

CHAPTER 3

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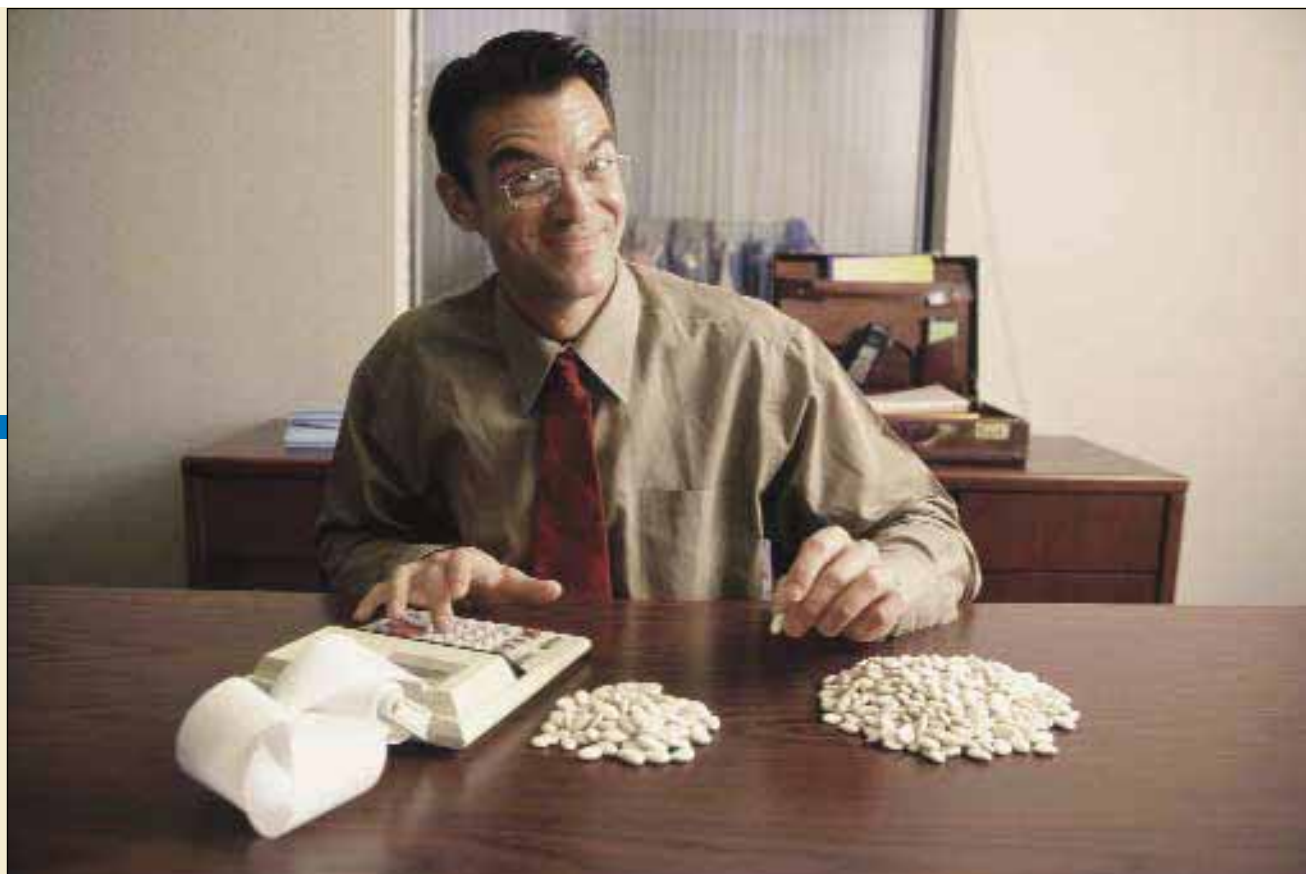
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Accounting is not the same as finance, but if you don't understand the basics of accounting, you won't understand finance, either.

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In Chapter 1 we pointed out that a large corporation is a team effort. All the players—the shareholders, lenders, directors, management, and employees—have a stake in the company's success, and all therefore need to monitor its progress. For this reason the company prepares regular financial accounts and arranges for an independent firm of auditors to certify that these accounts present a "true and fair view."

Until the mid-nineteenth century most businesses were owner-managed and seldom required outside capital beyond personal loans to the proprietor. When businesses were small and there were few outside stakeholders in the firm, accounting could be less formal. But with the industrial revolution and the creation of large railroad and canal companies, the shareholders and bankers demanded information that would help them gauge a firm's financial strength. That was when the accounting profession began to come of age.

We don't want to get lost in the details of accounting practice. But because we will be referring to financial statements throughout this book, it may be useful to review briefly their main fea-

tures. In this chapter we introduce the major financial statements: the balance sheet, the income statement, and the statement of cash flow. We discuss the important differences between income and cash flow and between book values and market values. We also discuss the federal tax system.

This chapter is our first look at financial statements and is meant primarily to serve as a brief review of your accounting class. It will be far from our last look. For example, we will return (in Chapter 17) to see how managers use financial statements to analyze a firm's performance and assess its financial strength.

After studying this chapter you should be able to

- Interpret the information contained in the balance sheet, income statement, and statement of cash flows.
- Distinguish between market and book values.
- Explain why income differs from cash flow.
- Understand the essential features of the taxation of corporate and personal income.

3.1 The Balance Sheet

balance sheet

Financial statement that shows the firm's assets and liabilities at a particular time.

Firms need to raise cash to acquire the many assets used in their businesses. In the process of raising that cash, they also acquire liabilities to those who provide funding. The **balance sheet** presents a snapshot of the firm's assets and liabilities at one particular moment. The assets—representing the uses of the cash raised—are listed on the left-hand side of the balance sheet. The liabilities—representing the sources of that cash—are listed on the right.

Some assets can be turned more easily into cash than others; these are known as *liquid* assets. The accountant puts the most liquid assets at the top of the list and works down to the least liquid. Look, for example, at Table 3–1, which shows the consolidated balance sheet for PepsiCo, Inc., at the end of 2004.¹ (“Consolidated” simply means that the balance sheet shows the position of PepsiCo and any companies it owns.) You can see that Pepsi had \$1,280 million of cash and marketable securities. In addition, it had sold goods worth \$2,999 million but had not yet received payment. These payments are due soon and therefore the balance sheet shows the unpaid bills or *accounts receivable* (or simply *receivables*) as an asset. The next asset consists of inventories. These may be (1) raw materials and ingredients that the firm bought from suppliers, (2) work in process, and (3) finished products waiting to be shipped from the warehouse. Of course, there are always some items that don't fit into neat categories. So there is a fourth entry, *other current assets*.

Up to this point all the assets in Pepsi's balance sheet are likely to be used or turned into cash in the near future. They are therefore described as *current assets*. The next assets listed in the balance sheet are longer-lived or *fixed assets* and include items such as buildings, equipment, and vehicles.

The balance sheet shows that the gross value of Pepsi's property, plant, and equipment is \$15,930 million. This is what the assets originally cost. But they are unlikely to be worth that now. For example, suppose the company bought a delivery van 2 years ago; that van may be worth far less now than Pepsi paid for it. It might in principle be possible for the accountant to estimate separately the value today of the van, but this would be costly and somewhat subjective. Accountants rely instead on rules of thumb to estimate the *depreciation* in the value of assets and with rare exceptions they stick to these rules. For example, in the case of that delivery van the accountant may deduct a third of the original cost each year to reflect its declining value. So if Pepsi bought the van 2 years ago for \$15,000, the balance sheet would show that accumulated depreciation is $2 \times \$5,000 = \$10,000$. Net of depreciation the value is only \$5,000. Table 3–1 shows that Pepsi's total accumulated depreciation on fixed assets is \$7,781 million. So while the assets cost \$15,930 million, their net value in the accounts is only $\$15,930 - \$7,781 = \$8,149$ million.

