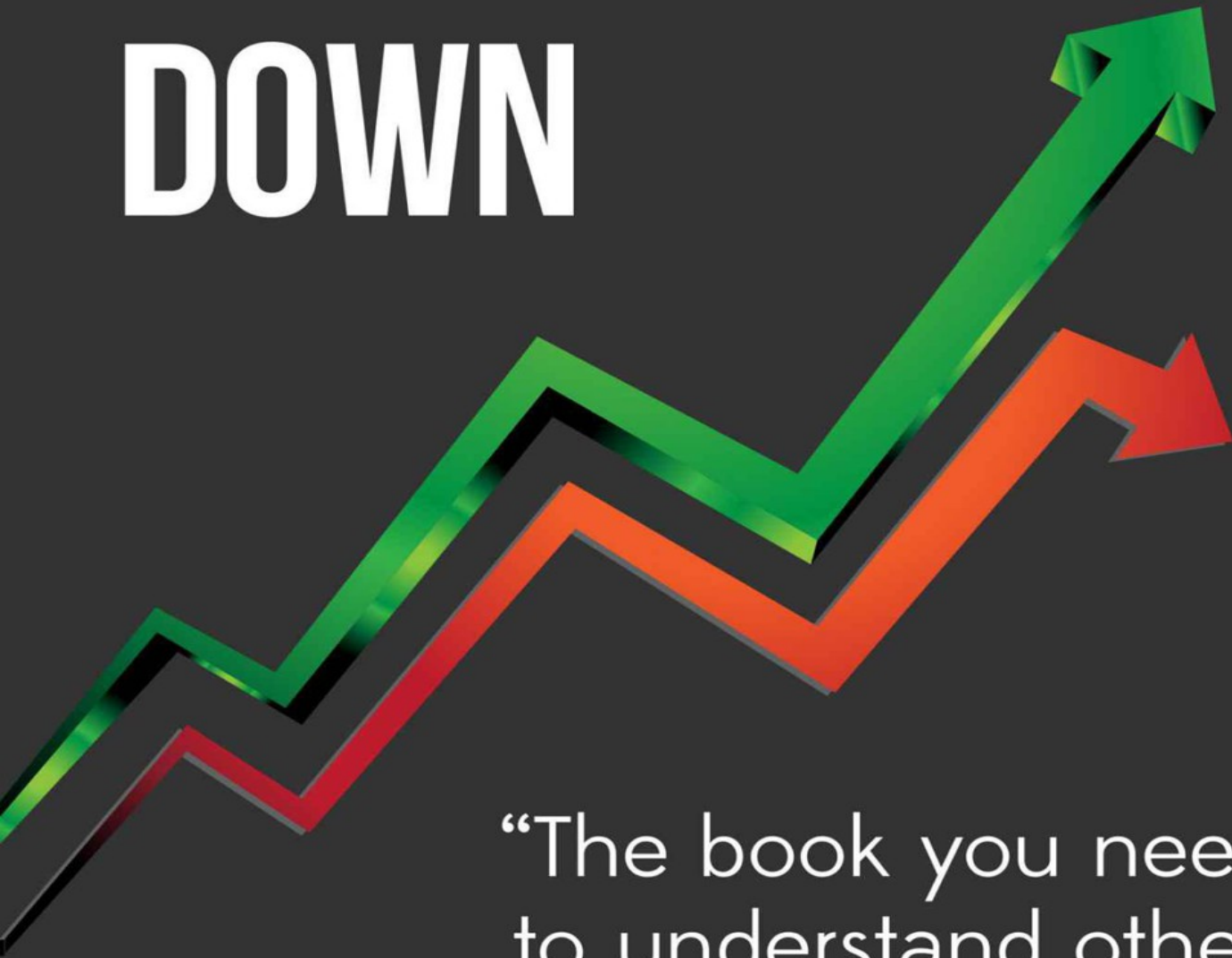


William Pike • Patrick Gregory

WHY STOCKS GO UP AND DOWN



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Why Stocks Go Up and Down

William Pike and Patrick Gregory

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September 2013

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WHY STOCKS GO UP AND DOWN

by WILLIAM H. PIKE and PATRICK C. GREGORY

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LCCN: 2013908933

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First Kindle Edition

Prepared by Vally Sharpe

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TO THE READER

“The fundamental knowledge all investors need.”

There are many popular books about investing which try to convey wisdom without first conveying adequate knowledge. *Why Stocks Go Up and Down* does just the opposite. It presents the basic fundamental knowledge that all investors need. This will enable you to get more value from other books which deal with specific aspects or approaches to investing. *Why Stocks Go Up and Down* goes well beyond other introductory investment books. It will not insult your intelligence. In fact, it will go into more detail in some areas than you may need, but by doing so, the major concepts should stay with you, and you will not find yourself having more questions than you started with.

The book is the outgrowth of introductory investment courses we have taught at the college level and through professional organizations such as the Boston Security Analysts Society for more than 20 years. Our students are newcomers to the investment business who have had little or no experience with accounting, finance, or the stock market. The book has evolved to provide them—and other interested investors—with the fundamentals needed for successful investing.

Part 1 introduces the basic concepts of business ownership and financial statement analysis. The emphasis on accounting may not seem relevant at first, but stock prices are directly related to financial statements. To ignore this would be an oversimplification, and would leave readers with major gaps in their knowledge. Part 1 also covers the process of “going public” and the difference between primary and secondary equity stock offerings. This section will clear up many common misconceptions.

Part 2 is about bonds and preferred stock (which is quite different from common stock). To understand a company and its stock price behavior, it is important to understand all the instruments a company can use to raise capital. It is, however, possible to skip over Part 2 without losing the

continuity of the other parts of the book. In fact, many readers skip from Part 1 to Part 4 in their first time through the book.

Part 3 explains more fully how income statements and balance sheets relate to stock prices. When you understand concepts such as write-offs, or the difference between earnings and cash flow, you will be better able to understand stock price behavior.

Part 4 discusses stock price valuation. It will give you a framework for understanding stock prices, and point to what you should watch for in your investments. It will help you avoid many mistakes that new investors make. This is the part that most interests new investors, but readers will get more value from Part 4 by reading the other parts first. The final chapter is an investment analysis of Abbott Labs that draws on many of the concepts in the book, and takes readers through the thinking process of a professional investment analyst.

A glossary at the end gives succinct definitions of many terms used in the book.

Investing is like many other aspects of life: the more thoroughly you prepare, and the more you work at it, the better you will do. There is no substitute for watching your stocks respond to day-to-day news concerning the economic environment, the stock market, and the company you are analyzing. The background that you should take from this book will help you gain that experience much faster.

William H. Pike, CFA
Patrick C. Gregory, CFA

Part 1

Basics: Starting a Business, Financial Statements, and Common Stock

1

Starting a Business

Our story begins in late 2009, when Mr. Jones had the inspiration that he could build a better mousetrap. He decided to go into business to see if he could make some money. He was handy in the workshop, and he knew where to buy some wood and metal to make the mousetraps, as well as where to buy a screwdriver, a saw, and other tools used in the construction process. He even had a friend who owned a store and said he would sell Jones' traps. Jones knew that he would have to keep financial records of what he bought and sold and the profit he made, but he recognized that his knowledge of business and accounting was limited. So he asked his good friend, Mr. Greenshades, who had been an accountant for many years, if he would advise him. Greenshades was quite willing, knowing that once the business was underway, he would be able to charge a fee for his services. Greenshade's first advice to Jones was to open a bank account for his mousetrap business and keep it separate from his personal account.

On January 1, 2010, Jones deposited \$100 into the mousetrap company account and declared himself in business. He named his company the Jones Mousetrap Company, or JMC for short. At this point, JMC is considered a sole proprietorship. This means the company is owned by one person and is not yet incorporated (see Chapter 2).

Greenshades advised Jones to keep accounting records in the same manner as most other companies, which means having two financial statements: a balance sheet and an income statement. The balance sheet has three major categories, which show, for a given point in time: (1) assets, which are anything of value that the company owns or has claim to; (2) liabilities, which are debts the company owes at the same point in time; and (3) owner's equity, which reflects the combination of the amount of money put into the company by the owners and the total amount of profit it has

earned through the years, less any dividends the company has paid to its owners through the years. Owner's equity means the same thing as Ownership equity.

In the common form of the balance sheet, all assets are recorded on the left side of the balance sheet, and liabilities and ownership equity are recorded on the right side:

Asset	Liabilities
	Ownership Equity

Because Jones put \$100 into the company on January 1, the balance sheet at that time looked like this:

Assets	Liabilities
Cash \$100	
	Ownership Equity
	Jones put in \$100

What this really says is that the company has \$100 worth of assets, and Jones (as the sole owner of the company) has a claim, or equity, of \$100 in the company. The term *equity* is frequently a source of confusion because, as we will see, it is used in many different contexts. At this point it will be helpful just to use the definition above and remember where equity goes on the balance sheet. Since JMC has not made or sold any mousetraps, there is no statement of income yet.

After opening the bank account, Jones set out to make his initial purchases. He spent \$30 on wood and metal, from which the traps will be made, and another \$20 on screwdrivers, saws, and other equipment that will be used to make the traps. The \$30 worth of wood and metal is called *inventory*. The \$20 worth of tools is called *equipment*. The difference is this: *Inventory* consists of the materials from which the traps will be made; it will be used up and ultimately become part of the mousetraps that will be sold. *Equipment* does not become part of the mousetraps; it is only used to make

the mousetraps. While equipment will not be used up during the manufacturing process, it may wear out or become obsolete and need to be replaced.

Definitions

- **Inventory.** The material or materials that will be used and will become part of the products that will ultimately be sold. Inventory may include raw material, partially completed goods, known as work in progress or WIP, or finished goods waiting to be sold.
- **Equipment.** The tools that are used to help produce the goods that are to be sold. Usually, the equipment is expected to last longer than one year.

At this point, then, the JMC balance sheet looks like this:

Assets		Liabilities	
Cash	\$50		
Inventory	30		
		Ownership Equity	
Equipment	20	Jones put in	\$100
Total	<u>\$100</u>	Total	<u>\$100</u>

All that has happened thus far is that one asset (cash) has been changed into two others (inventory and equipment).

It is customary to distinguish on the balance sheet between *current assets*, consisting of cash and items that are expected to be converted into cash within one year, and *long-term assets* which are expected to be around for more than one year. The most common long-term assets include tools, office equipment, buildings, company cars and trucks, and the like. We will see other types of long-term assets later. If Jones wanted to build a factory in which to make his traps, the cost of the factory and the cost of the property on which it was built would be long-term assets, because they would be around for well over one year. Buildings, tools, motor vehicles, and so on are

often grouped together on the balance sheet as *property, plant, and equipment or PP&E*. Thus, a more formally drawn balance sheet would look like this:

Assets		Liabilities	
Cash	\$50		
Inventory	30		
Property, plant, and equipment	<u>20</u>	Ownership Equity	
		Jones put in	<u>\$100</u>
Total	<u>\$100</u>	Total	<u>\$100</u>

At this point, Jones began making mousetraps. After working for a week, he had used up \$20 worth of wood and metal and had built 10 traps. If Jones wanted to be more accurate on his balance sheet, he could now separate inventory into two groups:

Inventory:	
Finished Goods	\$20
Raw materials	\$10

Jones brought the traps to the store that agreed to sell them, and the store bought all 10 traps from Jones for \$5 each, or a total of \$50. Jones collected the \$50 at the end of January. At this point Jones decided to redo his balance sheet and draw up his first income statement. To recap, this is what has happened:

1. Sales of \$50 were made and the \$50 was received in cash.
2. Finished goods worth \$20 were sold.

Thus the income statement for the month of January might look like this:

JMC
Statement of Income
From 1/1/10 to 1/31/10

Sales		\$50
Less: Cost of goods sold	-	20
Equals: Profit	=	<u>\$30</u>

Note that an income statement reflects profits generated (or losses incurred) over a specified period of time, typically a month, quarter, or year.

Jones knew he would have to pay income tax on his profit. Even though it does not have to be paid until later, the tax is a legal liability, so it would be most accurate to put it into the income statement immediately. Since Jones owned the entire company, which was still a sole proprietorship (not yet incorporated), the Internal Revenue Service would treat TMC's profit as part of Jones's total income including his salary from his regular job. Therefore, the actual tax rate paid on the mousetrap profit could vary, depending on Jones' salary from his other job that year. Since 50 percent is an easy number to work with, we will assume a 50 percent tax rate throughout this book. The income statement, therefore, would be more complete like this:

JMC
Statement of Income
From 1/1/10 to 1/31/10

Sales		\$50
Less: Cost of goods sold	-	<u>20</u>
Equals: Profit before tax	=	\$30
Less: Income tax @ 50 percent	-	<u>15</u>
Equals: Net profit after tax	=	<u><u>\$15</u></u>

Since the tax has not been paid, but will have to be paid, Jones put the following entry on the balance sheet under Liabilities.

Taxes payable \$15

Liabilities on the balance sheet, like assets, are usually broken into two parts, *current liabilities* (those due within one year), and *long-term liabilities* (those due after one year). Since taxes are paid quarterly by most businesses and by individuals who don't have their tax deducted from each pay check, *taxes payable* is a current liability.

The net profit of \$15 that was earned is classified as *retained earnings* in the owner's equity section of the balance sheet. Thus, the balance sheet now looks like this:

JMC Balance Sheet 1/31/2010			
Assets		Liabilities and Ownership Equity	
Current assets:		Current liabilities:	
Cash	\$100	Taxes payable	\$15
Inventory:		Long-term liabilities	
Raw materials	10	Ownership equity:	
Property, plant, and equipment	<u>20</u>	Jones put in	100
Total	<u>\$130</u>	Retained earnings	<u>15</u>
		Total	<u>\$130</u>

Reviewing the right-hand side of the balance sheet, notice that owner's equity is *not* a liability. Ownership equity is not owed to anybody, except in the sense that the company is "owed to" or belongs to Jones. At this point, the company has \$130 worth of assets, but the United States government has a claim on \$15 worth of those assets. In other words, if Jones liquidated the company (i.e., sold all the assets for what they were worth), he could not legally pocket the entire \$130. He first would have to pay the \$15 in taxes, and he would be left with \$115. We say "left with" because equity is a residual ownership, meaning that it is what the owners are entitled to after all other claims (usually debts) are paid. At this point Jones' equity (or

ownership) in the company is worth \$115, not just the \$100 that he put in. Although the total ownership equity is now \$115, it is conventional to list separately the amount of money put into the company and the amount of money earned by the company (retained earnings), as shown above on the January 31 balance sheet.

Definitions

- **Balance sheet.** The balance sheet reflects the financial condition of the company *at a point in time*. It shows what assets are held, what liabilities are owed, what money (or capital) was initially put into the company, and how much was earned by the company. As the name implies, the balance sheet—sometimes referred to as the “Statement of Financial Condition” — must balance, meaning that assets (the left side) are equal to the sum of liabilities and owner’s equity (the right side).
- **Income statement.** The income statement shows the revenue (sales) that the company has made, the expenses that have been incurred to make those sales, and the profit or loss derived therefrom. The income statement shows what has happened *over a period of time*. It should always say “Income Statement from (date) to (date).” This statement is also called the Profit and Loss Statement, or the P&L.
- **Book value.** Book value is defined as total assets less total liabilities (current and long-term). So JMC’s book value is currently \$115—exactly equal to the owner’s equity account. This is not always so, for reasons that will be discussed in later chapters, but book value often approximates owner’s equity.

Jones was pleased with his successful mousetrap sales and his profit and wanted to grow his business, so he bought some more raw materials. During the first week of February, he spent \$60 on metal and wood. He also used \$30 worth of raw material to build 15 mousetraps, which he brought to the store but has not yet been sold. At that time, the current assets portion of the balance sheet looked as follows:

Current assets (as of 2/7/10)	
Cash	\$40
Inventory:	
Finished goods	30
Raw materials	40

Because Jones planned to take a vacation in the latter part of the month, he hired a trusted friend, Mr. Arbetter, as an employee. Jones agreed to pay Arbetter \$4 per hour. Jones expected Arbetter would work 15 hours before the end of February, so he knew the company would need \$60 to pay Arbetter’s wages. Since the store owner would not pay for the traps until the end of the month, and Arbetter wanted to be paid weekly, Jones needed to raise some new cash in order to pay Arbetter before the end of the month. Jones did not want to put any more of his own money into the company, so he went to a bank. To be on the safe side, and to have enough money for new raw materials, Jones asked to borrow \$100 for 30 days, from February 15 to March 15. The bank, however, thought the business was too risky (i.e., if the traps were unable to be sold, it was unlikely the bank could get all its money back). The bank did say, however, that if Jones was willing to put in another \$50 of equity, it would be willing to loan JMC \$50 for the month. In a case like this where JMC is a sole proprietorship (owned entirely by Mr. Jones), he would be personally liable to the bank, meaning that if the company did not have the funds to repay the loan even after selling its assets, Jones would be obligated to use his personal funds to repay the loan. To compensate for the risk of the loan, the bank asked for interest of \$4 for the month. (Note: The \$4 interest on the \$50 loan for one month is unrealistically high, just as some other numbers may seem low. The numbers in these examples have been chosen to keep the math simple.) Jones agreed to the terms and the loan was made on February 15. The new balance sheet of February 15 appeared as follows:

JMC
Balance Sheet
02/15/10

Assets	Liabilities and Ownership Equity
Current assets:	Current liabilities:
Cash \$140	Taxes payable \$15
Inventory:	Bank debt payable 50
Finished goods 30	Long-term liabilities
Raw materials 40	Ownership equity:
Property, plant, and equipment <u>20</u>	Jones put in 150
Total <u>\$230</u>	Retained earnings <u>15</u>
	Total <u>\$230</u>

At the end of February, all the mousetraps (in this case, 15) had been sold. The store owner and Jones, however, had agreed to raise the price, so this time Jones would receive \$6 per trap, or a total of \$90. On February 28, the store owner informed JMC that although all the traps had been sold, her store was a little short on cash and would not be able to pay JMC until the 10th of March.

At this point, February 28, Jones wished to set up a new balance sheet and income statement. He had a number of things to enter:

1. Although cash had not yet been received, JMC had a legal claim against the store, so JMC recorded \$90 in *Sales*, and set up a new account on the asset side of the balance sheet, *Accounts receivable* (i.e., money that is owed to the company).

2. Finished goods of \$30 had been sold, so they must be removed from the balance sheet. Even though the money for the traps had not yet been received, the traps had been sold. So JMC removed the \$30 from *Finished goods* inventory, and recorded the \$30 in *Cost of goods sold* for the month of February.

3. Arbetter had worked diligently and had converted another \$20 of raw materials into finished goods. He received his \$60 for wages as expected. To

reflect these wages, JMC lowered *Cash* by \$60.

4. Arbetter had spent one-third of his time building mousetraps and two-thirds of his time keeping the books, sweeping the floor, and doing other chores. Therefore, \$20 (reflecting his time working on mousetraps) was entered into inventory, specifically *Finished goods*. (None of Arbetter's traps had been sold yet. The traps that were sold during February had been built by Jones.) The other \$40 of Arbetter's pay was taken directly to the income statement. Since that \$40 cannot be attributed to any particular mousetraps, yet was a necessary expense of doing business, it must be recorded as an expense in the period (February) during which it was incurred. Rather than being listed under *Cost of goods sold (COGS or CGS)*, it is listed separately as *Selling, General and Administrative Expense (SG&A)*.

Note these distinctions carefully.

- *Cost of goods sold* is the dollar cost of the goods that have actually been sold.
- The dollar cost of goods that have been manufactured but *not yet sold* is put on the balance sheet as *finished goods*. Even though the cost of their manufacture has been paid for, they are not put on the income statement as cost of goods sold until the goods are actually sold.
- The \$40 cost Arbetter earned keeping the books, sweeping the floor, and so on is not attributable to any specific mousetrap. Therefore, it is not put added to Finished Goods or in Cost of goods sold. Rather, it becomes SG&A expense (or something similar) and put on the income statement for the period in which it occurred. Selling, General and Administrative expense (SG&A) is almost never put on the balance sheet. The exceptions are too minor to consider here.

Other things to enter:

5. Of the 30 days the bank loan was to be outstanding, 15 had elapsed. (Actually, February is a shorter month, so not quite 15 days elapsed. For simplicity, we assumed a 30-day month.) Thus, since half of the time had passed, it might be assumed that half of the interest had been "earned" by the bank. Since the interest had not actually been paid yet, JMC set up a new current liability account, *Interest payable*, of \$2. Also, since the bank's money was used to conduct business, the interest on the money must be considered an expense. Accordingly, a new account, *Interest expense*, was set up on the income statement in the amount of \$2. Again, even though the

interest had not actually been paid yet, it had been “earned” by the bank, so it must be accounted for.

6. Taxes payable are increased to reflect the February profit.

Thus, for the month of February, the income statement looked like this:

JMC Statement of Income From 2/1/10 to 2/28/10		
Sales		\$90
Expenses:		
CGS	\$30	
G&A	40	
Interest Expense	2	
	\$72	72
Profit before tax		18
Taxes at 50 percent		9
Net profit after tax		\$9

At this point, Jones decided to take some of the profit out of the company for himself, and he chose to do this by declaring a \$5 dividend.

Alternatively, he could have taken out the \$5 and called it his salary. If he had taken the \$5 as salary, it would have appeared under *expenses* in either COGS or SG&A expense on the income statement, or possibly on the balance sheet as finished goods, depending on how he attributed the \$5 of salary. In fact, he might have been better off if he had taken the \$5 as salary, because if it then appeared as an expense, he would have had higher expenses; therefore, less profit before tax; and therefore, less tax to pay. However, for illustrative purposes, let us assume he declared a dividend. Note the difference. Salary is a cost incurred while conducting business and attempting to make a profit. A dividend is something a company *may* choose to pay with the profit it earned. Although \$5 gets deducted from cash in either case, the rest of the accounting is quite different. Since Jones decided to pay himself the \$5 as a dividend, he deducted \$5 from the *Cash* account on the balance sheet, and \$5 from the *Net profit after tax* account on the

income statement. This left only \$4 of the profit to be added to *Retained earnings*. Retained earnings, for now, means any profit earned by the company that was not paid out as a dividend. The definition will be made more precise later on.

Thus Jones could put the following at the bottom of the income statement:

Net profit after tax		\$9
Less: Dividend	-	<u>5</u>
Retained earnings	=	\$4

Some companies do not put this on the bottom of the income statement, but leave it as a separate statement called the Statement of Retained Earnings.

As of February 28, the balance sheet looked like this:

JMC Balance Sheet 02/28/10			
Assets		Liabilities and Ownership Equity	
Current assets:		Current liabilities:	
Cash	\$75	Interest payable	\$2
Accounts receivable	90	Bank debt payable	50
Inventory:		Taxes payable	<u>24</u>
Finished goods	40	Total current liabilities	\$76
Raw materials	<u>20</u>	Long-term liabilities	
Total current assets	\$225	Ownership equity:	
Property, plant, and equipment:		Jones put in	150
Equipment	<u>20</u>	Retained earnings	<u>19</u>
Total assets	<u>\$245</u>	Total liabilities and owners' equity	<u>\$245</u>

The \$40 under *Finished goods* may present some confusion. It is the dollar cost of the finished goods, which are still owned by JMC. The dollar cost in this case consists of two components: the \$20 worth of raw materials used by Arbetter and the \$20 worth of labor paid to Arbetter. On the earlier balance sheets, *Finished goods* had only a raw materials component, because Jones was not paying himself any wages. Generally, the cost of finished goods consists of all costs that are normally attributable to making the goods. These almost always include both labor and raw material costs, as well as some other generally smaller items. On the other hand, such costs as interest and wages paid for selling, general and administrative functions usually are not attributed directly to making goods and are therefore *not* included in *Finished goods*. These types of costs, sometimes called *overhead* costs, are not put on the balance sheet but rather are put directly on the income statement as Selling, general and administrative expense, or interest expense, or whatever is appropriate.

Note the convention of subtotaling both current assets and current liabilities. It is also conventional to place the current liabilities due first at the top and those due latest at the bottom. Similarly, in current assets, cash comes first, the current asset most easily converted into cash comes second, and so on. The current assets that would be most difficult to convert into cash come last.

Note also that the balance sheet “balances”—that is, the left side and the right side total the same amount. There is absolutely no significance to the actual dollar amount, in this case \$245. The only thing that matters is that they balance. If they do not, an error was made someplace.

2

Ownership and Stock

In the month of March, Mr. Jones decided it was time to move the business out of his garage and buy some land and build a small factory. He estimated that buying the land and building and equipping the factory would cost about \$500. This seemed like a lot of money for a company this small, but Jones knew the factory would last for years and the land would probably appreciate in value, so he decided to go ahead. But with only \$75 in cash – that would be needed to buy raw materials, pay wages, and payoff the bank loan – it was clear the company needed to raise more money. Because it was very unlikely that a bank would loan \$500 to a new, risky venture with so few assets, Jones decided to raise more equity money. *Equity money* (or *equity capital*) is money that is put into a company permanently in exchange for a portion of ownership interest. Equity capital invested in a company does not have to be paid back, like a bond or a bank loan. The word “capital” as we shall see, has different meanings in different contexts.

Not wanting to risk any more of his own money, Jones decided to see if his friends would be willing to invest in his company. Why would his friends be willing to risk their money? Because they knew that if the venture was profitable, it would be able to pay them dividends. Should profits grow, so would dividends. Each investor, then, would hope to eventually receive in dividends more than he or she had initially put into the company as equity. In addition, if the profits and dividends increased, the value of the ownership would go up, and each person’s ownership could (hopefully) be sold for more than the amount that he originally invested.

To Jones’ pleasant surprise, many of his friends had faith in his ability to run the mousetrap business successfully, and four of them agreed to put in \$75 each. At this point, Jones was afraid that since his friends—who had put up a total of \$300 or two-thirds of the total equity money paid in—would

think that they owned two-thirds of the company. (Recall that Jones had only put in \$150.)

Jones turned to Mr. Greenshades for help. Greenshades first pointed out that percentage ownership in a company does not have to be proportionate to the amount of money put in. The percentage of ownership to be received by the new stockholders is negotiated between the current owners (in this case, Jones) and those willing to put money in. If people considering putting money in don't think they are being offered enough percentage ownership in the company, they can refuse to put their money in. Obviously, Jones wants to maintain as large a percentage of the company as possible. Similarly, his friends want as large a share of the company as they can get for their money. In this case, all agreed that since Jones had invented the mousetrap and would be putting a lot of time into the company (sometimes referred to as "sweat equity"), he deserves a larger share of the ownership. It was agreed that Jones would keep 60 percent of the company and the four other investors would get 10 percent each.

Next, Greenshades explained the use of stock as a way to reflect ownership in a company. Very simply, stock represents ownership. A share of stock is a piece of paper or electronic notation that entitles the owner of the stock to whatever portion of the company his or her share represents. Until now, Jones owned the entire company. Therefore, he owned all the company's stock; he could have had one share worth the entire company, or two shares each worth 50 percent of the company, or ten shares each worth 10 percent of the company. It made no difference; Jones could have printed up as many shares of stock as he pleased. He owned them all, totaling 100 percent of the company. Now he had agreed to give up 40 percent of the company to his friends. They decided to draw up 100 shares of stock. Jones would keep 60 shares and each of the four investors would get 10 shares. They could just as easily have printed 200 shares and Jones would have kept 120, and the four investors 20 each. It makes no difference how many shares there are as long as each partial owner of the company has the proper proportion.

Finally, Greenshades explained that, with the addition of the four investors, JMC would no longer be a sole proprietorship and would need to be made either a *partnership* or a *corporation*. A corporation is a legal entity, separate and distinct from the owners of the company. The primary advantage of being a corporation is called the *limited liability* feature, which

means that neither Jones nor the partners can be held personally liable for the debts of the company. For example, when the company was a sole proprietorship, if business had failed and the company was unable to repay the bank loan when it was due, Jones would have had to come up with the money out of his own pocket. Similarly, if the company is converted to a partnership, the partners would all be liable. If Arbetter had broken his hand while working for the company, he might have sued JMC for medical expenses. If he won and if the company did not have enough cash to pay the settlement, even after having sold off all its assets, Jones (or the partners) would have had to use personal funds to pay his expenses. The limited liability feature of a corporation means that neither the bank nor Arbetter would have been able to collect from Jones (or the partners). They could have collected as much as the assets of the company could have been sold for, but beyond that, the owner or owners would have no liability from their personal assets for the debts of the corporation. Jones and the four investors readily agreed that incorporation was a good idea. Note that in recent years, new law has enabled people to create *limited liability partnerships (LLPs)* or *limited liability companies (LLCs)*. Such limited liability entities enjoy the same limited liability feature of corporations.

Another factor that distinguishes a corporation from a sole proprietorship or partnership is the way its profits are taxed. In a sole proprietorship, the profits are taxed as a part of the income of the proprietor. In a partnership, each partner will pay tax on his or her share of the partnership's income. This is true whether or not the partner takes any profit out of the partnership. How much tax each partner pays will depend on what tax bracket he or she is in.

Taxation of a corporation's profit is different. A corporation's profit is taxed directly to the corporation. The owners of the corporation will pay tax only on dividends they actually receive from the company (corporation). If the corporation does not pay a dividend in a given year, then the corporation's owners will have no tax liability that year from the company's earning. Of course, an owner of a corporation will also have to pay tax if he sells his ownership in the corporation to another person at a profit. In that case, the amount of tax paid will depend on how long he held the stock; currently, profits on investments held for more than 12 months are called long term capital gains and are taxed at the capital gains tax rate, which is lower than the tax rates on regular income for most investors.

Incorporation in most states usually involves no more than filing a few forms with the Secretary of State and paying a nominal fee, which Jones did. The company name was changed to JMC, Inc. Greenshades now explained the following to Jones and the four investors.

Every person who owns one or more shares of a company is called a *shareholder* or *stockholder* of that company. Each stockholder has the right to receive the company's annual report, to attend stockholders' meetings, and to vote on all issues that come up before the stockholders at the meeting. A stockholder has as many votes as shares he or she holds. In the case of a large company such as IBM or Amazon, the stock is very widely held and no person is likely to hold more than 1 or 2 percent. Most stockholders own far less. IBM's ownership, for example, is divided into 1,159 million shares of stock. Therefore, a person owning one hundred shares owns less than one 0.00001 percent of IBM!

There are a few exceptions to the one vote per share rule. Some companies have two classes of stock, typically referred to as Class A and Class B. In these cases, one of the classes, say Class B, might get 10 votes per Class B share, whereas the other class, Class A, only gets one vote per share. While voting rights may differ between classes, typically both classes have identical rights to dividends. The two classes of stock, in this example, are both common stock. This has nothing to do with preferred stock, which is something different, and is discussed in Chapter 12. These rare cases of companies with two classes of common stock usually come about because a family-owned company wishes to retain voting control of the company even though the family wants to sell a large portion of the company to non-family investors.

Most corporations have one stockholder meeting each year. The primary purpose of the meeting is to elect the board of directors. Usually, any stockholder can nominate someone for the board of directors, whether or not that person works for the company and whether or not the person is a stockholder of the company. The board of many companies, however, includes the president and one or more of the officers of the company. Directors who are not employees of the company are called "outside directors" or "independent directors." Typically, a board of directors is made up of between 7 and 13 members. The board's most important functions usually include choosing the president of the company, reviewing management's performance, approving significant changes to corporate

strategy, declaring dividends, and making decisions about corporate actions, such as mergers and acquisitions. As we will see later, directors may also decide to use some of the company's money to buy back some of the company's outstanding company stock.

If a large number of stockholders are dissatisfied with the way their company is being run, they can elect new directors at the next meeting who can replace the management with someone more acceptable. To do this, of course, requires a large number of unhappy stockholders. As a practical matter, in most large companies the board is similar from year to year with only one or two changes every couple of years. Nevertheless, all directors have to be reelected periodically. In some companies, all directors come up for re-election each year, and in others each elected director serves a 3 year term, this is referred to as a "staggered board." There is usually no limit to the number of terms a director can serve.

Stockholders are notified well in advance of the meeting as to when and where it will be held. Those who cannot attend are allowed to vote by proxy, which is essentially an absentee ballot. The term *proxy fight*, which is often heard in the financial community, refers to a case where a group of unhappy stockholders wants to elect new directors who the group thinks will more adequately represent their interests (e.g., make changes in the company that they feel are necessary). Since most stockholders do not actually attend the meeting, the dissident group tries to get the non-attending stockholders to vote their proxies in favor of the dissidents' candidate. The incumbent directors, of course, will endeavor to get the stockholders to vote them in again.

In the case of JMC, Jones owns 60 percent of the stock and he can therefore elect himself as president because he controls 60 percent of the board of directors. In a closely held company (i.e., one with very few stockholders) the stockholders' meeting might be quite informal, particularly if one shareholder holds a majority stake (over 50 percent) of the shares.

Besides voting, the importance to the four investors of owning as much of the stock as possible is that whenever a dividend is declared, the same amount of dividend will be paid *on each share*. Thus, a person owning 60 shares would receive six times as much as a person owning 10 shares. A stockholder with 10 shares would receive twice as much as a stockholder owning 5 shares and so on. The final reason for wanting to own as many shares as possible is that if the company were dissolved or liquidated (i.e., if

all the assets were sold and all the debts paid off), the remaining money would be distributed to the stockholders in proportion to the number of shares owned.

Greenshades now proposed setting up the ownership equity portion of the balance sheet in the format used by most companies, which is as follows:

Ownership Equity	
Paid-in capital:	
Common stock (at par value \$1 per share)	\$100
(authorized 100 shares, issued 100, shares outstanding 100 shares)	
Additional paid-in capital)	350
Retained earnings	<u>19</u>
Total ownership equity	<u><u>\$469</u></u>

Paid-in capital, Greenshades explained, represents money put into the company in exchange for stock. Since the total capital paid in by the five investors (including Jones) was \$450, the items under *Paid-in capital* must, by definition, total \$450.

Par value, Greenshades went on, is an anachronism with little meaning today. Par value is an arbitrary dollar value assigned to each share of stock. In this case, the assigned par value was \$1 per share. Thus the dollar figure in Common stock is \$100 (\$1 par value x 100 shares outstanding = \$100).

