moneycentral.msn.com**). After clicking the Investing and Stocks tabs, you enter the stock's ticker symbol. Then, you will see the current stock price and a list of recent news stories. Here you

will also find links to the company's financial statements and key ratios (under Financial Results), as well as other information including analyst ratings, historical charts, earnings estimates, and a summary of insider transactions. Both MSN Money and Yahoo! Finance allow you to export the financial statements and historical prices to an *Excel* spreadsheet.

- Other sources for up-to-date market information are **money.cnn.com** and **www.marketwatch.com/news/**. These sites also have areas where you can obtain stock quotes along with company financials, links to Wall Street research and SEC filings, company profiles, and charts of the firm's stock price plotted over time.
- After accumulating all of this information, you may be looking for sites that provide opinions regarding the direction of the overall market and views regarding the individual stock. Two popular sites in this category are The Motley Fool's Web site, **www.fool.com**, and the site for TheStreet.com, **www.thestreet.com**.

Keep in mind that this list is just a small subset of the information available online. You should also realize that sites come and go, and also change their content over time. New and interesting sites are constantly being added to the Internet.

^a To avoid redundancy, we have intentionally left off **http://** in all Web addresses given here. A quick way to change an address is to highlight the portion of the address that is different and type in the appropriate letters of the new address. Once you're finished just press Enter.

At the same time, 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—see the box in Section 3.6 on GM's treatment of accounts receivable from its dealers. 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, as we noted in Chapter 1, 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 more than \$11 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. Their defense was that WorldCom's management had lied. WorldCom's CFO pleaded guilty and was sentenced to 5 years in prison, while its CEO was sentenced to 25 years in prison. In the wake of this and other recent accounting scandals, regulators and accounting professionals are issuing new standards to make financial statements more transparent for investors and to create an environment where managers have strong incentives to report truthful numbers.

Also, keep in mind that even if investors are provided with accurate accounting data, it is really cash flow, not accounting income, that matters. Similarly, when managers decide on which projects to accept, their focus should be on cash flow. Therefore, when it comes to effective decision making, managers and investors generally need to modify even the most accurate and transparent financial statements to determine the relevant cash flows. We discuss this in the next section.



Can an investor have complete confidence that the financial statements of different companies are accurate and that the data reported by one company are truly comparable to the data provided by another?

Why might different companies account for similar transactions in different ways?

3.9 MODIFYING ACCOUNTING DATA FOR INVESTOR AND MANAGERIAL DECISIONS

Thus far in the chapter we have focused on financial statements as they are prepared by accountants and 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 helpful for corporate decision-making and stock valuation purposes.

Recall from Chapter 1 that the firm's primary financial objective is to maximize shareholder value. Investors provide companies with capital, and managers create value for shareholders by investing this capital in productive assets. In the following sections we discuss how financial managers and analysts use accounting data to measure and evaluate corporate performance.

Operating Assets and Operating Capital

Companies raise funds from a variety of sources. The primary source is investors, including stockholders, bondholders, and lenders such as banks. Investors must be paid for the use of their money, with payment coming as interest for bonds and other debt and as dividends plus capital gains for stock.

So, if a company obtains more assets than it actually needs, it will have raised too much capital and thus have unnecessarily high capital costs.

Not all of the capital used to acquire assets is provided by investors—some of the funds normally come from suppliers and are reported as accounts payable, while other funds as reported on the balance sheet come as accrued wages and accrued taxes, which amount to short-term loans from workers and tax authorities. Generally, both accounts payable and accruals are “free” because no explicit fee is charged for their use. These funds are commonly referred to as *spontaneously generated, non-interest-bearing current liabilities*. They are called “spontaneous” because they are generated spontaneously through normal business operations, not by a specific act such as going to a bank and borrowing money.

When evaluating a company’s overall position and value, analysts often focus on **net operating working capital (NOWC)**, defined as follows:⁸

Net Operating Working Capital (NOWC)

Operating working capital less accounts payable and accruals. It is the working capital acquired with investor-supplied funds.

$$\text{Net operating working capital} = \text{NOWC} = \text{All current assets required in operations} - \text{All non-interest-bearing current liabilities} \quad (3-3)$$

Allied’s net operating working capital for 2005 was

$$\begin{aligned} \text{NOWC} &= \text{All current assets required in operations} - \text{All non-interest-bearing current liabilities} \\ &= \left(\text{Cash and cash equivalents} + \text{Accounts receivable} + \text{Inventories} \right) - \left(\text{Accounts payable} + \text{Accruals} \right) \\ &= (\$10 + \$375 + \$615) - (\$60 + \$140) \\ &= \$800 \text{ million} \end{aligned}$$

For 2004, Allied’s net operating working capital (NOWC) was

$$\begin{aligned} \text{Net operating working capital} &= (\$80 + \$315 + \$415) - (\$30 + \$130) \\ &= \$650 \text{ million} \end{aligned}$$

Thus, Allied’s NOWC increased by \$150 million during 2005.

Working capital is important for several reasons. First, all companies must carry some cash to “grease the wheels” of their operations. They continuously receive checks from customers and write checks to suppliers, employees, and so on. Because inflows and outflows do not coincide perfectly, firms must keep some cash (and cash equivalents) in their bank accounts to conduct operations without periodic disruptions. The same is true for most other current assets, such as inventory and accounts receivable.

Allied and most other companies try to hold only as much cash and marketable securities as is required under normal operations—they don’t try to operate like a bank and hold excess amounts of these assets. However, in some

⁸ Allied and many other companies have essentially zero nonoperating assets, but a number of companies do have significant amounts of nonoperating assets, often held as marketable securities, and report them on their balance sheets. Therefore, finance professionals typically differentiate operating from nonoperating assets and use the term NOWC as we do.

instances companies do accumulate more cash and marketable securities than are needed in operations. Perhaps these funds are on hand because the firm just sold a large bond issue and has not yet deployed the funds, or perhaps it is saving up funds for a specific purpose such as a merger or a major capital investment program. In these situations, the excess cash and marketable securities should not be viewed as part of operating working capital—it is nonoperating capital and is analyzed separately.