In addition to its tangible assets, Pepsi also has valuable intangible assets, such as its brand name, skilled management, and a well-trained labor force. Accountants are generally reluctant to record these intangible assets in the balance sheet unless they can be readily identified and valued.

There is, however, one important exception. When Pepsi has acquired other businesses in the past, it has paid more for their assets than the value shown in the firms' accounts. This difference is shown in Pepsi's balance sheet as “goodwill.” Most of the intangible assets on Pepsi's balance sheet consist of goodwill.

Now look at the right-hand portion of Pepsi's balance sheet, which shows where the money to buy the assets came from. The accountant starts by looking at the company's liabilities—that is, the money owed by the company. First come those liabilities that are likely to be paid off most rapidly. For example, Pepsi has borrowed \$1,054 million, due to be repaid shortly. It also owes its suppliers \$4,594 million for goods that have been delivered but not yet paid for. These unpaid bills are shown as *accounts*

¹ We have simplified and eliminated some of the detail in PepsiCo's published financial statements.

TABLE 3-1

CONSOLIDATED BALANCE SHEET FOR PEPSICO, INC. AS OF DECEMBER 31 (millions of dollars)					
Assets	2004	2003	Liabilities and Shareholders' Equity	2004	2003
Current assets			Current liabilities		
Cash and marketable securities	1,280	820	Debt due for repayment	1,054	591
Receivables	2,999	2,830	Accounts payable	4,594	5,213
Inventories	1,541	1,412	Other current liabilities	1,104	611
Other current assets	2,819	1,868	Total current liabilities	6,752	6,415
Total current assets	8,639	6,930	Long-term debt	2,397	1,702
Fixed assets			Deferred income taxes	1,216	1,261
Tangible fixed assets			Other long-term liabilities	4,050	4,075
Property, plant, and equipment	15,930	14,755	Total liabilities	14,415	13,453
Less accumulated depreciation	7,781	6,927	Shareholders' equity		
Net tangible fixed assets	8,149	7,828	Common stock and other paid-in capital	648	1,833
Intangible fixed assets			Retained earnings	12,924	10,041
Goodwill	3,909	3,796	Total shareholders' equity	13,572	11,874
Other intangible assets	1,531	1,587	Total liabilities and shareholders' equity	27,987	25,327
Total intangible fixed assets	5,440	5,383			
Total fixed assets	13,589	13,211			
Other assets	5,759	5,186			
Total assets	27,987	25,327			

Note: Column sums subject to rounding error.
Source: PepsiCo Annual Report, 2004.

payable (or *payables*). Both the borrowings and the payables are debts that Pepsi must repay within the year. They are therefore classified as current liabilities.

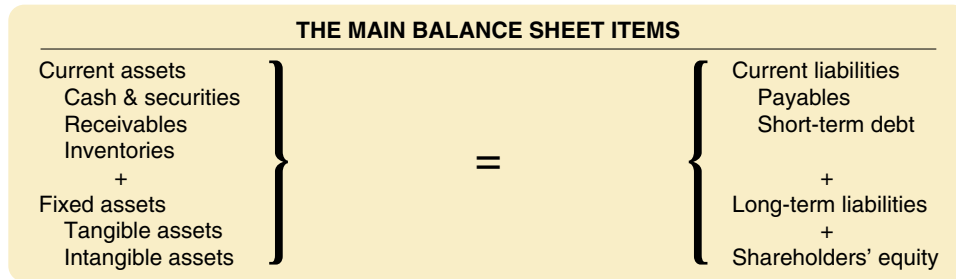
Pepsi's current assets total \$8,639 million; its current liabilities amount to \$6,752 million. Therefore the difference between the value of Pepsi's current assets and its current liabilities is $\$8,639 - \$6,752 = \$1,887$ million. This figure is known as Pepsi's *net current assets* or *net working capital*. It roughly measures the company's potential reservoir of cash.

Below the current liabilities Pepsi's accountants have listed the firm's long-term liabilities—that is, debts that come due after the end of a year. You can see that banks and other investors have made long-term loans to Pepsi of \$2,397 million.

Pepsi's liabilities are financial obligations to various parties. For example, when Pepsi buys goods from its suppliers, it has a liability to pay for them; when it borrows from the bank, it has a liability to repay the loan. Thus the suppliers and the bank have first claim on the firm's assets. What is left over after the liabilities have been paid off belongs to the shareholders. This figure is known as the shareholders' *equity*. For Pepsi the total value of shareholders' equity amounts to \$13,572 million. A small part of this sum (\$648 million) has resulted from the sale of shares to investors. The remainder (\$12,924 million) has come from earnings that Pepsi has retained and invested on shareholders' behalf.

Figure 3-1 shows how the separate items in the balance sheet link together. There are two classes of assets—current assets, which will soon be used or turned into cash, and long-term or “fixed” assets, which may be either tangible or intangible. There are also two classes of liability—current liabilities, which are due for payment shortly, and long-term liabilities.

FIGURE 3-1



The difference between the assets and the liabilities represents the amount of the shareholders' equity. This is the basic balance sheet identity. Shareholders are sometimes called "residual claimants" on the firm. We mean by this that shareholders' equity is what is left over when the liabilities of the firm are subtracted from its assets:

$$\text{Shareholders' equity} = \text{total assets} - \text{total liabilities}$$

Self-Test 3.1

Suppose that Pepsi borrows \$500 million by issuing new long-term bonds. It places \$100 million of the proceeds in the bank and uses \$400 million to buy new machinery. What items of the balance sheet would change? Would shareholders' equity change?

By the way, it is easy to obtain the financial statements of almost any publicly traded firm. For example, the Web site www.reportgallery.com allows you to access the financial reports of over 2,000 companies. In addition, the Market Insight Web site that comes with this text provides Excel spreadsheets containing annual financial statements for many firms over several years. See www.mhhe.com/edumarketinsight.

Book Values and Market Values

Throughout this book we will frequently make a distinction between the book values of the assets shown in the balance sheet and their market values.

Items in the balance sheet are valued according to **generally accepted accounting principles**, commonly called **GAAP**. These state that assets must be shown in the balance sheet at their *historical cost* adjusted for depreciation. **Book values** are therefore "backward-looking" measures of value. They are based on the past cost of the asset, not its current market price or value to the firm. For example, suppose that a printing press cost McGraw-Hill \$1 million 2 years ago but that in today's market such presses sell for \$1.3 million. The book value of the press would be less than its market value, and the balance sheet would understate the value of McGraw-Hill's assets.

Or consider a specialized plant that Intel develops for producing special-purpose computer chips at a cost of \$800 million. The book value of the plant is \$800 million less depreciation. But suppose that shortly after the plant is constructed, a new chip makes the existing one obsolete. The market value of Intel's new plant could fall by 50 percent or more. In this case market value would be less than book value.

The difference between book value and market value is greater for some assets than for others. It is zero in the case of cash but potentially very large for fixed assets where the accountant starts with the initial cost of the fixed assets and then depreciates that figure according to a prespecified schedule. The purpose of depreciation is to allocate the original cost of the asset over its life, and the rules governing the depreciation of asset values do not reflect actual loss of market value. As a result, the market value of fixed assets usually is much higher than the book value, but sometimes it is less.

generally accepted accounting principles (GAAP)

Procedures for preparing financial statements.

book value

Net worth of the firm according to the balance sheet.