Additional paid-in capital is the difference between the total money (capital) paid into the company for stock, less the portion that has been assigned to par value. Therefore:

$$\text{Paid-in capital} = \text{Common at par} + \text{Additional paid-in capital}$$

The *additional* just means the portion of the paid-in capital above what is assigned to Common at par. Usually, the only way to calculate Additional paid-in capital is to take the total paid-in capital and subtract Common at par. Additional paid-in capital is sometimes called *paid-in surplus*, *capital surplus*, or *capital paid-in above par*. The terms are synonymous, although the latter is the most accurate description. The word *surplus* is undesirable here, because it may imply there is surplus cash lying around the company. This, of course, is not true. The cash in this case will shortly be used to buy some land and construct a factory. These items—Common at par and Additional paid-in capital—are just accounting entries reflecting the fact that at some time or some times in the past, some money was paid into the company in exchange for stock. If the cash is still there, it would be in the Cash account on the left-hand side of the balance sheet. By looking at the Common at Par and Additional Paid-in Capital accounts on the balance sheet, there is no way to know when or how many times cash was paid in exchange for stock, or what has since been done with the cash.

Retained earnings represent profits earned by the company’s operations (i.e., making and selling mousetraps), less the amount of dividends paid.

If the par value had been declared at \$2, then the ownership equity portion of the balance sheet would look like this:

Ownership Equity	
Paid-in capital:	
Common stock (at par value \$2 per share)	\$200
(authorized 100 shares, issued 100, shares outstanding 100 shares)	
Additional paid-in capital	250
Retained earnings	<u>19</u>
Total ownership equity	<u><u>\$469</u></u>

“Authorized 100 shares” simply means that the stockholders agreed that the company’s ownership *may* be split into as many as 100 shares. In the case of JMC, the ownership has, in fact, been split into 100 shares, and

therefore there are 100 shares authorized, issued, and outstanding. If the stockholders thought they might want to sell more shares later on, they would first have to vote to authorize or permit the management of the company to sell more. Once the company has been authorized to sell more shares, it may sell such shares at any time in the future or it may never sell them. To *authorize* simply means to give permission. It does not require that such shares actually be sold.

“Issued 100 shares” means that at some point in the past the company issued 100 shares. *Issued* usually means *sold*, but a company may also issue shares of stock in exchange for assets, or may give shares away—perhaps to employees. Once a share has been issued, it is *outstanding* and will remain outstanding unless the company buys it back. When a company buys back some shares of its stock, those repurchased shares are called *Treasury shares*. Treasury shares do not represent ownership in the company and are not considered to be outstanding. Treasury shares do remain as authorized and issued. The decision of a company to buy back shares of its outstanding stock is another matter for the board of directors.

“Outstanding 100 shares” means that JMC’s ownership is currently divided into 100 shares. If JMC bought back 10 of its shares, there would only be 90 shares outstanding, and JMC ownership would be divided into 90 shares. In this case, the *Common stock* account would say “Authorized 100 shares, issued 100 shares, outstanding 90 shares.” For most investment purposes, the number of shares outstanding is the divisor (i.e., denominator) used when calculating Earnings per Share (EPS), so that is what we will focus on in this book.

Let’s assume that JMC did not repurchase any Treasury shares, so there are still 100 authorized, issued, and outstanding; and let’s also assume the par value is still \$1 per share. Now let’s see what happens if the shareholders authorize an additional 200 shares but JMC only issues 50 of them. Assume those 50 additional shares were sold for \$6 each. Then the Ownership Equity would appear as follows:

Ownership Equity

Paid-in capital:

Common stock (at par value \$1 per share)	\$150
(authorized 300 shares, issued 150, shares outstanding 150 shares)	
Additional paid-in capital	600
Retained earnings	<u>19</u>
Total ownership equity	<u><u>\$769</u></u>

Compared to the ownership equity portion of the balance sheet shown on page 24, note the increases in shares *authorized*, *issued*, and *outstanding*, as well as the increases in the dollar entries in *Common Stock* and *Additional Paid-in Capital*.

When a company wants to sell more shares, it could ask the shareholders to authorize them at the next annual stockholders' meeting. Or, in an emergency, a special stockholders' meeting could be called for the express purpose of authorizing more shares. Of course, the stockholders might vote not to authorize more shares, in which case the company would not be permitted to sell any more shares.

Definitions

- **Paid-in capital.** The total amount of dollars paid into the company by stockholders for stock. Paid-in capital is made up of the sum of *Common stock at par value* and *Additional paid-in capital*. The total dollars in *Paid-in capital* almost never changes unless the company issues more stock.
- **Par value.** An arbitrary per share figure set by the company that distinguishes one of the two components of paid-in capital. Some

companies use *stated value* in place of *par value*. There is a minor distinction that is irrelevant for most purposes.

- **Additional paid-in capital.** This can be calculated by taking Paid-in capital and subtracting Common stock at par value.
- **Retained earnings.** The total profits earned by the company for all years since its inception less any losses incurred since inception, less all of the dividends paid since inception. Retained earnings is often called *earned surplus*, or *retained profits*. Again, the word *surplus* is undesirable, since it might imply that surplus cash is lying around in the company. It is likely that this cash has long since been spent.

Notice that the categories “Common stock at par” and “Additional paid-in capital” do not tell us how much was paid for each share or when the shares were sold; it only tells us how much money was received in total for all those times when the company sold shares. Most companies have sold new shares on more than one occasion, and received a different price on each occasion.

Do not confuse (1) the company’s selling *new* shares, with (2) individuals who already own shares selling their shares to another individual. This will be discussed in Chapter 5. For now, we are only interested in how to account for money that comes into the company when the company sells new shares to someone for cash.

REVIEW: EQUITY IS NOT THE SAME AS CASH

The \$300 that JMC raised from the sale of the new stock, as well as the \$150 Jones had put in, is called *equity money*, or *equity capital*, or just *equity*. That equity was put into the company as cash. Eventually some or all of that cash will be spent, perhaps on new plant and equipment, or more inventory, or something else entirely. As the money is spent, the Cash

account will go down, but the Common at Par and Additional Paid-in Capital accounts do not change. These two equity accounts just reflect the fact that a certain amount of money was paid into the company for stock at some point(s) in the past.

The equity is permanent. If cash of \$25 is spent on inventory, then that equity will be in the form of inventory. In that case, the Cash account will go down by \$25, the Inventory account will go up by \$25, but the Equity accounts will remain unchanged. When that inventory is sold, the equity will again be in the form of cash. The Cash account will go up and down every time there is a transaction involving cash, which would be many times each day. But the equity accounts, Common at Par and Additional Paid-in Capital, only go up when the company issues new stock, and are unlikely to go down except under unusual circumstances.

3

Borrowing Money as the Company Grows

JMC has now raised \$300 of the \$500 it is seeking. Having improved its equity position (i.e., put \$300 of new equity permanently into the company), it is now possible that another \$200 can be raised through borrowing. Note the difference between equity and money borrowed. Equity is money put permanently into the company in exchange for stock (ownership rights). The equity itself will never be paid back, although the individual who paid it in did so with the idea that either (1) he will get more back in dividends later, or (2) the equity (stock) will increase in value so that it can be sold to another person for more than he paid for it.

Money that is borrowed (debt) must be paid back in the exact amount and with interest according to a specified time schedule. Therefore, people who lend money to the company (called creditors) have the disadvantage of not having ownership rights, but instead have the advantage of a fixed time schedule and contractual rights for getting their money back with interest. Creditors also have what is known as a “priority of claims,” which means that in the event that the company’s assets are liquidated (for example, through bankruptcy proceedings), creditors will have first claim on cash raised through liquidation. This is covered in more detail in later chapters.

Since \$200 is more than JMC expects to earn this year, it would not make much sense to borrow \$200 on a short-term basis (i.e., to plan to pay it back within one year). Furthermore, since the factory to be constructed with the money should be usable for many years, there is no reason why it should not be paid for over many years. As a result, JMC went to a financial services company and asked for a five-year term loan. (A “term” loan typically implies a loan of three to seven years. Borrowing for longer than that is more often done by selling bonds, which is discussed in a later chapter.)

The company said it would consider making the loan to JMC and assigned one of its loan officers to examine JMC’s books (financial statements) and to

study the mousetrap and its potential market opportunity. The financial services company decided that although the loan was risky, it would loan JMC \$200 with the following stipulations:

1. JMC is to pay back the loan at the rate of \$30/year for four years, and then pay the remaining \$80 at the end of the fifth year. Each principal payment is due on December 31 of that year.
2. JMC must pay 8 percent interest annually on the outstanding balance, to be paid at the rate of 4 percent semiannually, on June 30 and December 31.

Note: To understand how the interest payment schedule works, assume the loan was made on January 1. In that case, the first interest payment would be \$8, due on June 30 of the first year. This is 4% of \$200, the amount of the loan outstanding during that period. Similarly, the second interest payment on December 31 would also be \$8 since the entire \$200 was outstanding during the period. But on December 31, \$30 of the loan would be paid back. This leaves an “outstanding balance” of \$170. Thus the third and fourth interest payments, on June 30 and December 31 of the second year, would each be \$6.80, which is 4% of \$170. Similarly, the third-year payments would each be \$5.60, and so on.

3. In the event JMC cannot meet one or more of its interest or principal payments, the financial services company could immediately declare the company “in default” and require the entire loan to be repaid immediately. In other words, JMC could be forced to liquidate its assets (i.e., sell its factory and all its property, equipment, and inventory) to raise money needed to meet the interest and principal obligations. In the event that the money raised from selling the company’s assets is not enough to meet the financial services company’s claims, as well as other creditors’ claims, the financial services company wanted to be the first to be paid with whatever cash could be raised.

JMC had no objections to the first two requirements. The firm felt certain it could meet the annual \$30 principal requirement, called a *sinking fund*, with little difficulty. It was also confident that it could meet the large \$80 payment at the end of the fifth year. This large payment at the end is called a *balloon*. Both the \$30 sinking fund payments and the \$80 balloon payment are called *return of principal* (as distinguished from interest). In the language of finance, JMC borrowed \$200 principal amount under a term loan agreement requiring a \$30 annual sinker beginning in the first year.

On the third requirement, JMC said it could not let the financial services company have the first, or senior, claim on assets in the event of liquidation, because the bank had already been promised that. As it happens, the bank loan was due to be paid back within one week, but Jones knew the monthly cash problem might come up again; that is, JMC would have to go on buying raw materials and paying wages during the month even though JMC might not be paid for the traps it sold until ten or more days after the end of the following month. In other words, Jones knew the company would need future bank loans to meet the late-month cash needs (pay its bills) while the company had large accounts receivable (i.e., money owed to it). JMC would be able to pay back the bank loan when accounts receivable was received. In the language of Wall Street, JMC would need bank loans *to finance receivables*.

The financial services company understood the problem because many of its loan customers had the same difficulty, and it waived that requirement. The loan was granted.

Definitions

- **Short-term debt.** Loans that must be repaid within one year, whether payable to suppliers, financial institutions, individuals, or whomever. On the balance sheet, however, this term frequently means just short-term bank debt.
- **Long-term debt.** Loans that will be paid back after one year are considered long-term debt.
- **Term loan.** A term loan is usually for a period of three to seven years and is therefore long term. It often has a sinking-fund requirement and may have a balloon payment.
- **Sinking fund.** The sinking fund is the required partial repayment on a long-term loan. It can be payable annually, semiannually, or in any manner the borrower and lender agreed to at the time the loan is made. The sinking fund (or annual “sinker”) is a return of principal.
- **Balloon.** A large payment to complete the repayment of a long-term loan is known as a balloon payment. It is possible that a loan can have no sinking fund, and the balloon, when the loan is due, is therefore equal to the entire principal amount of the loan. Frequently, the sinking fund repays the entire loan in equal installments and there is no balloon.

On March 1, the loan and sale of stock to the four new investors was completed. The new balance sheet appears as follows:

JMC			
Balance Sheet			
03/01/10			
Assets		Liabilities and Stockholders Equity	
Current assets:		Current liabilities:	
Cash	\$575	Interest payable	\$2
Accounts receivable	90	Short-term debt (bank)	50
Inventory:		Tax payable	24
Finished goods	40	Total current liabilities	76
Raw materials	20	Long-term liabilities:	
Total current assets	\$725	8% term loan	200
		Stockholders equity:	
		Paid-in capital	
Property, plant, and equipment:		Common stock (par	
Equipment	20	value \$1) (authorized	
		100 shares, issued and	
		out. 100 shares)	100
		Additional paid-in cap.	350
		Retained earnings	19
		Total stockholders equity	469
Total assets	<u>\$745</u>	Total liabilities and equity	<u>\$745</u>

Note that the right-hand side of the balance sheet is now called “Liabilities and *Stockholders’* Equity.” We had previously used the term “Owner’s Equity.” Since the stockholders are the owners, both terms mean the same thing and either is correct.

DERIVING AN EXPANDED BALANCE SHEET

In the month of March, JMC continued to make and sell mousetraps. From the following list of events that took place in March, we will derive the income statement for March and a new balance sheet as of March 31. Readers having

difficulty following the accounting on the next two pages should just read on. It is not necessary to follow every step to maintain the continuity of the book.

During the month of March, the following events occurred:

1. Raw materials costing \$80 were purchased from a lumberyard. JMC could have paid the \$80 with its now abundant cash, but it was still uncertain how much cash would be needed for the new land and factory, so JMC asked the lumberyard if it could delay the \$80 payment for a while. Since JMC was now a good customer, the lumberyard agreed to extend credit for one month. Thus, instead of deducting the \$80 from cash, JMC set up a new account under current liabilities, called *accounts payable*, for \$80.
2. Raw materials costing \$60 were converted into finished goods, of which two-thirds were sold.
3. At the end of the month, \$10 worth of raw materials had been partially converted into mousetraps, but these traps had not yet been completed. Since this could no longer be called raw materials, and was not yet finished goods, it gave rise to a new inventory account called *work in progress*.
4. The store paid the \$90 it owed to JMC for February sales.
5. JMC sold all the mousetraps that were in Finished Goods on March 1. JMC also sold some additional traps that Arbetter had made during the month of March. All of the traps were sold to the store for a total of \$200. The store said it would pay JMC the \$200, as usual, ten days after the end of the month.
6. Mr. Arbetter received \$120 in wages, of which \$80 was attributed to time spent building traps and \$40 was for time spent talking to two new stores, which were considering carrying the line of mousetraps. Thus the \$40 is considered *Selling, General, and Administrative expense (SG&A)*. Of the \$80 of Arbetter's wages attributed to trap building, \$60 was attributed to traps built and sold in March, \$15 attributed to traps finished but not yet sold, and \$5 attributed to the time spent on traps that were partially completed at the end of the month.
7. Property on which to build the factory was purchased for \$100. The factory was not yet started.

The following calculations were made to derive the March 31 financial statements:

<i>Cash</i> as of 3/1/10	\$575
Add: Received from store	<u>90</u>
Subtotal	665
Less: Paid to Mr. Arbetter	120
Less: Property Purchase	100
Less: Bank loan paid back	50
Less: Interest on loan	<u>4</u>
Total cash as of 3/31/10	\$391
<i>Accounts receivable</i> as of 3/1/10	\$90
Less: February's sales to store, for which cash was paid to JMC during March	<u>90</u>
Subtotal	0
Add: March sales to store, for which cash would be paid to JMC in April	<u>200</u>
Total as of 3/31/10	\$200
<i>Inventory: Finished goods</i> as of 3/1/10	\$40
Less: All finished goods as of 3/1/10 were sold during the month	<u>40</u>
Subtotal	0
Add: Raw material converted but not yet sold	20
Add: Arbetter's wages attributable to traps finished but not yet sold	<u>15</u>
Total as of 3/31/10	\$35
<i>Inventory: Work in progress</i> as of 3/1/10	\$0
Add: Raw material converted but not yet completed	10
Add: Labor on raw material used in not yet completed traps	<u>5</u>
Total as of 3/31/10	\$15

<i>Inventory: Raw material</i> as of 3/1/10	\$20
Add: New purchases	<u>80</u>
Subtotal	100
Less: Amount converted to finished goods	60
Less: Amount converted to work in progress	<u>10</u>
Total as of 3/31/10	\$30
<i>Property, plant, and equipment</i> as of 3/1/10	\$20
Add: Purchase of property	<u>100</u>
Total as of 3/31/10	120
<i>Interest payable</i> ^a as of 3/1/10	\$2
Less: This was paid when due on 3/15/10 (along with the other \$2 of interest)	<u>2</u>
Total as of 3/31/10	\$0
<i>Short-term debt</i> as of 3/1/10	\$50
Less: This was paid when due on 3/15/10	<u>50</u>
Total as of 3/31/10	\$0
<i>Taxes payable</i> as of 3/1/10	\$24
Add: Expected tax on income for March	<u>9</u>
Total as of 3/31/10	\$33
<i>Accounts payable</i> as of 3/1/10	\$0
Add: Credit extended to JMC for raw material	<u>80</u>
Total as of 3/31/10	\$80
<i>Retained earnings</i> as of 3/1/10	\$19
Add: Profit for March	<u>9</u>
Subtotal	28
Less: Dividends paid	<u>0</u>
Total as of 3/31/10	\$28

The *Cost of goods sold* for the month of March was calculated as follows:

Transferred from March 1 finished goods	\$40
Transferred from raw materials ^b	40
Transferred from Arbetter's wages ^b	60
	<u>\$140</u>

^b Actually, both these figures would have been added to finished goods and then, when the product was sold, subtracted from finished goods and transferred to Cost of goods sold. We have ignored that step for simplicity.

From these calculations, the income statement for March and the March 31 balance sheet below are derived.

JMC		
Statement of Income		
From 3/1/10 to 3/31/10		
Sales		\$200
Expenses:		
CGS	\$140	
SGA	40	
Interest Expense ^c	<u>2</u>	
	\$182	<u>182</u>
Profit before tax		18
Income tax expense		<u>9</u>
Net profit after tax		<u><u>\$9</u></u>

^c Note that although the entire \$4 interest was paid in March, only \$2 was taken as an expense. This is because the other \$2 of the interest had previously been “expensed” in February. Again, we have ignored the interest on the \$200 term loan for simplicity.

JMC
Balance Sheet
03/31/10

Assets		Liabilities and Stockholders Equity	
Current assets:		Current liabilities:	
Cash	\$391	Accounts payable	\$80
Accounts receivable	200	Tax payable	<u>33</u>
Inventory:		Total current liabilities	\$113
Finished goods	35	Long-term liabilities:	
Work in progress	15	8% term loan	200
Raw materials	<u>30</u>	Stockholders equity:	
Total current assets	\$671	Paid-in capital	
Property, plant, and equipment:		Common stock (par	
Property	100	value \$1) (authorized	
Equipment	<u>20</u>	100 shares, issued and	
		outst. 100 shares)	100
		Additional paid-in cap .	350
		Retained earnings	<u>28</u>
		Total stockholders equity ...	<u>478</u>
Total assets	<u>\$791</u>	Total liabilities and equity ..	<u>\$791</u>

Again, it is not necessary for the reader to follow each calculation. It is sufficient to come away with an understanding of the items on the financial statements, how they arise, and where they belong on the balance sheet or income statement.

It would be an interesting and worthwhile exercise to try to derive one income statement for the period from January 1 through March 31 to check your understanding of the material presented so far. An easy proof to see if you have done it correctly is to make sure the net profit from the January, February, and March income statements (minus the \$5 dividend paid), plus the income tax expense from those income statements, is equal to the Retained earnings and Taxes payable accounts on the balance sheet as of March 31, 2012.

JUMPING AHEAD TO THE YEAR END

The company continued to prosper through the end of the year. The new factory, designated Plant Number 1, was completed by June, and then expanded in September. Some machinery for making mousetraps had been installed. The factory expansion and machinery had been paid for with money coming from three sources: (1) profits from operations, (2) another term loan, and (3) more new stock that JMC had sold to some venture capital investors.

At December 31, the financial statements of the company appeared as shown on the next page. Note that the numbers have been expanded and modified for clarity and realism.

Besides the changes in the numbers, the following changes should be noted:

1. The company has accumulated more cash than it needs at the moment. Rather than leave it in the bank, Jones decided to buy some U.S. Government Treasury bills. Treasury Bills pay interest and can always be sold for cash immediately, either through JMC's bank or through a broker. Thus, we will see a new current asset on the balance sheet called *U.S. Government Securities*. Besides government securities, there are other ways to invest cash that are safe and readily convertible into cash, and may pay a higher rate of interest than government securities. For instance, JMC could invest in (buy) *commercial paper*, which refers to notes issued by some corporations who need to borrow money for short periods of time to fund their obligations, such as meeting payroll expense. Therefore, instead of *U.S. Government Securities*, one often sees *marketable securities*. Marketable securities does *not* refer to common stock, whose price will fluctuate from day to day and may be difficult to sell on short notice. Marketable securities, in this context, refers to US government or other securities that are cash-like, and that are reported 'safe,' and very easy to sell quickly.
2. The *Property, buildings, and equipment* accounts were increased substantially.
3. The company once again went to the bank for short-term debt. This time it was for \$16,000, of which \$10,000 has already been paid back.
4. Note that the *Taxes payable* account is less than the full taxes for the year. This is because, being a corporation, JMC had to begin estimating and paying taxes quarterly. So, only the estimated tax for the last three months remains on the balance sheet, as all the earlier quarters' taxes have been paid. When the final tax bill for the year is figured in early 2011, the taxes payable figure can be adjusted accordingly.

JMC
Balance Sheet
12/31/10

Assets		Liabilities and Stockholders' Equity	
Current assets:		Current liabilities:	
Cash	\$5,000	Accounts payable	\$10,000
U.S. Govt. Securities	25,000	Short-term debt	6,000
Accounts receivable	10,000	Taxes payable	2,000
Inventory:		Sinking-fund payments	
Finished goods	20,000	on long-term debt	
Work in progress	5,000	due within one year	2,000
Raw materials	15,000	Total current liabilities	20,000
Total current assets	80,000		
		Capitalization:	
Fixed assets:		Long-term debt	
Property	3,000	8% Term loan	10,000
Buildings	13,000	9% First mortgage bonds	20,000
Equipment	44,000		
Total fixed assets	60,000	Stockholders' equity:	
		Common stock	
		(par value \$1.00)	
		(auth. 1,000 shs., issued	
		and outst. 500 shares)	500
		Capital surplus	4,500
		Retained earnings	85,000
		Total stockholders' equity ..	90,000
Total assets	<u>\$140,000</u>	Total liabilities and equity ..	<u>\$140,000</u>

JMC
Income Statement
for the Year Ending 12/31/10

Sales		\$100,000
Expenses:		
CGS	\$70,000	
SGA	18,000	
Interest Expense	<u>2,000</u>	
	\$90,000	<u>90,000</u>
Profit before tax		10,000
Income tax expense		<u>5,000</u>
Net profit after tax		<u><u>\$5,000</u></u>

1. Recall that liabilities due within one year are classified as current liabilities. When JMC first took the 8% term loan, it was for \$12,000. (Note: The term loan was actually for \$200, of which \$30 was due within one year, but, again, the numbers have been modified for convenience.) But one of the stipulations was that a sinking-fund payment of \$2,000 would be paid each year on December 30 beginning in 2011. Therefore, of the original \$12,000 loan, \$2,000 was due within a year and the remaining \$10,000 was still classified as long-term debt.
2. The 9% First Mortgage Bonds were sold to a group of insurance companies in October 2010. They are called First Mortgage because if JMC should fail to make its interest or principal repayments to the insurance companies, the insurance companies have the right to take possession of the building and sell it in order to get their money back.
3. The *Retained earnings* figure is obviously out of proportion. For a company that has been in business only one year, the retained earnings figure should be equal to the profits of the company that year, less the dividends paid by the company that year. The large figure presented would be more typical of a company that had been in business and making profits for many years.
4. Capitalization is a hard-to-define word. It comes up in many contexts within the business world. On the balance sheet, it usually refers to the combination of long-term debt plus stockholders' equity. In this sense, it refers to the money (or capital) used by the company to manufacture the products it sells. The machinery and equipment that were bought with this money can be thought of as capital. This, in fact, is the

economist's definition of capital: goods (i.e., machinery) used to make the company's products. Such machinery (or capital goods) can be paid for with (1) money put into the business by investors who bought stock from the company (which may have happened on more than one occasion); (2) profits earned by the company; and/or (3) money raised by selling debt (bonds, term loans). Inventory, however, is not thought of as capital, but rather as the raw materials that are converted into final saleable goods by the capital (machinery). Long-term debt and equity are usually thought of as financing capital equipment; short-term debt and other current liabilities are usually viewed as financing inventories or receivables until these can be converted into cash in what might be called the inventory cycle, or receivables cycle. Although we usually think of the balance sheet this way, it is not necessarily true. For example, there are many companies that use short-term debt to finance capital equipment, or use long-term debt or equity to finance inventories.

RECAP ON THE STATUS OF JMC

JMC is still a private company. It now has 12 stockholders. According to the Securities and Exchange Acts (the laws that regulate the purchase and sale of stocks and bonds), as long as there are only a limited number of investors, a company will be deemed to be a private company. The limitation on the number of investors a company can have and remains private is ill defined and depends on many factors (notably, whether the existing and prospective investors are deemed to be "sophisticated" investors.)

When a company is private, its owners have no obligation to publish financial statements, or to report to the Securities and Exchange Commission (S.E.C.), and thus the profitability of the company does not have to be revealed to anyone except the Internal Revenue Service on the company's income tax return.

If JMC wished to sell new shares of its stock to the public, i.e. a large number of people, especially if they were unsophisticated investors, then it would have to register the stock to be sold with the S.E.C. before the sale. Upon selling the newly registered shares, JMC would be deemed to be a *public company*, and would have to file its financial statements (balance sheet and income statement) and other information with the S.E.C. periodically. Why a private company might want to become a public company, and how it goes public, will be discussed in Chapter 5.

4

Ratios Investors Watch

When financial analysts first look at balance sheets or income statements, all they see is the same morass of numbers that the layman sees. To make sense of these figures, to evaluate a company's financial strength or weakness, and to get insights into possible stock market performance, a financial analyst must look at the relationships between the figures. The ratios discussed in this chapter are among those frequently used by analysts. The figures used are taken from JMC's financial statements of December 31, 2010, which are found at the end of Chapter 3.

The ratios discussed in this chapter are presented in five groups. It is not necessary to memorize every ratio, but we recommend carefully studying the ratios in the first four groups as they will come up most frequently in other chapters. The *Profitability Ratios* and *Efficiency Ratios* are very much a part of a thorough investment analysis, and can be reviewed here when they come up later.

STOCK EVALUATION RATIOS

Net Earnings per Common Share Outstanding

This ratio, usually just called *earnings per share*, and abbreviated EPS, is one of the most important numbers investors use in determining what to pay for a share of stock. The material here will set the stage for further discussion in later chapters. Earnings per share is simply the net earnings of the company for the year, \$5,000, divided by the number of shares of common stock outstanding, 500. Therefore, JMC's earnings per share for 2010 were \$10 per share.

$$\frac{\text{Net earnings}}{\text{Number of shares}} = \frac{\$5,000}{500 \text{ shares}} = \$10 / \text{share}$$

This ratio helps you to decide what to pay for a share of stock by telling you how much money that share can “earn” for you. The earnings per share are not, of course, paid directly to stockholders; they are kept in the company. The company may, however, declare a dividend from time to time, which *is* paid directly to stockholders. The higher the earnings per share, the higher the dividend per share is likely to be. The astute reader should realize, then, that what someone should be willing to pay for a share of stock is not really related to what the share of stock is “earning” today, but *what it is expected to earn (and therefore potentially pay in dividends) over a period of many years*. If a share of stock were earning \$10 per share this year, expected to earn \$20 per share next year, and \$30 per share the following year, and the company was expected to payout 50 percent of each year’s earnings as a dividend, then you as the holder of one share of stock would expect to receive dividends of \$5 + \$10 + \$15 = \$30 over a period of three years. Thus, you would certainly be willing to buy the stock for more than the \$10/share that the stock is earning today. How much more you would be willing to pay is related to two factors: (1) your evaluation of the risk that your estimates of the company’s next three years’ earnings and dividends are wrong; and (2) your evaluation of what the company can be earning, and therefore potentially be paying as dividends, beyond three years out.

To better understand the relationship of current dividends and potential future dividends to stock prices, let’s look at some examples. Table 4.1 shows three companies’ expected dividends for six years, and the bank interest that can be earned in a bank Certificate of Deposit earning 3 percent interest. Presuming that \$100 is put into a bank CD, the investor (Certificate holder) would expect to receive \$3 a year in interest and get back the original investment of \$100 at the end of six years.

Table 4.1 Expected Dividends of Three Companies

	Put in	Interest or dividend payment during year						Get back
		(1)	(2)	(3)	(4)	(5)	(6)	
Bank	\$100	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$100
Company A		3	4	4	5	6	6	
Company B		3	4	6	7	10	12	
Company C		0	0	0	10	20	30	

For Company A, dividends are expected to grow as shown for six years, and then stay at \$6. If you were as certain about receiving these dividends as you were about receiving bank interest, you would presumably be willing to pay more than \$100 for a share of stock of Company A because it will give you a greater return than the bank interest. How much more than \$100 you would be willing to pay is related to your confidence that these expected dividend payments will actually be paid. The problem is that one is almost always less certain about receiving dividends from a company than getting interest from a bank. Also, as one looks further out in time, confidence in earnings and dividend estimates gets lower and lower, whereas confidence in bank interest remains fairly high.

Let's assume Company A is expected to pay a dividend of \$6 for every year in the future after the sixth year, and that investor confidence in Company A's dividend-paying ability is as high as confidence in a bank's interest-paying ability. In that case, Company A would be worth \$200 per share at the end of six years. Why? Because a \$6 return (dividend) per year on a \$200 investment is identical to the bank's \$3 return per year on a \$100 investment, also a 3% yield. Therefore, what would you be willing to pay now for a stock with Company A's dividend expectations and a "known" value of \$200 at the end of six years? Obviously, more than \$100, but less than \$200 because for the first 5 years the dividends you receive will be less than \$6 per share per year. In theory, the stock should gradually rise toward \$200 over the 5 years because as time passes, the bigger dividends become closer in time. In practice, the stock will fluctuate over the 5 years as market conditions change and as different investors change their estimates, or their confidence in their best estimates of what the company may earn or pay as dividends.

Company B is expected to pay even higher dividends over six years and therefore a share of its stock should sell for more than a share of Company A's stock, provided there is similar confidence in the dividend estimates, and a similar expectation for receiving a steady dividend (in this case, \$12 per year) in each year beyond the sixth year. If company B were to be yielding 3% at the end of year six, it would be selling at \$400 per share. With Company B's future stock price expectation higher than company A's, Company B would most likely sell at a higher price today than company A.

Company C appears to be a speculative stock. It pays no dividend today and is not expected to for three years, but if Company C is successful, its dividend paying power may be much higher than Company A or B. Would you pay more today for a share of Company C or Company B? Once again, the answer depends to an important degree on your confidence that Company C will actually meet these future dividend expectations.

In this example we talked about dividends, but we said earlier that the price of a stock is related to its expected earnings. Investors generally talk about earnings because it is presumed that what a company earns is a good measure of what it can pay as dividends. The more a company earns, the more it can presumably pay in dividends.

In reality, dividends are not paid from earnings but are paid from cash. In a given year, a company may earn nothing—or even lose money—but choose to pay a dividend anyway, provided it has the cash available to do so. If a company is losing money and still pays a dividend, we would say (from an accounting point of view) that the dividend was paid out of retained earnings rather than current earnings. If a company is losing money and sees no expectation of returning to profitability soon, it is unlikely that it would continue to pay a dividend and deplete its cash. It is common practice today for a company to maintain a dividend for a few quarters, or even a year or more, if management believes that earnings will only be low, or a loss, for a short period. But over a period of years, if there is not a continuing flow of earnings, there cannot be a continuing flow of dividends.

Remember that when a dividend is declared and paid, it is deducted from *Cash* on the left side of the balance sheet and deducted from *Retained earnings* on the right. The Cash account reflects the actual dollars belonging to the company, and the Retained earnings account is just an accounting entry reflecting all the earnings minus the dividends paid down through the years (see Chapter 2 for review).

Price-to-Earnings Ratio

There are no rules about how much one should pay for any given amount of earnings per share, or dividends per share. In the example from Table 4.1 it is not clear whether Company C or Company B is worth more today. Making that judgment is the “art” of investing. Only after thorough analysis of a company and by long experience of studying the relationship between the price of a stock per share and its expected earnings per share, called the *price-to-earnings ratio*, does one begin to develop a sense of what a stock is really “worth.”

$$\text{Price-to-earnings ratio} = \frac{\text{stock price}}{\text{earnings per share}}$$

If we assume a stock is selling at \$100 per share, and its earnings per share are \$10, then the price-to-earnings ratio, often referred to as the price-earnings ratio, or just the P/E, would be “ten times,” or just “ten.”

$$P / E = \frac{\$100}{10} = 10 \times$$

At this point, however, we are all well ahead of our story. We will return to this ratio in other chapters.

Book Value Per Common Share

This ratio is simply the book value, defined in Chapter 1, divided by the number of shares outstanding.

$$\begin{aligned} \text{Book value} &= \frac{\text{Total assets} - \text{Total liabilities}}{\text{Number of shares}} \\ &= \frac{\$140,000 - \$50,000}{500 \text{ shares}} = \frac{\$90,000}{500 \text{ shs.}} = \$180 / \text{share} \end{aligned}$$

This ratio tells you about how much money each share of common stock could be expected to receive if the company were liquidated. When a company is liquidated, all its assets are sold and the money received is initially used to pay off the debts (liabilities). Then, if there is any money left over, it is split up among the common stockholders in proportion to how many shares of stock each owns. As a practical matter, in the case of a liquidation, after all the debts are paid off, it is unlikely that the stockholders

would realize book value. The exact Book Value figure of \$180/share assumes that each asset could be sold for exactly the value at which it is carried on the books (on the balance sheet.) Normally, when a company is liquidated, its inventories are sold for less than their value on the books. If the plant and equipment are used and worn, they might be sold for much less than their book value. On the other hand, an efficiently operating plant might sell for more than its book value because another company buying the plant would be able to save all the costs of building it. Land is also often worth more than what it originally cost.

When a company is liquidated, the amount of money raised selling off the assets is sometimes not enough to pay off all the liabilities. In this case it is usually known in advance which liabilities get paid off first. Recall that the bank and the financial services company who made loans to JMC both wanted to be paid first in the event of liquidation, but JMC told the financial services company that it had given the bank first priority. Similarly, the priority of all other liabilities is usually predetermined, either by negotiation, as with JMC's bank and financial services company in Chapter 3, or by law. The law in most states specifies that in the event of liquidation any back wages owed to employees and any taxes owed are very high priorities.