Also, as noted, accounts payable and accruals arise in the normal course of operations, and each dollar of these current liabilities is a dollar that the company does not have to raise from investors to fund its current assets. Therefore, we deduct these current liabilities from the operating current assets when calculating net operating working capital. However, those current liabilities that charge interest, such as notes payable to banks, are investor-supplied capital, and are not deducted when we calculate NOWC.

We see, then, that a company's assets can be divided into two groups, *operating assets (or operating capital)* and *nonoperating assets (or nonoperating capital)*. Operating capital includes those current and net fixed assets that are necessary to operate the business, while nonoperating assets include items like land held for future use, stock in other companies, and marketable securities in excess of those held for liquidity purposes.⁹ Moreover, firm's holdings of nonoperating assets are always based on unique, special conditions, and decisions regarding them are similarly unique. Typically, the vast majority of assets are operating as opposed to nonoperating, and the firm's value is based on the cash flows that those operating assets provide. Therefore, our focus in the book is on operating, not on nonoperating, assets.

Companies typically use a combination of *investor-supplied capital* and *non-interest-bearing, spontaneous current liabilities* to finance their required operating assets. For example, when Allied opens a new plant, it needs to acquire fixed assets (land, building, and equipment) and current assets (inventory and receivables). However, the suppliers who ship materials to Allied generally expect to be paid 30 or so days later, so accounts payable, which are non-interest-bearing current liabilities, help finance the new operations. Accrued wages and taxes similarly reduce the amount of funds Allied's investors must provide to acquire the new operating assets. The amount of operating capital supplied by Allied's investors over the years, through December 31, 2005, is found as follows:

$$\begin{aligned}
 \text{Total operating capital,} &= \text{Net operating} + \text{Net fixed} & (3-4) \\
 \text{2005} & \text{working capital} & \text{assets} \\
 & = \$800 + \$1,000 \\
 & = \$1,800 \text{ million}
 \end{aligned}$$

In the prior year, 2004, Allied's total operating capital was

$$\begin{aligned}
 \text{Total operating capital, 2004} &= \$650 + \$870 \\
 &= \$1,520 \text{ million}
 \end{aligned}$$

Therefore, Allied's operating capital increased from \$1,520 to \$1,800 million during 2005, or by \$280 million.

⁹To value a firm, analysts typically use the techniques we describe in the text to value the firm's operations and then add to that value the value of the nonoperating assets. To keep things simple, we illustrate concepts with Allied Foods, which has only operating assets.

Operating Cash Flows

Financial managers create value by obtaining funds and investing them in operating assets, and the cash flow generated through operations determines the firm's value. These cash flows are found as follows:

$$\text{Operating cash flow} = \text{EBIT}(1 - \text{Tax rate}) + \frac{\text{Depreciation and amortization}}{\quad} \quad (3-5)$$

Recall that EBIT is the firm's operating income—it is what remains after subtracting from sales all operating costs, including depreciation and amortization, but before subtracting taxes and interest. Investors are interested in after-tax cash flows, which are found by multiplying EBIT by one minus the tax rate. We add back depreciation and amortization when calculating the cash flow because they are noncash expenses.

EBIT(1 – Tax rate) is often referred to as **NOPAT**, or **net operating profit after taxes**, and it is the profit a company would generate if it had no debt and held only operating assets.¹⁰ Thus, we can rewrite Equation 3-5 as follows:

$$\text{Operating cash flow} = \text{NOPAT} + \text{Depreciation and amortization} \quad (3-5a)$$

Using data from the income statement in Table 3-2, Allied's 2005 NOPAT was

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

Because depreciation was the only noncash charge, Allied's 2005 operating cash flow was

$$\begin{aligned} \text{Operating cash flow} &= \text{NOPAT} + \text{Depreciation and amortization} \\ &= \$170.3 + \$100 \\ &= \$270.3 \text{ million} \end{aligned}$$

Free Cash Flow

Earlier in the chapter we defined net cash flow as being equal to net income plus noncash adjustments, typically net income plus depreciation. Note, though, that cash flows cannot be maintained over time unless depreciating fixed assets are replaced, and new products must also be developed. Therefore, management is not completely free to use the available cash flow however it pleases. Therefore, we now define another term, **free cash flow**, which is the cash flow actually available for payments to investors (stockholders and debtholders) after the company has made the investments in fixed assets, new products, and working capital required to sustain ongoing operations.

To be more specific, the value of a company's operations depends on its expected future free cash flows (FCF), defined as after-tax operating profit minus the investments in working capital and fixed assets necessary to sustain the business. Thus, free cash flow represents the cash that is actually available for payments to investors. Therefore, managers make their companies more valuable by increasing their free cash flow.

Net Operating Profit After Taxes (NOPAT)

The profit a company would generate if it had no debt and held only operating assets.

Free Cash Flow

The cash flow actually available for distribution to all investors (stockholders and debtholders) after the company has made all the investments in fixed assets, new products, and working capital necessary to sustain ongoing operations.

¹⁰ For large, complex firms complications can arise. For additional information see Tim Koller, Marc Goedhart, and David Wessels, *Valuation: Measuring and Managing the Value of Companies*, 4th edition (New York: John Wiley & Sons, 2005); and G. Bennett Stewart III, *The Quest for Value*, 2nd edition (New York: HarperCollins Publishers, 1999).