The same goes for the right-hand side of the balance sheet. In the case of liabilities the accountant simply records the amount of money that you have promised to pay. For short-term liabilities this figure is generally close to the market value of that promise. For example, if you owe the bank \$1 million tomorrow, the accounts show a book liability of \$1 million. As long as you are not bankrupt, that \$1 million is also roughly the value to the bank of your promise. But now suppose that \$1 million is not due to be repaid for several years. The accounts still show a liability of \$1 million, but how much your debt is worth depends on what happens to interest rates. If interest rates rise after you have issued the debt, lenders may not be prepared to pay as much as \$1 million for your debt; if interest rates fall, they may be prepared to pay more than \$1 million.² Thus the market value of a long-term liability may be higher or lower than the book value. **Market values of assets and liabilities do not generally equal their book values. Book values are based on historical or original values. Market values measure current values of assets and liabilities.**

The difference between book value and market value is likely to be greatest for shareholders' equity. The book value of equity measures the cash that shareholders have contributed in the past plus the cash that the company has retained and reinvested in the business on their behalf. But this often bears little resemblance to the total market value that investors place on the shares.

If the market price of the firm's shares falls through the floor, don't try telling the shareholders that the book value is satisfactory—they won't want to hear. Shareholders are concerned with the market value of their shares; market value, not book value, is the price at which they can sell their shares. Managers who wish to keep their shareholders happy will focus on market values.

We will often find it useful to think about the firm in terms of a *market-value balance sheet*. Like a conventional balance sheet, a market-value balance sheet lists the firm's assets, but it records each asset at its current market value rather than at historical cost less depreciation. Similarly, each liability is shown at its market value. **The difference between the market values of assets and liabilities is the market value of the shareholders' equity claim. The stock price is simply the market value of shareholders' equity divided by the number of outstanding shares.**

EXAMPLE 3.1**Market- versus Book-Value Balance Sheets**

Jupiter has developed a revolutionary auto production process that enables it to produce cars 20 percent more efficiently than any rival. It has invested \$10 billion in producing its new plant. To finance the investment, Jupiter borrowed \$4 billion and raised the remaining funds by selling new shares of stock in the firm. There are currently 100 million shares of stock outstanding. Investors are very excited about Jupiter's prospects. They believe that the flow of profits from the new plant justifies a stock price of \$75.

If these are Jupiter's only assets, the book-value balance sheet immediately after it has made the investment is as follows:

BOOK-VALUE BALANCE SHEET FOR JUPITER MOTORS			
(figures in billions of dollars)			
Assets		Liabilities and Shareholders' Equity	
Auto plant	\$10	Debt	\$4
		Shareholders' equity	6

Investors are placing a *market value* on Jupiter's equity of \$7.5 billion (\$75 per share times 100 million shares). We assume that the debt outstanding is worth \$4

² We will show you how changing interest rates affect the market value of debt in Chapter 5.

billion.³ Therefore, if you owned all Jupiter's shares and all its debt, the value of your investment would be $\$7.5 + \$4 = \$11.5$ billion. In this case you would own the company lock, stock, and barrel and would be entitled to all its cash flows. Because you can buy the entire company for \$11.5 billion, the total value of Jupiter's assets must also be \$11.5 billion. In other words, the market value of the assets must be equal to the market value of the liabilities plus the market value of the shareholders' equity.

We can now draw up the market-value balance sheet as follows:

MARKET-VALUE BALANCE SHEET FOR JUPITER MOTORS (figures in billions of dollars)			
Assets		Liabilities and Shareholders' Equity	
Auto plant	\$11.5	Debt	\$4
		Shareholders' equity	7.5

Notice that the market value of Jupiter's plant is \$1.5 billion more than the plant cost to build. The difference is due to the superior profits that investors expect the plant to earn. Thus in contrast to the balance sheet shown in the company's books, the market-value balance sheet is forward-looking. It depends on the profits that investors expect the assets to provide. ▶

Is it surprising that market value exceeds book value? It shouldn't be. Firms find it attractive to raise money to invest in various projects because they believe the projects will be worth more than they cost. Otherwise, why bother? You will usually find that shares of stock sell for more than the value shown in the company's books.

Self-Test 3.2

- What would be Jupiter's price per share if the auto plant had a market value of \$14 billion?
- How would you reassess the value of the auto plant if the value of outstanding stock were \$8 billion?

3.2 The Income Statement

income statement

Financial statement that shows the revenues, expenses, and net income of a firm over a period of time.

If Pepsi's balance sheet resembles a snapshot of the firm at a particular time, its **income statement** is like a video. It shows how profitable the firm has been during the past year.

Look at the summary income statement in Table 3–2. You can see that during 2004 Pepsi sold goods worth \$29,261 million and that the total expenses of producing and selling goods was $(\$12,142 + \$10,142) = \$22,284$ million. The largest expense item, amounting to \$12,142 million, consisted of the raw materials, labor, and so on, that were needed to produce the goods. Almost all the remaining expenses were administrative expenses such as head office costs, advertising, and distribution.

In addition to these out-of-pocket expenses, Pepsi also made a deduction for the value of the plant and equipment used up in producing the goods. In 2004 this charge for depreciation was \$1,264 million. Thus Pepsi's *total earnings before interest and taxes* (EBIT) were

$$\begin{aligned}
 \text{EBIT} &= \text{total revenues} - \text{costs} - \text{depreciation} \\
 &= 29,261 - 22,284 - 1,264 \\
 &= \$5,713 \text{ million}
 \end{aligned}$$

³ Jupiter has borrowed \$4 billion to finance its investment, but if the interest rate has changed in the meantime, the debt could be worth more or less than \$4 billion.

TABLE 3-2

CONSOLIDATED STATEMENT OF INCOME FOR PEPSICO, INC., 2004 (figures in millions of dollars)	
Net sales	29,261
Cost of goods sold	12,142
Selling, general & administrative expenses	10,142
Depreciation	1,264
Earnings before interest and income taxes	5,713
Interest expense	167
Taxable income	5,546
Taxes	1,334
Net income	4,212
Allocation of net income	
Dividends	1,329
Addition to retained earnings	2,883

Source: PepsiCo Annual Report, 2004.

The remainder of the income statement shows where these earnings went. As we saw earlier, Pepsi has partly financed its investment in plant and equipment by borrowing. In 2004 it paid \$167 million of interest on this borrowing. A further slice of the profit went to the government in the form of taxes. This amounted in 2004 to \$1,334 million. The \$4,212 million that was left over after paying interest and taxes belonged to the shareholders. Of this sum Pepsi paid out \$1,329 million in dividends and reinvested the remaining \$2,883 million in the business. Presumably, these reinvested funds made the company more valuable.

The \$2,883 of earnings that PepsiCo retained, or reinvested, in the firm in 2004 show up on its balance sheet as an increase in shareholders' equity. Notice that retained earnings in Table 3-1 increased by \$2,883 million in 2004, from \$10,041 million to \$12,924 million.

Profits versus Cash Flow

It is important to distinguish between Pepsi's profits and the cash that the company generates. Here are three reasons why profits and cash are not the same:

1. When Pepsi's accountants prepare the income statement, they do not simply count the cash coming in and the cash going out. Instead the accountant starts with the cash payments but then divides these payments into two groups—current expenditures (such as wages) and capital expenditures (such as the purchase of new machinery). Current expenditures are deducted from current profits. However, rather than deducting the cost of machinery in the year it is purchased, the accountant makes an annual charge for depreciation. Thus the cost of machinery is spread over its forecast life.