Liquidation can occur either voluntarily, because the board of directors decides to liquidate, or more likely because the company is bankrupt. Bankruptcy usually occurs when a company is unable to pay a debt or debts that are due. This debt can be a bank loan, an interest payment, an account payable to a supplier, or any other debt. The party owed the money can go to court and ask that the company be legally declared bankrupt. Sometimes, however, a company voluntarily goes to court to declare bankruptcy. We will discuss bankruptcy briefly in Chapter 10.

Even ignoring the value in bankruptcy, it is important to understand book value per common share because some investors like to use this ratio as a benchmark against which to measure the price of a stock. While most stocks sell for more than book value, some stocks sell at slightly below their book value, perhaps as much as 25% below. However, book value per share is often thought of as a price below which a stock will not fall for long, for the following reason: If the book value of a company were \$10 per share and its stock was selling for \$4, someone could attempt to buy all the stock and voluntarily liquidate the company, thereby realizing a \$6 per share profit. In practice, this does not happen often to a public company with widely held stock (many stockholders), but it is a real enough possibility that many stocks do seem to stop going down when the stock is selling well below book value, perhaps 25 to 50 percent below. When a stock falls that far

below book value, it often does not stay there long because the steep discount from book value attracts buyers.

Dividend Payout Ratio

The dividend payout ratio is the dividend per share divided by the earnings per share. For the year 2010, JMC paid a dividend of \$5 per share and its earnings were \$10 per share, so its dividend payout ratio was 50%.

$$\frac{\text{Dividend per share}}{\text{Earnings per share}} = \frac{\$5}{\$10} = 50\%$$

Dividend Yield

The yield on a share of common stock is defined as the dividend received by the investor divided by the price of the stock. The dividend received usually refers to the expected full year's dividend. Since most dividend paying companies pay a quarterly dividend, we would take the most recent quarterly dividend and multiply by 4 to get the expected annual dividend rate. For example, if a company's most recent quarterly dividend was \$1.25, its annualized dividend rate is \$5. Since the yield also depends on the price, it is important to know what price you are talking about. If a stock pays a \$5 dividend per share dividend each year and the price of the stock is \$100 today, the yield to the investor today is 5 percent.

$$\frac{\text{Dividend}}{\text{Stock Price}} = \frac{\$5}{\$100} = 5\%$$

If the current price of the stock falls to \$83, the yield is 6 percent.

$$\frac{\text{Dividend}}{\text{Stock Price}} = \frac{\$5}{\$83} = 6\%$$

An investor who purchased the stock at \$50 a few years ago might say his yield, based on his purchase price of \$50, is 10 percent.

$$\frac{\text{Dividend}}{\text{Stock Price}} = \frac{\$5}{\$50} = 10\%$$

When investors talk about the yield on a stock without otherwise specifying, they generally mean the dividend expected over the next 12 months divided by the price of the stock today. Since the price of the stock is always changing, the expected yield over the next 12 months is also always changing.

Yield usually refers to the return to an investor. The word occasionally has other uses, but you would know this by the context of the discussion. Bond yield, like stock yield, refers to the return to an investor but is more complicated and will be discussed in Chapter 8.

PROFITABILITY RATIOS

Gross Margin

Gross profit is the difference between Sales and Costs of Goods Sold. The *Gross profit margin* or just *Gross margin* is Gross profit divided by Sales. The gross profit margin is an excellent ratio for comparing profitability across companies or over time for one company.

$$\begin{aligned} \text{Gross Margin} &= \frac{\text{Gross Profit}}{\text{Sales}} = \frac{(\text{Sales} - \text{Cost of Goods Sold})}{\text{Sales}} \\ &= \frac{\$100,000 - \$70,000}{\$100,000} = 30\% \end{aligned}$$

In the case of JMC, the Gross Profit Margin for 2010 is 0.3 or 30%; that is, gross profit is 30% of sales. When making comparisons, it's important to remember that Gross Margins differ dramatically by industry. For instance, Gross Margins tend to be very high for biopharmaceutical companies and very low for discount retailers.

Operating Profit Margin

The *operating profit margin*, also referred to as the *operating margin*, is a measure of management's effectiveness in controlling the expenses associated with normal operations. Typically, Cost of Goods Sold, and Selling, General & Administrative Expense are the expenses under management's control in day to day operations. So the *operating profit* is calculated by subtracting COGS and SGA from sales:

$$\begin{array}{r r r r r} \frac{\text{Sales}}{\$100,000} & - & \frac{\text{less COGS}}{\$70,000} & - & \frac{\text{less SG\&A}}{\$18,000} & = & \frac{\text{Operating Profit}}{\$12,000} \end{array}$$

The operating profit margin would be:

$$\text{Operating Profit Margin} = \frac{\text{Operating Profit}}{\text{Sales}} = \frac{\$12,000}{\$100,000} = 12\%$$

For JMC, the operating profit *margin* for 2010 is 12 percent. In other words, for every \$1 in sales, the company generates \$0.12 in operating profit. Operating margin improvement—known as margin expansion—is generally a favorable indicator for a company. Margin expansion can imply: (1) the company has increased sales with a smaller percentage increase in costs, (2) management was able to raise the price of its products without losing business, and/or (3) management has found ways to reduce costs. Regarding the first of these, most businesses have some relatively fixed costs, so if the company increases its sales while some costs remain constant, the resulting margin expansion may be called *fixed cost leverage*, or *manufacturing leverage*. To the extent that the fixed costs were part of SG&A we would say the increased sales produced margin expansion due to *SG&A leverage*. Knowing the reason for margin expansion (or contraction) can help an analyst making an earnings forecast. (Note: Some companies provide more information than others about the reasons for profit margin changes. Such information may be learned from a company press release or a conference call after a quarter is reported, or from the company's form 10-Q filed with the Securities and Exchange Commission. In the real world, most companies with growing sales benefit to some degree from manufacturing or SG&A leverage, but some or all of that benefit may be offset by other fixed or variable cost increases.) Profit margin expansion for whichever reason, along with revenue growth, drives earnings growth over time.

Operating profit is sometimes referred to as EBIT, which stands for *earnings before interest and taxes*. Interest and taxes are not considered operating expenses. EBIT is a commonly used investment term that we will see again.

Pretax Profit Margin

The *pretax profit margin*, also called the *pretax return on sales*, is the profit before taxes divided by the total sales for the same period.

$$\frac{\text{Pretax Profit}}{\text{Sales}} = \frac{\$10,000}{\$100,000} = 10\%$$

Like the operating margin, the pretax profit margin is also a measure of the efficiency of a company. If two companies of roughly the same size, which sell the same products, have differing profit margins, the one with the greater margin is probably the more efficiently managed. This may not be true if the companies are of different sizes. A larger company can spread fixed overhead expenses over more units sold. The lower unit cost in the larger company would necessarily create a higher profit margin.

Within a given industry, the company with the highest pretax profit margin is in one way the safest investment because, if sales or profitability were to decline, perhaps due to a competitive price war, the company that started with the higher profit margin might only have its profits reduced; but the company which had a low profit margin to begin with could show a loss and eventually go out of business.

Net Profit Margin

Net profit margin may also be referred to as *profit margin after taxes*, *net margin* or *net return on sales*. It has about the same meaning as the pretax profit margin. The only case where it would make a difference when comparing two companies is if the two companies have differing tax rates. When the companies being compared have approximately the same tax rate, the analyst can use either the pretax or after-tax profit margin with the same comparative results.

Return on Invested Capital

To measure how well a company is investing its capital, we can look at the after-tax income (return), divided by the invested capital. For now, invested capital means the amount of long term debt plus equity carried on the balance sheet. Recall that capitalization may be thought of as the sources of money that bought the capital assets (i.e., the machinery and equipment that the company uses to make its finished goods). Therefore, *return on*

capital is a measure of how efficiently the company is able to use its assets to generate profit.

$$\frac{\text{Net profit after tax}}{\text{Total capitalization}} = \frac{\$5,000}{\$120,000} = 4.2\%$$

The 4.2 percent return on capital just shown was calculated by dividing JMC's net profit for 2010 by the total capital on the balance sheet at the end of 2010. However, the profit earned in 2010 was really earned using the capital the company had at the *beginning* of the year. Thus the 2010 return-on-capital ratio would be better calculated by dividing the 2010 profit by the capital at the beginning of the year. In this example we don't have the beginning-of-the-year capital. If we had the company's 2009 balance sheet available, we would divide the 2010 net profit by the total capital on the December 31, 2009, balance sheet. (The capital at the end of 2009 is, of course, the same as the capital at the beginning of 2010.)

Some analysts believe that using *average* total capital (an average of the capital at the beginning of the year and the end of the year) gives an even more accurate measure. This is because the amount of capital in a company is changing continuously during the year. Increases in capital could be due to: profits earned and/or money raised from sale of long term debt or equity (new stock). Decreases in capital could be due to: losses incurred, repayment of long term debt, payment of dividends, or less commonly, a company repurchasing some of its outstanding stock. Each of these items causes a change in either long term debt or equity—the two things that make up total capital.

This *return on invested capital* (ROIC) or simply *return on capital* (ROC) is a measure of the operating profit generated on the capital that was provided by both debt and equity holders. For JMC, the return on capital is 4.6 percent. In other words, management is able to generate nearly \$0.05 in after-tax operating income for every \$1 in capital. This ratio can be used as a basis for comparing companies in the same industry. For example, let's assume that two of JMC's competitors have returns on invested capital of 8 percent and 12 percent, respectively. Regardless of the size of the company, it could be concluded that the company with the 12 percent return has the potential to be the fastest growing since, proportionate to its capital base, it is generating the largest amount of cash to use to buy more assets to enable it to keep growing. The return on capital varies widely by industry, tending to be lower in competitive industries.

Return on Equity

The *Return on Equity* (ROE) ratio looks at profitability from the perspective of the stockholder. To calculate ROE, Net Income is divided by the book value of Shareholder's Equity.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{B.V. of Shareholder's equity}} = \frac{\$5,000}{90,000} = 5.6\%$$

For JMC, the Return on Equity is 5.6 percent. This ratio is closely monitored by equity investors because it is a measure of the return on the capital provided specifically by shareholders. In this case, for every \$1 in equity the company is generating nearly \$0.06 in net earnings or profit.

Return on Assets

A related measure is *return on assets* or ROA, which measures how effectively management is using company assets to generate net income. To calculate ROA, net income is divided by total assets. Using the 2010 financial statement data for JMC, the ROA is 3.6%. In other words, for every \$1 in assets, the company generated \$0.036 in profit.

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}} = \frac{\$5,000}{\$140,000} = 3.6\%$$

This is a good ratio to use to compare companies in the same industry, or to watch one company over time. Because some businesses, such as automobile manufacturers, need a high level of assets (are asset intensive) and other industries need lower levels of assets, the Return on Assets ratio is seldom appropriate for comparing companies in different industries.

DEBT AND INTEREST RATIOS

The word *leverage*, as used by investors, can also refer to debt. A company with a lot of debt on the balance sheet, relative to the equity on the balance sheet, is said to be highly leveraged. High leverage implies a high level of interest expense and therefore would make the company more risky if there is any doubt about the company's ability to make its interest payments on time. On the positive side, by buying a lot of its assets with

borrowed money, if the company is successful, earning per common share will be higher than if the company had financed (paid for) its assets by selling additional stock.

The next two financial ratios relate directly to the ability of the company to raise more money if needed.

Interest Coverage Ratio

The *interest coverage ratio*, sometimes called *times-interest-earned* or *earnings coverage ratio*, is a measure of the company's ability to meet its interest charges. If a company owing money were unable to meet its interest charges when due, the bank or person to whom the interest and loan is owed usually has the right to demand that the company immediately pay off not just the interest due, but the entire loan as well. If the company cannot meet this obligation, it risks being forced into bankruptcy. Thus, investors must watch a company's finances closely to make sure it will be able to meet all its interest and principal repayments on schedule.

The interest coverage ratio answers two questions: (1) How much money is the company earning that is available to pay interest? and (2) How many times larger is the available amount of earnings than it needs to be? In other words, how safely is the interest covered? Since interest is paid with cash, we could simply look at the cash on the balance sheet to see if there is enough to cover interest payable. But that really is not useful because, if a company used all its cash to pay interest, the company would be unable to continue operating. What we are really interested in is the ability of the company to generate sufficient cash over a period of time to meet its interest payments over the same period. Thus, the way this ratio is usually calculated is to first look at the income statement to see how much money came in and how much money had to go out before interest was paid. The difference is how much money was earned *that is available to pay interest*. The calculation is usually done using a full year's results, either the past year, or the expected results for the current year, or some future year.

Ratio calculation

Sales	\$100,000	(Came in)
Less: Cost of goods sold	-70,000	(This money had to be spent or there would be no products to sell)
Less: Selling, general and administrative expense	-18,000	(This money also had to be spent or the company could not function)
Less: Research and Development expense ^a	0	
Money available to pay interest	\$12,000	

^a In difficult times, a company can cut back on its R&D, but if some level of R&D is not maintained, the company's products will fall behind competitors' and the company will shrink and possibly go out of business. In the case of JMC, we have not assumed any R&D so we will carry it here at \$0, but include it for completeness.

Therefore, there is \$12,000 *available* to pay interest, and interest is "covered" six times (6x).

$$\frac{\text{Money available to pay interest}}{\text{Total interest}} = \frac{\$12,000}{\$2,000} = 6x$$

Note that *taxes* do not enter into the calculation. This is because interest charges are deducted *before* pretax profit and taxes are calculated. Thus, if interest charges were \$12,000 in this example, pretax profit would be \$0 and there would be no taxes to be paid.

While the ratio calculation above is perfectly correct and shows you exactly what you are calculating, it is usually presented differently in the financial press. Note that these statements say exactly the same thing in different ways:

$$\frac{\text{Earnings before interest and taxes}}{\text{Total interest}} = \frac{\$12,000}{\$2,000} = 6x$$

or

$$\frac{\text{EBIT}}{\text{Total interest}} = \frac{\$12,000}{\$2,000} = 6x$$

This means interest expense is covered 6 times over.

Earnings before interest and taxes is commonly referred to as EBIT. With interest covered 6 times, this company probably would be able to borrow a limited amount of additional money without too much difficulty. But if interest were covered 44 times (for example, earnings of \$88,000 before interest and taxes, and interest charges of \$2,000), an analyst would know that the company could borrow money easily and would be able to do so at a lower interest rate than a similar company with earnings of only 6 times. On the other hand, if interest were covered only 2 times, and if perhaps the liquidity ratios (see below) were weak or deteriorating, the analyst would suspect that this company might be in trouble and could have difficulty borrowing additional money.

In Chapter 14 we will see a different way to look at interest coverage.

Fixed Charge Coverage

In addition to interest coverage, many investors also use a similar ratio called the *fixed charged coverage ratio*. This ratio is calculated much like the interest coverage ratio; but, in addition to interest, it also takes into account certain other fixed charges, such as fixed lease payments and perhaps some other items. JMC is not leasing any assets so we will not do that calculation here.

Debt to Total Capitalization

Debt to total capitalization (sometimes referred to as *debt to total capital* or just *debt to cap*) usually refers to long-term debt divided by total capitalization (review in Chapter 3).

$$\frac{\text{Long term debt}}{\text{Total capitalization}} = \frac{\$30,000}{\$120,000} = 25\%$$

Note: Long-Term Debt and Equity are the only items we have seen in capitalization thus far. In a later chapter, we will add another term.

The less debt already in the total capitalization, the more easily (i.e., at lower interest) the company will be able to borrow money. What constitutes a “safe” ratio depends, again, on the nature of the company and its industry. An electric utility, for example, where earnings are very predictable, can easily borrow money above a 50 percent debt/total capital ratio, even if interest coverage is low. However, a company in which earnings fluctuate widely may have trouble borrowing more than 30 percent of its total capitalization, primarily because the ability to cover interest or to meet sinking-fund payments might be seriously impaired in a year when earnings are low.

Total Debt Ratio

The Total Debt ratio indicates how much debt a company has relative to assets. The ratio is calculated by dividing Total Debt by Total Assets. Unlike the Debt-to-Cap ratio discussed above, the Total Debt Ratio includes all current liabilities. Notably, current liabilities include Accounts Payable that are incurred as the company funds its day-to-day operations. Thus, if Current Liabilities are abnormally high, the Total Debt ratio would “flag” a possible problem that the Debt-to-Cap ratio might miss. This can happen when a company wants to borrow money in a period when the long term debt market is unattractive (i.e. very high interest rates), and as a result, the company is forced to borrow heavily on its existing lines of credit. Since lines of credit are viewed as short term, leverage ratios based on Long Term Debt alone would exclude it, thereby understating the company’s level of debt.

$$\text{Total Debt Ratio} = \frac{\text{Total Assets} - \text{Total Equity}}{\text{Total Assets}} = \frac{\$140,000 - \$90,000}{\$140,000} = 0.36$$

Companies with high debt ratios are considered to be riskier companies. Generally speaking, companies with debt ratios greater than 0.5 are considered “highly levered.” That said, the Total Debt ratio should be compared to other similar companies before drawing any conclusions.

LIQUIDITY OR FINANCIAL CONDITION RATIOS

Current Ratio

The *current ratio* is defined as current assets divided by current liabilities. It is a measure of the company's ability to pay off its short-term liabilities. Recall that current assets are those expected to be converted into cash within a year. Current liabilities are those that must be paid within one year. Since, in the normal course of business, current assets are continually being added (inventory, accounts receivable) and current liabilities are continually being paid off, the current ratio can be regarded more generally as a measure of the company's ability to meet day to day needs. For JMC, the current ratio in 2010 is 4:1, typically written 4x. We would say there is \$4.00 in current assets for every \$1 of current liabilities, or that JMC has its current liabilities covered 4 times by current assets.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\$80,000}{\$20,000} = 4 : 1$$

Because creditors lend money to a company with the promise of repayment, they prefer high current ratios that reflect liquidity. However, a high current ratio may also indicate an inefficient use of cash or poor inventory control procedures. For this reason, it is helpful to compare the company's current ratio to that of the other companies in the industry.

Quick Ratio

The quick ratio is another measure of the company's ability to pay off debt in the short run. The quick ratio is sometimes referred to as the Acid Test. To calculate the quick ratio, inventory is subtracted from current assets before dividing by current liabilities. This is because inventory is normally the least liquid current asset, because items held in inventory must be sold in order to generate cash. Further, large inventories may be a sign that the company has overbought, or that the company's products (finished goods) are not selling well, making the inventory even less liquid (harder to sell).

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}} = \frac{\$80,000 - \$40,000}{\$20,000} = 2 : 1$$

In the case of JMC, inventory accounts for half of current assets. As such, the quick ratio is 2:0, that is, the current liabilities are covered 2 times over. If the quick ratio is at least 1 :0, the company has sufficient cash and accounts receivable to cover the liabilities that will come due in the next 12 months. Again, the quick ratio for the company being analyzed should be compared to that of the industry.

Cash Ratio

The *cash ratio* is cash plus marketable securities divided by current liabilities. This is simply a more stringent version of the quick ratio, or acid test.

$$\frac{\text{Cash} + \text{Marketable securities}}{\text{Current Liabilities}} = \frac{\$5,000 - \$25,000}{\$20,000} = 1.5 : 1$$

The significance of the last three ratios lies not so much in the actual ratios, since they vary widely from company to company, especially companies in different industries, but in the changes that occur over a period of time in the same company. If a financial analyst saw the figures in Table 4.2, she would immediately conclude that the financial status of the company was weakening, and it might need to raise some outside money, either by borrowing or by selling stock to meet its current liabilities.

	2009	2010	2011	2012
Current Ratio	$\frac{2.4}{1}$	$\frac{2.5}{1}$	$\frac{1.2}{1}$	$\frac{0.7}{1}$
Quick Ratio	$\frac{1.1}{1}$	$\frac{0.9}{1}$	$\frac{0.6}{1}$	$\frac{0.5}{1}$
Cash Ratio	$\frac{0.8}{1}$	$\frac{0.8}{1}$	$\frac{0.4}{1}$	$\frac{0.3}{1}$

She would try to confirm this by looking at the profitability ratios and seeing if they, too, were declining. She would also ask the company officers what has caused this deterioration in financial position. Often, company officers can explain things that the analyst cannot read from the financial statements.

EFFICIENCY RATIOS

Efficiency ratios describe how well the company manages specific assets. Efficiently managing inventory and accounts receivable can save the company money on financing costs. We will see how efficiency ratios can sometimes give an early warning that company has a problem.

Total Asset Turnover

This is a measure of management's effectiveness in using all of the company assets to generate sales. The formula is simply sales divided by total assets. For JMC, the total asset turnover is 0.71. This means that for every dollar of assets, JMC generated \$0.71 in sales in 2010. Obviously, the higher the ratio, the more efficient the company is in using its asset base to generate sales. Like the return on invested capital, the Total Asset Turnover ratio would be a more accurate measure if calculated by dividing the company's sales by the *average* total assets for the year. This will reflect the fact that the asset level is changing over the year.

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}} = \frac{\$100,000}{\$140,000} = 0.71$$

Inventory-to-Sales Ratio

A company's inventory is always turning over. That is, old inventory is constantly being sold, and new inventory is constantly being added. A company needs to have enough inventory on hand so that it can fill all its customer's orders, but it does not want to have more than it needs because it is expensive to carry the extra inventory. Companies learn over time about how much inventory they should carry to balance these needs. The actual inventory level in a company will vary around the desired level, as

shipments to customers pick up and slow down, and as new inventory is manufactured or purchased. To be sure there is enough inventory, most companies need to schedule their manufacturing and inventory purchasing well in advance. As a result, if sales to customers slow down unexpectedly, a company can end up with more inventory than it needs before it can slow or stop the manufacturing process or purchasing of raw materials. Such a buildup of inventory can be an early warning to investors that sales are slowing. On the other hand, a slow buildup of inventory would be expected if the company's sales were growing, and would not be an indication of a problem. So the best way to watch the inventory level is to look at it in relation to the company's sales. In the case of JMC, the inventory-to-sales ratio at the end of 2010 was as follows:

$$\frac{\text{Inventory}}{\text{Sales}} = \frac{\$40,000}{\$100,000} = 40\%$$

Like many other ratios, one year by itself is hard to interpret, but watching a ratio over a period of time can reveal potential problems. Suppose, for example, JMC had inventory-to-sales ratios as follows:

	2007	2008	2009	2010	2011
Inventory-to-sales ratio	43%	40%	46%	40%	65%

A financial analyst looking at these ratios would want to know immediately if there was a good reason for the inventory buildup in 2011. An acceptable reason might be that JMC had announced a new line of improved mousetraps that was expected to lead to higher sales and profits in 2012 and beyond, so the company was building extra inventory in anticipation of a spurt in sales. Also, the announcement of the new product line might have caused customers to cancel their orders for older traps. With this explanation, investors may be comfortable with the inventory build. On the other hand, the reason for the inventory buildup might be that another company is making a better mousetrap, or is selling traps cheaper than JMC, and JMC's business is suffering. If this were the reason, JMC stock could be headed down and should be sold. If we do not know the reason, in the absence of a satisfying explanation, we as investors may be better off assuming the worst and selling the stock.

Inventory Turnover

Instead of looking at the inventory-to-sales ratio, some analysts turn it upside down and look at the sales-to-inventory ratio. This is called the *inventory turnover ratio*. Using the same inventory and sales numbers used to calculate the inventory-to-sales ratios above, the inventory turnover ratio for the same years would look as follows:

	2007	2008	2009	2010	2011
Sales-to-inventory ratio					
or	2.3x	2.5x	2.2x	2.5x	1.5x
Inventory turnover ratio					

We would say that JMC's *inventory turns* slowed sharply in 2011, possibly indicating a problem.

Inventory Turnover in Days

Another way investors (and companies) look at inventory levels is to look at the number of day's sales currently held in inventory. The average number of days sales in inventory can be determined by dividing 365 by the inventory turnover ratio. The calculation below shows that in 2011, JMC's inventory sat on the shelf 243 days on average before being sold.

$$\text{Inventory Turnover in Days} = \frac{365 \text{ days}}{\text{Inventory Turnover}} = \frac{365}{1.5} = 243 \text{ days}$$

Looking at the five year history of JMC's year-end inventory turnover in days, we see the same inventory buildup as we saw above.

	2007	2008	2009	2010	2011
Days Sales in Inventory	159	146	166	146	243

This shows that at the end of 2011, JMC had enough inventory for 243 days of sales. A problem with this is that if the company's sales are growing, the rate of sales per day at the end of the year will be greater than the rate of sales at the beginning of the year, which would distort the ratios. A less distorted way to look at this ratio would be to look at each quarter's sales and quarter end inventory.

When calculating either inventory-to-sales, or the inventory turnover ratio, some investors use *Cost of goods sold* instead of *Sales*. This is because the sales level may have changed just because the company's selling prices changed. Thus the sales figures might be misleading as to the amount of physical inventory that was sold. Using Cost of goods sold instead of Sales prevents this possible distortion.

Accounts Receivable-to-Sales Ratio

Like the previous ratio, the ratio of Accounts receivable to Sales can also give an indication that something is wrong at the company. This ratio is also best watched over a period of time. JMC's receivables-to-sales ratio at the end of 2010 was as follows:

$$\frac{\text{Accounts receivable}}{\text{Sales}} = \frac{\$10,000}{\$100,000} = 10\%$$

If this ratio stayed at about the same level over a period of time, it would not tell us anything. But if the ratio suddenly jumped to a much higher level, it might indicate that customers were not paying their bills, and that, in turn, could mean that JMC would be unable to pay its liabilities, and could be headed for bankruptcy. Thus, if an investor sees the receivables-to-sales ratio getting abnormally high, he should try to find out the reason for it, and if there is not a satisfying explanation, he should sell the stock.

Accounts Receivable Turnover and Days Sales in Receivables

Receivables turnover, which is the inverse of the *accounts receivable-to-sales* ratio, describes how quickly the company collects on those sales. In 2010, JMC's receivables turnover was 10 times.

$$\text{Receivables Turnover} = \frac{\text{Sales}}{\text{Receivables}} = \frac{\$100,000}{\$10,000} = 10x$$

Using the day's sales in receivables ratio, we see that the company collects on credit sales on average, every 36.5 days. This ratio is sometimes referred to as the *average receivables collection period*, or *day sales outstanding*.

$$\text{Receivables Turnover in Days} = \frac{365 \text{ days}}{\text{Receivables Turnover}} = \frac{365}{10} = 36.5 \text{ days}$$

If an investor sees a large increase in Days Sales Outstanding, that may be a warning sign. If JMC's customers are delaying paying JMC, or in some cases stopping payments to JMC, it might imply that those customers are having financial trouble. If they go out of business, JMC is not only likely to lose the Receivables, but will also lose a customer. Another ominous explanation might be that JMC saw its sales going down, and in an effort to maintain a high sales level, began to sell mousetraps to more risky retailers, who don't pay as quickly and have a much higher probability of going out of business, and never paying.

Going Public—Primary and Secondary Offerings

Shares of stock represent ownership in a company. The statement, “JMC, Inc. has 500 shares outstanding,” means JMC ownership is divided into 500 equal parts, each share representing one five-hundredth. Individual and institutional investors (mutual funds, hedge funds, pension funds, insurance companies and others) own these shares. It would be clearer to say, “JMC, Inc. has 500 shares outstanding, which are owned by investors.” The company has no stock of its own. It cannot own itself. A company may use some of its money to buy back shares of its stock from investors who own them, but that stock, called *treasury stock*, no longer represents partial ownership of the company. These treasury shares may not be voted by the company at stockholders’ meetings and they do not receive dividends. Such shares are without value unless reissued by the company.

If one of the investors who owned 10 shares of JMC stock sold his shares to another investor, it simply means that part of the ownership of the company (10 shares) has changed hands. Regardless of the price at which the stock changed hands, there is no change in any of the company’s accounts. There are still only 500 shares outstanding. The Common Stock at Par Value and Additional Paid-in Capital accounts do not change. The dollar amounts in those accounts only represent the total amount of money that was paid into the company when each share of stock was issued *by the company* to its *first* owner.

By way of analogy, if I buy a new Chevrolet, the money goes to General Motors. If I then sell my Chevrolet to my neighbor, he pays me. General Motors never sees the money that my neighbor paid me.

That car can change ownership every day and it has no effect on the financial statements of General Motors. Similarly, once shares of stock have been issued by JMC (sold to their initial owner) the ownership of those shares can be bought and sold by investors every day, at any price, and those sales will not affect JMC's company accounts.

JMC is currently a private company. This means that none of its stock has been registered with the Securities and Exchange Commission and sold to the public. As discussed at the end of Chapter 3, before stock of a company can be sold to the public (many investors) it must first be registered with the S.E.C. Thus, prior to going through the registration process (discussed shortly), JMC is limited in its ability to sell new shares of stock, and JMC's 12 stockholders are also limited in their ability to sell their stock to other investors. By going public—that is, registering some of JMC's shares of stock with the SEC and selling them—it becomes much easier for both the company to sell new stock and for existing private shareholders to sell their (still private) stock in the future. Note that some, but not all, of a company's shares need to be registered with the S.E.C. for the company to be deemed “public.” As we will see, there are still restrictions on selling the outstanding shares which were not registered, although the company being public does make the selling of these unregistered shares easier. Nevertheless, once any portion of the company's shares are registered and sold to the public, it is deemed a public company.

Thus, there are two reasons why a company may want to go public:

1. The company wishes to raise more capital, and does not want to borrow or have another private stock offering. In this case, the company writes up new shares (provided they have been authorized by the existing stockholders) and sells them to investors (new or existing). All the money from this sale of new shares goes to the company.
2. Existing stockholders in a private company want to sell their stock and raise money for themselves. In this case, all the money from the sale of the stock goes directly to the stockholders who are selling their stock.

In either case, it is the company officers who must file the registration statements with the Securities and Exchange Commission (S.E.C.), but in the latter case, we say it is the shareholders who are “bringing the company public.” Typically, when a new company is formed, the investors who are putting up their money in exchange for the initial “private” stock, decide among themselves, when and under what circumstances those stockholders can force the company to go public. This agreement is put in writing and is signed by all those people who wish to invest (put money) in the company. This is sometimes called the “registration rights” agreement. The registration rights agreement may say something like, “Any time after the company has been profitable for at least two years, and if a majority of the stockholders are in favor, we will have the right to have company officers take all the necessary steps for a public offering.” Every company’s agreement with its initial stockholders is different.

REGISTERING THE STOCK

For whichever of the above reasons the company is going public, the shares to be sold to the public must first be registered with the S.E.C.. This means the company must file with the S.E.C. a statement of (1) how many shares of stock will be sold, (2) whether they are new shares being sold by the company or already outstanding shares being sold by current stockholders, or some of each, and (3) certain financial and other information about the company to help potential investors (buyers) make an evaluation of the risks involved in buying this stock. This information is filed with the S.E.C. on form S-1 or a similar form. A summary of the most relevant information is put together in a small booklet called a *prospectus*. The S.E.C. examines the S-1 and the prospectus. If the S.E.C. examiners are not satisfied that the filing fully complies with the law and that enough information has been presented, it requests more. The S.E.C. does not attest that the information presented is truthful, or even that it is adequate for investors to make an informed decision. But when the S.E.C. gives its permission for the stock to be sold to the public (it declares the registration to be *effective*),

investors generally assume there is enough information presented that, if truthful, an investor should be able to make an informed decision about the risks in the stock. If the information is found to be fraudulent, however, the people who bought the stock based on the information contained in the prospectus may be able to return the stock to the company and have their money refunded. Furthermore, the perpetrators of the fraud are subject to criminal prosecution.

Note that the prospectus deals primarily with the past performance of the company and some of the risks in owning the stock. The prospectus does not make projections of future company earning or provide much other information that might help investors decide what the stock might be worth in the future. But the historical data and other information in the prospectus are generally regarded as a good starting place for investors who are trying to value the stock.

While the registration statement is pending with the S.E.C., we say the company is “in registration.” While a company is in registration it is allowed to print and distribute a *preliminary* prospectus, sometimes called a *red herring*. This name derives from the fact that the company is required to print in red ink on the front page that this is only a preliminary prospectus and is subject to change.

When the S.E.C. is satisfied that the prospectus is sufficiently informative, i.e. has all the required disclosures, it declares the registration to be “effective.” Once the registration has been declared effective, both the company and/or the stockholders who are selling their shares are free to sell all or just some of the shares that were just registered. They may not sell any other shares. Recall that the prospectus had to state how many shares each stockholder or the company was registering. Once the registered shares have been sold, those shares are registered *forever* and may be sold from one investor to another every day without another registration filing or prospectus. (There are some unusual circumstances when already-registered shares must be registered again. These are discussed later in this chapter.)

The newly registered shares do not have to be sold right away, although they most often are. A registration statement can remain effective for anywhere from 60 days to over a year, depending on circumstances. Often a company can amend a registration statement with updated information to keep it “effective,” but eventually the

effective time lapses and, at that point, any of the registered shares that were not sold are no longer deemed registered, and they cannot be sold until a new registration statement is filed and declared effective. The reason a registration lapses is that, with the passage of time, the old information becomes out of date and potential investors no longer have enough current information to make an informed decision.

Exceptions to Registration

There are some exceptions to the formal registration procedure. First, under Rule 144, most holders of unregistered stock who have held their shares for at least two years may sell these shares to the public without registration. Unregistered shares held between one and two years may also be sold under Rule 144, but have some restrictions, such as how many shares a person can sell in a three month period. Once unregistered shares of stock are sold under Rule 144, they are then free to trade forever, as if they had been registered.

Other ways that formal registration can be avoided include Rule 144A and Regulation S. Rule 144A permits companies to sell new shares of unregistered stock to “Qualified Institutional Buyers,” meaning sophisticated hedge funds, mutual funds, pension funds, insurance companies, etc. This 144A stock, as it is called, can be freely sold among Qualified Institutions while it remains unregistered, but before being sold to the public, it must either be registered or sold under Rule 144. Do not confuse Rule 144A with Rule 144. Rule 144A refers to *a company* selling new shares of its stock. Rule 144 refers to *stockholders* selling their already-outstanding shares.

Regulation S permits companies to sell new shares of unregistered stock to offshore (non-American) buyers. Under certain circumstances, that stock can eventually come back to the U.S. market and be treated as registered stock. There are a few other exceptions to the registration required—too minor to be discussed here.