The following equation can be used to calculate free cash flow:¹¹

$$\begin{aligned} \text{FCF} &= \left[\text{EBIT}(1 - \tau) + \text{Depreciation and amortization} \right] - \left[\text{Capital expenditures} + \text{operating working capital} \right] \\ &= \text{Operating cash flow} - \text{Investment in operating capital} \end{aligned}$$

In 2005 Allied's EBIT was \$283.8 million, and its depreciation and amortization was \$100 million. Its fixed assets increased by \$130 million after \$100 million of depreciation, so its capital expenditures must have been \$230 million. Finally, its net operating working capital (current assets less spontaneous current liabilities) rose by \$150 million. Therefore, its free cash flow was $-\$109.7$ million:

$$\begin{aligned} \text{FCF} &= \text{Operating cash flow} - \text{Investment in operating capital} \quad (3-6) \\ &= [\$283.8(1 - 0.4) + \$100] - (\$230 + \$150) \\ &= \$270.3 - \$380 \\ &= -\$109.7 \text{ million} \end{aligned}$$

Even though Allied's operating cash flow was positive, its very high investment in operating capital 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 put in *more* money to keep the business going. Investors provided most of the needed funds 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, this is definitely bad, and it suggests that the company is experiencing operating problems. However, many high-growth companies have positive NOPAT but negative free cash flow because they must invest heavily in operating assets to support rapid growth. There is nothing wrong with a negative cash flow if it results from profitable growth.



What is net operating working capital?

What is total operating capital?

What is NOPAT?

What is free cash flow? Why is free cash flow the most important determinant of a firm's value?

A company has NOPAT of \$30 million, and its depreciation and amortization expense is \$10 million. During the year the company's gross capital expenditures (total purchases of fixed assets) were \$20 million and its net operating working capital increased by \$10 million. What is the company's operating cash flow? (\$40 million)
What is its free cash flow? (\$10 million)

¹¹ In the finance literature, free cash flow is defined in two ways: (1) cash flow available to both stockholders and bondholders and (2) cash flow available to stockholders, that is, after interest payments. The first definition, which we prefer and incorporate into Equation 3-6, is the one most analysts use. FCF as found with Equation 3-6 can be discounted at the weighted average cost of capital (WACC) to find the value of the firm, whereas FCF after interest must be discounted at the cost of common stock to find the firm's value. This distinction is discussed at length in advanced finance courses, but the choice does not matter so long as the correct discount rate is used with each.

3.10 MVA AND EVA

Assets as reported on the financial statements reflect historical, in-the-past, values, not current market values, and there are often substantial differences between the two. Inflation results in differences, as do successful and unsuccessful operations. For example, it cost Microsoft very little to develop its first operating system, but that system turned out to be worth many billions that were not shown on its balance sheet. Of course, balance sheets must balance, so if the assets side of the statement totals to less than the market value of the firm's assets, then so will the liabilities and capital side. Debt values are fixed by contract, so it is the equity where the discrepancy between book and market values are concentrated.

To illustrate, consider the following situation. The firm was started with \$1 million of assets at book value (historical cost), \$500,000 of which was provided by bondholders, and \$500,000 by stockholders (50,000 shares purchased at \$10 per share). However, the firm was very successful, and its assets now produce \$2 million of free cash flow per year. Investors discount that free cash flow at a 10 percent rate, resulting in a value of \$20 million for the firm. After deducting the \$500,000 of debt, the market value of the equity is found to be \$19.5 million versus the \$500,000 stockholders invested in the firm. The stock price is $\$19,500,000 / 50,000 = \390 per share, so the firm's managers have done a marvelous job for the stockholders.

The accounting statements do not reflect market values, so they are not sufficient for purposes of evaluating managers' performance. To help fill this void, financial analysts have developed two additional performance measures, the first of which is **MVA**, or **Market Value Added**.¹² MVA is simply the difference between the market value of a firm's equity and the book value as shown on the balance sheet, with market value found by multiplying the stock price by the number of shares outstanding. For our hypothetical firm, MVA is $\$19.5 \text{ million} - \$0.5 \text{ million} = \$19 \text{ million}$.

For Allied, which has 50 million shares outstanding and a \$23 price, the market value of the equity is \$1,150 million versus a book value as shown on the balance sheet in Table 3-1 of \$940 million. Therefore, Allied's MVA is $\$1,150 - \$940 = \$210 \text{ million}$. This \$210 million represents the difference between the money Allied'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. Boards of directors often look at MVA when deciding on the compensation a firm's managers deserve. Note though, that just as all ships rise in a rising tide, most firms' stock prices rise in a rising stock market, so a positive MVA may not be entirely attributable to management.

A related concept, **Economic Value Added (EVA)**, sometimes called "economic profit," is closely related to MVA and is found as follows:

$$\begin{aligned}
 \text{EVA} &= \text{Net operating profit after taxes (NOPAT)} - \text{Annual dollar cost of capital} \\
 &= \text{EBIT}(1 - T) - \left(\text{Total investor-supplied operating capital} \times \text{After-tax percentage cost of capital} \right) \quad (3-7)
 \end{aligned}$$

¹² 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 "MVA" and "EVA," so other consulting firms have given other names to these values. Still, MVA and EVA are the terms most commonly used in practice. For more on MVA and EVA, see Stewart, *The Quest for Value*.

Market Value Added (MVA)

The excess of the market value of equity over its book value.

Economic Value Added (EVA)

Excess of NOPAT over capital costs.

EVA is an estimate of a business's true economic profit for a given year, and it differs sharply from accounting net income primarily in that accounting income has no deduction for the cost of equity whereas this cost is deducted when calculating EVA.