When calculating profits, the accountant does *not* deduct the expenditure on new equipment that year, even though cash is paid out. However, the accountant *does* deduct depreciation on assets previously purchased, even though no cash is currently paid out. For example, suppose a \$100,000 investment is depreciated by \$10,000 a year.⁴ This depreciation is treated as an annual expense, although the cash actually went out of the door when the asset was first purchased. For this reason, the deduction for depreciation is classified as a *noncash* expense.

To calculate the cash produced by the business, it is necessary to *add back* the depreciation charge (which is not a cash payment) and to *subtract* the expenditure on new capital equipment (which is a cash payment).

⁴ We discuss depreciation rules in Chapter 8.

2. Consider the following stages in a manufacturing business. In period 1 the firm produces the goods; it sells them in period 2 for \$100; and it is paid for them in period 3. The general rule is to recognize revenue at the time of the sale rather than when the cash is actually received. Therefore, although the cash does not arrive until period 3, the sale is included in the income statement for period 2. However, the accountant does not ignore the fact that the bills have not been paid. When the sale is made in period 2, the figure for accounts receivable in the balance sheet is adjusted to show that the company's customers owe an extra \$100 in unpaid bills. Next period, when the customers pay their bills, the firm receives cash and receivables decline by \$100. This payment has no impact on profits in that period. **The cash that the company receives is equal to the sales shown in the income statement less the increase in unpaid bills:**

Period:	2	3
Sales	100	0
- Change in receivables	100	(100)
= Cash received	0	+100

3. The accountant also tries to match the costs of producing the goods with the revenues from the sale. For example, suppose that it costs \$60 in period 1 to produce the goods that are then sold in period 2 for \$100. It would be misleading to say that the business made a loss in period 1 (when it produced the goods) and was very profitable in period 2 (when it sold them). Therefore, to provide a fairer measure of the firm's profitability, the income statement will not show the \$60 as an expense of producing the goods until they are sold in period 2. This practice is known as *accrual accounting*. The accountant gathers together all expenses that are associated with a sale and deducts them from the revenues to calculate profit, even though the expenses may have occurred in an earlier period.

Of course, the accountant cannot ignore the fact that the firm spent money on producing the goods in period 1. So the expenditure will be shown in period 1 as an *investment* in inventories. Subsequently in period 2, when the goods are sold, the inventories would decline again.

In our example, the cash is paid out when the goods are manufactured in period 1, but this expense is not recognized until period 2 when the goods are sold. **The cash outflow is equal to the cost of goods sold, which is shown in the income statement, plus the change in inventories:**

Period:	1	2
Cost of goods sold	0	60
+ Change in inventories	60	(60)
= Cash paid out	+ 60	0

EXAMPLE 3.2 ▶ Profits versus Cash Flows

Suppose a firm pays \$100 in period 1 to produce some goods. It sells those goods for \$150 in period 2, but it does not collect payment from its customers until period 3. The firm would "book" a \$50 profit in period 2, recognizing both cost (\$100) and revenue (\$150) when the sale takes place. However, its cash flow in period 2 would be zero, as we see from the following table:

Period:	1	2	3
Sales	0	150	0
– Change in accounts receivable	0	150	(150)
– Cost of goods sold	0	100	0
– <u>Change in inventories</u>	<u>100</u>	<u>(100)</u>	<u>0</u>
= Net cash flow	–100	0	+150

Think about why this makes sense. In period 1, the firm expends \$100 to produce the product. The product is not sold then, so the cost of producing the product is not recognized in this period; instead, the expenditure is treated as an investment in inventory, which is a negative cash flow. In period 2, the product is sold, but no cash trades hands. Instead, under accrual accounting, \$150 is booked as a sale, with a corresponding investment in accounts receivable. At the same time, the \$100 cost of goods sold is recognized in this period, and because the product is sold, the investment in inventories is reversed. Finally, in period 3, the cash is collected. Accounts receivable is reduced by the \$150 cash inflow. ◀

Self-Test 3.3

Consider a firm similar to the one in Example 3.2. It spends \$200 to produce goods in period 1. In period 2 it sells half of those goods for \$150, but it doesn't collect payment until one period later. In period 3, it sells the other half of the goods for \$150, and it collects payment on these sales in period 4. Calculate the profits and the cash flows for this firm in periods 1 to 4 by completing a table like that in Example 3.2.

3.3 The Statement of Cash Flows

The firm requires *cash* when it buys new plant and machinery or when it pays interest to the bank and dividends to the shareholders. Therefore, the financial manager needs to keep track of the cash that is coming in and going out.

We have seen that the firm's cash flow can be quite different from its net income. These differences can arise for at least two reasons:

1. The income statement does not recognize capital expenditures as expenses in the year that the capital goods are paid for. Instead, it spreads those expenses over time in the form of an annual deduction for depreciation.
2. The income statement uses the accrual method of accounting, which means that revenues and expenses are recognized when sales are made, rather than when the cash is received or paid out.

statement of cash flows

Financial statement that shows the firm's cash receipts and cash payments over a period of time.

The **statement of cash flows** shows the firm's cash inflows and outflows from operations as well as from its investments and financing activities. Table 3–3 is the cash-flow statement for Pepsi. It contains three sections. The first shows the cash flow from operations. This is the cash generated from Pepsi's normal business activities. Next comes the cash that Pepsi has invested in plant and equipment or in the acquisition of new businesses. The final section reports cash flows from financing activities such as the sale of new debt or stock. We will look at these sections in turn.

The first section, cash flow from operations, starts with net income but adjusts that figure for those parts of the income statement that do not involve cash coming in or going out. Therefore, it adds back the allowance for depreciation because

TABLE 3-3

CONSOLIDATED STATEMENT OF CASH FLOWS FOR PEPSICO	
For the year ended December 31, 2004 (figures in millions)	
Cash Provided by Operations	
Net income	4,212
Noncash expenses	
Depreciation and amortization	1,264
Other	(109)
Changes in working capital	
Decrease (increase) in accounts receivable	(130)
Decrease (increase) in inventories	(100)
Increase (decrease) in accounts and taxes payable	(50)
Decrease (increase) in other current assets	(33)
Total change in working capital	(313)
Cash provided by operations	5,054
Cash Flows from Investments	
Cash provided by (used for) disposal of (additions to) property, plant, and equipment	(1,387)
Sales (acquisitions) of other investments	(943)
Cash provided by (used for) investments	(2,330)
Cash Provided by (Used for) Financing Activities	
Additions to (reduction in) short-term debt	1,112
Additions to (reduction in) long-term debt	(8)
Dividends paid	(1,329)
Net issues (repurchases) of stock	(2,090)
Other	51
Cash provided by (used for) financing activities	(2,264)
Net increase (decrease) in cash and cash equivalents	460

Note: Column sums subject to rounding error.

Source: PepsiCo Annual Report, 2004.

depreciation is not a cash outflow, even though it is treated as an expense in the income statement.

Any additions to current assets need to be *subtracted* from net income, since these absorb cash but do not show up in the income statement. Conversely, any additions to current liabilities need to be *added* to net income because these release cash. For example, you can see that the increase of \$130 million in accounts receivable is subtracted from income, because this represents sales that Pepsi includes in its income statement even though it has not yet received payment from its customers. On the other hand, Pepsi increased inventories by \$100 million. The accountant did not deduct this figure as part of the cost of the goods sold by Pepsi in 2004, even though Pepsi purchased these goods. Thus the \$100 million increase in inventories must be subtracted to calculate the cash flow from operations.

We have pointed out that depreciation is not a cash payment; it is simply the accountant's allocation to the current year of the original cost of the capital equipment. However, cash does flow out the door when the firm actually buys and pays for new capital equipment. Therefore, these capital expenditures are set out in the second section of the cash-flow statement. You can see that Pepsi spent \$1,387 on new capital equipment. It also spent \$943 million on other investments. Total cash used by investments was \$2,330 million.