PRIMARY AND SECONDARY OFFERINGS, AND GOING PUBLIC

When a company sells new stock, either privately (unregistered stock) or publicly (registered stock), the sale of stock is called a *primary offering*. When existing shareholders sell their already-outstanding stock, either to other private individuals or to the public, it is called a *secondary offering*. Unfortunately, as we will see below, in common usage the term “secondary offering” has also come to be used when referring to certain primary offerings, causing much confusion. For now, the discussion will use “primary” and “secondary” only as correctly defined above.

In a primary offering, the money from the sale of the stock goes to the company. In a secondary offering, the money from the sale of the stock goes to the stockholders who are selling their shares. If this distinction is clear, it should be apparent that there is no limit to the number of primary offerings a company can have provided each such offering is authorized by the shareholders. Similarly, there is no limit to the number of secondary transactions that can take place in a company’s stock. The secondary transactions, of course, are investors (stockholders) selling their shares to other investors.

The first time that registered shares of a company are sold to the public, whether as a primary or secondary offering, we say the company is “going public,” or “having its initial public offering.” After the initial public offering, the company is deemed to be public, even though only some, not all, of its outstanding shares are registered and therefore are tradable by the public. The company may subsequently have many more public offerings, but none of those subsequent public offerings means the company is “going public.” The company is already public as a result of its initial (or first) public offering, sometimes called its IPO. When a company does a subsequent public offering (after its initial public offering), we could say the company is “doing another primary offering,” or “is selling a new issue,” or “is doing a follow-on offering.”

By the precise definition of *secondary*, every time a person sells one or more shares of stock to another person, he or she has made a secondary sale. Therefore, every purchase or sale of stock, on a stock exchange, NASDAQ or over the counter, is technically a secondary sale. The word *secondary*, however, is not normally used that way. Shares that are sold from one person to another are just called *trades*.

More commonly, a *secondary offering* refers to a block of unregistered stock that is owned by an individual or financial institution that is being registered and sold to the public. For example, if Mr. Jones or his original four investors in Jones Mousetrap Company decide to have their stock registered and sold to the public, that would be a registered secondary offering. If their stock was being sold under Rule 144 (without a registration), that would still be a secondary offering because the stock is already outstanding and the money from the sale is going to the selling stockholders, not the company. Similarly, financial institutions also may have blocks of unregistered stock that they wish to register and sell to the public in a secondary offering. Such unregistered stock might have originally been purchased from the company as a *private placement* (discussed in the next section).

Less frequently, a secondary may refer to re-registering previously registered stock. For example, if an individual or fund holds a large block of stock, usually more than 10 percent of the company's total outstanding shares, and wishes to sell it all at once to the public, the holder may first need to have the company file a registration statement with the S.E.C.. This usually occurs when the holder of the stock is an *insider*, which means he or she has access to information about the company that the general public does not. While a registration statement and related prospectus obviously cannot reveal every bit of information that an insider knows, it is theoretically required to reveal at least "all material information" about the company that the prospective buyer would need to evaluate the risks. This "material disclosure" requirement applies to all prospectuses, including stock that is being re-registered or stock being registered for the first time.

Although the usage of *primary* and *secondary* as described above is generally accepted on Wall Street, the term *secondary* has also come to be used by many people to mean any public offering by a company of new shares of stock that occurs after the initial public offering. Correct

usage would refer to these subsequent public offerings as *follow-on* offerings, or as a second public offering, a third public offering, and so on. Such offerings could simply be referred to as *new issues*. Each of these subsequent public offerings of new stock *by the company* would, of course, be a primary offering. Unfortunately, this misuse of the term *secondary* can create confusion, since it may not be clear from context whether a *secondary offering* is, in fact, correctly referring to already-outstanding stock, or is incorrectly referring to a follow-on primary issue.

PRIVATE PLACEMENTS

A *private placement* occurs when a company sells new, *unregistered* stock to individuals or financial institutions. Such a sale would be a primary offering because the company is getting the money. A company may prefer to sell a private placement of unregistered stock, rather than have a public offering, because it wants to raise money quickly and avoid the time-consuming and costly process of filing a registration statement for a public offering. It is also possible that the company has some information that it does not wish to reveal that would have to be disclosed in a prospectus if the stock were to be registered and offered to the public.

Note that a company can sell a private placement of unregistered stock even though the company is already public. Again, being “public” just means that the company already has *some* public shares outstanding. It does not mean that *all* the company’s shares have been registered and are free to be traded among the public (although they may be for older companies.) Although new, privately placed shares are not registered, they still must be authorized by the existing shareholders.

In a private placement of stock, the actual stock certificate usually has a statement stamped on it, called a *legend*, which says that those shares have not been registered and may not be resold unless a registration statement is in effect, or “unless an exemption from such registration is available,” such as under Rule 144, previously discussed.

Such stock is sometimes called *legend stock*, or *investment letter stock*, or just *letter stock*. The legend also says that the stock has been acquired “for investment.” The laws governing the resale of this legend or investment letter stock are not precisely defined; in some cases the law states that the stock may be held for a period of as little as four months, and in other cases means it must be held for a period of two or three years before it can be sold without a registration.

Definitions

- **Primary Offering.** When a company creates new shares and sells them, either publicly or privately, it is a primary offering. In a primary offering, the company receives the money from the sale of the shares.
- **Secondary Offering.** When investors who own shares of stock in a company sell their already outstanding shares to other investors, it is a secondary offering. In a secondary offering, the individuals or institutions who sold the stock receive the proceeds, not the company. A secondary offering most often refers to unregistered stock held by investors that is being registered for the time and sold to the public. Unfortunately, in recent usage, the word *secondary* has come to describe any public offering of new shares by the company *after* the initial public offering. These follow-on or subsequent public offerings *by the company* should more properly be referred to as primary offerings or new issues.
- **Public Offering.** Any time registered stock is being sold, it is a public offering, whether it is a primary or a secondary offering.
- **Initial Public Offering.** The first time that any stock of a company is being registered and sold to the public, it is the company’s initial public offering, or IPO. An IPO can be a primary or a secondary, or a combination of both.

- **Private Placement.** Any time unregistered shares are being sold, it is called a private placement or private offering. A private offering will be a primary offering if it is being sold by the company. A private offering will be a secondary offering if already outstanding, unregistered shares are being sold from one investor to another.
- **Follow-on offering.** Any primary offering of new stock issued by the company after the initial public offering

WHY A COMPANY GOES PUBLIC

Let us now return to why a company goes public. The first reason is that the company wants to raise money (i.e., capital). This would lead to an initial public offering which is a primary offering. A second reason to go public would be because some of the existing stockholders of a private company want to sell some or all of their shares to raise money for themselves. This would lead to a public offering which is a secondary offering. In fact, many public stock offerings are *combined offerings*, meaning that some of the shares being offered are primary shares being offered by the company, and the other shares are secondary shares being offered by existing shareholders. Let's look more closely at the latter.

Ms. Smith owns 100 shares of JMC. JMC's earnings per share are \$10 and the company is paying a dividend (\$5 per share per year), so Ms. Smith will receive a total of \$500 per year in dividends. If Smith were to sell her stock, however, she could get more for it than the \$5 per share the stock offers her in dividends this year. This is because the purchaser of the stock can look forward to a future stream of hopefully increasing earnings and dividends. With an expected dividend of at least \$5 per share per year, Ms. Smith's stock should be worth at least \$100 per share because a \$5 per share dividend on a \$100 stock would provide a 5% yield, an attractive yield in today's market.

If the stock is earning \$10 per share and investors are willing to pay \$100 per share, we would say the price-to-earnings ratio, or P/E, of the stock is ten (10x).

$$\text{P/E ratio} = \frac{\text{Price / share}}{\text{Earnings / share}} = \frac{\$100}{\$10} = 10x$$

In other words, investors are willing to pay 10 times current earnings per share (or 20 times the current dividend) for a share of JMC stock. In Wall Street language one would say, “Investors are willing to pay 10 times earnings for JMC,” or, “JMC’s price-to-earnings ratio is 10x,” or, “The investment community is capitalizing JMC’s earnings at 10 times.” Note the use of the word *capitalize*. Again, this is a word with many meanings. In this case, it refers to what price-to-earnings ratio investors are willing to pay for a share of JMC stock.

If Smith sells her hundred shares at \$100 a share, she will have a total of \$10,000 in cash, compared with the \$500 per year she might have expected to receive in dividends if she held the stock. This is the main reason why initial stockholders of a company want the company to go public—because the public’s willingness to pay a high price-to-earnings ratio enables the original stockholders to receive in cash today what they would not otherwise get for years, if ever, in dividends.

An initial investor does not, of course, need to sell all of her shares. For that matter, she does not need to sell any. Suppose Ms. Smith chose to hold all of her stock. Instead, assume the company itself, or other individuals, sold stock to the public to raise money. If the public paid \$100 per share for the stock, and assuming the stock continued to trade at about that price, Smith would know that her stock was worth \$10,000, and she could sell it later (after either registering it, or selling it under Rule 144) when she needed the money.

It is this willingness of stock market investors to pay a high multiple of current earnings (e.g., Facebook went public with a P/E of ~75x) that provides incentive for people with good ideas to start their own companies. Similarly, this incentive causes people with capital to invest in new ventures, as did the four individuals who invested in Jones Mousetrap Company in Chapter 2.

This incentive is also one reason why companies sometimes lose their best people. An engineer with a new idea might get a bonus from his

company for the idea, but it is far less than what he will make if he forms his own company and keeps a lot of the stock for himself, as did Jones in JMC. Recall that Jones put up one-third of the money but kept 60 percent ownership in the company when he accepted capital from the four initial investors.

One way that companies are able to prevent their key employees from leaving is to give them company stock options. (These are options to buy shares of the company directly from the company, and are not the same thing as publicly traded options an investor can buy through a broker.) These options offer individuals a way to make a lot of money in a stock even if they did not put any money into the company at the beginning. As an example, assume that Ms. Appel is a valued employee of XYZ Corporation, and management of XYZ has given her a stock option on 100 shares of XYZ stock. The stock option may say something like the following:

Ms. *Appel* has the right, anytime in the next three years, to purchase from the company 100 shares of stock at \$100 per share.

What this says is that Ms. Appel is being offered the right to buy a given number of shares (100 in this case) of XYZ stock *anytime* within a specified period (up to three years in this case) for a price (\$100 per share) that is specified today (at the time the stock option is initially given). Say, for example, Ms. Appel was given this stock option on January 4, 2013, at which time XYZ's stock was selling at \$100 per share. It is now May of 2014 and XYZ's stock has appreciated to \$300 per share, which Ms. Appel thinks is as high as it is likely to go before her option *expires* on January 4, 2016. Thus, she decides to *exercise* her option. So she calls the person who is administering the stock option plan and says she wishes to exercise her option and buy 100 shares at \$100 per share. She can now sell it the same day at \$300, and make a \$200 profit per share. Since her option was for 100 shares, she has made a gain of \$20,000 on top of her regular salary.

If, however, the stock goes down while she is holding the option, she has lost nothing since she has not paid anything yet and does not have to. In most large companies, management can offer enough shares in options to keep most good employees happy without having to give away a significant portion of the company. Options also help to keep employees because, in most companies' stock option plans, if the employee leaves the company, he

or she must forfeit the options. Before management can offer any stock option to any employees, however, the company's whole stock option plan must be approved by the stockholders.

A Primary Offering after the Company is Public

Once a company is public, if it wishes to do a follow-on offering of stock, it can file another registration statement, as described earlier in this chapter, and when the registration is declared "effective," the company can sell the stock promptly. Alternatively, the company may be able to use the *shelf registration* procedure. Shelf registration enables the company to do the time consuming registration work early, but delay the offering until management feels the time is right. Most typically, this would be a case where the company expects that it will need new capital (cash) within two years but does not want to sell the stock immediately because management feels the stock price is likely to be higher at some point before the new capital is needed; either because market conditions are expected to be more favorable, or because the company expects to report positive developments which will drive the stock price higher.

By having an "effective" shelf registration, the company can then decide when to sell all or just some of the stock that was registered under the shelf prospectus. If some, but not all, of the shelf-registered stock is sold, the shelf registration remains effective so the unsold shares can be sold at another time.

The prospectus that is part of a shelf registration filing is called a *base or core* prospectus. When the company decides to sell the shelf-registered stock, it will file a *prospectus supplement* which updates the base prospectus and gives more specific information about the securities being currently offered. The prospectus supplement does not have to repeat most of the information originally filed on the base prospectus, and for most companies, it does not have to be reviewed and approved by the S.E.C., as the base prospectus had to be. Thus the procedure goes much faster. The prospectus supplement, which must be delivered to buyers of the stock, is usually published with the original base prospectus included in the booklet. This shelf registration procedure cannot be used when doing an initial public offering.

In sum, this shelf registration process enables a company to raise money on shorter notice, so it can take advantage of favorable market conditions, i.e. the company's stock price is up and an active stock market suggests that there will be buyers for all the stock the company is about to issue, without driving the price down. If market conditions never look acceptable, or the company decides it does not need the money, the company is not obligated to sell the shelf-registered stock; but after two years, the shelf registration will lapse unless the registration statement is properly updated.

In practice, when a company, especially a small company, announces the filing of a shelf registration, the stock may go down somewhat as investors know that a supply of new shares will be put on the market soon. This is discussed in the next chapter.

6

Earnings Dilution—JMC Goes Public

In March of 2011, JMC decided business was going so well that it was time to build a second mousetrap factory, to be designated Plant Number 2. Once again, the question arose as to where the money would come from to build the plant. In other words, how would the plant be financed?

With long-term debt comprising 25 percent of total capitalization and interest coverage of 6 times (6x—see ratio calculations in Chapter 4), it is doubtful that JMC could borrow the \$10,000 it needed for the new plant.

A bank, or other lender, which was considering making the loan, might have accepted the 25 percent debt-to-total capitalization ratio and even the 6x interest coverage, but these ratios were computed *before* the effects of the expected loan were considered. A potential lender would want to know what the ratios would be *after* the loan had been made. Assuming JMC would have to pay 10 percent interest per year on a \$10,000 loan, the annual interest would be \$1,000. As a result, the interest coverage would be reduced to 4x.

$$\frac{\text{Annual earnings before interest and taxes}}{\text{Annual interest}} = \frac{\$12,000}{\$2,000 + \$1,000} = \frac{\$12,000}{\$3,000} = 4x$$

Interest on existing debt ↑ ↑ Additional interest on presumed \$10,000

The debt-to-capitalization ratio would increase to 31 percent.

$$\begin{array}{c}
 \text{Old debt} \quad \downarrow \qquad \qquad \downarrow \quad \text{New debt} \\
 \frac{\text{Debt}}{\text{Capitalization}} = \frac{\$30,000 + \$10,000}{\$120,000 + \$10,000} = \frac{\$40,000}{\$130,000} = 31\% \\
 \text{Old capitalization} \quad \uparrow \qquad \qquad \uparrow \quad \text{New debt}
 \end{array}$$

With this lower earnings coverage and higher debt ratio, Mr. Jones realized that it was unlikely that his small company would be able to get a \$10,000 loan. (For large, established companies such as General Motors, these ratios might be acceptable).

Thus, JMC realized it would have to raise more equity money, which is another way of saying, “sell new stock.” Since none of the current 12 investors wanted to put more money into the company (i.e., buy more stock from the company), it was decided that the company would have to sell stock to the public. Also, it occurred to some of the 12 stockholders that, as long as the company was going through the process of registering new stock to sell, they could take advantage of this registration to sell some of *their* stock, too. So, it was decided to register and sell some new shares (a primary offering) as well as some of the already outstanding shares (a secondary offering).

Since neither Jones nor the other owners knew how to go about selling stock to the public, they consulted Mr. Greenshades, who suggested they contact an investment bank. An investment banking firm has nothing to do with banking in the usual sense of checking accounts and personal loans. Rather, an investment bank is a firm that helps businesses raise money by selling new stock or bonds to either the public or as private placements to financial institutions. Jones contacted three investment bankers, all of whom visited the company and explained to Jones how they could help JMC raise new equity capital by “going public.”

Mr. Gaines, from the firm of Gaines & Wynn Investment Bankers, Inc., told Jones that his firm had brought many companies like JMC public and was quite experienced in selling new stock for small firms like JMC. Mr. Gaines explained that the price of a stock is always related to how well the company has been doing and is expected to do, but the actual price at which the stock can initially be sold to the public is determined by the demand for

the stock by interested investors. But from his years of experience, Mr. Gaines thought that in the current stock market environment, with JMC's expected growth rate of earnings per share of about 12 percent annually, the stock might be expected to sell at a price-earnings (P/E) ratio of somewhere between 10x and 12x. (Note: "Price-earnings" ratio, "price-to-earnings" ratio, and "P/E" mean the same thing. We will use them interchangeably.) Therefore, if JMC was expected to earn \$2 per share this year, the stock might be expected to sell for between \$20 and \$24 per share. Whether the stock will tend to sell at the low end of this range (or even lower), or at the high end of the range (or even higher) is hard to predict, but is related to a number of factors, including some directly relating to JMC, and some relating to the environment in which JMC operates. Such factors include:

- The company's historic growth rate of sales and earnings
- The company's future growth potential
- The end markets the company serves. How fast are the markets growing? This will directly affect future sales volume.
- The company's competitive position within each end market. Is the company gaining market share or losing it? How long is the company expected to maintain its competitive advantage?
- The uniqueness of the company's products. Does the company have a monopoly or is it one of several companies making similar products, and therefore, subject to price competition that could pressure future sales and earnings?
- The company's cost structure. Are operating margins expected to expand or contract?
- The amount of debt in the company's capitalization. Are high interest costs negatively impacting earnings growth?
- Is management highly regarded?
- The company's expected valuation relative to peers. Should the company trade at a premium or discount price-earnings ratio to peers?
- The impact of government regulations and taxation
- The state of the economy and the stock market

Factors such as these, and others, will impact what price investors are willing to pay for a stock.

DILUTION

Mr. Gaines pointed out that JMC would obviously want to sell its shares for as much as possible, for two reasons: (1) so the selling stockholders could get the most possible money for their shares, and (2) so the company could raise the necessary funds selling as few shares as possible so as to give away the least possible percentage ownership of the company (i.e., have the current shareholders suffer the least *dilution*).

Dilution is an important concept in understanding the stock market. Dilution occurs when outstanding shares of stock in a company become worth less as a result of the company issuing more shares. Look at the following example.

Currently, JMC has 500 shares outstanding and is earning \$5,000; thus, it has earnings per share of \$10.

$$\frac{\text{Earnings}}{\text{Shares outstanding}} = \frac{\$5,000}{500} = \$10 / \text{share}$$

Mr. Gaines said that based on his experience with similar companies, he expects that JMC stock should sell at a price-earnings ratio of 10x. Therefore, one share of stock will sell at \$100.

$$\frac{\text{EPS}}{\$10} \times \frac{\text{P/E}}{10x} = \frac{\text{Stock Price}}{\$100}$$

At first glance, with the stock selling at \$100, it appears that JMC would have to sell 100 shares to raise \$10,000.

$$100 \text{ shares} \times \$100/\text{share} = \$10,000$$

But adding 100 new shares will lower EPS as follows:

$$\text{EPS} = \frac{\text{Earnings}}{\text{Shares Outstanding}} = \frac{\$5,000}{\underset{\substack{\uparrow \\ \text{Old} \\ \text{shares}}}{500} + \underset{\substack{\uparrow \\ \text{New} \\ \text{shares}}}{100}} = \frac{\$5,000}{600} = \$8.33 / \text{share}$$

With EPS of \$8.33, if the stock sells at a P/E ratio of 10x, it would now sell only at \$83.33. Therefore, we could say that issuing 100 new shares has *diluted* JMC's earnings from \$10.00/share to \$8.33/share, or approximately 17 percent dilution.

Note also that with the stock at \$83, JMC cannot raise \$10,000 by selling 100 shares as long as the P/E remains at 10x.

<u>EPS</u>	<u>P/E</u>	<u>Stock price</u>	<u>New shares</u>	<u>Money raised</u>
\$8.33	x 10x	= \$83	x 100 shares	= \$8,300

Thus, JMC has to sell more shares of stock to raise the \$10,000. But that will lower EPS even further. It turns out that to raise \$10,000, 125 new shares must be sold, which results in 20 percent earnings dilution.

<u>EPS</u>	<u>P/E</u>	<u>Stock price</u>	<u>New shares</u>	<u>Money raised</u>
$\text{EPS} = \frac{\$5,000}{\underset{\substack{\uparrow \\ \text{Old} \\ \text{shares}}}{500} + \underset{\substack{\uparrow \\ \text{New} \\ \text{shares}}}{125}} = \frac{\$5,000}{625} = \$8$	x 10x	= \$80	x 125	= \$10,000

The 20 percent dilution reflects the fact that earnings will be \$8/share after the new stock is issued, but were \$10/share before the new stock was issued. Thus, each of the original 500 shares' earnings is being diluted by 20 percent as a result of the issuance of new shares.

Now let's look at the dividend. JMC pays out 50% of earnings as a dividend, so with \$10 earnings per share, the dividend was \$5/share. If the dividend payout ratio remained at 50 percent after the stock offering, the dividend would now have to be reduced to \$4 per share, also a 20 percent decline.

The dilution calculations were based on a P/E ratio of 10x. What if the stock were selling at a P/E of twenty times earnings? In that case, it works out that only 56 new shares need to be sold to raise \$10,000, and the earnings dilution is not as severe.

$$\begin{array}{ccccccc}
 & & & & \text{EPS} & \text{P/E} & \text{Stock price} & \text{New shares} & \text{Money raised} \\
 & & & & \hline
 \text{EPS} = & \frac{\$5,000}{500 + 56} = & \frac{\$5,000}{625} = & \$8.99 \times & 20 = & \$180 \times & 56 = & \$10,080 \\
 & \uparrow & \uparrow & & & & & & \\
 & \text{Old} & \text{New} & & & & & & \\
 & \text{shares} & \text{shares} & & & & & &
 \end{array}$$

Thus, with a higher price-to-earnings ratio, the same amount of money can be raised selling fewer shares. The higher 20x P/E multiple results in less dilution, only about 10 percent, which lowers earnings to \$8.99. Also, if the dividend payout ratio remains at 50 percent, the dividend would be \$4.50 per share, instead of the \$4.00 per share in the case with the P/E of 10x. This is why current stockholders like to have the highest P/E possible when new shares are being sold (issued).

To review, the higher the price/earnings ratio of a stock, the fewer the number of shares a company will need to issue to raise a given amount of money, and therefore the less the dilution that existing shareholders will suffer when the company issues the new stock.

The dilution calculations above are correct as far as they go, but the calculations did not consider what JMC will do with the \$10,000 it raised. The money is intended to be used to build a new mousetrap plant that is expected to generate more earnings. Since it takes time to build a new plant, let's assume that JMC will invest the \$10,000 in a tax free investment that pays 2 percent interest until the cash is needed. If the \$10,000 is invested for

one year while the plant is being built, it will earn \$200 interest. Thus, assuming a P/E of 10x, a more complete dilution calculation would be:

$$\begin{array}{c} \text{Earnings from mousetrap business} \quad \swarrow \quad \searrow \quad \text{Interest earned} \\ \text{EPS} = \frac{\$5,000 + \$200}{500 + 125} = \frac{\$5,200}{625} = \$8.32 \\ \quad \quad \quad \uparrow \quad \quad \uparrow \\ \quad \quad \quad \text{Old} \quad \quad \text{New} \\ \quad \quad \quad \text{shares} \quad \quad \text{shares} \end{array}$$

Under these assumptions, EPS are only diluted from \$10.00 to \$8.32, or 17 percent, not the 20 percent shown previously. Similarly, the 10 percent dilution calculation, assuming a P/E of 20x, was not exactly correct, either.

In the real world, when a company announces an equity offering (intention to raise capital by selling new stock), investment analysts immediately go through these calculations, making assumptions where necessary, to see what the dilution will be and try to judge how it will affect the stock price. If the offering was a total surprise to investors, the stock would be very likely to go down by at least the same percentage as the dilution. If investors thought the financing was being done because the company was having serious problems, the P/E ratio would probably also decline and the stock would fall even further. If the new financing reflected a great new opportunity for the company, the P/E might expand and the stock would go down less than the earnings dilution.

Often, an announcement of an equity offering is not a surprise to investors. Investors who closely follow a company's fundamentals (financial statements, business outlook, etc.) can often see in advance that the company will need to raise new cash. Similarly, a company will sometimes tell investors that it would like to do an equity financing sometime in the near future. When a financing is expected, the stock price usually adjusts gradually in advance to the expected dilution, and the market's reaction, if any, when the announcement of the new financing is made reflects the difference between the terms of the financing and the expectations.

An interesting and unusual example of dilution in an equity financing occurred in a Polaroid equity offering a number of years ago. Since Polaroid

did not need the money immediately, it invested the money at approximately 6 percent interest. At the time, Polaroid was selling at a very high P/E, over fifty times earnings. Thus, when analysts did the dilution calculation, it turned out that the interest on the money that Polaroid would receive added so much to earnings that, even with the increased number of shares outstanding, Polaroid actually showed an *increase* in EPS rather than a decrease. This is called *negative dilution*. It is unusual and only happens when a stock is selling at a very high price-earnings ratio.

Polaroid's earnings per share as reported (before the new equity offering):

$$\frac{\text{Earnings}}{\text{Shares}} = \frac{\$58.9 \text{ Million}}{31.7 \text{ Million}} = \$1.86 / \text{share}$$

Polaroid's earnings per share, adjusting both earnings and shares for the equity offering:

$$\frac{\text{Earnings}}{\text{Shares}} = \frac{\$58.9 + \$2.7}{31.7 + 1.1} = \frac{\$61.60}{32.8} = \$1.88 / \text{share}$$

Additional earnings from interest received after investing
 the \$100MM raised from the equity offering
 ↓
 ↑
 New shares from the offering

Dilution points to a key concept in the relationship of the stock market to capitalism. We showed earlier that the stock market will pay a higher P/E for a company with faster earnings growth and, therefore, potential dividend growth. Thus, the greater the company's potential growth, the higher the P/E and, therefore, the less dilution that will be suffered in a new stock offering. In the language of Wall Street, a company with a high P/E can do an equity offering (sell new stock) much cheaper (with less dilution) than a company with a low P/E. This seems socially desirable because the high P/E, reflecting a high expected growth rate, implies the market's expectation that the company's products will be in great demand. If the company's products are in great demand, then it indeed seems desirable that the company be able to raise money cheaply in order to expand its ability to make its products and satisfy that demand.

Thus, we see the two sides of the capitalism “coin.” On one side are investors who wish to invest their capital (money) where they see the fastest growth. On the other side are companies that wish to raise capital. The result is that the companies with successful products (i.e., what consumers want) have the easiest (cheapest) ability to raise money to increase production of those products. So the profit motive is not the *purpose* of capitalism, as some people erroneously believe; rather, the profit motive is a *mechanism* that causes capital to be directed to those areas of the economy that are growing rapidly, reflecting consumers’ demands.

SELLING THE STOCK

When a company offers new stock, it can attempt to sell it for whatever price it wants. Obviously, if it is too high, nobody will buy it. If the price of the stock appears unreasonably low, the existing stockholders may try to prevent its sale because their stock will be diluted too much. In the real world, the company, usually with the help of its investment banker, decides on a price that appears likely to attract investors. Then the investment banker’s sales team sends out preliminary prospectuses and calls customers to see what they are willing to pay for the stock. The actual price will then be adjusted up or down as the date of effective registration approaches and the market (interested investors) indicates that it was priced too high or could have been priced higher.

Mr. Gaines had now explained why both the company and current stockholder want to sell the shares for as much as possible. However, Gaines recommended not pricing the stock too high because it might not all be sold, in which case the price would have to come down to sell the remaining shares. In that case, most of the initial buyers would have a loss right away, which is considered undesirable for establishing a good market for a new issue of stock. Conversely, if the stock came (was offered) at an attractive price (i.e., at slightly less than it was “worth”), there would probably be a great demand for the stock and not only would all the offered stock be sure to be sold, but the stock would probably rise in price immediately after it was free to trade on the open market. That way, everyone who bought the stock in the offering would have a profit, and people would remember it

favorably as a very successful offering—or as a “hot” issue. This can make it easier for the company to sell additional offerings in the future.

Next, Mr. Gaines explained that it is desirable to have an active, stable public market for the stock. This would also make it easier for either JMC or existing shareholders to sell more of their stock on another occasion. With these considerations, Gaines said it was important that the stock be “widely held,” or “widely distributed”; that is, there should be a large number of stockholders because, if a large number of people each owned a few shares of the stock rather than a small number of people each owning a large number of shares, it was more likely to produce an active market for the stock (more liquidity). Also, Gaines suggested placing some stock “in strong hands,” that is, some stock should be sold to financial institutions or investors who have a reputation for holding stock for longer periods and not selling the minute they see a small profit, or panicking and selling if the stock falls. Mr. Gaines explained that his firm had many wealthy individual clients, as well as close contacts with major institutions, and was sure he would have no trouble selling the stock to a wide range of investors.

Jones then asked how much the company could get for the stock. Gaines explained that he would first have to study JMC’s books (financial statements) and the potential growth rate of the company, but from his experience, he judged the public would probably be willing to pay a price-earnings ratio of between 10 and 12 times earnings. Mr. Gaines said he would want a commission of \$.50 per share and that his firm would *underwrite* or guarantee to sell the issue. That means that Gaines & Wynn would actually buy the entire issue from JMC and then resell or distribute it to the buyers. This way, if for any reason some of the buyers backed out at the last minute, Gaines & Wynn would be obligated to hold the stock, and JMC would be paid for all the new shares. Jones liked that idea but thought it only reasonable to meet the other two investment bankers anyway.

Mr. Slick then arrived, representing the firm of New Ventures, Inc. New Ventures had a reputation for dealing with highly speculative stock issues. For example, many of the companies New Ventures had brought public had gone bankrupt within a year or two and the stockholders had lost all their money. Other issues, however, had made millions for New Ventures’ clients. Jones was concerned, that the clients Slick dealt with, and the quick selling that Mr. Gaines had referred to, might be more likely to occur if Slick’s clients were the initial stockholders. Jones, of course, had every bit of

confidence that JMC would not go bankrupt and, therefore, even if the stock did at some point go down, he presumed it would trade higher when the investment community realized there was nothing wrong with JMC. Nevertheless, it is this type of wild fluctuation in the price of a stock that may scare away some potential buyers of the stock who prefer more stable, steady prices.

Slick was quite aware of his company's reputation, and he explained to Jones that, besides the highly speculative companies New Ventures had brought public, it had also done offerings for many stable companies as well. Slick also pointed out that New Ventures had a large number of clients and for a company such as JMC it would place (i.e., sell) the stock with more stable customers. Slick said he thought JMC could be brought public at about 14 times earnings and that New Ventures would ask a \$.60 per share commission.

Jones stopped to think. "If Slick takes us public (sells the stock to the public) at 14 times earnings, rather than 10–12 times earnings as Gaines suggested, then we will get more money for each share and have less dilution, so it would certainly be worth paying the slightly higher commission." Slick also said that since JMC was a small company and did not make a particularly glamorous product, it might be hard to sell the stock. Thus, New Ventures would only take the deal on a "best-efforts" basis. This means New Ventures would sell as much of the stock as it could, but if it was unable to sell all the stock, it wanted to return the unsold shares to JMC (or the original owners) rather than buy it. Slick's reason was that New Ventures was a much smaller firm than Gaines & Wynn and had much less capital that it was willing to risk if the offering was not completely sold out and Slick was obligated to retain (buy and hold) any unsold stock.

Jones, being conservative, decided he would rather take less money for his stock but have the offering *underwritten* or guaranteed. Thus, Slick was told the best-efforts basis was unsatisfactory and, after being thanked for his trouble, was shown the door.

The third investment banking firm was similar to Gaines & Wynn but would only underwrite or guarantee the offering at nine times earnings, less commission. Also, Gaines & Wynn not only had a better reputation and brand image but offered a number of financial consulting services that New Ventures and the other firm did not. Finally, Gaines & Wynn could do more to help JMC stock after the offering because of its stock brokerage and

investment research contacts with a large number of institutional customers. So Jones called Mr. Gaines and asked him to handle the offering. Gaines immediately came out to JMC’s office and examined the company’s financial records.

STOCK SPLITS AND STOCK DIVIDENDS

One of Mr. Gaines’ first suggestions was a 10-for-1 stock split, which means that for each share of stock held by a stockholder, he would be given nine additional shares, so he would now have 10 times as many shares as he had before the 10-for-1 split. Each of the shares after the split, however, would only be worth one-tenth of their original value before the split. Thus, instead of having 500 shares outstanding, each representing one five-hundredth of ownership in the company, there would now be 5,000 shares outstanding and each would represent one five-thousandth of ownership in the company. There would be two minor changes on the balance sheet. First, the stockholders (in this case the current 12) would have to vote to authorize at least 5,000 shares, so the number of shares authorized would increase. Second, if the stock is being split 10-for-1, the par value would have to be divided by 10. Thus, the stockholders’ equity portion of the balance sheet after the 10-for-1 split would look like this:

Stockholders’ Equity	
Paid-in capital	
Common stock at par value (\$.10) (authorized, issued, and outstanding 5,000 shares)	\$ 500
Capital surplus	4,500
Retained earnings	<u>85,000</u>
Total stockholders’ equity	<u>\$90,000</u>

Compare this to the stockholders' equity section of JMC's balance sheet at the end of Chapter 3. The reason for the change in par value is this: The number of shares outstanding multiplied by the par value must always equal the dollar figure in the *Common stock at par value* account. Since no new money is received with a stock split, the \$500 figure will remain the same. Thus, with 5,000 shares now outstanding and \$500 in the *Common stock* account, the par value must be reduced to \$.10 to make the figures balance.

Stock splits can also be accomplished in the form of a *stock dividend*. "Stock dividend" in this case does not refer to the company paying a cash dividend to stockholders. "Stock dividend" here refers to the company giving new shares of the company's stock to existing stockholders. If JMC's 10-for-1 stock split is done as a stock dividend, it will be called a 900% stock dividend. For every 100 shares that a stockholder owns, he will receive 900 new shares from the company, leaving him with 1,000 shares. This is the identical result as a 10-for-1 stock split. The only difference is that the accounting on the company's balance sheet is slightly different.*

Some companies choose the stock split method, and others choose the stock dividend method. Stock splits are more commonly used when the share increase is significant, such as a 10-for-1 or 5-for-1 split. Stock dividends are more commonly used when the share increase is small, such as a 2% or 10% stock dividend. In a 2% stock dividend, a shareholder with 100 shares would receive an additional 2 shares.