If EVA is positive, then after-tax operating income exceeds the cost of the capital needed to produce that income, and management's actions are adding value for stockholders. Positive EVA on a yearly basis will help ensure that MVA is also positive. Note that whereas MVA applies to the entire firm, EVA can be determined for divisions as well as for the company as a whole, so it is useful as a guide to "reasonable" compensation for divisional as well as top corporate managers.



Define the terms "Market Value Added (MVA)" and "Economic Value Added (EVA)."

How does EVA differ from accounting net income?

3.11 THE FEDERAL INCOME TAX SYSTEM

Corporations must pay out a significant portion of their income as taxes, and individuals are also taxed on their income. We summarize some important points about the U.S. tax system here, based on 2004 provisions. A more detailed discussion is provided in Web Appendix 3A accessed through the ThomsonNOW Web site.

Corporate Taxes

Corporate income is generally taxed by the federal government at rates that begin at 15 percent and go up to 35 percent on taxable income of \$10 million or more.¹³ Thus, the corporate tax structure is *progressive* in the sense that higher rates are imposed on companies with larger incomes. Most state governments also impose income taxes on corporations, with 5 percent being a typical rate. Therefore, larger companies generally pay a rate of about 40 percent on their income, and we typically use 40 percent in our examples. The tax system is incredibly complex, so we do not attempt to cover it in detail. However, as noted above, we do provide a bit more tax information on the ThomsonNOW Web site.

Personal Taxes

Individuals are taxed by the federal government at rates that begin at 10 percent and rise to 35 percent on incomes of \$319,100 or more. Some states also impose a state income tax, with rates varying across states. Note that income on investments held in pension accounts is not taxed until the money is withdrawn, presumably after retirement. Thus, a person might be in the 35 percent tax bracket on his or her ordinary income, but the tax rate would be zero on income earned in a 401(k) or other retirement account (and certain college savings plans).

Interest Paid

Borrowers must pay interest on their debts. For a business, the interest payments are regarded as an expense, and they are deducted when calculating taxable income. Individuals also incur debts and pay interest, but generally individuals cannot deduct interest payments (the big exception is interest on home loans, which, within limits, is deductible).



A Web site of interest concerning federal tax law is <http://www.taxsites.com/federal.html>. From this home page one can visit other sites that provide summaries of recent tax legislation or current information on corporate and individual tax rates. The official government Web site is <http://www.irs.gov>.

¹³ Actually, the marginal corporate tax rate goes up to 38 percent for income between \$15,000,000 and \$18,333,333; however, it then declines to 35 percent for taxable income above \$18,333,333.

Interest Earned

Most interest earned, whether by businesses or individuals, is taxable. An important exception is that interest on most state and local government debt is exempt from federal taxes. State and local bonds are often called “munis,” and they are generally purchased by individuals in high tax brackets.

Dividends Paid

Corporations pay dividends, and dividends paid are generally not a deductible expense. Thus, corporations can deduct interest paid but they cannot deduct dividends. Thus, if a company had a combined federal-plus-state tax rate of 40 percent and \$10 million of pre-tax cash income, it could pay out all \$10 million as interest but only \$6 million of dividends because it would have to pay \$4 million of taxes.¹⁴

Note that if one company uses a lot of debt financing, whereas another with similar operations uses only common stock financing, the stock-financed company will have no interest, hence no interest tax deductions, hence a higher income tax bill. The company that uses debt can thus pass more of its operating income on to investors (stockholders and debtholders). For this reason, our tax system encourages debt financing, as we discuss at length in the chapter on capital structure.

Dividends Received

Dividends received by an individual are taxed at the same tax rate as capital gains, 15 percent.¹⁵ Note that this creates a double tax on dividend income—the corporation that paid the dividend is first taxed, and then the individual who receives it is taxed again. For corporate recipients, the situation is somewhat different—the corporation that receives dividend income can exclude some of the dividends from its taxable income. This provision is in the Tax Code to minimize the amount of *triple taxation* that would otherwise occur—one corporation would pay dividends out of after-tax income, the second corporation would be taxed again on that income, and the person who received dividends from the second corporation would be taxed once more.

Tax Loss Carry-Back and Carry-Forward

Corporation income often fluctuates from year to year, so a firm might be taxed at a 40 percent rate one year and then have a large loss the following year, hence pay no taxes. The Tax Code allows firms to carry losses back to offset profits in prior years, and, if losses haven't been offset by past profits, to carry the remaining losses forward to offset future profits. The effect of this provision is to cause taxes to reflect average income over time.

Capital Gains

Capital gains are, generally speaking, defined as profits from the sale of assets that are not normally bought and sold in the course of business. For individuals, capital gains typically arise from the sale of stocks or bonds at a profit. Thus, if someone buys some Microsoft stock for \$10,000 and later sells it for \$15,000, then he or she will have a \$5,000 capital gain. If the stock was held for less than a

¹⁴ This calculation is not exact, because the tax bill on \$10 million of income would actually be somewhat lower (\$3.4 million) because some of the income would be taxed at lower rates.

¹⁵ If an individual is in the 10 percent tax bracket, the applicable tax rate is only 5 percent.

year, the \$5,000 gain is just added to ordinary income and taxed as such. If the stock had been held for more than a year, then the gain will be taxed at a lower rate. For someone in the top (35 percent) federal tax bracket, the long-term capital gains rate is generally 15 percent. Corporations face somewhat different rules, and individual tax rates also vary a bit.

Depreciation

When a business buys an asset with a life greater than one year, it depreciates the asset over the years in which it will be used. For stockholder reporting, the company generally estimates the actual likely years of use, divides the cost by the number of years, and charges the calculated value as a cost on the income statement each year. (This is called “straight-line depreciation.”) However, for tax purposes Congress has specified different depreciation rates for different types of assets, and those rates generally result in higher depreciation charges than what the company uses for stockholder reporting. We discuss depreciation in greater detail in Chapter 12.