Finally, the third section of the cash-flow statement shows the cash from financing activities. Pepsi increased net short-term debt by \$1,112, but used \$8 million to retire



Understanding Financial Statements



You can find a company's financial statements on its home page, but to avoid getting entangled in a web of company promotional material it is usually easier to log on first to www.reportgallery.com. Find the latest financial statements for a large nonfinancial company and draw up a simplified balance sheet, income statement, and statement of cash flows as in Tables 3-1, 3-2, and 3-3. Some companies' financial statements can be extremely complex; try to find a relatively straightforward business. Also, as far as possible, use the same headings as in these tables, and don't hesitate to group some items as "other current assets" or "other expenses," etc. Look first at your simplified balance sheet. How much was the company owed by its customers in the form of unpaid bills? What liabilities does the company need to meet within a year? What was

the original cost of the company's fixed assets? Now look at the income statement. What were the company's earnings before interest and taxes (EBIT)? Finally, turn to the cash-flow statement. Did changes in working capital add to cash or use it up?

long-term debt; it used \$2,090 million to buy back its stock and \$1,329 million to pay dividends to its stockholders.⁵

To summarize, the cash-flow statement tells us that Pepsi generated \$5,054 million from operations, it spent \$2,330 million on new investments, and it used \$2,264 in financing activities. Pepsi earned and raised more cash than it spent. Therefore, its cash balance rose by \$460 million. To calculate this change in cash balance, we subtract the uses of cash from the sources:

	In Millions
Cash flow from operations	\$5,054
– Cash flow for new investment	– 2,330
+ Cash provided by new financing	– 2,264
= Change in cash balance	460

Look back at Table 3-1 and you will see that cash accounts on the balance sheet did indeed increase by this amount in 2004.

Self-Test 3.4

Would the following activities increase or decrease the firm's cash balance?

- Inventories are increased.
- The firm reduces its accounts payable.
- The firm issues additional common stock.
- The firm buys new equipment.

3.4 Accounting Practice and Malpractice

U.S. accounting rules are spelled out by the Financial Accounting Standards Board (FASB) and its generally accepted accounting principles (GAAP). Yet inevitably, rules and principles leave room for discretion. Managers under pressure to perform may be

⁵ You might think that interest payments also ought to be listed in this section. However, it is usual to include interest in the first section with cash flow from operations. This is because, unlike dividends, interest payments are not discretionary. The firm must pay interest when a payment comes due, so these payments are treated as a business expense rather than as a financing decision.

tempted to take advantage of leeway in how they measure earnings and book values to present their financial statements in the best possible light. And in more extreme cases, some companies simply break the rules.

The years between 2000 and 2004 were filled with a seemingly unending series of accounting scandals. Enron and its auditor Arthur Andersen came to symbolize the crisis in corporate accounting. Enron used so-called special-purpose vehicles to hide debt and inflate profits, and Arthur Andersen was convicted of shredding documents that would have provided evidence concerning Enron's activities. Enron was only the tip of the iceberg, however. Other firms such as Global Crossing, Qwest Communications, and WorldCom misstated profits by billions of dollars. Sunbeam and Xerox used questionable sales assumptions to inflate profits. At the end of 2004, mortgage giant Fannie Mae was found to have improperly accounted for transactions in derivative contracts, reducing its stated profits back to 2001 by \$9 billion. Nor was this just a U.S. phenomenon. Parmalat, an Italian dairy company, was dubbed "Europe's Enron" after it falsified the existence of a bank account to the tune of \$5.5 billion, eventually entering bankruptcy. The French media and entertainment firm Vivendi Universal nearly ended up in bankruptcy after it was accused of accounting fraud.

In response to these and other scandals, Congress passed the Sarbanes-Oxley Act in 2002. The act attempts to ensure that the firm's financial reports accurately represent its financial condition. The act created the Public Company Accounting Oversight Board to oversee the auditing of public companies, requires CEOs and CFOs to personally sign off on the firm's financial statements, and requires independent financial experts to serve on the audit committee of the board of directors.

However, accounting rules still give firms considerable leeway when preparing their financial statements. Here are a few examples of gray areas that allow for judgment calls.

- *Stock options.* If you pay your employees in cash, that cost is deducted from the company's earnings. But until recently, if you instead gave them options to buy the firm's stock, the value of those options would not show up as an expense, and therefore reported earnings would be correspondingly higher. After more than a decade of contentious debate, FASB decided to require firms to treat stock options as an expense starting in 2005. However, there is no standard means to value these options, so there is still considerable room for discretion in their impact on earnings.
- *Cookie-jar reserves.* Firms know that in the course of business things occasionally will go wrong. For example, some customers who buy on credit may not pay their bills. Firms estimate a fair allowance for these events and create reserve accounts to recognize their expected impact on earnings. But sometimes it can be tempting to take a rosy view of the proportion of bills that will go unpaid, and thereby increase reported earnings. In other cases, some firms have actually overestimated likely future expenses, or "overreserved," so that these reserves could be "released" later in a downturn, thus creating the illusion of smooth and consistent earnings growth. In other words, when extra income is needed, the firm can raid its "cookie-jar reserves."
- *Off-balance sheet assets and liabilities.* Suppose that one firm guarantees the debt of another firm. This obligation may require payments down the road, but it may not be reported as part of the firm's outstanding debt. This appears to be one way that Enron was able to hide the extent of its debt obligations from the public.
- *Revenue recognition.* As we saw above, firms record a sale when it is made, not when the customer actually pays. But there are occasions when it can be hard to know when a sale occurs. An extreme (and potentially fraudulent) version of this problem is called "channel stuffing." The firm "sells" large quantities of goods to customers, but gives them the right to later refuse delivery or return the product. The revenue from the "sale" is booked immediately, but the likely returns are not



Called to Account

No one becomes an auditor because the job is adventurous. In recent years, however, the profession has been really rather racy. Auditors have been implicated in fraud after fraud. The Enron scandal brought down Arthur Andersen, which had been one of the profession's five giant firms. Now a scandal at Italy's Parmalat that was uncovered in late 2003 threatens Deloitte & Touche, another global giant. And new scandals are still emerging: most recently, financial manipulation was discovered at Fannie Mae, America's quasi-governmental mortgage lender, and at Nortel Networks, a telecoms-equipment group.

Investors depend on the integrity of the auditing profession. In its absence, capital markets would lack a vital base of trust. So it is no surprise that scandals have triggered changes in the profession. In America it has seen self-regulation dissolved in favor of the Public Company Accounting Oversight Board (PCAOB), in effect, a new regulator. It has been deluged with new rules, restrictions and requirements as part of the Sarbanes-Oxley act. In Europe the Eighth Company Law Directive, which, among other things, deals with the auditing profession, is progressing, albeit slowly, toward enactment. Britain's Office of Fair Trading is in the midst of scrutinizing its audit industry.

One consequence of all this change is that audits have become tougher. The requirement introduced by Sarbanes-

Oxley that auditors report to independent nonexecutive board directors rather than company management has reduced one overt conflict of interest. The certification of financial reports by chief executives and chief financial officers has focused minds. And the PCAOB has begun its inspections of audit quality and internal controls at auditing firms.

Auditors themselves say they have toughened their standards and beefed up internal controls. Audit committees are taking their roles more seriously and asking tougher questions of management and auditors. Yet despite this flurry of activity, behind the scenes there is a feeling among auditors that they are still a long way from meeting all the challenges they face.