** When a company pays a stock dividend, the par value is not changed, as with a stock split. With the par value remaining the same, there is an increase in the dollar figure in Common at Par, and that is balanced by a decrease in Additional Paid in Capital. For JMC with a Par Value of \$1, after a 900% stock dividend, the dollar figure in the Common at Par account would increase from \$500 to \$5,000, reflecting the new total of 5,000 shares outstanding. That increase of \$4,500 would be offset by a decrease of \$4,500 in Additional Paid in Capital.*

Do not confuse a stock dividend with a cash dividend. When a cash dividend is paid, the only changes on the balance sheet are that the cash account and the retained earnings account are both reduced by the amount of the dividend.

JMC Splits Its Stock

Mr. Gaines explained that the reason for the stock split is to get wider distribution. JMC currently has 500 shares outstanding. If JMC sells an additional 125 shares, it will raise the desired \$10,000, *but only 125 shares will be in the hands of the public*. That would be a very thin market, exactly opposite the wide distribution Gaines had recommended. However, if the stock split 10-for-1 before the public offering, the \$10,000 can be raised just as easily, but there will be 1,250 shares in public hands rather than 125 shares; hence more stockholders, hence wider distribution. (Actually, 1,250 shares is still too thin for a real-world example; 100,000 shares might be considered a bare minimum, but dealing with such large numbers would make the example hard to follow.)

After a 10-for-1 split, but before the new issue, the earnings per share will be reduced to \$1.

$$\frac{\text{Earnings}}{\text{Shares}} = \frac{\$5,000}{500 \text{ shares} \times 10} = \frac{\$5,000}{5,000 \text{ shares}} = \$1.00 / \text{share}$$

After both the stock split and the new issue of 1,250 shares, the EPS will be \$.80 per share.

$$\frac{\text{Earnings}}{\text{Shares}} = \frac{\$5,000}{5,000 \text{ shares} + 1,250 \text{ shares}} = \frac{\$5,000}{6,250 \text{ shares}} = \$0.80 / \text{share}$$

Note that although the existing stockholders are being diluted by the new offering, they are not being diluted by the stock split. If there had been just a new offering and no split, one share of stock would be diluted from 1/500th of ownership in the company to 1/625th ownership. Conversely, if there had been a split but no new offering, then an investor who owned one share of stock worth 1/500th of the company would, after the split, now own 10 shares out of 5,000, which is the same percentage ownership as 1 out of 500.

Let's also look at how the split and new offering impacted the 100 shares that Ms. Smith (one of the original investors in the company) wanted to sell.

After the new issue, but if the stock had *not* been split, Smith could expect to sell her 100 shares at \$80 per share for a total of \$8,000. After the new issue, but now assuming the stock *was* split, she would have 1,000 shares that she could now expect to sell at \$8 per share, still totaling \$8,000. She was no better or worse off because of the split.

She was, however, worse off as a result of the dilution from the new issue. Had there not been a new issue, her 100 shares would be worth \$10,000 (assuming earnings-per-share of \$10 and a price-to-earnings ratio of 10x). But as a result of the dilution from the new issue, her 100 shares are now only worth \$8,000.

Despite this immediate decline in value from the dilution resulting from the new issue, the new issue can still be good for stockholders. This is because the money raised from the stock offering is presumably going to be used in a way that raises company earnings enough in the future to more than offset the decline due to dilution. This was what Jones anticipated when he decided to sell the new stock to finance the new plant.

A new stock offering by a company does not always reflect a new growth opportunity. Often, a company with a poor outlook will need to raise equity money to reduce debt and assure its survival. In this case, the stock offering will have to be done at a price which is very cheap relative to the company's outlook, because of the risks. But because the stock is so "cheap" it is still potentially attractive. A stock offering in a case such as this is usually very dilutive to existing stockholders.

Jones saw the logic of the split and the other 11 owners (stockholders) of JMC agreed. So they voted to increase the authorized shares to 6,250. This authorized enough shares for both the stock split and the new offering.

Since some of the 12 investors wanted to sell some of their shares to the public, it was decided to have a "combined" offering. This means that some of the shares being offered are from the company—a primary offering—and some of the shares are being offered by selling stockholders—a secondary offering. All the shares will be sold at the same price, and Gaines & Wynn will charge the same commission per share.

The current stockholders, who now owned 5,000 shares after the split, decided to sell a total of 1,000 of *their* shares to the public. Thus, the combined offering was 2,250 shares, 1,250 being primary (with the proceeds going to the company) and 1,000 being secondary (the proceeds going to the selling stockholders). *After the offering there will be 6,250 shares*

outstanding, not 7,250. The 1,000 shares being sold by the stockholders were already outstanding; they are just changing ownership. Only the new shares being sold by the company add to the number outstanding.

With Mr. Gaines' help, JMC prepared and filed an S-1 registration statement (including a prospectus) and registered with the SEC to sell 2,250 shares. Even though the company was selling only 1,250, the entire 2,250 being offered had to be registered. After three months of conversations and correspondence between the SEC and JMC, the SEC was satisfied that the registration statement and prospectus complied with the requirements of the Security Act, and contained enough information about the company, the stock, and its risks for potential buyers to make an informed decision. On September 1, 2011, the SEC declared JMC's registration to be effective.

Gaines & Wynn could have placed (sold) the entire 2,250 shares itself, but as is customary, it only placed some of the stock, in this case 800 shares, and distributed the rest to other investment bankers and stockbrokers to distribute to their clients. Gaines & Wynn and all the other dealers (investment bankers and stockbrokers) participating in the offering are called the *selling group*. Gaines & Wynn, of course, split the commission with the other dealers. There are two reasons Gaines is willing to give some of the offering to other dealers. First, other investment bankers give Gaines some of their business, so all the bankers have a more even flow of business. Second, most investment bankers have only a limited number of clients. By having many dealers selling the stock, the offering is better publicized among all potential investors. Thus, there is more demand for the stock and less risk that the issue will not be able to be sold. Also, if the issue cannot all be sold, rather than have to buy all the remaining stock itself, and risk its going down, Gaines & Wynn is splitting the risk with the other members of the *underwriting syndicate*.

The underwriting syndicate is usually composed of some, but not all, of the dealers in the *selling group*. Again, the underwriting syndicate consists of those dealers who have agreed to participate in the purchase of any shares of stock that are not able to be sold to the public. Those dealers who are in the selling group but who are not in the underwriting syndicate simply sell as many shares as they can and return the rest to the syndicate. The syndicate then either sells them directly to the public or redistributes the shares to other members of the selling group who have more demand for the stock. Those members of the selling group who are also part of the underwriting

syndicate get a higher commission than those who are not because they are taking some risk if all the shares cannot be sold. Those dealers in the selling group who are not in the underwriting syndicate are taking no risk and therefore get a smaller commission.

With the wide exposure the selling group provides, the company issuing the shares hopes there will be excess demand for the stock (i.e., there will be investors who wanted some of the stock but were unable to get any on the offering). Some of these investors, it is hoped, will still want the stock and will buy it in on the open market after the offering is completed. This is called the *after market*. The after market literally refers to any trade made between members of the public after the investment banker or underwriter has completed the offering. In common usage, however, *after market* refers to the hour or two, or even day or two, immediately following the offering when there is a lot of trading between investors who were unable to get any stock in the offering and those who did get stock in the offering but are selling it immediately either to make a quick profit (if the stock went up) or cut their losses (if the price went down).

By the time the JMC registration was declared effective by the SEC, the selling group had already called its clients to see who was interested in buying the stock. Since there was a lot of interest in JMC stock, the issue was “fully subscribed” when the registration became effective, which meant that the selling group had enough buy orders that all the shares being offered would be purchased. Shortly after the registration became effective at 10:00 a.m., September 1, 2011, the stockbrokers and underwriters immediately called the clients to whom they were selling the shares to confirm that they still wanted to buy their allotted shares. Since the shares cannot be legally offered until the registration has been declared effective, this confirmation is a necessary step. Until the post-effective confirmation occurs, the investors who indicated interest (and had been allotted shares) can always back out. This would typically occur where either (1) the offering priced the stock was increased at the last minute; (2) some last minute new information came out suggesting that the issuing company’s outlook was not as bright as it seemed; or (3) the stock market as a whole had weakened noticeably.

Upon confirmation, the underwriters inform their clients (buyers) that the stock is “free to trade.” This meant that as of that moment, those individuals who had subscribed to the stock were now the owners of registered, freely

tradable stock and could sell it or buy more from other holders of the newly-registered stock who wished to sell.

Part 2

Securities Other than Common Stock: Bonds, Preferred Stock, and Hybrid Securities

Financing Growth: Selling New Stock versus Selling New Bonds

In early 2013, JMC decided to build another new mousetrap plant. The bigger, more efficient plant that JMC management had in mind, to be designated Plant 3, was estimated to cost \$20,000 to build and equip. There are four common ways a company can obtain enough money to finance (pay for) a new plant. First, the company can sell new stock, called an equity offering or equity financing. Second, the company can borrow the money, called a debt financing. These are called external or outside financing. Third, the company can use cash that has built up as a result of profits earned from operations in past years. In this case, we say the company is “financing the plant from retained earnings.” This is called an *internal financing*. Investors use the phrase “financing from retained earnings,” even though it is really financing from cash. This is to distinguish it from cash that was raised by selling new stock or bonds. The phrase “financing from retained earnings,” then, is specifically telling you that the cash being used for the financing is cash that was earned by the company in prior years that was not used to pay for something else. In fact, financing from retained earnings is also an equity financing because the profit earned that are in retained earnings belong to the owners (stockholders.) We might call this an internal equity financing, rather than an external equity financing (raising money by selling new stock.)

A fourth way to finance a plant would be to sell off existing assets to raise cash. For instance, a company that made both furniture and clothing might decide the clothing business was by far the most attractive and should be expanded, and the company might sell off its furniture business to raise cash for a new clothing goods plant. This, too, would technically be an internal equity financing.

JMC did not have enough cash (unused retained earnings) available to build the new plant. Cash and U.S. Government securities at December 31, 2012, were only \$15,000, and much of that was needed for the day-to-day operations of the company. JMC could have waited until enough cash was saved up from future retained earnings, but management anticipated it would take three or four years to do that and they were eager to build the plant now so they could reach new markets for their mousetraps before a competitor did. Thus, an external or outside financing was needed. Management decided it was preferable to finance this plant with borrowed money rather than by selling new stock. The reason for this decision will be shown shortly.

The company felt safe borrowing the money because even if the net profit level did not increase as a result of the new plant, they knew they would be able to repay the loan over time just from the profit earned on products being manufactured in existing plants. As it happens, management's projections showed that, as a result of the newer and more efficient plant, earnings should go up substantially when the new plant was completed.

The \$20,000 might have been borrowed from a bank, but the company did not want to go to a bank, primarily because it liked to use bank borrowings for short-term needs, such as receivables financing and unexpected expenses, which occur from time to time. If JMC used a major bank borrowing to build the new plant now, banks might be reluctant to lend the company more for receivables financing or in an emergency later on. Also, loan agreements with banks are usually very restrictive in terms of financial ratios the company is required to maintain. Management wished to borrow in a way that provided more flexibility than under the typically tight bank loan agreements. Selling bonds in the public market usually provides such an opportunity for a company in good financial condition. While this kind of borrowing also places restrictions and obligations on the company, these are typically less burdensome than bank arrangements. The debt financing (bond sale) was planned for early spring 2013.

WHY JMC DECIDED TO SELL BONDS

Let us now catch up with the changes at JMC, look at its latest financial statements, and see why management chose to sell bonds rather than new equity (stock). The factors affecting the decision between selling new bonds

and selling new stock reveal a lot about the way corporations think; and understanding this can help investors predict in advance whether a company is more likely to do an equity financing or a debt financing if new cash is needed. Similarly, it can help investors determine the impact of a new stock or bond offering on the existing stock.

In September 2011, JMC’s stock issue, discussed in Chapter 6, was sold and \$10,000 was received (ignoring commissions). The \$10,000 was put to use to build the then-new Plant 2, which was completed by December 31, 2011. Thus, in 2012, JMC had the benefit of Plant 2 for the whole year, in addition to the old Plant 1. As a result of this expanded capacity and an increase in the price of the traps sold, JMC’s sales in 2012 increased to \$125,000. The full-year 2012 income statement looked like this:

JMC Income Statement For Year Ending 12/31/12		
Sales		\$125,000
Expenses:		
CGS	\$86,000	
SGA	22,000	
Interest	3,000	
	\$111,000	111,000
Pretax profit		14,000
Taxes for the year		7,000
Net profit after tax		\$7,000

The balance sheet at the end of 2012 was as follows:

JMC
Balance Sheet
12/31/12

Assets	Liabilities
Current assets:	Current liabilities:
Cash \$7,000	Accounts payable \$8,000
U.S. Govt. Securities .. 8,000	Short-term debt 2,000
Accounts receivable ... 14,000	Taxes payable 2,000
Inventory:	Sinking-fund payments
Finished goods 25,000	on long-term debt
Work in progress 7,000	due within one year <u>2,000</u>
Raw materials 21,000	Total current liabilities 14,000
Total current assets 82,000	
Fixed assets:	Capitalization:
Property 4,000	Long-term debt
Plant 15,000	8% Term loan 6,000
Equipment 51,000	9% First mortgage bonds .. 20,000
Total fixed assets 70,000	Stockholders' equity:
	Common stock (par
	value \$1.00) (authorized
	6,250 shares, outstanding
	6,250 shares) 625
	Additional paid-in capital 14,375
	Retained earnings <u>97,000</u>
	Total stockholders' equity 112,000
Total assets <u>\$152,000</u>	Total liabilities and equity <u>\$152,000</u>

Compared with the balance sheet of 12/31/2010 at the end of Chapter 3, the following changes have occurred:

1. *Common at par* and *Additional paid-in capital* were increased when JMC sold new stock in September 2011. Cash went up at that time too,

but the cash was since spent on new property, plant, and equipment.

2. *Property, plant, and equipment* increased by \$1,000, \$2,000, and \$7,000 respectively, reflecting the impact of Plant 2 that was built with the money raised from the stock offering. Note that the old Plant 1 is still in place and operating. At this point we are assuming that the old plant has not yet begun to wear out or deteriorate, so it is still carried at its original cost.
3. *Accounts receivable* and each of the *Inventory* categories are higher as a result of increased sales level from the new plant. Obviously, additional *Raw materials* are needed to feed the new plant, which in turn results in more *Work in progress* and a higher level of *Finished goods* awaiting sale to the expanded customer list. Since the sales level is higher, the *Accounts receivable* level is also higher.
4. *Cash* is down. This reflects the following: (a) money spent to increase the level of inventory; (b) money used to reduce accounts payable and short-term debt; and (c) money spent to meet the sinking fund obligations under the 8% term loan agreement. The amount of the term loan outstanding declined \$2,000 in each of the years 2011 and 2012, due to the sinking fund payments.
5. *Retained earnings* increased, reflecting both the \$5,000 earned in 2010 and the \$7,000 earned in 2012 (2011 was break-even).

SELLING BONDS VERSUS SELLING STOCKS

JMC management wanted \$20,000 to build the new plant. To decide how best to finance the new plant (by selling either new stock or new bonds), the income statement and balance sheet need to be projected into the future to see what they would look like under the different assumptions of either a new stock sale or a new bond sale.

Since both old plants were operating at full capacity in 2012, we start by assuming that the income statement for 2013 and beyond would look the same as 2012 if business continued to be good but no new plant capacity was added. This is shown in the left-hand column in Table 8.1.

Assumption A—No external financing (wait a few years) results in an income statement that looks like the 2012 income statement. Actually, future earnings under Assumption A would enable JMC to repay some debt, which would result in lower interest payments and therefore higher earnings; but this difference is minor, compared to the potential changes resulting from a new stock or bond sale, so we will ignore it.

Assumption B—The sale of \$20,000 worth of bonds. Under this assumption, the following factors went into JMC management’s income statement projections. First, after discussions with Gaines & Wynn (investment bankers), JMC concluded that it would have to pay 10 percent interest per year on the new bond issue. Second, management was now quite experienced in the manufacture of mousetraps and knew how to build a plant that would be more efficient (i.e., produce traps for a lower cost per trap). Finally, management knew that with the JMC sales force and management already in place, selling, general, and administrative expense would not go up as much as sales. As a result of detailed calculations, including these factors, management projected that the income statement would look like the Assumption B column in Table 7.1 once the new plant was operating.

Table 7.1 JMC’s Income Statement under Two Assumptions

	Assumption A – no external financing	Additional yearly sales and expenses from new plant	Assumption B – sell bonds
Sales	\$125,000	\$40,000	\$165,000
CGS	86,000	25,000	111,000
SGA	22,000	5,000	27,000
Interest	<u>3,000</u>	<u>2,000</u>	<u>5,000</u>
Pretax profit	14,000	8,000	22,000
Tax (assume 50%)	<u>7,000</u>	<u>4,000</u>	<u>11,000</u>
Net income	\$7,000	\$4,000	\$11,000
Shares outstanding	6,250		6,250
EPS	\$1.12		\$1.76

Assumptions A and B also produce the following changes on the balance sheet and in certain ratios shown in Table 7.2. Again, under *Assumption A—No external financing*, we simply use the current balance sheet as indicative of the future.

Table 7.2 Interest Coverage and Debt Ratio under Assumptions A & B	Assumption A	
	– no external financing	Assumption B – sell bonds
Long-term debt	\$26,000	\$ 46,000
Equity	112,000	112,000
<u>Long-term debt</u>	18.8%	29.1%
Total capital		
Interest coverage	5.7x	5.4x

By selling bonds to finance the new plant, we see that earnings per share, once the plant is up and running, should rise dramatically. On the other hand, interest coverage declines and long-term debt as a percentage of total capital moves higher (i.e., both these ratios deteriorate). The deteriorating leverage ratios will make it more difficult for JMC to borrow additional money should the need arise in the near future. The effect on earnings, however, is so favorable as to make the bond sale worthwhile despite this potential problem. Furthermore, the higher earnings will enable JMC to pay back its debt faster, which will, in turn, cause a reduction in interest expense. As the debt is paid down, the debt-to-total capital ratio will decline and the interest coverage ratio will improve (go up). These ratios are covered in Chapter 4.

Assumption C—The \$20,000 is raised by having another offering of new stock. This, of course, may result in earnings dilution (i.e., although the new plant will produce more earnings, the increased number of common shares outstanding may result in a net decline in earnings per share). It is also possible that the increase in earnings will be so big that, despite the increased number of common shares outstanding, the EPS figure will increase. This is called *negative dilution*. In order to find out which is the case, we must go through the dilution calculations shown in Chapter 6.

**Table 7.3 JMC's
Earnings with New
Plant Financed by
Stock**

	Assumption C – sell new stock
Sales	\$165,000
CGS	111,000
SGA	27,000
Interest	<u>3,000</u>
Pretax profit	24,000
Tax	<u>12,000</u>
Net income	12,000
Shares outstanding	?
EPS	?

JMC stock is currently selling at a price-earnings ratio of 6 times (6x). Thus, to raise \$20,000, JMC will have to sell 2,425 new shares.

$$\text{EPS} = \frac{\$12,000}{\underset{\substack{\uparrow \\ \text{Old} \\ \text{shares}}}{6,250} + \underset{\substack{\uparrow \\ \text{New} \\ \text{shares}}}{2,425}} = \frac{\$12,000}{8,675} = \frac{\text{EPS}}{\text{P/E}} \times \text{P/E} = \frac{\$1.38}{6x} \times 6x = \$8.28 \times 2,425 = \$20,079$$

If JMC did the stock offering but has not yet built the plant, then earnings would be diluted as shown in Table 7.4 under Assumption C. Here we assume that the cash from the offering is not earning any interest while it is waiting to be used to build the plant.

Table 7.4 JMC's Income Statements under Two Assumptions

	Assumption A – no external financing	Assumption C – sell new stock – new plant not yet running
Sales	\$125,000	\$125,000
CGS	86,000	86,000
SGA	22,000	22,000
Interest	3,000	3,000
Pretax profit	14,000	14,000
Tax (assume 50%)	7,000	7,000
Net income	\$7,000	\$7,000
Shares outstanding	6,250	8,675
EPS	\$1.12	\$0.81

Thus, the stock offering alone would result in earnings being diluted from \$1.12 to \$0.81 per share, a big decline, and the announcement of such an offering might cause the stock to go down.

JMC's management also did the dilution calculation using expected sales and earnings *after* the new plant was up and running. That calculation is *Assumption D* shown in Table 7.5. Assumption D shows that the projected profit from the new plant is so great that it will more than compensate for the increased number of shares outstanding, and earnings should rise from \$1.12 to \$1.38. Although earnings would be initially diluted from the stock sale, the expected sales and earnings growth resulting from the new plant would more than offset the dilution and lead to higher EPS if all goes as planned. Thus, management might be willing to do the stock offering, even knowing that the stock could go down in the short run.

However, the resulting increase in EPS from the stock sale is much lower than the increase in EPS from a bond sale. Therefore, since higher earnings should produce a higher stock price in the long run, it is in the best interests of the current shareholders for the money to be raised by selling bonds rather than by selling stock. This is true even though the bond sale results in a weakening of the balance sheet (long-term debt to total capital ratio) near

term, while the stock sale would result in improvement of the balance sheet, as shown in Table 7.6. Thus, the company decided to go ahead with the bond sale.

Table 7.5 Comparing JMC's Income Statements under Three Assumptions

	Assumption A – no external financing	Assumption B – Sell bonds – new plant operating	Assumption D – Sell new stock – new plant operating
Sales	\$125,000	\$165,000	\$165,000
CGS	86,000	111,000	111,000
SGA	22,000	27,000	27,000
Interest	3,000	5,000	3,000
Pretax profit	14,000	22,000	24,000
Tax (assume 50%)	7,000	11,000	12,000
Net income	\$7,000	\$11,000	\$12,000
Shares outstanding	6,250	6,250	8,675
EPS	\$1.12	\$1.76	\$1.38

Compare the interest coverage and debt ratios in Table 7.6.

Table 7.6 Interest Coverage and Debt Ratios for Three Options

	Assumption A – no external financing	Assumption B – Sell bonds – new plant operating	Assumption D – Sell new stock – new plant operating
Long-term debt	\$26,000	\$46,000	\$26,000
Equity	112,000	112,000	132,000
<u>Long-term</u> Total capital	18.8%	29.1%	16.5%
Interest coverage	5.7x	5.4x	9.0x

An interesting exercise is to work through the numbers and see what would be the effect of equity financing (selling new stock) if the price-to-earnings ratio were 15x or 30x. Answer: If the P/E were 15x, the money could be raised by selling 780 new shares. This would result in EPS of \$1.71 after the new plant was in place. This is only slightly below the \$1.76 resulting from a bond sale. In this case, it would probably be preferable to raise the money selling stock, because the minor shortfall in EPS (compared to selling bonds) is more than made up for by the stronger balance sheet (i.e., less debt and better interest-coverage protection). If the P/E were 30x, the \$20,000 could be raised selling 370 new shares, which would result in EPS of \$1.81. This is even higher than the EPS resulting from the bond sale and, therefore, it would certainly be preferable to sell new stock at 30x earnings rather than bonds, because it results not only in higher EPS but also leaves a better balance sheet. However, with JMC stock selling at six times earnings, a bond issue seems preferable to a new stock issue.

Mr. Jones decided that it was time for his entire management team to learn more about bonds, so Mr. Gaines was asked to come in. He made the presentation reported in Chapter 8.

8

Bonds

A bond is a contract between a company that is borrowing money and the people or institutions who are lending the money. The borrower is called the bond *issuer*. The lenders are the *bondholders*. A bond *certificate* is a piece of paper that says that the bondholder is the lender and has the right to be paid back by the issuer on a certain date or dates, and to receive interest from the issuer on certain dates. The certificate gives little other information. Rather, it refers to an *indenture*, which is the complete detailed agreement between the lender(s) and the borrower (issuer). The indenture states all the obligations of the borrower and all the rights of the lenders in the event that the borrower fails to live up to the agreement. The *trustee* under the indenture is a person or entity (typically a bank) who looks out for the rights of the bondholders. If, for example, you are a bondholder of Company XYZ and have not received your interest payment, you would call the trustee, not Company XYZ which owes you the interest. In fact, most typically, the borrowing company makes the interest payment to the trustee who, in turn, distributes it to the bondholders. If the company fails to make the interest payment, the trustee is obligated to take legal action against the company or to invoke some other right stated in the indenture. The trustee also watches the borrowing company's financial statements to make sure they are maintaining certain financial ratios agreed to in the indenture. Should the company fail to meet these agreements, the trustee is again obligated to act to help the bondholders invoke their rights (discussed later).

The term *bond* usually refers to a loan that is backed by a specific asset or group of assets. *Backed by*, or *secured by*, means that if the company issuing the bond cannot meet its interest or principal obligations and goes bankrupt and liquidates, then the money raised from selling those particular assets must be used first to repay the bondholders. In some cases, the

bondholders may be entitled to take possession of the assets securing, or backing, their loan and sell them to get their money back.

The term *debenture* refers to a loan that is very much like a bond except it is not backed by any specific assets. Rather, debentures are a *general obligation* of the company, which means that if the company is liquidated, debenture holders are only repaid if there is enough money after all other lenders with a higher “priority of claim,” such as banks or bondholders, are paid off. Despite this clear difference between a bond and a debenture, the word *bond* is often used when referring to a debenture. We will sometimes adopt that convention in this book when referring to things that apply equally to bonds or debentures. The term *note* is also sometimes used interchangeably with *bond* or *debenture*, although notes usually are loans of less than 10 years, while bonds and debentures typically have lives of 10 years or more.

A company can have more than one issue of bonds or debentures outstanding at any given time. In such a case, each issue would have its own indenture and its own trustee. The obligations under the indentures will vary. For an example, one indenture could prohibit the company from having any further bond issues without permission of the bondholders under the existing indenture, while another issue’s indenture may have no such limitation.

The bond features covered in this chapter concern both nonconvertible bonds and convertible bonds. Convertible bonds, however, also have additional important features, which are covered in Chapter 11. Also, this book refers primarily to corporate bonds (i.e., bonds issued by a corporation). Bonds issued by a city or state—known as municipal bonds—or bonds issued by a government agency have many similar features but are not covered here.

Issuing Bonds, Notes, or Debentures

Issuing bonds is similar to issuing new stock. If a company wishes to sell a new issue of bonds to the public, the bonds must first be registered with the Securities and Exchange Commission and a prospectus distributed to buyers. The process of selling an entire issue of bonds at one time through an underwriter or investment banking group is similar to a new stock sale, as discussed in Chapter 6.

A second way that bonds, notes, or debentures may be issued (sold) is through a *shelf registration* which allows the bonds to be sold continuously or intermittently over a period of up to two years. Similar to an equity shelf registration as discussed in Chapter 5, the company files a registration statement with a base or core prospectus with the SEC. The base prospectus describes the company, how much money it plans to raise, and a broad description of the securities that might be sold (issued), such as bonds, debentures, notes, preferred stock or even common stock. After the registration has been declared effective by the SEC, the company may offer any of the securities listed in the core prospectus, the bonds in this case, either continuously or intermittently, or the company may delay the offering until management feel the time is better. Because market conditions will change over the time period when the shelf-registered securities are offered (sold), the company may change the terms slightly, that is, raise or lower the bond's coupon to match then-current market rates, or perhaps lengthen or shorten the maturity, etc. The company typically uses a selling agent or dealer to sell the bonds. When an investor buys a block of these bonds, we refer to that as a *takedown* under the shelf prospectus. With each takedown, the company will then issue a *prospectus supplement*, or a *pricing supplement*, specifically describing the bonds (coupon, maturity, price) issued under that takedown.

When bonds are initially registered and sold by a company, it is a *primary* offering and the money goes to the company. Once registered and initially sold, those bonds can be bought and sold on the secondary market at any time, just like stocks, at whatever price the buyer and seller agree upon.

Registered, Bearer, and Book Entry Bonds

Bonds can be in either *registered* form or *bearer* form. If a bond is registered in your name, you will get a check in the mail when each interest payment is due. A *registered bond* belongs to the person in whose name it is registered and there is no risk if it is lost. On the other hand, a bearer bond belongs to the person who possesses it. It is not registered. Bearer bonds have attached coupons for each interest payment. When an interest payment is approaching, the bearer (bondholder) clips off the coupon with the upcoming interest payment date on it and presents it or mails it to the trustee

who sends back the interest payment. Bearer bonds are rare today but of great interest to overseas investors looking to avoid paying taxes!

Most bonds today are issued in *book entry form*. In this form, the company issuing the bond issues one so-called “global certificate” for the entire amount of the bond issue. This certificate is held by and owned by a trust company. Individual buyers of the bond are said to have a “beneficial interest” in the certificate. In effect, this is like having the bond registered in your name, except that you cannot hold the certificate.

BOND FEATURES

Maturity

The *maturity* date is the date when the bond loan is due to be paid back by the borrower. *Final maturity* is the last date the borrower must pay back any of the bonds of a particular issue that are still outstanding. Some of the bonds of an issue may have matured at an earlier date than the final maturity date as a result of a sinking-fund provision or a call provision (discussed in Chapter 10).

Face Value

Face value, also called *face amount*, *par value* *principal amount*, *redemption value*, or *maturity value* is the amount of money the company must pay back when a bond is redeemed at its maturity date. (Do not confuse par value of a bond with par value of a common stock. They are unrelated.) If the bond matures ahead of final maturity under a call provision, the amount that must be paid to the bondholder may be more than the face value (Chapter 10).

Face value for most bonds is \$1,000 (i.e., each bond represents a \$1,000 loan). Recently, however, a few companies have issued bonds with denominations (face value) as low as \$25. Bonds with a face value of less

than \$1,000 are sometimes referred to as *baby bonds*. Similarly, bonds with a face value of \$5,000 or larger are known as *jumbos*.

Redemption and Retirement

Redemption and Retirement do not mean exactly the same thing. *Redemption* usually refers to a bond holder returning a bond certificate to the company or trustee at its maturity date in exchange for the amount of money due (usually the face amount). Most bond indentures specify that when bonds are redeemed, they will be retired forever. *Retirement* means the bond ceases to exist and can never be reissued. Bonds can be retired either when the bond is redeemed or when the company repurchases the bond in the secondary market. A few bond indentures do permit the company to reissue bonds which have been repurchased in the market.

When a company repurchases some of its bonds in the secondary market, regardless of the price it paid, the interest and debt repayment obligations cease. The company does not owe itself principal or interest. If a company has bought back some, but not all, of the bonds of a particular issue, the company remains under the restrictions of the indenture until all the bonds under that indenture are retired.* A company may buy back its bonds simply because it has extra cash available and wants to reduce its interest payments, or because it is obligated to do so under a sinking-fund provision or in some cases because the bondholders have a “put” which is the right to force the company to buy back its bonds ahead of the maturity dates, under certain circumstances.

** Indenture restrictions can be changed by a vote of the bondholders. A company wanting to change its indenture terms will offer bondholders a small one time payment, perhaps 1/4% of the bond's par value, for approving the indenture change. If the indenture change will significantly increase the risk of non-payment of the bond's interest or principal repayment, the payment for approving the change might be a permanent increase in the coupon, perhaps 1/2% or more.*

Sinking Fund

A *sinking fund* is an obligation to retire a certain amount of bonds on or before a specified date ahead of final maturity. A bond issue may or may not have a sinking-fund provision. To illustrate, suppose ABC Company issued \$100,000 worth of bonds (100 bonds x \$1,000 face amount) on January 1, 2010. The indenture has a sinking-fund provision, which says the following:

The bond's final maturity is December 31, 2025, except that at least \$5,000 face value (5 bonds) must be retired each year by December 31, beginning in the year 2017.

Thus, the sinking fund is \$5,000 a year in each of the years 2017 to 2024, for a total of \$40,000. The remaining \$60,000 would then be redeemed for face value at the final maturity date, December 31, 2025. The repayment at final maturity, if it is larger than the annual sinking-fund requirement, is called a *balloon* payment. A bond issue that has no sinking-fund payment and is completely redeemed at final maturity is called a *term bond* or a *bullet*. While term bonds need not be retired before final maturity, there is no reason why the company cannot buy back some (or all) of the issue earlier in the secondary market, if they are available. A bond may have no balloon and, rather, be redeemed in equal sinking-fund installments. For example, the indenture for a \$100,000 issue may specify a \$10,000 annual sinking fund for ten years, up to and including the final maturity.

A company may meet its sinking-fund obligations in a number of ways. The easiest way is to buy the necessary amount of bonds on the secondary market prior to the specified date and retire them. Although ABC Company in the above example is required to retire at least \$5,000 face value in each year from 2017 to 2024, it is allowed to retire more. It is common to see a company try to get one or two years ahead of the required sinking-fund schedule, so if, in a given year, it is unable to buy any bonds back, it will have already met its contractual obligation.

The purpose of the sinking fund is to help assure that the bond issue will be retired at final maturity. If there were no sinking fund, ABC Company would have to pay \$100,000 at final maturity. By having a sinking fund, there is less to retire at final maturity, and it forces the company to start planning its finances early to meet the sinking fund obligations.

Of course, a company's desire to buy back bonds ahead of schedule does not obligate anyone to sell them. In the event that the company is unable to

buy back enough bonds in the market, to meet the sinking fund obligation, indentures usually provide an alternative mechanism for the company to buy bonds by a random selection, called a *lottery*. Since each bond has a serial number, the trustee will draw numbers at random to select bonds for the required sinking-fund redemption. The bonds that have been selected will then mature perhaps one month later to allow time to notify the bondholders and for the bondholders to deliver their bonds to the trustee. Since the bonds have now matured early under the sinking-fund lottery selection procedure, they will no longer earn interest after their sinking fund redemption date, and thus the bondholders would have nothing to gain by not surrendering them.

Whether the company meets sinking-fund obligations by buying bonds in the secondary market or by using the lottery procedure is usually up to the company. If a company can buy a \$1,000 face value bond for \$940 in the market, that is obviously preferable to redeeming it at the full \$1,000 under the lottery procedure because the company saves \$60. If the bonds are selling at more than face value, or if there are none available to be purchased in the market, then the company invokes the lottery procedure. Some bond indentures provide for an *accelerated sinking fund*. This provision permits the company, if it wants, to use the lottery procedure to buy back more bonds than required by the sinking fund in any year, typically up to twice the required amount.