Small Businesses

If a business is a proprietorship or partnership, its income is allocated to its owners in proportion to their ownership interests. If the same business is operated as a corporation, there are two possibilities. First, if the firm meets certain requirements related to size and number of stockholders, then it can elect to be taxed as an S corporation. In this case, for tax purposes it is treated like a partnership. An S corporation can thus enjoy the advantages of the corporate form of organization yet still receive the tax advantages of a partnership. Most small business corporations are actually set up as S corporations. If the firm does not qualify for S corporation status, it is called a C corporation and is taxed at regular corporate tax rates.



Explain the statement, “Our tax rates are progressive.”

What is a “muni” bond, and how are these bonds taxed?

What are long-term capital gains?

How does our tax system influence the use of debt financing by corporations?

Differentiate between S and C corporations.

Tying It All Together

The primary purposes of this chapter were to describe the basic financial statements, to present some background information on cash flows, to differentiate between net cash flow and accounting income, and to provide an overview of the federal income tax system. In the next chapter, we build on this information to analyze a firm’s financial statements.

SELF-TEST QUESTIONS AND PROBLEMS (Solutions Appear in Appendix A)

- ST-1 Key terms** Define each of the following terms:
- Annual report; balance sheet; income statement; statement of cash flows; statement of retained earnings
 - Common stockholders' equity, or net worth; retained earnings; net working capital
 - Depreciation; tangible assets; amortization; intangible assets; EBITDA
 - Net cash flow; accounting profit
 - Operating assets; nonoperating assets
 - Total operating capital; net operating working capital
 - Net operating profit after taxes (NOPAT); operating cash flow; free cash flow
 - Market Value Added (MVA); Economic Value Added (EVA)
 - Progressive tax
 - Capital gain
 - S corporation; C corporation
- ST-2 Net income and cash flow** Last year Rattner Robotics had \$5 million in operating income (EBIT). Its depreciation expense was \$1 million; its interest expense was \$1 million; and its corporate tax rate was 40 percent. At year-end it had \$14 million in current assets, \$4 million in non-interest-bearing current liabilities, and \$15 million in net plant and equipment. Assume that Rattner's only noncash item was depreciation.
- What was the company's net income?
 - What was its net cash flow?
 - What was its net operating profit after taxes (NOPAT)?
 - What was its operating cash flow?
 - What was its net operating working capital (NOWC)?
 - If operating capital at the end of the previous year was \$24 million, what was the company's free cash flow (FCF) for the year?
 - If the firm had \$4.5 million in retained earnings at the beginning of the year and paid out a total dividend of \$1.2 million, what was its retained earnings at the end of the year?

QUESTIONS

- 3-1** What four financial statements are contained in most annual reports?
- 3-2** What do the numbers on financial statements actually represent?
- 3-3** Who are some of the basic users of financial statements, and how do they use them?
- 3-4** 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?
- 3-5** 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*."
- 3-6** Financial statements are based on generally accepted accounting principles (GAAP) and audited by CPA firms, so do investors need to worry about the validity of those statements?
- 3-7** Differentiate between accounting profit and net cash flow. Why do those two numbers differ?
- 3-8** Differentiate between operating cash flow and net cash flow. Why might those two numbers differ?

- 3-9** What's the difference between NOPAT and net income? How does debt affect the relationship between these two items?
- 3-10** What is free cash flow? If you were an investor, why might you be more interested in free cash flow than net income?
- 3-11** Would it be possible for a company to report *negative* free cash flow and still be highly valued by investors; that is, could a negative free cash flow ever be a good thing in the eyes of investors?
- 3-12** What does *double taxation of corporate income* mean? Could income ever be subject to *triple* taxation?
- 3-13** How does the deductibility of interest and dividends by the *paying corporation* affect the choice of financing (that is, the use of debt versus equity)?

PROBLEMS

Easy Problems 1–4

- 3-1** **Income statement** Little Books Inc. recently reported \$3 million of net income. Its EBIT was \$6 million, and its tax rate was 40 percent. 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 of 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.]
- 3-2** **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 percent. What was its charge for depreciation and amortization?
- 3-3** **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.
- 3-4** **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 dividends were paid to shareholders during the year?

Intermediate Problems 5–10

- 3-5** **Balance sheet** Which of the following actions are most likely to directly increase cash as shown on a firm's balance sheet? Explain, and state the assumptions that underlie your answer.
- It issues \$2 million of new common stock.
 - It buys new plant and equipment at a cost of \$3 million.
 - It reports a large loss for the year.
 - It increases the dividends paid on its common stock.
- 3-6** **Statement of retained earnings** Computer World Inc. paid out \$22.5 million in total common dividends and reported \$278.9 million of retained earnings at year-end. The prior year's retained earnings were \$212.3 million. What was the net income?
- 3-7** **Statement of cash flows** W.C. Cycling had \$55,000 in cash at year-end 2004 and \$25,000 in cash at year-end 2005. Cash flow from long-term investing activities totaled $-\$250,000$, and cash flow from financing activities totaled $+\$170,000$.
- What was the cash flow from operating activities?
 - If accruals increased by \$25,000, receivables and inventories increased by \$100,000, and depreciation and amortization totaled \$10,000, what was the firm's net income?
- 3-8** **Cash flow** The Klaven Corporation had operating income (EBIT) of \$750,000 and depreciation expense of \$200,000. It is 100 percent equity financed (no debt), and its corporate tax rate is 40 percent. The firm had no amortization expense. What are net income, net cash flow, and operating cash flow?