Fearing lawsuits, accounting rules are increasingly interpreted prescriptively rather than based on broad principles that are seen as too fuzzy to hold up in court. Auditors themselves, fearful of lawsuits, are inclined to adopt a "check-the-box" approach, adhering strictly to accounting rules rather than exercising (necessarily subjective) judgment. "Who wants to be a partner in a firm that faces billions of dollars in lawsuits?" asks one company boss.

Source: Reprinted from *The Economist*, November 18, 2004.

recognized until they occur in a future accounting period. Channel stuffing hit the headlines in 1997 when the head of Sunbeam Corporation, "Chainsaw" Al Dunlap, allegedly moved millions of dollars of appliances to distributors and retailers to produce record earnings.

Investors worry about the fact that some companies may be particularly tempted to inflate their earnings in such ways. They refer to such firms as having "low-quality" earnings, and they place a correspondingly lower value on the firms' stock.

The nearby box discusses some of the difficult issues currently facing the auditing profession. The box points out that trust in a firm's financial statements is crucial to the operation of capital markets where the firm goes to raise funds. There is a long way to go before that trust is regained.

3.5 Taxes

Taxes often have a major effect on financial decisions. Therefore, we should explain how corporations and investors are taxed.

Corporate Tax

Companies pay tax on their income. Table 3-4 shows that there are special low rates of corporate tax for small companies, but for large companies (those with income over \$18.33 million) the corporate tax rate is 35 percent.⁶ Thus for every \$100 that the firm earns it pays \$35 in corporate tax.

When firms calculate taxable income they are allowed to deduct expenses. These expenses include an allowance for depreciation. However, the Internal Revenue Service (IRS) specifies the rates of depreciation that the company can use for different types of equipment.⁷ The rates of depreciation that are used to calculate taxes are not the same as the rates that are used when the firm reports its profits to shareholders.

⁶ In addition, corporations pay state income taxes, which we ignore here for simplicity.

⁷ We will tell you more about these allowances in Chapter 8.

TABLE 3-4 Corporate tax rates, 2005

Taxable Income, Dollars	Tax Rate, %
0–50,000	15
50,001–75,000	25
75,001–100,000	34
100,001–18,333,333	Varies between 39 and 34
Over 18,333,333	35

TABLE 3-5 Firms A and B both have earnings before interest and taxes (EBIT) of \$100 million, but A pays out part of its profits as debt interest. This reduces the corporate tax paid by A.

	Firm A	Firm B
EBIT	100	100
Interest	<u>40</u>	<u>0</u>
Pretax income	60	100
Tax (35% of pretax income)	<u>21</u>	<u>35</u>
Net income	39	65

Note: Figures in millions of dollars.

The company is also allowed to deduct interest paid to debtholders when calculating its taxable income, but dividends paid to shareholders are not deductible. These dividends are therefore paid out of after-tax income. Table 3-5 provides an example of how interest payments reduce corporate taxes.

The bad news about taxes is that each extra dollar of revenues increases taxable income by \$1 and results in 35 cents of extra taxes. The good news is that each extra dollar of expense *reduces* taxable income by \$1 and therefore reduces taxes by 35 cents. For example, if the firm borrows money, every dollar of interest it pays on the loan reduces taxes by 35 cents. Therefore, after-tax income is reduced by only 65 cents.

Self-Test 3.5

Recalculate the figures in Table 3-5 assuming that Firm A now has to make interest payments of \$60 million. What happens to taxes paid? Does net income fall by the additional \$20 million interest payment compared with the case considered in Table 3-5, where interest expense was only \$40 million?

When firms make profits, they pay 35 percent of the profits to the Internal Revenue Service. But the process doesn't work in reverse; if the firm makes a loss, the IRS does not simply send it a check for 35 percent of the loss. However, the firm can carry the losses back, deduct them from taxable income in earlier years, and claim a refund of past taxes. Losses can also be carried forward and deducted from taxable income in the future.⁸

Personal Tax

Table 3-6 shows the U.S. rates of personal tax. Notice that as income increases the tax rate also increases. Notice also that the top personal tax rate is higher than the top corporate rate.

marginal tax rate

Additional taxes owed per dollar of additional income.

The tax rates presented in Table 3-6 are **marginal tax rates**. The marginal tax rate is the tax that the individual pays on each *extra* dollar of income. For example, as a single taxpayer, you would pay 10 cents of tax on each extra dollar you earn when your income is below \$7,300, but once income exceeds \$7,300, you would pay 15 cents of tax on each extra dollar of income up to an income of \$29,700. If your total

⁸ Losses can be carried back for a maximum of 3 years and forward for up to 15 years.



Tax Rates



The schedule of tax rates for individuals changes frequently. Check the latest schedules on either www.irs.gov or finance.yahoo.com. What is your marginal tax rate if you are single with a taxable income of \$70,000? What is your average tax rate?

income is \$40,000, your tax bill is 10 percent of the first \$7,300 of income, 15 percent of the next \$22,400 (i.e., 29,700 – 7,300), and 25 percent of the remaining \$10,300:

$$\text{Tax} = (.10 \times \$7,300) + (.15 \times \$22,400) + (.25 \times \$10,300) = \$6,665$$

average tax rate

Total taxes owed divided by total income.

The **average tax rate** is simply the total tax bill divided by total income. In this example it is $\$6,665/\$40,000 = .167 = 16.7$ percent. Notice that the average rate is below the marginal rate. This is because of the lower rates on the first \$29,700.

Self-Test 3.6

What are the average and marginal tax rates for a single taxpayer with a taxable income of \$70,000? What are the average and marginal tax rates for married taxpayers filing joint returns if their joint taxable income is also \$70,000?

The tax rates in Table 3–6 apply to “ordinary income,” primarily income earned as salary or wages. Interest earnings also are treated as ordinary income. Other investment income is treated differently, however.

For example, dividend income for most individual investors in the United States is taxed at a 15 percent rate. Remember that each dollar of income that the company earns is taxed at the corporate tax rate. If the company then pays a dividend out of this after-tax income, the shareholder also pays personal income tax on the dividend, and so the company’s original earnings are taxed twice, first as corporate income and then as dividend income. This treatment is commonly dubbed the “double taxation” of corporate earnings. Suppose instead that the company earns a dollar which is paid out as interest. The dollar escapes corporate tax because the interest payment is considered a business expense that reduces the firm’s taxable income, but the individual who

TABLE 3–6 Personal tax rates, 2005

Taxable Income (dollars)		
Single Taxpayers	Married Taxpayers Filing Joint Returns	Tax Rate, %
0–7,300	0–14,600	10
7,300–29,700	14,600–59,400	15
29,700–71,950	59,400–119,950	25
71,950–150,150	119,950–182,800	28
150,150–326,450	182,800–326,450	33
326,450 and above	326,450 and above	35

receives the interest must pay personal tax at the rate on ordinary income. Financial managers need to worry about the tax treatment of investment income, because tax policy will affect the prices individuals are willing to pay for the company's stock or bonds. We will return to these issues in Part 5 of the text.

Capital gains are also taxed, but only when the capital gains are realized. For example, suppose that you bought Bio-technics stock when it was selling for 10 cents a share. Its market price is now \$1 a share. As long as you hold on to your stock, there is no tax to pay on your gain. But if you sell, the 90 cents of capital gain is taxed. The marginal tax rate on capital gains for most shareholders is 15 percent.

The tax rates in Table 3–6 apply to individuals. But financial institutions are major investors in corporate securities. These institutions often have special tax provisions. For example, pension funds are not taxed on interest or dividend income or on capital gains.

SUMMARY

What information is contained in the balance sheet, income statement, and statement of cash flows?

Investors and other stakeholders in the firm need regular financial information to help them monitor the firm's progress. Accountants summarize this information in a balance sheet, income statement, and statement of cash flows.