A third way sinking-fund obligations are met is through *serial redemption*. When serial bonds are initially issued, it is specified that certain serial numbers will be retired in certain years, thereby constituting the sinking fund. Serial bonds are common today with state and local government agencies, but are rare in corporate bonds, except in equipment trusts (discussed later in this chapter.)

Interest Payment

Most bonds require the company to pay interest semiannually, although some bonds specify interest be paid annually, quarterly, or even monthly. The interest payment required by a bond is called its *coupon*. For the vast majority of bonds, the coupon is fixed; that is, it stays the same for the life of the bond. Some exceptions, such as *floating rate notes*, *variable rate notes*

and *resets* or *stepups*, are discussed in Chapter 10. With that exception, we will assume for the remainder of the book that a bond's coupon is fixed.

Let's look at a bond with a face amount of \$1,000 and a semiannual coupon of \$50, for a total coupon of \$100 a year. In this case we would say the annual coupon is \$100, and the *coupon rate* is the \$100 annual coupon divided by the \$1,000 face value, or 10%:

$$\text{Coupon rate} = \frac{\text{Coupon}}{\text{Face amount}} = \frac{\$100}{\$1,000} = 10\%$$

The *coupon rate* (a percentage) is always stated as an annual rate, although the dollar coupon may be stated either as \$50 semiannually or \$100 annually. The term "full coupon" refers to full year's coupon, \$100 in this case.

Note that since the coupon is fixed, and the face amount is also fixed, the *coupon rate* must also be fixed. The price the bond sells for in the secondary market may vary above or below \$1,000, but the coupon rate is always a fixed percentage *of the face value*, which does not vary. So the coupon rate for this bond will always be 10%. The coupon rate is sometimes called the *coupon yield* or the *nominal yield*.

Current Yield and Coupon Yield

Coupon yield (which is fixed) should not be confused with current yield (which varies with price.) The *current yield* is the annual dollar coupon (fixed) divided by the current price of the bond in the secondary market (which varies.) Both the coupon yield and the current yield are expressed as annual yields because the bondholder receives one full coupon each year.

Table 8.1 compares coupon yield and current yield. Notice what happens to the current yield when the price of the bond goes up or down.

Table 8.1 Comparison of Coupon Yield and Current Yield

			Current yield (%)	Coupon yield (%)
A.	<u>Coupon</u>	\$ 100	? %	10%
	Face amount	\$ 1,000		
B.	<u>Coupon</u>	\$ 100	12.0%	10%
	Current price	\$ 833		
C.	<u>Coupon</u>	\$ 100	10.6%	10%
	Current price	\$ 943		
D.	<u>Coupon</u>	\$ 100	10.0%	10%
	Current price	\$ 1,000		
E.	<u>Coupon</u>	\$ 100	9.2%	10%
	Current price	\$ 1,086		

When a \$1,000 par value or face value bond is selling at more than par (i.e., more than \$1,000 as in case E), we say it is selling at a *premium* (to par). In this case, its current yield will always be less than the coupon yield. When a bond is selling below par, as in Cases B and C, we say it is selling at a *discount* (to par). In that case, its current yield will always be greater than the coupon yield. Notice in cases B, C, D, and E that, as the bond price increases, current yield decreases. Conversely, as price decreases, current yield increases. To say it another way, a declining yield implies a rising price, and a rising yield implies a declining price. This inverse relationship between current yield and bond price is always initially confusing. Just remember that as the price of the bond increases, the coupon is a smaller and smaller portion of the price.

Coupon yield and current yield are not to be confused with *yield to maturity*, which is discussed later in this chapter.

BOND RATINGS

Bondholders are always concerned with safety. By “safety,” we mean the probability that all future interest payments, sinking-fund payments, and the final maturity payment will be made on time. Many investors do their own analysis of a company’s financial statements and outlook and make their own judgments about the safety of their bonds, while other investors rely on one or more of three well-known independent rating agencies that publish ratings on a wide variety of bonds. The three agencies are Moody’s Investors Service, Standard & Poor’s Corporation, and Fitch Ratings.

The bonds or companies deemed by these agencies to be the most safe (i.e., have the highest probability of meeting all future payments on time) get the highest rating. We say these are the *most creditworthy*, or the *best credits*. The bonds that are issued by companies deemed to have the highest risk of not meeting their obligations are called the *least creditworthy*, or *speculative credits*. It is common for bondholders to refer to a company as a *credit*. The ratings for each of the services are shown in Table 8.2.

Table 8.2 Comparison of Credit Ratings

	Moody’s	S&P	Fitch	
Safest	Aaa	AAA	AAA	} High-grade bonds that are considered very safe.
	Aa	AA	AA	
	A	A	A	} Medium-grade bonds that considered somewhat safe.
	Ba	BBB	BBB	
	Ba	BB	BB	} Lower grade – may contain some degree of speculation as to eventual payment of future interest and principal repayment obligations.
	B	B	B	
Least safe	Ca	CCC	CCC	} Highly speculative as to payment of interest and principal; lowest ratings may include bonds already in default.
	Ca	CC	CC	
	C	C	C	

S&P also has a D rating, and Fitch has a DDD, DD, and D, all of which reflect bonds that are in default, i.e., have failed to make a required payment.

Ratings are based on a number of financial ratios as well as subjective factors. These qualitative factors are often grouped into four categories known as the “4 C’s.”

Category	Area of focus
Character	Management quality/track record
Capacity	Ability to pay
Collateral	Availability of assets to meet claims
Covenants	Quality of protection afforded by covenants in the loan agreement(s)

Table 8.3 shows typical levels for two financial ratios commonly used in determining ratings:

	AAA	AA	A	BBB	BB	B
Pretax interest Coverage	20x	12x	8x	4x	2x	1x
Long-term debt capitalization	18%	24%	29%	42%	54%	70%

In practice, actual ratios for companies in each rating level will vary substantially due to factors such as strength or weakness of other financial ratios, size of company, industry served, and more.

If a company has strong ratios but the trend has been deteriorating, or is expected to deteriorate, the rating agencies may rate its bonds lower than the ratios might suggest. We would say the creditworthiness of such a company is declining. Similarly, if a company’s ratios are improving, or are expected to improve, the agencies may rate the bonds higher than the ratios suggest, and we would say this is an *improving credit*.

Each of the agencies often gives the same level of rating to a company’s bonds. Sometimes one agency rates a particular bond one or more notches

higher or lower than the other agency. This is called a *split rating*. When a company has more than one bond issue outstanding, both or all of the issues of that company may be rated the same, or they may have different ratings. The bond issue with the higher rating will usually be the one that has the highest priority (gets paid back first in the event of bankruptcy) or has the best assets backing it.

Rating agencies focus on credit risk and the likelihood of defaults as well as the estimated recovery value during a bankruptcy, but they do not give an opinion as to the value of a bond. That is the investors' responsibility. Bond ratings have been criticized for being focused on historical results as opposed to future projections.

A BOND'S YIELD IS RELATED TO ITS RATING

The lower a company's bond rating, the greater the risk that the company will default on some future interest, sinking fund, or final maturity payment, according to the judgment of the rating agency. When investors buy lower-rated bonds, they demand a higher yield to compensate them for the higher risk of default. Bond yields, in fact, are directly related to the market's perception of the bond's risk, and a bond's price in the market will rise or fall so its yield will adjust to changing perceptions of risk.* For example, if a bond was perceived to have increasing risk, its price would fall so that its yield would rise to a level reflecting the increased risk.

Bond prices also will rise or fall in the market to adjust the yield to changes in interest rates caused by economic or government policy factors, discussed in Chapter 9.

When a company issues new bonds, it usually has to offer an interest rate comparable to the interest rates of similarly rated bonds already on the market. In fact, a company selling new bonds usually has to offer an interest rate slightly higher than similar bonds already in the market in order to induce potential investors to sell their old bonds and buy the new ones with which they are less familiar.

Investors do not always agree with the ratings agencies. Investors may evaluate a bond's risk, or creditworthiness, as being greater than or less than the ratings suggest. For instance, a bond may be rated AA, but the market (i.e., most investors) may feel it is more risky and should only be rated A. In this case, the bond would be likely to sell at a yield closer to other A-rated bonds rather than AA-rated bonds. In fact, it sometimes happens that the rating agencies only raise or lower their ratings after the market has already begun to reflect such a change. For the majority of bonds, however, the market usually agrees with the ratings agencies; thus, for these bonds, yields at any given time are related to their ratings.

In early 2013, newly issued 10-year maturity bonds of industrial companies with the following ratings typically had the accompanying yields.

AAA	2.50%
AA	2.60%
A	2.80%
BBB	3.50%

This does not mean that all A-rated bonds had exactly a 2.80% yield. Other factors—such as call feature, time to maturity, and individual investors' judgments about risk—could cause the yields to vary around the 2.80% level. It is harder to identify a typical rate for lower-rated bonds because they vary more widely, but many BB-rated bonds were issued at the same time with yields close to 5%, and many B-rated bonds were issued at yields over 7%.

THE YIELD SPREAD BETWEEN RATINGS

Changes in interest rates and yields are often quoted in terms of *basis points*. A basis point is 0.01 percent, or one one-hundredth of a percentage point. For example, if interest rates went from 3% to 4%, we would say they went up by 100 basis points, or one full percentage point. If the rate then declined from 4% to 3.8%, we would say the rate declined by 20 basis

points. Since interest rate changes are often small and gradual, investors who work with these numbers every day find it easier to talk about changes in interest rates in terms of basis points. It is easier to say “The rate was down 20 basis points,” rather than saying, “The rate was down by 20 one-hundredths of a percent,” or “point two percent.”

If interest rates in the economy in general moved up or down, yields on bonds at each rating level would also move up or down; but the yields at each rating level typically move up or down by different amounts. As a result, the yield difference between two ratings levels, called the *yield spread*, will vary. Table 8.4 gives an example of how yield spreads can change when prevailing interest levels change.

Table 8.4 Examples of Yield Spreads

	January	% Spread	Basis point spread	November	% Spread	Basis point spread
AAA	3.00%	0.10%	10	3.50%	0.20%	20
AA	3.10%			3.70%		
A	3.40			4.15%		
BBB	3.85%			5.05%		

Table 8.4 shows that yields rose in all ratings categories from January to November, but it also shows that the spreads between the ratings categories changed and became wider. The market factors causing such spread changes are numerous. Here it is sufficient to say that the relative positions will always remain the same: a AAA-rated bond will always yield less than a AA-rated bond, which will always yield less than an A-rated bond, and so on, except where the market disagrees with the ratings, or possibly when comparing different kinds of bonds. Bonds of industrial companies, for example, may have somewhat different yields than bonds of utilities, such as electric power companies.

Many bond investors watch yield spread changes closely and make buy and sell decisions on this basis. For example, when the spread between A-rated and BBB-rated bonds is narrow, such as the 45 basis point difference in January, an investor might prefer to buy an A-rated bond. In this case she would only be getting an extra 0.45% yield if she took the greater risk with the BBB-rated bond. So she might prefer the safer bond. On the other hand, in November when the spread between A-rated bonds and BBB-rated bonds had widened to 90 basis points, the same investor might decide she would rather have the BBB-rated bond because she is now getting considerably more yield, 0.90%, to compensate her for the increased risk.

INTEREST RATES

There are many different interest rates in the economy. The most commonly watched interest rates include bank borrowing rates (what banks pay depositors for savings accounts, certificates of deposit [CDs], and checking accounts) and bank lending rates (what banks charge customers who borrow in the form of mortgages, personal loans, or business loans). The *prime rate* is usually the rate that banks charge their safest business borrowers. Other rates investors watch include: (1) bond rates—the yield on U.S. Treasury bonds, corporate bonds, and municipal bonds issued by towns, states, and state agencies; (2) the *discount rate*—what the Federal Reserve charges when it lends money to banks; and (3) the *federal funds rate*—the rate banks charge when they lend money for a day or two to other banks to help them meet reserve requirements. There are other interest rates too numerous to mention: the rate on government Treasury bills, government agency bonds, and commercial paper (short-term loans from one corporation to another) are but a few.

The interest rates listed above rise and fall for reasons too numerous to discuss here. Even if we listed, discussed, and became experts on all the influencing factors, it would still be very difficult to predict whether interest rates would be rising or falling in the near and distant future. Even experts disagree on the future direction of interest rates and what the key factors are that will cause them to change. In short, interest rates at any given time reflect in some complicated and perhaps unknowable way the entire

economic outlook of the marketplace; that is, the anonymous result of each person's decision to borrow or lend at a particular time and interest rate. Because interest rates have a powerful effect on the economy,* certain rates such as the *discount rate* are fixed by the Federal Reserve at a level it feels is best for the economy. As such, changes in the rates set by the Federal Reserve tend to have an effect on many of the other interest rates noted above.

** The question of whether interest rates determine the level and direction of economic activity, or whether the economy determines the level and direction of interest rates, is like asking which came first, the chicken or the egg.*

YIELD TO MATURITY

When a \$1,000 face value bond is selling at \$1,000 and has a coupon of \$100, its coupon yield and current yield are obviously both 10 percent. However, if the bond price falls to \$943, the coupon yield is still 10 percent but the current yield increases to 10.6 percent (\$100 annual coupon divided by the current price of \$943). Notice however, that a person buying the bond at \$943 not only gets a \$100 coupon each year, for a current yield of 10.6%, but will also get a capital gain of \$57 when the bond matures at a \$1,000. (In some circumstances this gain will be treated as a capital gain for tax purposes, and be subject to a lower tax rate, and in other cases it will be treated as ordinary income. In either case we will refer to it as a capital gain to distinguish it from the interest income that a bondholder also receives.) Thus, the actual yield to the investor is higher than the current yield. The current yield reflects only the \$100 coupon payment the bondholder receives each year, but ignores the capital gain. The yield figure which includes both annual coupon and the capital gain is called the *yield-to-maturity*. The yield to maturity takes the capital gain into account as if it were being received a little bit each year (rather than all at the end), so the yield to maturity, like the current yield, can be thought of as an annual return to the bondholder. The calculation that gives the yield to maturity is more complex than it looks and cannot be done on a simple calculator. Either use a financial calculator,

such as the Hewlett-Packard 12c or Google “Bond Yield Calculator” and choose one to calculate an accurate yield to maturity. But even without doing any calculations, we can say with certainty the following:

- If a bond is selling at a *discount* to par (below \$1,000), its yield-to-maturity will be *greater* than its current yield (because a capital gain is added to the current yield).
- If the bond is selling at a *premium* to par (more than \$1,000), its yield-to-maturity will be *less* than its current yield because, in addition to the annual coupon payments received, the buyer of the bond will incur a capital *loss* when the bond is redeemed at par at maturity.

Table 8.5 shows the coupon yield, current yield, and yield to maturity for a bond with a \$70 annual coupon (\$35 coupon semiannually) and 12 years to maturity.

Table 8.5 Yield Comparisons on a \$1,000 Bond at Different Prices

Price	Coupon yield	Current yield	Yield to maturity
\$1,150	7.0%	6.1%	5.3%
1,100	7.0	6.4	5.8
1,050	7.0	6.7	6.4
1,000	7.0	7.0	7.0
950	7.0	7.4	7.6
850	7.0	8.2	9.1

For most investors, the yield to maturity is the most meaningful yield figure because it takes everything (coupon plus capital gain, or minus capital loss) into account. Therefore, other things being equal, investors should be indifferent in choosing among similar-rated bonds with the same yield-to-maturity. However, other things are not equal because individual investors

have different investment requirements. Look, for example, at the bonds of three similarly rated companies shown in Table 8.6. Each was originally issued at \$1,000 per bond, and each matures 12 years from now, but because they were issued at different times they have different coupons. Bond A was issued at a time when AAs were yielding 4 percent, so its coupon payment is \$40. Bond B was issued when AAs were yielding 7 percent, so its coupon is \$70. Bond C was issued when AAs were yielding 10 percent, so its coupon is \$100. Assume that AA rated issues today are yielding 7 percent.

Table 8.6 Comparing Bonds with the Same Maturity (12 years), the Same Yield-to-Maturity, but Different Coupons

	Annual coupon	Coupon yield	Today's price	Current yield	Yield to maturity	Yearly interest	Capital gain (or loss) at maturity
Bond A ...	\$40	4%	\$759	5.3%	7.0%	\$40	\$241
Bond B ...	70	7	1,000	7.0	7.0	70	none
Bond C ...	100	10	1,241	8.1	7.0	100	(241)

In Table 8.6 the price of bond A has declined from its initial issue price of \$1,000, and bond C is trading much higher than its initial price of \$1,000. But each of the three bonds is trading at a price such that all three have the same yield-to-maturity. Thus, a bond buyer who has no tax to worry about, and does not need the money until after 12 years, might be indifferent as to which bond is bought. But if the bond buyer was a retired person who needed current income to live on, and was in a low tax bracket, that buyer would most likely prefer Bond C because of the higher current income. A wealthy person in a high tax bracket might prefer Bond A because Bond A pays relatively little interest, which would be taxed at a high rate now, but offers a big capital gain at maturity. The wealthy investor prefers Bond A because most of the tax can be deferred until maturity, and may possibly be taxed at a lower capital gains rate. Thus, individual tax considerations and financial needs may make one bond more attractive than another.

Notice in Table 8.6 that the higher the bond price today (third column), the higher the current yield (fourth column). But in Tables 8.1 and 8.5, we

saw that as the price of a bond increases, its yield decreases. The explanation is that this table is comparing bonds with different coupons, whereas Tables 8.1 and 8.5 describe the price/yield relationship of a single bond with a fixed coupon.

Definitions

- **Bond.** A loan that is backed by a specific asset or group of assets.
- **Debenture.** A loan, much like a bond, that is a general obligation of the company, but is not backed by any specific assets.
- **Coupon.** The interest payments required on a bond.
- **Face Value.** The amount of money that must be repaid when a bond is redeemed at maturity; also referred to as par value.
- **Coupon Rate.** The annual coupon payment expressed as a percentage of the face value; it is fixed.
- **Current Yield.** The annual coupon payment expressed as a percentage of the current bond price; it is variable, changing with the price of the bond.
- **Yield to maturity (YTM).** The annualized return expected on a bond that is held to maturity. Calculated using the current price, coupon payment, time to maturity, and face value of the bond, the YTM takes into account both the bond's annual coupon and the capital gain or loss the bondholder will realize when the bond matures.

BOND TITLES

When you look at the balance sheet in the annual report of a company you will usually see each of its debt issues listed separately. The bonds, debentures and notes all have a variety of different titles, each of which provides information about some of the features or characteristics of that issue. Here, we will look at many typical debt issue descriptions. Let's look at a company with the following debt issues outstanding. Each of these issues is a separate contract with a separate indenture.

Long Term Debt:

3.60%	Mortgage bonds of 2036
4.00%	Equipment Trust Certificates due 2021
5.10%	Sinking-fund debentures due 2020
5.25%	Senior Notes due 2022
6.40%	Subordinated debentures due 2024
7 ½ %	Senior subordinated debentures due 2023
8.10%	Junior subordinated deferrable interest debentures due 2044
2.00%	Convertible subordinated debentures due 2019

Bond titles usually indicate the issue's priority in liquidation (sometimes referred to as "priority of claims"). The order of priority in liquidation is not necessarily the order in which they were issued, nor the order in which they mature. To be certain of the priorities, one often has to refer directly to the prospectuses or indentures of each issue. To better understand how bond titles indicate priority in liquidation, let's look at each of the bonds on the above balance sheet.

3.60% Mortgage bonds due 2036

This bond has a coupon rate of 4.60 percent and final maturity is in 2036. There may or may not be a sinking-fund provision. The bond title does not tell us. The title, *mortgage bonds*, means that one or more specific pieces of property, usually land, buildings, and equipment, are "pledged" to the bondholders. (This is the same as saying the bonds are "backed by," or "secured by," the specified pieces of property.) This means that if the

company defaults on an interest or principal repayment to the mortgage bondholders, i.e. fails to make a payment, the mortgage bondholders usually have the right (through the trustee named in the indenture) to sell the pledged assets and use the money to repay the principal and interest they are owed. In the event of a bankruptcy reorganization proceeding, rather than a liquidation, because the mortgage bondholders have assets pledged to them, they usually get all the money owed them; while holders of debentures, or unsecured bonds, end up getting less than the full amount they were owed.

4.00% Equipment Trust Certificates due 2021

Like mortgage bonds, Equipment Trust Certificates (ETC's) have specific assets pledged to them. In the case of ETC's, however, an independent trustee holds title to the assets pledged to the Certificates. ETC assets are usually transportation equipment such as airplanes or railroad cars. In the event that the issuing company defaults, the trustee can quickly sell or lease these assets to another user and repay the ETC holders. As long as the value of the pledged transportation equipment exceeds the repayment and interest requirements of the ETC, the ETC is among the safest bond investments.

5.10% Sinking-Fund Debentures due 2020

As discussed at the beginning of this chapter, not all bonds have a specific property pledged to them as collateral. Bonds that do not are usually called debentures. Debentures are a *general obligation* of the company. If the company is unable to meet its obligations to the debenture holders (i.e pay interest on time) the debenture holders do not get to take possession of assets. The debenture holders can, however, go to court and ask that the company be declared bankrupt. If that occurs and the company is liquidated, the debenture holders only get paid off after all debt holders with higher priority of claims get paid off. The words *sinking fund* in the title give you the additional information that there is a sinking fund. Even if the title does not say sinking fund, there may be one. While these debentures are not backed by assets, the sinking fund provision reduces the risk to bondholders relative to other bonds without such a provision. Recall, that the sinking fund provides annual repayment of a portion of the principal balance, thereby reducing the amount due at maturity. If there was not a sinking fund, the title of these bonds would have been "5.10% Debentures due 2020." Since there

is a sinking fund and those words are included in the title, the issue's title might be abbreviated "5.10% SFDs."

5.25% Senior Notes due 2022

Notes are essentially the same thing as bonds or debentures, but are usually issued with shorter maturity dates, ranging from 1 to 10 years. Longer maturities are normally called bonds or debentures.

6.40% Subordinated Debentures due 2024

The title of this bond tells us that the rights of the holders of these debentures are in some way subordinated to the rights of other debenture holders. "Subordinated" means lower ranking or lower priority, and it means that some other debenture holders get paid off ahead of the 6.40% Subordinated Debenture holders in the event of bankruptcy. Subordinated debentures can arise in two ways. First, suppose the 5.10% Sinking-Fund Debentures (SFDs) were issued in 2000. The indenture for the 5.10% SFDs said that if the company issued any new debt, the new debt must have lower priority in bankruptcy than the 5.10% SFDs. Thus, when the company wanted to issue some more debt in 2002, the new debt issue had to be subordinated to the 5.10% SFDs. Thus, the 6.40s of 2024 get the title "6.40% Subordinate Debentures due 2024." They are often abbreviated "6.40% Sub. Debs. of '24." Subordination can also arise another way, described under the 7½% Senior Subordinated Debentures.

7½% Senior Subordinated Debentures due 2023

The title tells us that the 7½% debentures are subordinated to *some* debt issue or issues, but are *senior* to the other subordinated issues. *Senior* means higher ranking, or "comes ahead of," the opposite of subordinated. The title does not tell us which issues the 7½'s are subordinated to, or senior to, but it appears that they are subordinated to the 5.10% SFDs, the 5.25% Notes and the Bonds; and they are senior to, or ranked ahead of, the 6.40% Subordinated Debentures, the Junior Subordinated Debentures, and the Convertible Subordinated Debentures. The ranking almost certainly relates to the issue's priority in being repaid if the company liquidates.

Let's look at why the 7½% became "senior subordinated" even though they were issued after the 6.40% Subordinated Debentures.

When the 6.40% were issued in 2002, the company had a lot of debt outstanding; and in order to make the issue attractive enough to be sold, the company not only had to pay a high 6.40% interest rate, but also had to agree in the indenture not to issue any further bonds or debentures. However, in 2005, things got so bad that the company was faced with bankruptcy if it could not raise more money quickly. It was almost impossible to sell new stock, and banks refused to make any further loans to the company. Thus, the company knew it would have to issue more bonds even though it had agreed not to in the indenture of the 6.40% Sub. Debs. So the company's management sent a letter to the holders of the 6.40% Sub. Debs. explaining the dire situation and asked the bondholders to *waive* this agreement (make an exception) and allow the company to issue some new bonds or debentures. The letter explained that if the company did not raise new money, bankruptcy was inevitable.

The letter also pointed out that, in the event of bankruptcy, the holders of the 6.40% were the last people to be paid off, and that it was unlikely that they would get all, if any, of their money back. (Note: At that time, the 8.10% Junior Subordinated Debentures and the 2.00% Convertible Subordinated Debentures had not yet been issued.) Further, the bankruptcy proceedings could be in the court for years, and during that time the 6.40% Sub. Deb holders would not even receive interest. Thus, it became apparent to the 6.40% holders that it was in their best interests to waive their right and allow the company to issue new debt, and then hope that the company would recover and meet its interest and eventual redemption obligations.

The investment bankers advised the company that from their experience, to make the new debentures attractive enough to sell, the new issue would need a coupon of 9½%, but would also need to be given priority over the 7.40% in the event of bankruptcy. So the letter to the 7.40% Sub Deb. holders also asked them to agree to subordinate their right in liquidation to the new debentures.

The 6.40% holders understood the situation and gave their permission for the company to issue new debentures, and allowed the new debentures to be senior to them. They also noted that although they were willing to make an exception this time, they were retaining all their rights under the indenture and would refuse any further requests for additional new debt.

Thus the new debt was called the 7½% Senior Subordinated Debentures, to indicate that they were senior to any other subordinated debt in the

company (i.e., the 6.40%^s). The 7½%^s, of course, were still junior, or subordinated, to the 5.10% SFDs and the other debt issues already discussed.

8.10% Junior Subordinated Deferrable Interest Debentures due 2044

By 2004, the company's financial condition had improved, though its bank debt remained high. Management wanted to raise some long-term capital to reduce its bank debt. However, the company's stock price was too low to consider selling new common stock, and the company's existing debt indentures made it difficult to sell any senior debt. That left the company with three options: it could sell preferred stock (discussed in Chapter 12), it could sell hybrid or trust preferred securities (Chapter 13), or it could sell junior subordinated debentures. Junior subordinated debentures (abbreviated jr. sub. debts. or j.s.d.'s), would be the lowest priority debt in the company (i.e., in the event of liquidation, the j.s.d.'s would only be paid off after all other debt of the company had been paid off).

The features of jr. sub. debts. are often very different from other debentures. Newer issues differ from older debentures in three ways. First, these j.s.d.'s have maturity dates 30 to 50 years after issue, an unusually long time. Second, they are sold in denominations (face or par value) of \$25, rather than the \$1,000 typical of most bonds and debentures. Third, they pay interest quarterly or monthly, unlike most bonds' and debentures' semi-annual payments; and fourth and most unusual, they have a *deferrable interest* feature.

The deferrable interest feature gives the company the right to temporarily stop making interest payments and to defer those payments for up to five years without the debenture holders having the usual right to enforce payment by forcing the company into bankruptcy. However, if any interest payment were deferred for over five years, then the jr. sub. deb. holders would have the right to enforce payment. Junior sub. debts. with this deferrable interest feature typically specify that, if interest is being deferred, the company may not pay any dividends to its preferred or common stockholders until all the deferred interest payments have been made. Consequently, companies are unlikely to defer interest payments unless they are in desperate financial condition.

Since the company's right to defer interest adds risk for the debenture holders, companies issuing deferrable interest debentures must pay a higher

coupon rate than if the debentures did not have the deferrable interest feature.

Because these debentures are often the most junior in the company, have such a distant maturity date, and give the company the right to defer interest payments, we say that the debentures are *deeply subordinated*.

Junior subordinated deferrable interest debentures are most commonly issued in conjunction with trust preferred securities, which are discussed in Chapter 13.

2.00% Convertible Subordinated Debentures due 2019

Convertible issues are usually the most junior debt issues in a company, although some convertible bonds are senior bonds. Convertibles usually pay a lower coupon rate than similarly rated non-convertible debentures because the opportunity to make a big profit from the conversion feature makes them very attractive to investors. This is discussed in Chapter 11. These convertible debentures were issued after the 8.10% jr. sub. debts. discussed above, so at the time the j.s.d.'s were issued, those j.s.d.'s were the most junior issue in the company. Now, because the 2.00% convertibles are the last debt issue listed on the company balance sheet, we can guess that they are junior to the 8.10% j.s.d.'s, but we cannot be sure without referring to the indentures.

9

WHY BONDS GO UP AND DOWN

In the last chapter, we learned the bond basics: the key features of bonds, the language of bond investors, and the ways bond investors look at yield. In this chapter, we will look at why bond prices go up and down in the market, and what investors should focus on to determine the relative investment attractiveness of different bonds.

Why bond prices change appears to be more of a mystery to new investors than why stock prices change. To help understand bond pricing, we will begin by looking at how bond prices and yields change. We will then look at bond price sensitivity to changes in both prevailing interest rates in the economy, and in company creditworthiness. Finally, we will look at the all-important yield curve. With an understanding of the yield curve, readers should be much more comfortable with bond pricing.

Bond prices generally move up and down for two reasons. First, bond prices will move up or down to reflect changes in interest rates in the economy in general. How this happens is discussed shortly. Second, bond prices will move up or down to reflect an improvement or deterioration in the creditworthiness of a particular company. Price changes for this latter reason will be independent of how interest rates are moving in the economy in general. For example, even if interest rates in general are declining, and most bond prices are moving up, the prices of some bonds may decline because those bonds are becoming more risky. This is to be expected because, as the risk increases, bond buyers would want a higher yield to compensate them for the increased risk that a future interest or principal repayment might not be made.

HOW BOND YIELDS CHANGE

To see how bond yields change, let's look at BLT Co. bonds that were issued on December 31, 2010. The bonds have a 4% coupon and mature on December 31, 2022. They are rated AA and have no sinking fund or call provision. Their annual coupon is \$40 (\$20 semiannually), or 4% of their face value of \$1,000 per bond. When these bonds were initially issued to their first owners (a primary offering) in December 2010, AA-rated bonds in the market were typically yielding 4%, so the BLT AA-rated bonds were issued exactly at par. Mr. Wood purchased one of the bonds by paying \$1,000 to the company (through his broker). Thus, his coupon yield was 4%, his current yield was 4%, and his yield to maturity was 4%. Mr. Wood intended to hold the bond until maturity.

In January 2011, let's assume the general level of interest rates began to rise. This meant bond prices began to fall. In January 2011, Mr. Wood looked online and saw that his bonds were selling at \$980: At \$980, his BLT bond's current yield is 4.1% and its yield to maturity is 4.2%.

$$\text{Current Yield} = \frac{\text{Coupon}}{\text{Current Price}} = \frac{\$40}{\$980} = 4.1\%$$

$$\text{Yield to maturity (from financial calculator)} = 4.2\%$$

Notice that the current yield and yield to maturity change with changes in the price. From Wood's point of view, however, nothing has changed, since he does not intend to sell the bond. He still gets \$40 in interest payments each year and \$1,000 principal payment at maturity. He is still getting a 4% yield *on his original investment of \$1,000*. But when investors talk about bond yields they are usually not talking about some individual's yield based on a price he paid sometime in the past. Bond investors usually talk about the yield one would get beginning today if he bought the bond at today's price.

Why did the bond price fall? Or the interest rate rise? What happened was something like this: Assume Ms. D, Mr. E, and Mr. F were all holders of

BLT Co. bonds and were sophisticated investors who closely followed the bond market and interest rates. In early January 2011 they observed upward changes in other interest rates, such as the prime rate and U.S. Treasury bond interest rates. Each of them, independently, concluded that interest rates were about to go up further. If interest rates went up on AA-rated bonds to, say 4.4%, that would mean that another company about to issue new bonds, Company XYZ for instance, would have to pay a coupon of \$44 per \$1,000 bond. If BLT Co. and XYZ had the same rating and the other features of the bond were similar, and if BLT Co. bonds were still selling at \$1,000 and yielding 4% exactly, it would obviously be preferable for investors to sell their BLT bonds at \$1,000 and buy the bonds of XYZ and get the higher coupon. Anticipating this, Ms. D decided to sell her BLT Co. bonds in early January and wait until interest rates rose and then use her money to buy the bonds of another AA-rated company which would then have the expected higher yield. Ms. D called her broker and asked him to sell her BLT bonds at par (\$1,000), and was surprised when her broker said there was no bid (no one was willing to buy) at \$1,000. Other investors had also anticipated that interest rates were going to rise, and nobody was willing to pay \$1,000 for an AA-rated bond with a 4% coupon and yield. So she had to lower the price at which she was willing to sell to make her bonds more attractive to a buyer. Thus, the price was forced downward, say to \$996.

Mr. E and Mr. F also expected interest rates to go up, and therefore expected that the price of their BLT bonds would go down, so they wanted to sell their bonds. In the process of selling, they forced the price down even further. By January 20, the price had fallen to \$980. Since each sale has a buyer and a seller, the \$980 price and 4.1% current yield and 4.2% yield to maturity reflected the balance that day of those who wanted to sell because they thought the bond price was going lower, and those who wanted to buy because they thought the price had reached bottom and would stay there or move higher. Thus, the yield to maturity on AA-rated bonds had now moved up to 4.2%. When BLT's bond price stopped going down, it was because the higher yield (at the lower price) brought out more buyers and caused other sellers to change their mind about selling.

In sum, the price moved down and the yield moved up responding to many investors' individual decisions to buy or sell, which in turn reflected their anticipation of market interest rate changes, and how to best invest their money.

Markets always anticipate the future. The price of a bond (or a stock) on a given day always represents the “market opinion” (i.e., the net effect of investors’ transactions that reflect differing opinions on whether the price is going up or down in the future).