- 3-9** MVA Henderson Industries has \$500 million of common equity; its stock price is \$60 per share; and its Market Value Added (MVA) is \$130 million. How many common shares are currently outstanding?
- 3-10** **Cash flow** Bailey Corporation's income statement (dollars are in thousands) is given here:

Sales	\$14,000,000
Operating costs excluding depreciation and amortization	<u>7,000,000</u>
EBITDA	\$ 7,000,000
Depreciation and amortization	<u>3,000,000</u>
EBIT	\$ 4,000,000
Interest	<u>1,500,000</u>
EBT	\$ 2,500,000
Taxes (40%)	<u>1,000,000</u>
Net income	<u>\$ 1,500,000</u>

Its total operating capital is \$20 billion, and its total after-tax dollar cost of operating capital is \$2 billion. During the year, Bailey invested \$1.3 billion in net operating capital.

- What is its NOPAT?
- What is its net cash flow?
- What is its operating cash flow?
- What is its free cash flow?

Challenging
Problems 11–14

- 3-11** **Income statement** Hermann Industries is forecasting the following income statement:

Sales	\$8,000,000
Operating costs excluding depreciation and amortization	<u>4,400,000</u>
EBITDA	\$3,600,000
Depreciation and amortization	<u>800,000</u>
EBIT	\$2,800,000
Interest	<u>600,000</u>
EBT	\$2,200,000
Taxes (40%)	<u>880,000</u>
Net income	<u>\$1,320,000</u>

The CEO would like to see higher sales and a forecasted net income of \$2,500,000.

Assume that operating costs (excluding depreciation and amortization) are 55 percent of sales, and depreciation and amortization and interest expenses will increase by 10 percent. The tax rate, which is 40 percent, will remain the same. What level of sales would generate \$2,500,000 in net income?

- 3-12** **Financial statements** The Davidson Corporation's balance sheet and income statement are given here:

Davidson Corporation: Balance Sheet as of December 31, 2005
(Millions of Dollars)

Assets		Liabilities and Equity	
Cash and equivalents	\$ 15	Accounts payable	\$ 120
Accounts receivable	515	Notes payable	220
Inventories	<u>880</u>	Accruals	<u>280</u>
Total current assets	\$1,410	Total current liabilities	\$ 620
Net plant and equipment	2,590	Long-term bonds	<u>1,520</u>
		Total debt	\$2,140
		Common stock	
		(100 million shares)	260
		Retained earnings	<u>1,600</u>
		Common equity	<u>\$1,860</u>
Total assets	<u>\$4,000</u>	Total liabilities and equity	<u>\$4,000</u>

Davidson Corporation: Income Statement for Year Ending December 31, 2005
(Millions of Dollars)

Sales	\$6,250
Operating costs excluding depreciation and amortization	<u>5,230</u>
EBITDA	\$1,020
Depreciation and amortization	<u>220</u>
EBIT	\$ 800
Interest	<u>180</u>
EBT	\$ 620
Taxes (40%)	<u>248</u>
Net income	<u>\$ 372</u>
Common dividends paid	<u>\$ 146</u>
Earnings per share	\$ 3.72

- All revenues were received in cash during the year and all costs except depreciation and amortization were paid in cash during the year. What was net cash flow? How was it different from reported accounting profit?
- Construct the statement of retained earnings for December 31, 2005.
- How much money has been reinvested in the firm over the years?
- At the present time, how large a check could be written without it bouncing?
- How much money must be paid to current creditors within the next year?

3-13 Free cash flow Financial information for Powell Panther Corporation is shown here:

Powell Panther Corporation: Income Statements for Year Ending December 31
(Millions of Dollars)

	2005	2004
Sales	\$1,200.0	\$1,000.0
Operating costs excluding depreciation and amortization	<u>1,020.0</u>	<u>850.0</u>
EBITDA	\$ 180.0	\$ 150.0
Depreciation and amortization	<u>30.0</u>	<u>25.0</u>
Earnings before interest and taxes	\$ 150.0	\$ 125.0
Interest	<u>21.7</u>	<u>20.2</u>
Earnings before taxes	\$ 128.3	\$ 104.8
Taxes (40%)	<u>51.3</u>	<u>41.9</u>
Net income	<u>\$ 77.0</u>	<u>\$ 62.9</u>
Common dividends	<u>\$ 60.5</u>	<u>\$ 46.4</u>

Powell Panther Corporation: Balance Sheets as of December 31
(Millions of Dollars)

	2005	2004
<i>Assets</i>		
Cash and equivalents	\$ 12.0	\$ 10.0
Accounts receivable	180.0	150.0
Inventories	<u>180.0</u>	<u>200.0</u>
Total current assets	\$372.0	\$360.0
Net plant and equipment	<u>300.0</u>	<u>250.0</u>
Total assets	<u>\$672.0</u>	<u>\$610.0</u>
<i>Liabilities and Equity</i>		
Accounts payable	\$108.0	\$ 90.0
Notes payable	67.0	51.5
Accruals	<u>72.0</u>	<u>60.0</u>
Total current liabilities	\$247.0	\$201.5
Long-term bonds	<u>150.0</u>	<u>150.0</u>
Total debt	\$397.0	\$351.5
Common stock (50 million shares)	50.0	50.0
Retained earnings	<u>225.0</u>	<u>208.5</u>
Common equity	<u>\$275.0</u>	<u>\$258.5</u>
Total liabilities and equity	<u>\$672.0</u>	<u>\$610.0</u>

- What was the 2005 NOPAT?
- What were the 2004 and 2005 net operating working capital?
- What were the 2004 and 2005 total operating capital?
- What was the 2005 free cash flow?
- How would you explain the large increase in 2005 dividends?