The **balance sheet** provides a snapshot of the firm's assets and liabilities. The assets consist of current assets that can be rapidly turned into cash and fixed assets such as plant and machinery. The liabilities consist of current liabilities that are due for payment within a year and long-term debts. The difference between the assets and the liabilities represents the amount of the shareholders' equity.

The **income statement** measures the profitability of the company during the year. It shows the difference between revenues and expenses.

The **statement of cash flows** measures the sources and uses of cash during the year. The change in the company's cash balance is the difference between sources and uses.

What is the difference between market and book value?

It is important to distinguish between the book values that are shown in the company accounts and the market values of the assets and liabilities. **Book values** are historical measures based on the original cost of an asset. For example, the assets in the balance sheet are shown at their historical cost less an allowance for depreciation. Similarly, the figure for shareholders' equity measures the cash that shareholders have contributed in the past or that the company has reinvested on their behalf. In contrast, **market value** is the current price of an asset or liability.

Why does accounting income differ from cash flow?

Income is not the same as cash flow. There are two reasons for this: (1) Investment in fixed assets is not deducted immediately from income but is instead spread over the expected life of the equipment, and (2) the accountant records revenues when the sale is made, rather than when the customer actually pays the bill, and at the same time deducts the production costs even though those costs may have been incurred earlier.

What are the essential features of the taxation of corporate and personal income?

For large companies the **marginal rate of tax** on income is 35 percent. In calculating taxable income the company deducts an allowance for depreciation and interest payments. It cannot deduct dividend payments to the shareholders.

Individuals are also taxed on their income, which includes dividends and interest on their investments. Capital gains are taxed, but only when the investment is sold and the gain realized.

QUIZ

- Balance Sheet.** Construct a balance sheet for Sophie's Sofas given the following data. What is shareholders' equity?

 - Cash balances = \$10,000
 - Inventory of sofas = \$200,000
 - Store and property = \$100,000
 - Accounts receivable = \$22,000
 - Accounts payable = \$17,000
 - Long-term debt = \$170,000
- Financial Statements.** Earlier in the chapter, we characterized the balance sheet as providing a snapshot of the firm at one point in time and the income statement as providing a video. What did we mean by this? Is the statement of cash flow more like a snapshot or a video?
- Income versus Cash Flow.** Explain why accounting income generally will differ from a firm's cash inflows.
- Working Capital.** QuickGrow is in an expanding market, and its sales are increasing by 25 percent per year. Would you expect its net working capital to be increasing or decreasing?
- Tax Rates.** Using Table 3–6, calculate the marginal and average tax rates for a single taxpayer with the following incomes:

 - \$20,000
 - \$50,000
 - \$300,000
 - \$3,000,000
- Tax Rates.** What would be the marginal and average tax rates for a *corporation* with an income level of \$100,000?
- Taxes.** A married couple earned \$95,000 in 2005. How much did they pay in taxes? What were their marginal and average tax brackets?
- Cash Flows.** What impact will the following actions have on the firm's cash balance?

 - The firm sells some goods from inventory.
 - The firm sells some machinery to a bank and leases it back for a period of 20 years.
 - The firm buys back 1 million shares of stock from existing shareholders.

PRACTICE PROBLEMS

- Balance Sheet/Income Statement.** The year-end 2005 balance sheet of Brandex Inc. listed common stock and other paid-in capital at \$1,100,000 and retained earnings at \$3,400,000. The next year, retained earnings were listed at \$3,700,000. The firm's net income in 2006 was \$900,000. There were no stock repurchases during the year. What were the dividends paid by the firm in 2006?
- Taxes.** You have set up your tax preparation firm as an incorporated business. You took \$70,000 from the firm as your salary. The firm's taxable income for the year (net of your salary) was \$30,000. How much taxes must be paid to the federal government, including both your personal taxes and the firm's taxes? Assume you pay personal taxes as an unmarried taxpayer. By how much will you reduce the total tax bill by reducing your salary to \$50,000, thereby leaving the firm with taxable income of \$50,000? Use the tax rates presented in Tables 3–4 and 3–6.
- Market versus Book Values.** The founder of Alchemy Products, Inc., discovered a way to turn lead into gold and patented this new technology. He then formed a corporation and invested \$200,000 in setting up a production plant. He believes that he could sell his patent for \$50 million.

- a. What are the book value and market value of the firm?
 b. If there are 2 million shares of stock in the new corporation, what would be the price per share and the book value per share?
12. **Income Statement.** Sheryl's Shingles had sales of \$10,000 in 2005. The cost of goods sold was \$6,500, general and administrative expenses were \$1,000, interest expenses were \$500, and depreciation was \$1,000. The firm's tax rate is 35 percent.
- a. What is earnings before interest and taxes?
 b. What is net income?
 c. What is cash flow from operations?
13. **Cash Flow.** Can cash flow from operations be positive if net income is negative? Can operating cash flow be negative if net income is positive? Give examples.
14. **Cash Flows.** Ponzi Products produced 100 chain letter kits this quarter, resulting in a total cash outlay of \$10 per unit. It will sell 50 of the kits next quarter at a price of \$11, and the other 50 kits in two quarters at a price of \$12. It takes a full quarter for it to collect its bills from its customers. (Ignore possible sales in earlier or later quarters.)
- a. Prepare an income statement for Ponzi for today and for each of the next three quarters. Ignore taxes.
 b. What are the cash flows for the company today and in each of the next three quarters?
 c. What is Ponzi's net working capital in each quarter?
15. **Profits versus Cash Flow.** During the last year of operations, accounts receivable increased by \$10,000, accounts payable increased by \$5,000, and inventories decreased by \$2,000. What is the total impact of these changes on the difference between profits and cash flow?
16. **Income Statement.** A firm's income statement included the following data. The firm's average tax rate was 20 percent.
- | | |
|-------------------------|---------|
| Cost of goods sold | \$8,000 |
| Income taxes paid | 2,000 |
| Administrative expenses | 3,000 |
| Interest expense | 1,000 |
| Depreciation | 1,000 |
- a. What was the firm's net income?
 b. What must have been the firm's revenues?
 c. What was EBIT?
17. **Profits versus Cash Flow.** Butterfly Tractors had \$14 million in sales last year. Cost of goods sold was \$8 million, depreciation expense was \$2 million, interest payment on outstanding debt was \$1 million, and the firm's tax rate was 35 percent.
- a. What was the firm's net income and net cash flow?
 b. What would happen to net income and cash flow if depreciation were increased by \$1 million? How do you explain the differing impact of depreciation on income versus cash flow?
 c. Would you expect the change in income and cash flow to have a positive or negative impact on the firm's stock price?
 d. Now consider the impact on net income and cash flow if the firm's interest expense were \$1 million higher. Why is this case different from part (b)?
18. **Cash Flow.** Candy Canes, Inc., spends \$100,000 to buy sugar and peppermint in April. It produces its candy and sells it to distributors in May for \$150,000, but it does not receive payment until June. For each month, find the firm's sales, net income, and net cash flow.
19. **Financial Statements.** Here are the 2005 and 2006 (incomplete) balance sheets for Nobel Oil Corp.

NOBEL OIL CORP. BALANCE SHEET, AS OF END OF YEAR

Assets	2005	2006	Liabilities and Owners' Equity	
			2005	2006
Current assets	\$ 310	\$ 420	Current liabilities	\$210
Net fixed assets	1,200	1,420	Long-term debt	830
				920



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- a. What was owners' equity at the end of 2005 and 2006?
 - b. If Nobel paid dividends of \$100 in 2006, and made no stock issues, what must have been net income during the year?
 - c. If Nobel purchased \$300 in fixed assets during the year, what must have been the depreciation charge on the income statement?
 - d. What was the change in net working capital between 2005 and 2006?
 - e. If Nobel issued \$200 of new long-term debt, how much debt must have been paid off during the year?
20. **Financial Statements.** South Sea Baubles has the following (incomplete) balance sheet and income statement.