In the example of BLT Co., we saw how bond prices fall and yields rise. Now let’s look at the bonds of DTZ Co. and see why bonds can sell at a premium to par (i.e., over \$1,000). DTZ bonds were initially issued at par when interest rates were higher than today and thus had an 8% coupon which was the level of similar bonds at the time DTZ bonds were issued. Sometime after the DTZ bonds were issued, interest rates declined. As interest rates fell, new, similar bonds were being issued that yielded only 7%, or \$70 per annual coupon. DTZ bonds suddenly became very attractive with their \$80 coupon, and investors began to buy them. Investors were willing to pay a premium (more than par) for DTZ bonds because, even though they would ultimately incur a capital loss when they received \$1,000 at maturity, the extra current income received on DTZ bonds each year (\$80 coupon compared to the \$70 coupon they could get on new bonds) would make up for the capital loss. The question is, up to what price would investors pay for DTZ bonds? The answer is, up to a price where the DTZ bond’s yield to maturity is equal to the yield to maturity of new, similar bonds being issued today. That yield to maturity tells you exactly the price where you should be indifferent to buying DTZ bonds with their \$80 annual coupon, or newly issued bonds with a \$70 coupon.

Review: For bonds that are creditworthy and stable; that is, unlikely to have their creditworthiness upgraded or downgraded, the following statements are true.

1. Bond prices are inversely related to prevailing interest rates for similarly-rated bonds. That is, when interest rates increase, bond prices fall, and vice versa.
2. When the coupon rate on a bond is equal to the prevailing interest rate on similar bonds, the bond will sell near par.
3. When the coupon rate on a bond is less than the prevailing interest rate on similar bonds, the bond will sell at a discount to par. The price of a

bond that is trading at a discount to par will increase over time to par as the maturity date approaches.

4. When the coupon rate on a bond is greater than the prevailing interest rate on similar bonds, the bond will sell at a premium to par. The price of a bond that is trading at a premium will decrease over time to par as the maturity date approaches.

Bond Interest Rate Sensitivity

As we have seen, when interest rates in the economy (prevailing interest rates) go up or down, prices of bonds will go down or up (the two are inversely related). How much the price of a bond will go up or down due to a specified change in prevailing interest rates is called its *Interest Rate Sensitivity*. A bond whose price will change a lot for a specified change in prevailing interest rates is said to be highly interest rate sensitive. A bond whose price will change less with the same specified change in interest rates is said to be less interest rate sensitive. A bond's interest rate sensitivity is primarily related to 1) its coupon, and 2) the time left to maturity. (The sensitivity may also be affected by a Call provision, if the bond has one. Call provisions, which may affect the maturity date, are covered in Chapter 10.) Note, we are only referring here to a bond's sensitivity to changes in interest rates; that is, we are assuming there is no change in the creditworthiness of the company. If a bond issuer's financial results begin to deteriorate to the point of increasing the risk that the company will not be able to meet its interest and principal repayment obligations, that would be a *credit* risk related problem, not an *interest rate* risk concern.

Rule 1: The longer the time to maturity, the greater the interest rate sensitivity.

Example: Consider two bonds issued by the same company which are identical in every way except that Bond 1 matures in 20 years, and Bond 2 matures in 5 years. The 20 year bond would be more sensitive to a changes in prevailing interest rates, meaning that if interest rates rose, the price of the 20 year bond would go down more (by a larger percentage) than the 5 year

bond. How much each bond would go down for a specified rise in interest rates, other things being equal, is mathematically determinable, but beyond the scope of this book. Suffice it to say here, this is because with the longer maturity, more of the return to the investor (coupons and principal repayment) is further out in time. So, if you are looking to buy bonds now but you think that interest rates might go up, you would want to choose a shorter maturity to limit how much your bond's price would go down if interest rates do rise. The problem with buying a shorter maturity bond is that most often shorter maturity bonds have lower yields than longer maturity bonds. So the investor who is worried about interest rates going higher faces a trade-off between buying a higher yield-to-maturity bond, with more interest rate risk (price decline), or a lower yield-to-maturity bond, which has less downside price risk in the event of an increase in interest rates.

An investor who is certain that she will hold the bond to maturity and is equally certain that all coupons and repayment of principal at maturity will be made, should not care if the bond's price declines for some period prior to maturity, because as the maturity date approaches, the bond price will climb back to par. On the other hand if she was certain that interest rates were going up, the best decision would be to hold off: do nothing now, and wait until interest rates have moved higher, and then buy bonds at the then higher yields (and lower price). But of course one can never be absolutely certain about interest rate changes, so if the investor waits, she risks having no yield, or whatever minimal yield her bank account or money market is paying currently. And if interest rates go down instead of up as she predicted, she will then only be able to buy her bonds later at a lower yield.

Don't forget that the downside price risk is "temporary" because as the bond approaches maturity, the price will climb back up to par.

Rule 2: The lower the coupon, the greater the interest rate sensitivity.

Example: Consider two bonds issued by the same company which are identical in every way (including identical maturity dates) except that Bond 3 has a 3% coupon, and Bond 4 has a 5% coupon. The 3% coupon bond would be more sensitive to changes in prevailing interest rates, i.e. the price of the 3% coupon bond will go down or up more (by a larger percentage) than the 5% coupon bond for a given change in prevailing interest rates.

Again, this is because more of the bond's return to the investor is further out in time. Or to say it the other way, the 5% coupon bond has more of its return in the early years because the 5% coupon brings in more early return than the 3% coupon bond. So if interest rates decline, the price of the 3% coupon bond will go up by more than the price of the 5% coupon bond. As in the prior example, how much each bond would go down or up as a result of a specified change in interest rates, is mathematically determinable, but beyond this book. (Interested readers are referred to *Inside the Yield Book* by Homer and Leibowitz.)

Bond Price Creditworthiness Sensitivity

Bond prices are also sensitive to changes in credit quality, but not in the same mathematical way as they are to interest rate changes. If a bond issuer's creditworthiness is deteriorating, as investors come to realize that, they will want a higher yield to compensate them for the increased risk, and thus will sell the bonds until the bond's price has fallen to a level where its increased yield compensates them for the increased risk. Creditworthiness is a much more subjective factor than interest rate changes. But we can say qualitatively that the price of the bond will continue to decline until its yield has moved up to the point where its yield is consistent with other bonds of similar characteristics and credit rating.

Example: I own an AA-rated bond of Company XYZ (the bond can have any coupon and maturity, they do not matter in this example.) My AA-rated bond is currently selling at a yield of 3.2%, which is in line with other AA-rated bonds. At the same time, the prevailing yields for single A-rated bonds are closer to 3.6%, and BBB-rated bonds are typically selling at yields near 4.2%. My research shows that there is increasing competition in the market for Company XYZ's products, and I anticipate that XYZ's profit margins and therefore earnings will decline to the point where XYZ's interest coverage ratio falls to levels consistent with single A or BBB-rated companies. If my analysis is correct and XYZ's earnings and interest coverage ratios deteriorate, the price of the company's bonds will sooner or later decline to the point where their yield is closer to the levels of single A or BBB bonds. Often, since other bond holders will anticipate the same profit margin deterioration that I expect, there will be many sellers, and the

bond prices may begin to decline before XYZ's financial statements actually show the deteriorating margins.

In sum, if an investor is able to identify a bond that she believes will be upgraded by one or more credit rating agencies, she should buy the bond before the upgrade is reflected in the bond's price; this is referred to as a *credit upside trade*. When the upgrade is announced, the price of the bond will increase (or will increase to the extent it has not already increased as other bond investors also anticipated the credit upgrade), and the bond's yield will decline accordingly. Alternatively, if an investor believes the credit rating agencies are going to downgrade a bond, she can reduce her exposure by selling the bond ahead of the downgrade. This trade is referred to as a *credit defense trade*.

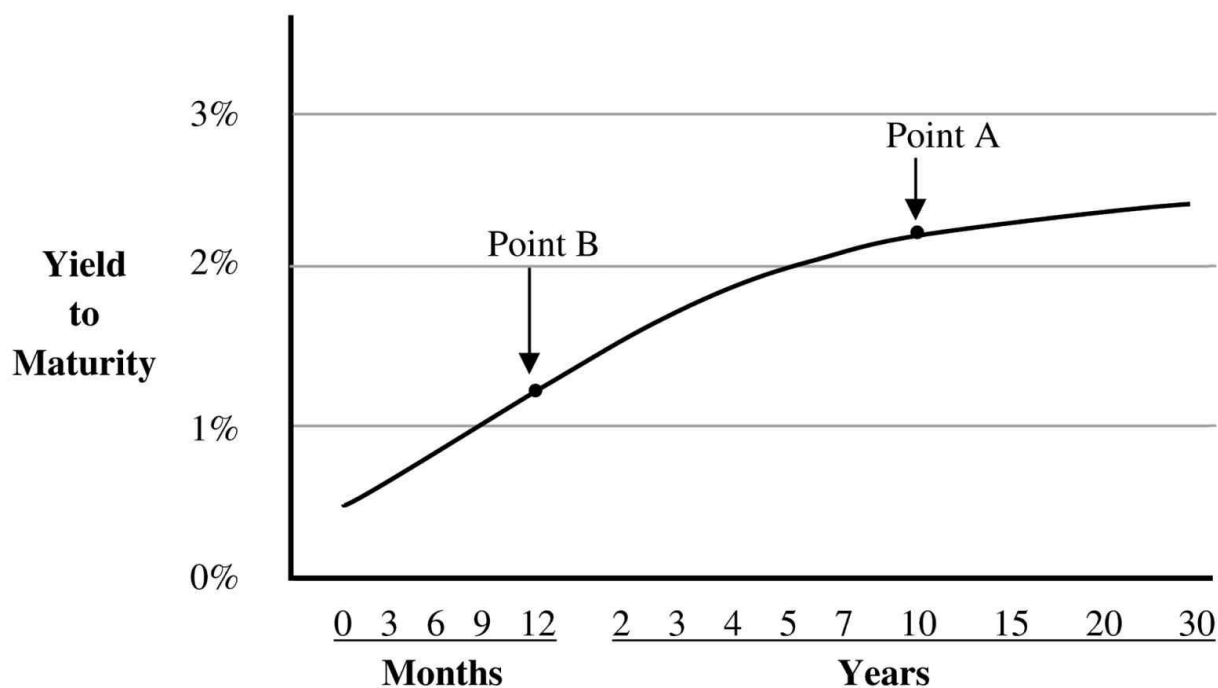
The Yield Curve

Bond investors use yield — most commonly yield to maturity (YTM) — as the primary measure of comparison when evaluating a bond or comparing bonds attractiveness. Sometimes other measures of yield, which we will see in Chapter 10, are more appropriate, but even these can be viewed as versions of yield to maturity. Comparing yields on different kinds of bonds (U.S. Treasury bonds, Government agency bonds, corporate industrials, corporate utilities, or corporate financials, and more), or comparing yields on similar bonds but with different maturities, coupons, or other features, can reveal information about whether a given bond is over- or under-valued relative to similar or different kinds of bonds.

The study of yield comparisons begins with understanding the yield curve. There are many yield curves, as we will see, but the starting point for any comparison is the yield curve for United States Treasury bonds (U.S.T. bonds). For simplicity, in this discussion of the U.S.T. yield curve, we will sometimes use the terms U.S.T. bonds or U.S. Treasury bonds to mean all U.S.T. issues, including U.S.T. bills (maturity of one year or less), U.S.T. notes, (maturity of one to ten years), and U.S.T. bonds (maturities longer than 10 years).

The U.S.T. yield curve, Graph 9.1, shows the yield for U.S.T. bonds with different times to maturity.

Graph 9.1 UST Yield Curve as of June 20, 20xx



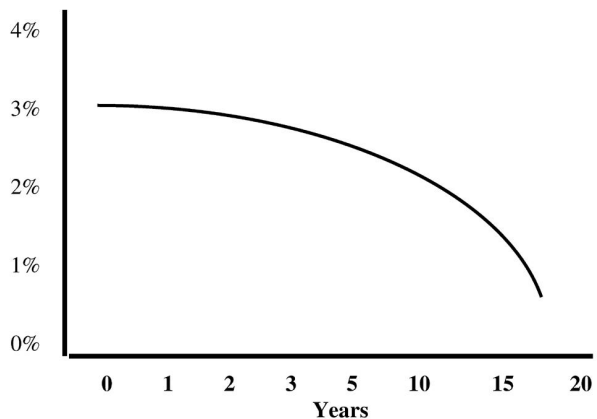
In Graph 9.1, the horizontal axis shows the time to maturity, beginning with months at the “short end” on the left of the graph, and going out to 30 years maturity on the “long end”. The vertical axis is the bond’s yield-to-maturity (see Chapter 8.) Each point on the curve shows the yield-to-maturity of a U.S.T. bond for that time to maturity as of the date of that yield curve. So Point A on graph 9.1 shows that a 10 year to maturity U.S.T. bond (on June 20th in this case) had a yield of 2.2%. Point B shows that a U.S.T. bill with 12 months to maturity had a yield 1.2%

The shape of the curve in Graph 9.1 is described as upward sloping, or positively sloping, reflecting the fact that the longer maturity U.S.T. bonds have a higher yield than the shorter maturity bonds. An upward sloping yield curve is called a *normal yield* curve because this is the way it most commonly looks. The higher yield at the “long end” compensates investors for taking on the additional risk of a longer maturity investment.

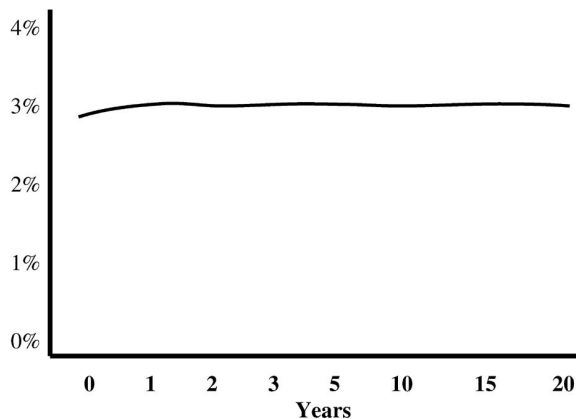
If the yields on short term issues are *higher* than on long term issues, as in Graph 9.2, we say the curve is negatively sloped, or the yield curve is *inverted*. The reasons why the U.S.T. yield curve inverts and what it historically portends for the economy are subjects of endless discussions among economists. We will not delve into that here, except to note that an

inverted yield curve is rare and frequently signals that a recession is coming. For those readers interested in this subject, an internet search for “inverted yield curve” will provide a long reading list. If the difference between long term and short term yields is relatively small, we say the yield curve is flat, as in Graph 9.3

Graph 9.2 Inverted Yield Curve

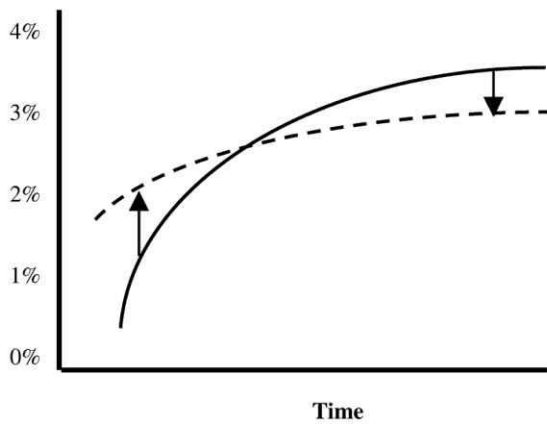


Graph 9.3 Flat Yield Curve

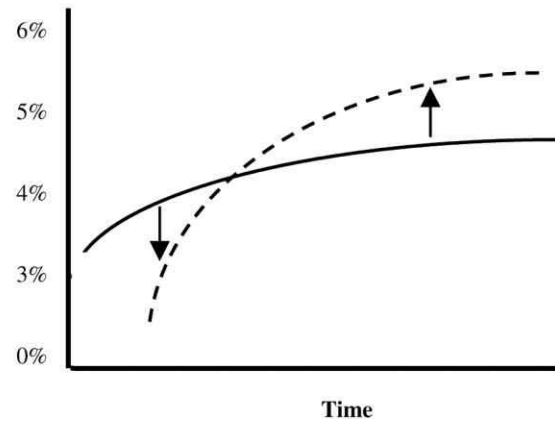


The shape of the yield curve is constantly changing as economic conditions and expectations of future interest rates change. The entire yield curve will move up or down as interest rates move up or down, and the shape of the yield curve will also constantly change independent of whether it is moving up or down. On Graph 9.4 the solid line illustrates a sharply sloped, normal yield curve indicating that the yield on long term bonds is noticeably higher than on short-term bonds. A flattening of the yield curve (the dashed line) occurs when the difference between long- and short-term yields declines. A flattening curve can indicate that investors expect economic growth to slow, and does often presage slowing economic growth. On Graph 9.5 we see the yield curve steepening. This can occur when short term yields are falling while long term yields remain relatively unchanged or are rising (dotted line on Graph 9.5), or perhaps because long term yields are rising faster than short term yields (see Graph 9.6)

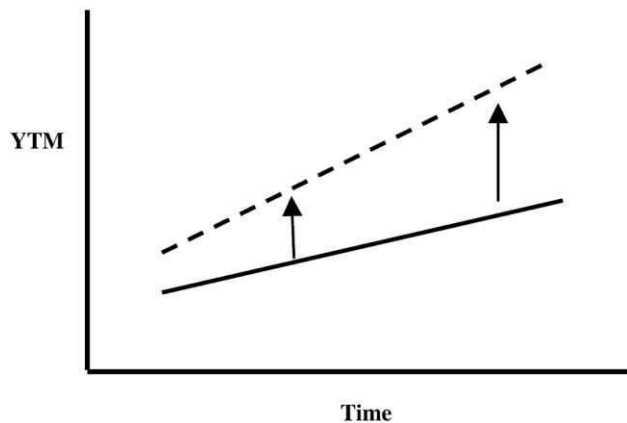
Graph 9.4 Sharply Sloped Yield Curve Flattening



Graph 9.5 Gentle Sloped Yield Curve Steepening



Graph 9.6 Yield Curve Rising and steepening



A steepening curve can indicate that investors expect more robust growth, or expect inflation to rise.

While yield curves can be and are drawn for all kinds of bonds (corporate industrial, corporate utility, government agency, foreign, etc.), U.S. treasuries are typically used as the base yield curve for three reasons. First, all along the yield curve, the bonds are homogenous in terms of quality; that is, they are all issued by the U.S Treasury. That prevents distortions that may occur if one were looking at a yield curve of, say, corporate AA-rated bonds. Since no one company, or even a few AA-rated companies would have enough bonds outstanding to create a continuous yield curve, a corporate AA-rated yield curve would necessarily have data

points from many company's bonds, even though those companies are not exactly of the same quality (despite all being rated AA). Even within the corporate AA rating category, bonds of industrial companies will have slightly different yields than those bonds issued by utilities or banks. Further, even within the corporate AA industrials sector, food companies will have slightly different yields from mining or home building companies. In sum, while a reasonable corporate AA-rated yield curve can be created, including interpolating some points on the curve where there is no appropriate bond that is actively trading, the homogeneity of the U.S.T. bonds is an important factor in making its yield curve the best standard for comparison.

Second, it is generally assumed that the risk of default on U.S.T. bonds is non-existent (though that point could be argued given the U.S.' recent credit rating downgrade from AAA to AA+ by Standard & Poor's). Third, the U.S.T. bond market is highly liquid, meaning that no one or a few trades would by itself affect the prices of the bonds in the market. In a less liquid market, the one or two big trades by anxious buyers or sellers could take place at prices which are not really reflective of the yield levels at which most similar bonds are trading, and thus distort the curve. Finally, yields on U.S treasuries at all maturities can be obtained from readily available public information. For instance, Yahoo! Finance provides the current yields on Treasuries of all maturities, as well as information on how those yields have changed over the past.

A U.S. Treasury yield curve is easy to construct. Many issues mature every week and the treasury is issuing new ones every week. There are hundreds of different U.S.T. bonds, notes, and bills outstanding at any time. Here are two ways a five year U.S.T. bond can be created. First, the Treasury can sell a new bond that matures 5 years from the date of issue. Second, a 5 year bond is created from a 20 year bond that was originally issued 15 years ago, leaving only 5 years left until the bond matures. In fact, there are many 5 year (or 4 year or 6 year etc.) bonds at any given time that began life as a 10 year, 15 year, 20 or 30 year bond.

When the treasury raises money by selling bonds we say the bonds are being auctioned, because that's the way U.S.T. bonds are sold. When the treasury announces it will sell (auction) an issue of bonds on a given day, bond buyers will bid by saying what is the minimum yield they need to receive to be willing to buy the new bond. The treasury then looks at all the bids and takes the lowest yield (so it has the lowest interest payments to

make) and then sells the bonds to the low bidders. (In fact, the auction process is a little more complicated than this but the details are beyond the scope of this book. Note however, that the Treasury allocates a portion of each offering to “non-competitive” bids. These are bids from small investors who are willing to buy the treasury bonds at whatever the yield on the issue turns out to be.)

Recently issued U.S.T. bonds are referred to as “on the run,” whereas old bonds, like the 20 year bond discussed above, that became a 5 year bond due to the passage of time, are referred to as being “off the run”. These off the run treasury issues are just as safe an investment as the on the run issues, but don’t trade quite as actively. Because on the run issues are extremely liquid (trade very actively), the on the run U.S.T. curve is deemed to be a highly accurate reflection of investor sentiment for yield and risk.

The Importance of the Yield Curve

As noted above, yield curves can be drawn for virtually any kind of bond. But the U.S.T. yield curve is so fundamental to bond investments that investors simply refer to it as “the curve”. When you hear someone say a bond issue is trading “80 over the curve,” it means that the issue being discussed is trading at a yield to maturity that is 80 basis points (0.8 percentage points) higher than the YTM of a U.S. Treasury issue of the same maturity.

The U.S. Treasury yield curve is both a cause of, and is affected by, economic activity in the United States and to some extent the whole world. Investors’ decisions to buy, sell, or hold short term or long term U.S.T. bonds impacts the shape of the yield curve. Investors expecting an increase in inflation will not want to hold long term bonds (10-30 years), because in an inflationary period, the \$1,000 face amount of a bond that will be received at maturity will be worth a lot less if inflation has caused the prices of goods to move up since the bond was originally purchased. Thus those investors expecting inflation will sell their long term U.S.T. bonds, pushing the price down to the point where the yield has increased enough that other investors feel that the yield is high enough to compensate them for the risk of the inflationary loss of purchasing power at maturity. On the other hand, the level of the yields and slope of the yield curve will affect whether a

company wishing to borrow money, chooses to borrow short term from a bank, or sell short, intermediate, or long term bonds.

In sum, the yield curve is a reflection of investors' expectations for economic developments, including expectations for government policy that will directly affect economic activity and interest rates. In many ways the yield curve reflects the "pulse of the economy," signaling what is going on at a fundamental level. Thus, changes in the yield curve can provide bond investors with important insights that can be used to determine which bonds to include in their portfolios. For stock investors, the curve can be used as part of the macroeconomic analysis to help forecast changes in the economic outlook, which of course, directly impacts most company's sales and earnings, and therefore their stock prices.

Corporate Yield Curves Compared to U.S.T. Yield Curves

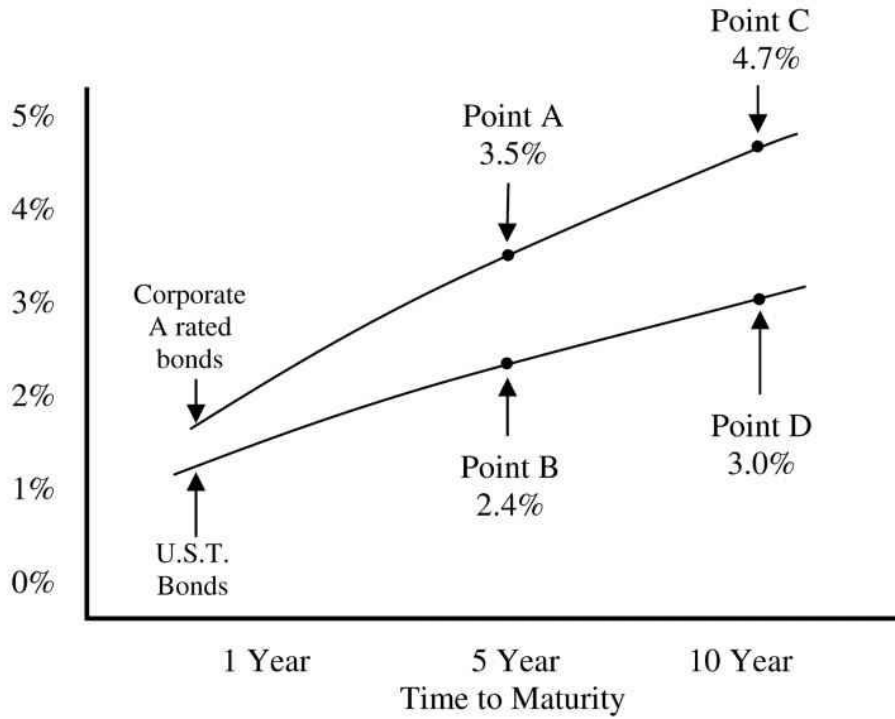
While the most risk averse investors will only buy U.S.T. bonds, most investors are willing to take the greater risk associated with other bond issuers in exchange for the higher yield they offer. Such issuers include U.S. Government Agency and Government Sponsored Entities (GSE) bonds such as those issued by the Federal National Mortgage Association (known as Fannie Mae), municipal bonds (issued by state and local government entities), corporate bonds (issued by companies), and foreign government and foreign corporation bonds. We will look briefly at corporate / U.S.T. spreads.

Graph 9.7 shows part of the yield curve for single A-rated corporate bonds on the same graph as the yield curve for U.S. Treasuries. The difference between the yield of a corporate A-rated bond and the yield of a U.S.T. bond *of the same maturity* is called the *spread* between the two. In Graph 9.7, Point A shows that 5 year corporate A-rated bonds, on average, are selling at a 3.5% yield. Point B shows that 5 year U.S.T. bonds are currently trading at a 2.4% yield. So the yield spread between the 5 year corporate A bond and the 5 year U.S.T. bond is 1.1% spread (or 110 basis points). Similarly, the 10 year Corporate single A / U.S.T. spread between Point C and Point D is 1.7% percentage points (or 170 bps). So we see that the spread can be wider or narrower at different maturities across the yield curve. For students of the yield curve, both the size of the spread (in basis

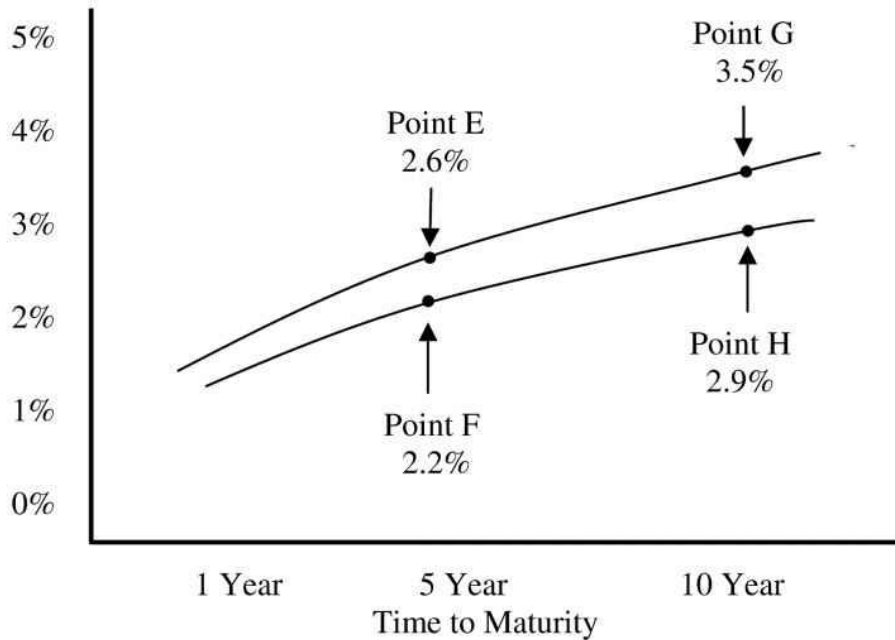
points) and the difference in size of the spread (more or fewer basis points) across the curve, provide clues as to the sentiment and direction of the markets.

As you might imagine, investors will also look at the spread between corporate AAA bonds and U.S.T. bonds, the corporate AA to U.S.T. spread, the corporate BBB to U.S.T. spread, and also look at spreads that do not involve the U.S.T. yield curve. For example, a comparison of the corporate AAA-rated bond curve to the corporate BBB-rated bond curve would tell us something about investor's appetite for risk. A comparison of the corporate AA-rated financial companies yield curve compared to corporate AA-rated bonds issued by industrial companies might tell us something about the strengths or weakness of specific sectors of the economy. All of these spreads can be mined for clues to investment opportunities as well as economic insights.

Graph 9.7 Yield Curve Showing U.S.T. Bonds and Corporate Single A-Rated bonds in January 20xx



Graph 9.8 Yield Curve Showing U.S.T. Bonds and Corporate Single A-Rated bonds in November 20xx



Graphs 9.7 and 9.8 show the spreads between corporate A-rated bonds and U.S.T. bonds at different times (11 months apart on these graphs). Comparing Graph 9.8 to Graph 9.7, we see that in November (Graph 9.8), the spread was narrower for all times to maturity, than in January (Graph 9.7). The narrower spread in November means holders of single A corporate bonds don't get a lot more interest for the increased risk when compared to U.S.T. bonds. This might be typical in a strong economy when investors are not very worried about risk. Conversely, in January, the yield spreads were wider across the curve (i.e. at all maturities from short to long). Wider spreads are more typical of the spreads in a recession when investors are very concerned about risk. In a deepening recession, investors are risk averse and there is a "flight to quality" as investors tend to sell their corporate bonds and move up in quality to buy U.S.T. bonds. As they sell their corporate single A-rated bonds, they force the price down, which increases the yield, and widens it compared to Treasury bonds.

The change in the spread over time can be useful to investors in different ways. First, if an investor who closely watches yield curves may notice that even during a strong economy, the corporate-to-U.S.T. spreads are beginning to widen. This may be an early or leading indicator that the economy will soon weaken. He could use that early warning as an opportunity to sell both his stock holdings and any bond holdings that he thinks will perform poorly in a recession (the lower rated bonds). Second, if the corporate/treasury spreads are wide, for example during a recession, and the same investor is confident that the economy is about to recover, which would reduce the risk of the corporate bonds defaulting, he might expect the wide corporate A-to-U.S.T. spread to narrow over time. If he is truly confident in his forecast of economic recovery, he would sell his U.S.T. bonds and move down in quality to corporate A-rated bonds (or lower), which will provide a higher total return, both because they have a higher coupon, but more importantly here, because their price will appreciate more relative to the treasury bonds (or go down less than the price of treasury bonds) as the spread narrows.

Now that we have seen how yield spreads will widen and narrow over time, the next step for bond investors is to look at an example of how the spread between two different bonds of the same maturity changes over time. Graph 9.9 shows the spread, over a 15 year period, between corporate A-

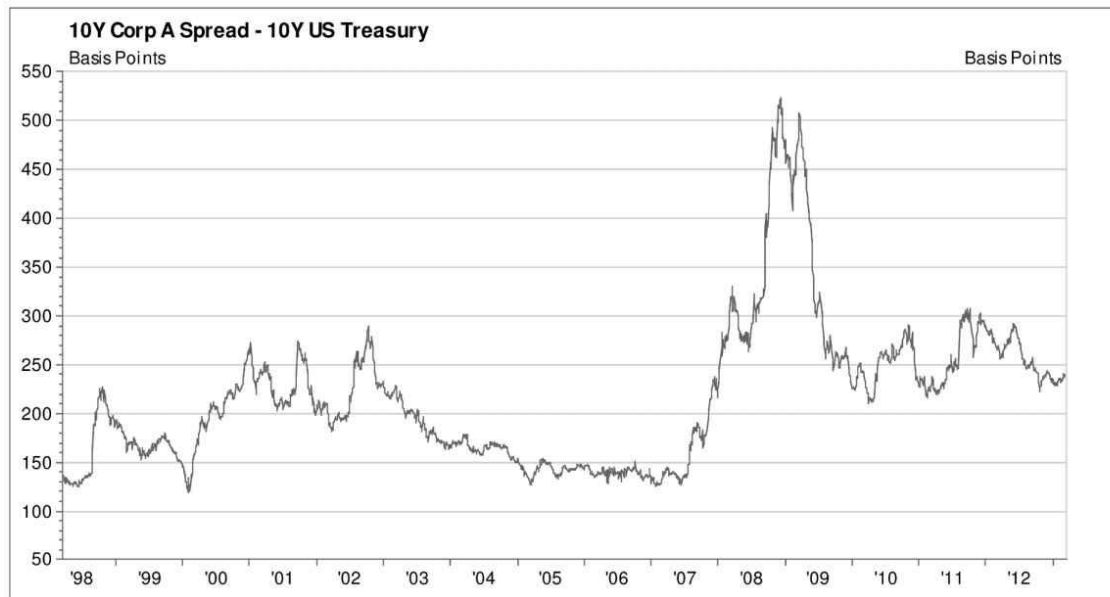
rated bonds with 10 years until maturity and U.S.T. bonds with 10 years to maturity. Note that Graph 9.9 is not a yield curve. The term “yield curve” refers to the graph of the yield to maturity for a particular type of bond over all maturities (from short to long) *at a specified point in time*. Graph 9.9 shows only the spread between two different kinds of 10 year bonds *over a 15 year period of time*. It might be called a *spread curve*, but not a yield curve.

As can be seen on Graph 9.9, the spread between a 10 year corporate A-rated bond and a 10 year U.S.T. Bond has repeatedly widened and narrowed. With the exception of the extreme widening of the spread in late 2008 and early 2009 during the “financial crisis,” it appears that there may be a pattern that when the spread is less than 150 Basis Points (see scale on left side) it is ‘narrow’ and would be a good time for investors to sell their A-rated bonds and buy U.S.T. bonds. Similarly, when the spread is about 275 Basis Points, it is wide and A-rated corporates appear attractive relative to U.S.T. bonds and should be bought.

Using this strategy, a new investor wanting to buy a 10 year bond in early 1998, would have the best performance if he bought a U.S.T. bond. An A-rated corporate bought in early 1998 would have underperformed from 1998 to mid 2002, as its spread widened from 1998 to 2002. But when the investor saw the spread widen to just under 300 BP in 2000, 2001, and 2002, it would have been a good time to sell his U.S.T. Bond, and buy a 10 year corporate. Had he done so, he would have been pleased, as from 2002 to early 2007, his A-rated corporate would have outperformed the U.S.T. bond as the spread narrowed. In 2007, with the spread having narrowed to about 130 basis points, the investor would have done well to have sold the A-rated corporate bond in early 2007 when the spread was too narrow to fairly compensate him for long term risk. Had he sold the A-rated corporate and bought back a 10 year U.S.T. note in early 2007, he would again have been pleased as the A-rated corporate underperformed in 2007. Note however, that when the spread got back to about 300 B.P. in late 2007, it gave a false signal. This time, the spread continued to widen (meaning the A-rated corporate bond continued to underperform the U.S.T. Bonds until early 2009. One can also see that the extraordinarily wide spread of 2008 and early 2009 turned out to be a great buy point for the A-rated corporate for those who had the courage to buy any bond other than a U.S.T. bond in the depths of the 2008-2009 recession.