3-14 Income and cash flow analysis The Menendez Corporation expects to have sales of \$12 million in 2006. Costs other than depreciation and amortization are expected to be 75 percent of sales, and depreciation and amortization expenses are expected to be \$1.5 million. All sales revenues will be collected in cash, and costs other than depreciation and amortization must be paid for during the year. The corporate tax rate is 40 percent.

- Set up an income statement. What is the expected net cash flow?
- Suppose Congress changed the tax laws so that depreciation and amortization expenses doubled and there were no changes in operations. What would happen to reported profit and net cash flow?
- Now suppose that Congress reduced depreciation and amortization expenses by 50 percent. How would profit and net cash flow be affected?
- Would you prefer that Congress double or halve depreciation and amortization expenses? Why?
- Would a doubling of depreciation and amortization expenses possibly have an adverse effect on stock price and on the ability to borrow money? Explain.

COMPREHENSIVE/SPREADSHEET PROBLEM

3-15 Financial statements, cash flow, and taxes Laiho Industries' 2004 and 2005 balance sheets (in thousands of dollars) are shown below:

	2005	2004
Cash	\$102,850	\$ 89,725
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	<u>\$311,824</u>	<u>\$252,670</u>
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	<u>\$157,605</u>	<u>\$128,774</u>
Total liabilities and equity	<u>\$311,824</u>	<u>\$252,670</u>

- Sales for 2005 were \$455,150,000, and EBITDA was 15 percent of sales. Furthermore, depreciation was 11 percent of net fixed assets, interest was \$8,575,000, the corporate tax rate was 40 percent, and Laiho pays 40 percent of its net income out in dividends. The firm has no amortization expense. Given this information, construct the 2005 income statement.
- Construct the statement of retained earnings for the year ending December 31, 2005, and the 2005 statement of cash flows.
- Calculate net working capital and net operating working capital. What are the differences in these two measures?

- d. Calculate total operating capital, NOPAT, operating cash flow, and free cash flow for 2005.
- e. Calculate the 2005 MVA. There were 10 million shares outstanding and the year-end closing price was \$17.25 per share.
- f. If Laiho increased its dividend payout ratio, what effect would this have on its corporate taxes paid? What effect would this have on the taxes paid by the company's shareholders?

Integrated Case

D'Leon Inc., Part I

3-16 Financial statements and taxes Donna Jamison, a 2000 graduate of the University of Florida with 4 years of banking experience, was recently brought in as assistant to the chairman of the board of D'Leon Inc., a small food producer that operates in north Florida and whose specialty is high-quality pecan and other nut products sold in the snack-foods market. D'Leon's president, Al Watkins, decided in 2004 to undertake a major expansion and to "go national" in competition with Frito-Lay, Eagle, and other major snack-food companies. Watkins felt that D'Leon's products were of a higher quality than the competition's; that this quality differential would enable it to charge a premium price; and that the end result would be greatly increased sales, profits, and stock price.

The company doubled its plant capacity, opened new sales offices outside its home territory, and launched an expensive advertising campaign. D'Leon'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, Watkins 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 D'Leon'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 the financial statements and other data given in Tables IC3-1, IC3-2, IC3-3, and IC3-4. Assume that you are Jamison's assistant, and you must help her answer the following questions for Campo. (Note: We will continue with this case in Chapter 4, and you will feel more comfortable with the analysis there, but answering these questions will help prepare you for Chapter 4. Provide clear explanations, not just yes or no answers!)

- a. What effect did the expansion have on sales, NOPAT, net operating working capital (NOWC), total operating capital, and net income?
- b. What effect did the company's expansion have on its net cash flow, operating cash flow, and free cash flow?
- c. Looking at D'Leon's stock price today, would you conclude that the expansion increased or decreased MVA?
- d. D'Leon purchases materials on 30-day terms, meaning that it is supposed to pay for purchases within 30 days of receipt. Judging from its 2005 balance sheet, do you think D'Leon pays suppliers on time? Explain. If not, what problems might this lead to?
- e. D'Leon spends money for labor, materials, and fixed assets (depreciation) to make products, and still more money to sell those products. Then, it makes sales that result in receivables, which eventually result in cash inflows. Does it appear that D'Leon's sales price exceeds its costs per unit sold? How does this affect the cash balance?
- f. Suppose D'Leon's sales manager told the sales staff to start offering 60-day credit terms rather than the 30-day terms now being offered. D'Leon's competitors react by offering similar terms, so sales remain constant. What effect would this have on the cash account? How would the cash account be affected if sales doubled as a result of the credit policy change?
- g. Can you imagine a situation in which the sales price exceeds the cost of producing and selling a unit of output, yet a dramatic increase in sales volume causes the cash balance to decline?
- h. Did D'Leon finance its expansion program with internally generated funds (additions to retained earnings plus depreciation) or with external capital? How does the choice of financing affect the company's financial strength?

- i. Refer to Tables IC3-2 and IC3-4. Suppose D'Leon broke even in 2005 in the sense that sales revenues equaled total operating costs plus interest charges. Would the asset expansion have caused the company to experience a cash shortage that required it to raise external capital?
- j. If D'Leon started depreciating fixed assets over 7 years rather than 10 years, would that affect (1) the physical stock of assets, (2) the balance sheet account for fixed assets, (3) the company's reported net income, and (4) its cash position? Assume the same depreciation method is used for stockholder reporting and for tax calculations, and the accounting change has no effect on assets' physical lives.
- k. Explain how earnings per share, dividends per share, and book value per share are calculated, and what they mean. Why does the market price per share *not* equal the book value per share?
- l. Explain briefly the tax treatment of (1) interest and dividends paid, (2) interest earned and dividends received, (3) capital gains, and (4) tax loss carry-back and carry-forward. How might each of these items affect D'Leon's taxes?