BALANCE SHEET, AS OF END OF YEAR (figures in millions of dollars)					
Assets	2005	2006	Liabilities and Shareholders' Equity	2005	2006
Current assets	\$ 90	\$140	Current liabilities	\$ 50	\$ 60
Net fixed assets	800	900	Long-term debt	600	750

INCOME STATEMENT, 2006 (figures in millions of dollars)	
Revenue	\$1,950
Cost of goods sold	1,030
Depreciation	350
Interest expense	240

- a. What is shareholders' equity in 2005 and 2006?
- b. What is net working capital in 2005 and 2006?
- c. What is taxable income and taxes paid in 2006? Assume the firm pays taxes equal to 35 percent of taxable income.
- d. What is cash provided by operations during 2006? Pay attention to changes in net working capital, using Table 3–3 as a guide.
- e. Net fixed assets increased from \$800 million to \$900 million during 2006. What must have been South Sea's *gross* investment in fixed assets during 2006?
- f. If South Sea reduced its outstanding accounts payable by \$35 million during the year, what must have happened to its other current liabilities?

The following table contains data on Fincorp, Inc., that you should use for problems 21–28. The balance sheet items correspond to values at year-end of 2005 and 2006, while the income statement items correspond to revenues or expenses during the year ending in either 2005 or 2006. All values are in thousands of dollars.

21. **Balance Sheet.** Construct a balance sheet for Fincorp for 2005 and 2006. What is shareholders' equity?
22. **Working Capital.** What happened to net working capital during the year?
23. **Income Statement.** Construct an income statement for Fincorp for 2005 and 2006. What were reinvested earnings for 2006? How does that compare with the increase in shareholders' equity between the two years?
24. **Earnings per Share.** Suppose that Fincorp has 500,000 shares outstanding. What were earnings per share?
25. **Taxes.** What was the firm's average tax bracket for each year? Do you have enough information to determine the marginal tax bracket?
26. **Balance Sheet.** Examine the values for depreciation in 2006 and net fixed assets in 2005 and 2006. What was Fincorp's gross investment in plant and equipment during 2006?
27. **Cash Flows.** Construct a statement of cash flows for Fincorp for 2006.

Excel

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	2005	2006
Revenue	\$4,000	\$4,100
Cost of goods sold	1,600	1,700
Depreciation	500	520
Inventories	300	350
Administrative expenses	500	550
Interest expense	150	150
Federal and state taxes*	400	420
Accounts payable	300	350
Accounts receivable	400	450
Net fixed assets†	5,000	5,800
Long-term debt	2,000	2,400
Notes payable	1,000	600
Dividends paid	410	410
Cash and marketable securities	800	300

* Taxes are paid in their entirety in the year that the tax obligation is incurred.

† Net fixed assets are fixed assets net of accumulated depreciation since the asset was installed.



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28. **Book versus Market Value.** Now suppose that the *market value* (in thousands of dollars) of Fincorp's fixed assets in 2006 is \$6,000 and that the value of its long-term debt is only \$2,400. In addition, the consensus among investors is that Fincorp's past investments in developing the skills of its employees are worth \$2,900. This investment of course does not show up on the balance sheet. What will be the price per share of Fincorp stock?

CHALLENGE PROBLEM

29. **Taxes.** Reconsider the data in problem 10 which imply that you have \$100,000 of total pretax income to allocate between your salary and your firm's profits. What allocation will minimize the total tax bill? *Hint:* Think about marginal tax rates and the ability to shift income from a higher marginal bracket to a lower one.

STANDARD
& POORS

1. Find Microsoft and General Motors on Market Insight (www.mhhe.com/edumarketinsight), and examine the financial statements of each. Which firm uses more debt finance? Which firm has higher cash as a percentage of total assets? Which has higher profits per dollar of total assets? Which has higher profits per dollar of shareholders' equity?
2. Find information on two highly profitable technology firms, like Intel (INTC) and Microsoft (MSFT), and two auto firms, such as Ford (F) and General Motors (GM), at www.mhhe.com/edumarketsight. Which firms have the higher ratio of market value to book value of equity? Does this make sense to you? Which firms pay out a higher fraction of their profits as dividends to shareholders? Does this make sense?

SOLUTIONS TO SELF-TEST QUESTIONS

- 3.1 Cash and equivalents would increase by \$100 million. Property, plant, and equipment would increase by \$400 million. Long-term debt would increase by \$500 million. Shareholders' eq-

- equity would not increase: assets and liabilities have increased equally, leaving shareholders' equity unchanged.
- 3.2 a. If the auto plant were worth \$14 billion, the equity in the firm would be worth $\$14 - \$4 = \$10$ billion. With 100 million shares outstanding, each share would be worth \$100.
b. If the outstanding stock were worth \$8 billion, we would infer that the market values the auto plant at $\$8 + \$4 = \$12$ billion.
- 3.3 The profits for the firm are recognized in periods 2 and 3 when the sales take place. In both of those periods, profits are $\$150 - \$100 = \$50$. Cash flows are derived as follows.

Period	1	2	3	4
Sales	0	150	150	0
- Change in accounts receivable	0	150	0	(150)
- Cost of goods sold	0	100	100	0
- Change in inventories	<u>200</u>	<u>(100)</u>	<u>(100)</u>	<u>0</u>
= Net cash flow	-200	0	+150	+150

In period 2, half the units are sold for \$150 but no cash is collected, so the entire \$150 is treated as an increase in accounts receivable. Half the \$200 cost of production is recognized, and a like amount is taken out of inventory. In period 3, the firm sells another \$150 of product but collects \$150 from its previous sales, so there is no change in outstanding accounts receivable. Net cash flow is the \$150 collected in this period on the sale that occurred in period 2. In period 4, cash flow is again \$150, as the accounts receivable from the sale in period 3 are collected.

- 3.4 a. An increase in inventories uses cash, reducing the firm's net cash balance.
b. A reduction in accounts payable uses cash, reducing the firm's net cash balance.
c. An issue of common stock is a source of cash.
d. The purchase of new equipment is a use of cash, and it reduces the firm's net cash balance.
- 3.5

	Firm A	Firm B
EBIT	100	100
Interest	<u>60</u>	<u>0</u>
Pretax income	40	100
Tax (35% of pretax income)	<u>14</u>	<u>35</u>
Net income	26	65

Note: Figures in millions of dollars.

Taxes owed by Firm A fall from \$21 million to \$14 million. The reduction in taxes is 35 percent of the extra \$20 million of interest income. Net income does not fall by the full \$20 million of extra interest expense. It instead falls by interest expense less the reduction in taxes, or $\$20 \text{ million} - \$7 \text{ million} = \$13 \text{ million}$.

- 3.6 For a single taxpayer with taxable income of \$70,000, total taxes paid are
- $$.10 \times 7,300 + [.15 \times (29,700 - 7,300)] + [.25 \times (70,000 - 29,700)] = \$14,165$$

The marginal tax rate is 25 percent, but the average tax rate is only $14,165/70,000 = .202$, or 20.2 percent.

For the married taxpayers filing jointly with taxable income of \$70,000, total taxes paid are

$$(.10 \times 14,600) + .15 (59,400 - 14,600) + .25 (70,000 - 59,400) = \$10,830$$

The marginal tax rate is 25 percent, and the average tax rate is $10,830/70,000 = .155$, or 15.5 percent.