TABLE IC3-1 *Balance Sheets*

	2005	2004
<i>Assets</i>		
Cash	\$ 7,282	\$ 57,600
Accounts receivable	632,160	351,200
Inventories	<u>1,287,360</u>	<u>715,200</u>
Total current assets	\$1,926,802	\$1,124,000
Gross fixed assets	1,202,950	491,000
Less accumulated depreciation	<u>263,160</u>	<u>146,200</u>
Net fixed assets	\$ 939,790	\$ 344,800
Total assets	<u>\$2,866,592</u>	<u>\$1,468,800</u>
<i>Liabilities and Equity</i>		
Accounts payable	\$ 524,160	\$ 145,600
Notes payable	636,808	200,000
Accruals	<u>489,600</u>	<u>136,000</u>
Total current liabilities	\$1,650,568	\$ 481,600
Long-term debt	723,432	323,432
Common stock (100,000 shares)	460,000	460,000
Retained earnings	<u>32,592</u>	<u>203,768</u>
Total equity	\$ 492,592	\$ 663,768
Total liabilities and equity	<u>\$2,866,592</u>	<u>\$1,468,800</u>

TABLE IC3-2 *Income Statements*

	2005	2004
Sales	\$6,034,000	\$3,432,000
Cost of goods sold	5,528,000	2,864,000
Other expenses	<u>519,988</u>	<u>358,672</u>
Total operating costs excluding depreciation and amortization	<u>\$6,047,988</u>	<u>\$3,222,672</u>
EBITDA	(\$ 13,988)	\$ 209,328
Depreciation and amortization	<u>116,960</u>	<u>18,900</u>
EBIT	(\$ 130,948)	\$ 190,428
Interest expense	<u>136,012</u>	<u>43,828</u>
EBT	(\$ 266,960)	\$ 146,600
Taxes (40%)	<u>(106,784)^a</u>	<u>58,640</u>
Net income	<u>(\$ 160,176)</u>	<u>\$ 87,960</u>
EPS	(\$ 1.602)	\$ 0.880
DPS	\$ 0.110	\$ 0.220
Book value per share	\$ 4.926	\$ 6.638
Stock price	\$ 2.25	\$ 8.50
Shares outstanding	100,000	100,000
Tax rate	40.00%	40.00%
Lease payments	40,000	40,000
Sinking fund payments	0	0

Note:

^a The firm had sufficient taxable income in 2003 and 2004 to obtain its full tax refund in 2005.

TABLE IC3-3 *Statement of Retained Earnings, 2005*

Balance of retained earnings, 12/31/04	\$203,768
Add: Net income, 2005	(160,176)
Less: Dividends paid	<u>(11,000)</u>
Balance of retained earnings, 12/31/05	<u>\$ 32,592</u>

TABLE IC3-4 *Statement of Cash Flows, 2005*

OPERATING ACTIVITIES	
Net income	(\$160,176)
<i>Additions (Sources of Cash)</i>	
Depreciation and amortization	116,960
Increase in accounts payable	378,560
Increase in accruals	353,600
<i>Subtractions (Uses of Cash)</i>	
Increase in accounts receivable	(280,960)
Increase in inventories	<u>(572,160)</u>
Net cash provided by operating activities	(\$164,176)
LONG-TERM INVESTING ACTIVITIES	
Cash used to acquire fixed assets	(\$711,950)
FINANCING ACTIVITIES	
Increase in notes payable	\$436,808
Increase in long-term debt	400,000
Payment of cash dividends	<u>(11,000)</u>
Net cash provided by financing activities	<u>\$825,808</u>
Sum: net decrease in cash	(\$ 50,318)
Plus: cash at beginning of year	<u>57,600</u>
Cash at end of year	<u>\$ 7,282</u>



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Exploring Starbucks' Financial Statements

Over the past decade, Starbucks coffee shops have become an increasingly familiar part of the urban landscape. Currently, the company operates more than 6,000 coffee shops in all 50 states, the District of Columbia, and internationally, and in 2005 it had roughly 80,000 employees.

Thomson ONE can access a wealth of financial information for companies such as Starbucks. To find some background information, begin by entering the company's ticker symbol, SBUX, and then selecting "GO." On the opening screen, you will see a lot of useful information, including a summary of what Starbucks does, a chart of its recent stock price, EPS estimates, some recent news stories, and a list of key financial data and ratios.

In researching a company's operating performance, a good place to start is the recent stock price performance. At the top of the Stock Price Chart, click on the section labeled "Interactive Chart." From this point, we are able to obtain a chart of the company's stock price performance relative to the overall market, as measured by the S&P 500, between 1995 and 2005. To obtain a 10-year chart, go to "Time Frame," click on the down arrow, and select 10 years. Then, click on "Draw" and a 10-year price chart should appear.

As you can see, Starbucks has had its ups and downs, but the company's overall performance has been quite strong, and it has beat the overall market handily.

We can also find Starbucks' recent financial statements. Near the top of your screen, click on the "Financials" tab to find the company's balance sheet, income statement, and statement of cash flows for the past 5 years. Clicking on the Microsoft *Excel* icon downloads these statements directly to a spreadsheet.

Discussion Questions

1. Looking at the most recent year available, what is the amount of total assets on Starbucks' balance sheet? What percentage is fixed assets, such as plant and equipment, and what percentage is current assets? How much has the company grown over the years that are shown?
2. Does Starbucks have a lot of long-term debt? What are the chief ways in which Starbucks has financed assets?
3. Looking at the statement of cash flows, what factors can explain the change in the company's cash position over the last couple of years?
4. Looking at the income statement, what are the company's most recent sales and net income? Over the past several years, what has been the sales growth rate? What has been the growth rate in net income?
5. Over the past few years, has there been a strong correlation between stock price performance and reported earnings?