We can also see from Graph 9.9 that the wide and narrow spread periods can extend for years, or can fluctuate widely within a range. In sum, yield curve and spread analysis, for those who take the time to study it, can be a valuable investment decision making tool.

Graph 9.9 Yield Spread between 10 Year A-Rated Corporate Bonds and 10 Year U.S. Treasury Bonds



Source: FactSet

The object of this yield spread comparison analysis is to identify and move your bond portfolio into the most relatively undervalued market sectors. To the extent that you are successful in judging the undervalued sectors, your portfolio should outperform the bond market averages.

To reemphasize the importance of yield curve spread analysis, note that while stock investors are primarily focused on “beating the market,” bond investors are often more focused on relative performance; that is, being in the right sectors of the markets so they can outperform U.S. Treasuries or other bond market sectors. What the investor is trying to do here is continually capture small relative gains, so that over time he will outperform the market.

Bonds: Advanced Topics

ORIGINAL ISSUE DISCOUNT AND ZERO COUPON BONDS

Most companies issue bonds at face (or par) value of \$1,000 per bond and pay a cash coupon at whatever interest rate is appropriate for that company's rating at the time the bond is issued. Thus, a company wishing to borrow \$60,000 would issue 60 bonds, and if 8% was the appropriate yield at the time the bond was issued, the company would pay a coupon of \$40 semiannually, or \$80 per bond each year. The annual interest payment on the whole issue would be \$4,800 (60 bonds x \$80 coupon per bond = \$4,800).

In certain situations, companies may choose to sell bonds at less than the face amount. In these cases we say the company has issued bonds at a *discount to par*. Such bonds are sometimes called *original issue discounts* and abbreviated OIDs. As an example, a company might issue a \$1,000 face amount bond for \$800. Although the company will have only borrowed \$800, it will still have to pay back \$1,000 when the bond matures. If this company wished to raise \$60,000, it would have to sell 75 bonds (75 bonds x \$800 received per bond = \$60,000) instead of 60. At maturity, however, the company will have to pay back \$75,000 (75 bonds x \$1,000 face value).

Why would a company be willing to issue bonds for \$800 when it knows it will have to pay back \$1,000 later? The answer is that because the bondholder will have a built-in gain of \$200 when the bond matures, she would be willing to accept a lower annual interest rate than she would otherwise require to buy the bond. Thus, the company can limit its interest payments over the life of the loan. A company with a very limited ability to pay a current coupon might wish to sell \$1,000 face-amount bonds at an even deeper discount, say \$600. This deeper discount (to face or par) would

build in a \$400 gain for the bondholder, who would thus be willing to accept an even lower annual coupon rate. At the extreme, a company that cannot afford to pay any interest now might issue 0% coupon bonds, called *zero coupons* or *zeros*. With no coupon, the bond would need to be issued at a very deep discount, such that all of the return to the bondholder comes at maturity when the bond is redeemed at \$1,000. Table 10.1 shows four different ways the company could borrow \$60,000 for 12 years and give the bond buyer an 8% yield to maturity.

Table 10.1 Alternative Bond Issues Priced to Give Same Yield to Maturity

Issue price per bond	Number of bonds sold	Repayment or face amount of total issue (at \$1,000 per bond)	Coupon	Total annual cash coupon paid by company	Yield to maturity
\$ 1,000	60	\$ 60,000	8 %	\$ 4,800	8%
\$ 800	75	\$ 75,000	5 ³ / ₈ %	\$ 4,031	8%
\$ 600	100	\$100,000	2 ³ / ₄ %	\$ 2,750	8%
\$ 390	154	\$154,000	0 %	\$ -	8%

Notice that the deeper the discount at which the bonds are originally issued (first column), the less interest that must be paid each year (fifth column). But this annual interest savings by the company is offset by an increasingly large repayment obligation at maturity (third column).

Notice also that in each case the yield to maturity is 8%. In practice, however, a company that was able to issue bonds at par with an 8% yield to maturity would probably have to offer a higher yield to maturity on zeros, perhaps 9% or 10%. This is because the much higher repayment obligation at maturity (third column) makes full repayment more risky.

In summary, from the issuing company's point of view, the advantage of *deep discount* or *zero coupon bonds* is that the company has little or no annual interest payments. The disadvantage is that there will be a much bigger repayment obligation at maturity than if the company had been paying a coupon all along. For these reasons, it makes sense for a company to issue zero coupon bonds when the company is currently cash short but

expects that by borrowing money now, the company will survive and prosper and be able to generate enough profit in the future to pay back the bonds.

From the bond buyer's point of view, zero coupon bonds may be preferable to full cash bonds when saving for retirement or some other far-off event. This is because, with zero coupon bonds, the bondholder does not need to be concerned with reinvesting the coupon payments she receives. Remember that since most bonds pay cash coupons twice a year, bondholders will have to decide how to reinvest that cash coming in twice each year. If interest rates were to decline in the future, then each time a coupon payment is received, the bondholder would only be able to reinvest it at a declining interest rate—perhaps 7% or 6% in the previous example. By buying a zero coupon bond, the 8% yield to maturity is “locked in” and there is no risk of having to reinvest a cash coupon at a lower interest rate. In other words, an 8% “reinvestment” rate is built into the appreciation from the \$390 issue price to the \$1,000 maturity price.

If, on the other hand, interest rates were expected to rise, then the bondholder would prefer the bond that paid an 8% cash coupon. This is because as each coupon payment is received, the cash could be reinvested at a higher rate, perhaps 9% or 10%, with the result that the total amount of money the investor will have at maturity would be greater than what she would receive from a 0% coupon bond with a locked in rate of 8%.

When you initially buy a bond, of course you do not know if interest rates will be going higher or lower over the years you own the bond, so you do not know if you will be better off with the built-in reinvestment rate of 8% with the zero coupon bond, or be better off with a bond that pays its full coupon in cash. This is called the reinvestment problem or *reinvestment risk*.

The bond in the example in Table 10.1, regardless of which coupon was chosen, was initially issued at a price which gave it an 8% yield to maturity. After being issued, the price of the bond will fluctuate in the market depending on changes in interest rates in the economy in general, and on the improvement or deterioration in the creditworthiness of the company that issued the bond. In any case, the price of a bond issued at an original issue discount will gradually increase with the passage of time as it approaches its redemption value of \$1,000 at maturity. This increase in value of an OID bond due to the passage of time is called *accretion*. In the language of Wall Street, an OID bond accretes from its original issue price to par. In addition,

of course, the price of the bond may fluctuate above or below its accreted value due to changes in interest rates or changes in creditworthiness.

RESETS, VARIABLE RATE NOTES, AND FLOATING RATE NOTES

Most bonds have a fixed coupon. That is, every coupon payment is the same. However, for some issues the coupon may change. Issues for which the coupon may change include *floating rate notes*, *variable rate notes*, *deferred interest bonds*, and *step-ups* (also referred to as *resets*.)

Floating rate notes state in the indenture that the coupon will vary with some specified market interest rate. For example, a variable rate note may specify that the first coupon will be paid at a 4% rate, but future coupons will always be at an interest rate that is 1.5 percentage points above the interest rate of the most recently issued 5-year U.S. Treasury (U.S.T.) note. So if the interest rate of the newest 5-year U.S.T. note is 2.5%, then the next interest payment on the variable rate note would be at an annualized rate of 4%. Because this company's coupons are paid semiannually, the next coupon payment would be \$20 per bond (not a full year's coupon of \$40.) Since the interest rate on U.S.T. notes is always changing, it is likely that the coupon on the variable rate note will be different at each payment.

Variable rate notes, or *adjustable rate notes*, come in many variations, too numerous to discuss here. Typically, their coupon rates do not change as often as floating rate notes. One interesting variable rate note specified that the coupon will change only if the price of oil rises or falls to a pre-specified level. Other variable rate notes may change their coupon if the issuing company has its bond ratings upgraded or downgraded by the ratings agencies.

Deferred interest bonds (or *notes*) and *step-ups* usually specify that the coupon rate will change only once or twice in the life of the bond, and that the change will occur at a specified time, perhaps a few years after the bond is issued. The amount of the change is usually also specified when the bond is issued, so buyers know exactly what their coupon will be both before and after the change, or reset. This, of course, is different from variable rate

bonds and floaters, where bondholders may try to forecast future changes in the coupon rate, but cannot predict the coupons with certainty.

A typical reset or step-up bond might be the “4%/7%*s* of 6-1-2021/2026”. This title tells you that the coupon rate will be 4% of face value from the time the bond is issued until the step-up date, which is June 1, 2021. At that time, the coupon rate will reset or “step-up” to 7% and stay there until maturity on June 1, 2026. Deferred interest bonds are like step-ups except that initially the coupon is 0% and then steps up to some pre-specified cash amount. An example might be the “0%/9%*s* of 9-1-2020/2025.” These are 0% coupon bonds until September 1, 2020 and then become 9% cash-paying coupon bonds until maturity.

Reset and variable rate bonds are far less common than fixed coupon bonds and will not be discussed further. For the remainder of the book we will assume that all bonds, notes, or debentures have a fixed coupon rate from the time they are issued until they are retired, unless otherwise stated.

CALL AND REFUNDING

When a company raises money issuing bonds, it expects to use the money raised from those bonds until the bonds are redeemed (paid back). For reasons we will see shortly, a company may sometimes wish to redeem a bond issue early, ahead of its sinking fund dates and/or final maturity. Bondholders, however, may not want to give up their bonds early. Thus, when a company is issuing bonds and wants the right to redeem those bonds early, the company will usually have to pay a slightly higher coupon, or interest rate, than would otherwise have been necessary, to compensate the bond buyers for the risk that their bonds might be redeemed early.

The provision in the indenture which permits the company to redeem bonds early is known as the *call* feature. Some bond indentures do not have a call feature, and we say those bonds are *non-callable*. For bonds that are callable, the call provision will typically state that the bond is *callable, at the company's option, beginning at a specified date*. This means that the company has the right to redeem the bonds early (ahead of maturity), on the call date, or any time thereafter.

When a company *calls* a bond, the bondholder is notified that the bond has been called for redemption as of a certain date. The bondholder, or the brokerage firm that holds the bond, will then return the bond to the trustee and the bond holder either gets a check in the mail, or the money is credited to his brokerage account. A bondholder who does not deliver his bonds to the trustee will not get his money back, but the bonds stop earning interest as of the call date, so the holder has no reason not to return the bonds.

A company wants the right to call its bonds for a number of reasons:

1. The company may have accumulated extra cash and wants to pay off the bonds so it will not have to make interest payments.
2. Assume the bonds were issued a few years ago with a 7% coupon (\$70 interest per year on a \$1,000 face value bond). Now, interest rates have declined and the yield on similarly rated bonds has fallen to 4%. With interest rates now at 4%, the company would benefit from issuing new bonds with a 4% (\$40) coupon and using the money raised from these bonds to redeem the old bonds with the 7% (\$70) coupon, and thereby save \$30 interest per bond per year.
3. Assume interest rates remained the same, but the company experienced strong financial performance (rising earnings, repayment of other debt, improving interest coverage ratio) and had its bond ratings upgraded. With the higher rating, the company would be able to issue new bonds at a lower yield, perhaps 5.80%. The company would want to call the old issue with the 7% coupon, replace it with a newly issued 5.8% coupon bond, and save \$12 interest per bond per year.
4. A company may want to call an issue of bonds because the bond's indenture has restrictions that are preventing the company from doing something it wants to do, such as issuing new debt or acquiring another company. By calling and redeeming the bond issue, its restrictive indenture ceases to exist and the company will again have its flexibility.

From the bondholder's point of view, the call feature is undesirable. Bondholders who bought the bond with a 7% coupon will certainly not want

to give it up (have it redeemed) when they can only reinvest the money at 4%. Therefore, other things being equal, if a bond is *callable*, prospective buyers of the bond will want a higher yield on the bond to compensate them for the risk that the bond might be called away just when it is most attractive. For example, if there were no call feature, a new bond issue may be able to be sold at issuance with a 6% coupon. But, if the company wants the right to call the bond at any time, it might have to pay a 7% coupon in order to get investors to buy the bonds. If the company is willing to settle for a somewhat limited call feature, such as the bond only being callable after 5 years, it might be able to issue the bonds with a 6½ % yield. The presence or absence of a call feature, and how flexible the call feature is, is typical of the factors that go into determining whether a bond will be attractive to a buyer at a given yield.

Given the company's desire to have the flexibility of calling the bond, and the bondholder's aversion to it, the call feature usually represents a compromise. For example, a 5% bond issued at par on June 1, 2012, and maturing on June 1, 2022, might have the following call feature:

CALL FEATURE

"These bonds are callable at the option of the company *but not before* 6-1-17. If they are called on or after 6-1-17 but before 6-1-18, the company will pay the bondholders the face amount (\$1,000) plus an 5% premium (\$50). If they are called on or after 6-1-18 but before 6-1-19, the company will pay a 4% premium. If they are called on or after 6-1-19 but before 6-1-20, the company will pay a 3% premium"...and so on down to no premium at maturity on 6-1-22.

With this call provision the bondholders are protected against having the bonds called away for the first five years after issue, and if the bonds are called by the company in the fifth through tenth year, the bondholders will get some extra money, referred to as a *call premium*, as compensation. With this call feature, the bonds would still look attractive to buyers at the time of issue, but would add some flexibility for the company in the later years.

In the language of Wall Street, we would say, "This bond is noncallable five years and then callable at an 5% premium declining evenly to par in 2022," or, "This bond is NC 5 and then at \$105 declining ratably to par in

2022.” Both statements mean the same thing. NC is the standard abbreviation for noncallable, and *ratably* means an equal amount each year. Including the call premium, the initial call price is \$1,050. Bond investors, however, usually talk in terms of \$100 when they mean \$1,000, so we would say that the bond’s *first call* is at \$105. Similarly, the *second call* is at \$104 (really \$1,040), and so on. Before June 1, 2017, this bond is noncallable. After that first call date has been reached, we would say the bond is *currently callable*, meaning it can now be called by the company at any time.

The call feature in the indenture also frequently says, “Although these bonds are callable from (date) to maturity, and with a (specified) premium, *they may not be refunded.*” This means that it is okay for the company to call the bonds if it has sufficient cash on hand to do so, *but the company is not permitted to call the bonds if the money used to redeem them is obtained by issuing new bonds at a lower interest rate.*

Definitions

- **Call.** The right of a company, at specified times, to redeem outstanding bonds ahead of maturity or a sinking fund date.
- **Refunding.** Occurs when a company issues new bonds at a lower interest rate and uses the proceeds to pay back old bonds that have a higher interest rate. The term *refunding* does not refer to the process whereby the bondholders return the bonds to the company to get their money back. That is *redemption*.

An example of a refunding was given above where the company wanted to call its 7% bonds in order to refund them by issuing new 4% bonds, saving \$30 interest per bond.

To review, a bond indenture states whether the bond may be *called*, and if so, at what price premiums at which dates. The indenture also states whether the bond may be *refunded*. It is possible that the indenture for a given bond may state that the bond is “callable but not refundable.” This

means that the bond may be called if the company has enough cash generated from retained earnings, or if the company raised new cash from an equity offering (selling new stock), but the company may not call the bonds with money raised by selling a new issue of bonds that carry a lower interest rate.

From the point of view of the investor who buys the bond and hopes to hold it to maturity to get the interest payments, a bond that is “callable but not refundable” would be more desirable than a bond that is callable for any reason. Obviously, it would be even better from the bondholder’s point of view if the bond were not callable for any reason. If a bond is callable, the bondholder would prefer that the call provision have a limited number of years, a high call premium, and limitations on the reasons for which it may be called, such as non-refundability. Any or all of these features are called *call protection*. If a potential buyer does not like the call features, he does not have to buy the bond. Many bonds issued today are callable at any time but are nonrefundable for a number of years. Others are noncallable and nonrefundable for the life of the bond. The call features can vary substantially among bond issues and should be analyzed carefully by investors.

YIELD TO CALL AND YIELD TO WORST

In Chapter 8 we learned that the yield to maturity is a yield that considers both the coupon that the bondholder receives each year and the gain or loss that the bondholder realizes at maturity (the difference between the price she paid and the \$1,000 face amount she receives at maturity). When a bond is *callable*, a question arises as to what the bond’s yield is. If the bond is not redeemed until final maturity, then the yield to maturity would be the yield the bondholder actually receives. But if the bond is called earlier, ahead of final maturity, then the bondholder’s yield would be different for two reasons: first, because she may have received a call premium (and therefore received more than the face value of the bond), and second, because she received the money earlier than final maturity. Thus, bond investors must do another yield calculation, called the *yield to call*. The yield to call is calculated the same way as the yield to maturity except that the yield to call

uses the *call price* (face value of the bond plus the call premium) instead of just the face value of the bond, and uses the *call date* instead of the final maturity date of the bond. Looking at the 5% bonds due on June 1, 2022, described under “Call Feature” above, notice that the bond was first callable on June 1, 2017 at a price of \$1,050. The yield to call calculated using the June 1, 2017 call date and the \$1,050 call price would be referred to as the *yield to first call*. The second call date for these bonds begins June 1, 2018, and the call price at that time is \$1,040. The yield to call using this date and price is referred to as the *yield to second call*, and so on. Since it is not possible to know in advance whether a bond will be called or in what year, bond investors calculate all of these yield figures—the yield to maturity and the yield to call for each call date—and generally use the lowest of these yields in determining whether they wish to buy, hold, or sell the bond. The lowest of these yields, whichever it turns out to be, is called the *yield to worst*, and is the minimum yield the bond buyer will realize if she holds the bonds either until they mature or are called.

COVENANTS

When someone buys a bond, that investor is lending money to a company for perhaps 10 or 20 years. Although the company may be very profitable and the bonds appear safe at the time they are issued, a lot can change over a number of years. If a bondholder perceives that the company’s creditworthiness is deteriorating; that is, the company’s financial condition is weakening and there is an increasing risk that the company will be unable to meet an interest payment or a principal repayment on time, the bondholder will want to sell the bond. Unfortunately, potential buyers of the bond probably see the same data and reach a similar conclusion—the bond is becoming more risky. Thus, it would be hard to find a buyer for the bond except at a lower price. To protect themselves as much as possible from deteriorating creditworthiness, bond investors require bond issuers to make a number of binding agreements that are designed to keep the company focused on maintaining its financial health. These agreements are called *covenants*, and are a major part of the bond (or debenture) indenture.

These covenants are not really very different from promises or agreements you would want if you were lending money to a friend to start a business. But because these covenants have been drafted by lawyers over many years, they are usually written in language that is difficult for the average person to understand. Many basic covenants are similar from one indenture to another, and others are written specifically to fit individual company and lender needs. Financial institutions, such as mutual funds, insurance companies, and the like, usually read them carefully and would not buy the bonds if the covenants did not give them adequate protection. This is important because where covenants are weak, company owners (stockholders) have been known to take advantage of these weaknesses to benefit themselves at the expense of the bondholders. A number of basic covenants are discussed below. Covenants similar to these are found in almost every indenture.

1. *Maintenance covenants.* These covenants typically say the company must maintain certain financial ratios. A typical covenant might require the company to maintain interest coverage of at least 4 times (review the interest coverage ratio in Chapter 4). Another might require the company to maintain a net worth (same as book value) above some specified level.

2. *Limitation on additional debt.* This covenant might say that if the company wants to issue additional debt, it can only do so if its interest coverage ratio and long term debt-to-total capital ratio are above specified levels *after the new debt is issued*. This covenant might also specify that any newly issued debt must be subordinated to, and have a later maturity date than the issue covered by this indenture.

3. *Restricted payments.* These covenants are designed to limit (or prohibit) the company's ability to spend its money in certain ways that might hurt the bondholders. These restrictions typically include:

a. *Limit on dividends.* This limits how much the company can pay out in the form of dividends to its shareholders. Recall that profit earned by a company can either be retained or paid out to shareholders as a dividend. If the company pays out too much and then profitability falls (e.g., during a recession), the company may be unable to repay its bonds when they are due. Worse, if the

company sees itself getting into financial trouble and does not have a dividend limitation covenant, the company could sell all its assets or the entire business, pay all the cash as a dividend to the shareholders, and leave nothing for the bondholders.

b. *Stock repurchase limit.* For the same reasons, this covenant also puts a limit on how much money the company can use to buy back its stock.

c. *Limit on junior debt repurchases.* This limits (or prohibits) the company's ability to buy back issues of the company's bonds or debentures that otherwise would not mature until after the bonds covered by this indenture. All of these *restricted payments covenants*, and others as well, are designed to keep the company's funds focused on the business and prevent the company from doing things that might unnecessarily weaken its financial condition.

Other covenants will limit the company's ability to sell its assets or merge with another company, and will require the company to maintain insurance on its property. The covenants may not seem important at the time the bonds are initially issued, but if the company begins to have problems a few years later, these protections can be crucial to preventing the company from taking steps that could hurt the bondholders.

It must be remembered that the company directors' obligation is to look out for the best interests of the stockholders, not the bondholders. The covenants in the indenture are the bondholders' only safeguard. Covenant protection is designed to ensure that the bondholders do not suffer at the expense of the stockholders. If a company is willing to live with very restrictive covenants (which make the bondholders feel safer), the company will be able to issue bonds at a lower interest rate than if it were only willing to agree to weaker covenants.

Sometimes, despite management's best efforts, the company's fortunes decline and creditworthiness deteriorates. The company may even go bankrupt. In these circumstances, the covenants also work to protect the bondholder in many ways.

DEFAULT AND ACCELERATION

Failure to make an interest payment, a sinking fund payment, or the final maturity payment when due is called a *default*. Violating a covenant, such as those listed above, is also a default. Usually the indenture gives the company a 30-day “grace period” to *cure the default*; that is, to make the payment or get a financial ratio back in compliance with the covenant. If the company does not correct the default, then the bondholders must look at the indenture to see what their rights are, and what obligations the company has. Typically, in the event of a default, the bondholder’s rights include *making the entire principal amount of the bond or debenture issue due and payable immediately*. This process of making the entire loan due for redemption immediately (ahead of the final maturity date or sinking fund schedule) is called *acceleration*. In the language of Wall Street, we would say, “The bondholders forced acceleration of Company XYZ’s bonds after XYZ defaulted on an interest payment on time or within the grace period.”

When a company is in financial trouble, forcing acceleration will often require the company to pay back more bonds than it is able. And that, in turn, can result in the company having to file for bankruptcy. In bankruptcy, the stockholders’ investment may become worthless, or nearly so. It is this threat of acceleration and its consequences that forces companies to work hard to comply with the covenant requirements.

Bankruptcy can also sometimes leave the bondholders worse off, especially holders of lower priority debt, for whom there may not be enough money after all higher priority debt has been paid off in the event of liquidation. So, even though a company may be *in default*, debtholders sometimes choose not to exercise their right of acceleration, hoping that the company will be able to work its way out of trouble and eventually repay all its past due interest and debt obligations.

BANKRUPTCY

When a court declares a company bankrupt, one of two procedures are usually followed. First, the company can try to do a *reorganization* under Chapter 11 of the Bankruptcy Act or, second, the company can liquidate under Chapter 7 of the Bankruptcy Act.

In a reorganization, the company and all the parties who are owed money try to make a plan agreeable to all, whereby debtholders usually agree to take less interest on their debt, perhaps forgo interest for a few years, and perhaps reduce the amount of principal that the company owes them. In these bankruptcy reorganizations, bonds which are backed by (or secured by) assets usually have to give up much less, if anything, than more junior debt issues, such as debentures. If all the creditors (people owed money) can agree on how much principal and interest will be given up by each, the court will usually approve the plan. Sometimes, if all but one or two parties can agree on a reorganization plan, the court may approve it anyway. This is known as a “cram down” on Wall Street. When this happens, the lower priority debtholders will usually have to give up more than higher priority debtholders, although the court has a lot of leeway in imposing a reorganization plan.

In reorganization, each of the creditor groups usually gets some stock in the reorganized company as some compensation for giving up some of their interest and/or principal. It is not uncommon for the creditors as a whole to get more than 90% of the stock (ownership) of the reorganized company. This dilution that the old pre-bankruptcy stockholders suffer is an incentive for them to analyze high risk investments carefully before investing.

Sometimes, if the parties cannot agree on a reorganization plan, the company will liquidate. In a bankruptcy liquidation, the court oversees the selling of all the company’s assets and then pays off the debtholders. In this case, the court usually follows the established debt priorities very carefully, so that lower priority debt may get paid nothing unless the higher priority debt is completely paid off. Before any debtholders are paid off, however, most states’ laws specify that back wages owed to employees and certain taxes must be paid first, along with, of course, the bankruptcy lawyers’ fees. The bankruptcy laws are complex and not especially relevant here. We are more concerned with successful companies.

11

CONVERTIBLE BONDS

Convertible bonds are just like straight bonds discussed in the last two chapters, except they have one additional feature: They can be converted into stock. The term *convertible bond* will be used in this chapter to mean either convertible bonds or convertible debentures. In fact, the vast majority of such convertible issues are debentures, but investors often refer to both loosely as convertible bonds.

To demonstrate, suppose BCD Corporation issued \$100,000 worth of convertible bonds on January 2, 2012. The bonds have a 10-year life and therefore mature in 2022. The *conversion feature* of these convertible bonds may say something like this:

Each bond may be converted into 20 shares of common stock of BCD Corp. at the option of the bondholder, any time after January 1, 2017.

This means that a bondholder who decides to convert will deliver his bond certificate to the company (or trustee) and in exchange receive a certificate for 20 shares of common stock of BCD Corp. Of course, this is mostly done electronically today by your brokerage firm. Notice that this bond cannot be converted during the first five years of its life. Sometimes the indenture specifies that the bond is only convertible after a specified period (like this one). A few convertible bond indentures may also specify that the bond *cannot* be convertible *after* a specified time. For example, a convertible bond may be convertible only for the first 6 years of its life and not thereafter. Most convertible bonds, however, are convertible any time before maturity. Finally, there are some convertible bonds with a *mandatory* conversion feature, which means if the bonds have not been converted to stock prior to maturity, they will automatically be converted on the maturity date.

While the conversion feature is sometimes written as shown above, giving the number of shares the bond converts into, it is more common to write the conversion feature this way:

This bond may be converted into common stock of BCD at \$50 per share.

This does *not* mean that the bondholder has to pay \$50 per share. Although it is not clear from the wording, it means that *\$50 worth of face value* of the bond may be exchanged for one share of common stock. Since the bond has a face value of \$1,000, it therefore converts into 20 shares of common stock:

$$\frac{\text{Face Value}}{\text{Conversion "price"}} = \frac{\$1,000}{\$50} = 20 \text{ shares}$$

Again, no cash is paid when a convertible bond is converted. The owner of the bond is giving up the bond, not cash, in exchange for the stock. When you exchange the bond for stock, you are giving up the right to receive future interest payments and the right to receive the face value of the bond at maturity. When the company receives the bond in exchange for stock, the bond is retired forever. There are no more coupon payments and the face amount of the bond is never paid in cash to anyone. The bond ceases to exist.

You cannot partially convert a bond. If you decide to convert a bond, you convert it entirely, in this case into 20 shares of common. However, if you own more than one convertible bond you may convert only some, but not all, of your bonds.

Note that this bond converts into 20 shares regardless of the price you paid for the bond, or the price it happens to be selling for at the time you decide to convert it into stock. The *conversion rate* (the number of shares of stock the bond converts into) *is based on the face value of the bond, not the current price of the bond*. Since the face value of the bond does not change, a \$1,000 face value bond which converts at \$50 per share can be converted into exactly 20 shares regardless of whether the bond's price falls to \$894, or rises to \$1,150, or trades at any other price. Stated differently, this bond's conversion "price" is always \$50.

Although the conversion rate is fixed for the vast majority of convertible bonds (as in BCD Corp. above), we occasionally see a bond that has a variable conversion rate. The conversion feature of such a bond might say:

This bond converts into 25 shares of common stock any time before December 31, 2018; into 30 shares of common stock between January 1, 2019 and December 31, 2023; and into 40 shares of common stock thereafter.

Actually, the variable conversion feature would more likely be written as follows:

This bond converts into common stock at \$40 per share any time before December 31, 2018; into common stock at \$33.33 per share between January 1, 2019 and December 31, 2023; and into common stock at \$25 per share thereafter.

While both statements mean exactly the same thing, the second way is more commonly used.

Some bonds with variable conversion rates state that the conversion rate changes when certain dates are reached, as in the previous example. Other convertible bonds have a conversion rate that varies depending on how much income the company is generating in future years. Variable conversion rate bonds are unusual, and for the remainder of the book we will assume that a convertible bond's conversion rate is fixed.

PRICE OF A CONVERTIBLE BOND

The price of a convertible bond sometimes behaves differently from a nonconvertible bond. We saw in Chapter 8 that the price of a nonconvertible bond moves up or down due to changes in both interest rates in the overall economy and changes in the creditworthiness of the company issuing the bond. The price of convertible bonds will also fluctuate for these reasons, but in addition, the price of a convertible bond can move higher than a similar nonconvertible bond if the market price of the underlying common stock (the stock into which the bond converts) moves high enough.

To illustrate, let's look again at the convertible bonds of BCD Corporation. The bonds have a 5% coupon, are single A rated, have eight years left to maturity, and convert into 20 shares of common stock (at \$50 of face value of a bond, per common share). Suppose the underlying common stock is selling at \$60/share. What would the bond sell for? Since each bond converts into 20 shares of stock, and each share of stock is worth \$60, the bond is therefore worth \$1,200, because anyone owning the bond could

convert it into 20 shares and sell them on the market for \$60 each, for a total of \$1,200.

Number of common shares per bond		Market Price per common share		Value to bondholder if converted
20	x	\$60	=	\$1,200

With the stock price at \$60, we would say the *converted value* of the bond is \$1,200.

If the bond were selling for anything less than \$1,200, say \$1,000, an investor could buy the bond for \$1,000, convert it to stock, sell the stock for \$1,200, and keep the \$200 profit. Thus, the price of a convertible bond will usually move up in line with the underlying common stock. For example, suppose the stock moved up to \$70/share. Then the converted value of the bond would move up to \$1,400, and the bond price would move up with it.

Number of shares		Market Value per share		Converted Value
20	x	\$70	=	\$1,400

As long as the market price of the stock is above the conversion price of the bond (conversion price is \$50 in this example) the bond price will move up in line with the stock price, as shown in Table 11.1.

Table 11.1 Convertible Bond Price in Relation to Stock Price

Common stock price	Bond price	Yields for a 5% coupon with 8 years to maturity		
		Coupon yield	Current yield	Yield to maturity
\$70	\$1,400	5.0%	3.6%	Negative
65	1,300	5.0	3.8	1.08%
60	1,200	5.0	4.2	2.25
55	1,100	5.0	4.5	3.55
50	1,000	5.0	5.0	5.00

Notice that as the stock price moves higher, and therefore the bond price moves higher, the bond's current yield and yield to maturity move lower, and

have less influence on the decision to buy or sell the bond. At this point, the decision to buy or sell the bond is based primarily on its relationship to the stock price and the investor's outlook for changes in the stock price.

Suppose the price of the stock falls to \$30 per share. The converted value of the bond then falls to \$600.

$$\begin{array}{rcccl} & \text{Number of shares} & & \text{Market Value} & \\ & \hline & 20 & \times & \text{per share} & \\ & & & \hline & & & \$30 & \\ & & & = & \\ & & & & \text{Converted Value} \\ & & & & \hline & & & & \$600 \end{array}$$

Does the bond price then fall to \$600? Not likely. The price of this bond will only fall to the price where its yield to maturity is equal or close to that of similar 8-year, A-rated, nonconvertible bonds. Assume that similar 8-year, A-rated, nonconvertible bonds are currently selling at a yield to maturity of about 6.6%. For an 8-year bond with a 5% coupon to sell at a yield to maturity 6.6%, its price would be about \$900. Thus, the price of the BCD bonds would be unlikely to fall below \$900. If the price of the BCD bond did fall below \$900, its yield to maturity would move up higher than that of other similar A-rated bonds, and thus BCD bonds would be attractive for purchase purely on their "bond value," i.e. independent of any value that the conversion feature might offer.

Suppose the price of the stock now rose to \$45. At that price the converted value of the bond is exactly \$900 (20 shares x \$45/share = \$900). So, for any stock price under \$45, the bond will sell for about \$900. As the stock price rises above \$45, the bond price will begin to move up with it. In practice, even if the stock price were slightly under \$45, it is probable that the bond would sell for slightly more than \$900. This is because the conversion feature, which gives the bond the possibility of unlimited gains in the future, would cause some investors to be willing to pay a little more for the convertible bond than they would for an otherwise similar nonconvertible bond.

If the stock price was well below the conversion price, say \$15 per share, the likelihood of the bond being converted to stock becomes very remote. In this case, the convertible bond will trade around \$900, its straight bond value. Investors will not be willing to pay much of a premium for the conversion privilege, if any. This is referred to as a *busted* convert. A *busted* convertible bond is not the same thing as a *distressed* convert. "Distressed" implies that there is a serious risk that the company will default, that is, be unable to meet a required interest payment or principal repayment when due.

“Busted” suggests that the stock price is so low that conversion of the bond is remote, but does not imply that the company is in any way likely to default on its obligations.

ADVANTAGE OF A CONVERTIBLE BOND FROM THE BONDHOLDER’S POINT OF VIEW

We can now see the advantage of a convertible bond from the bondholder’s point of view: It has the best features of both bonds and stock. If the stock price falls well below the conversion price, the bond has “downside protection” because the bond’s price will behave like a nonconvertible bond, and won’t go below a level reflecting the appropriate yield. But if the stock price moves above the conversion price, the bond price will behave like the stock price, and there is no limit to how high it can go (see table 11.2). For nonconvertible bonds, the bond price will always reflect only the appropriate yield. Nonconvertible bonds will not “participate” in the movement of the stock price.

Note that common stock alone does not have the downside protection of a convertible bond. If a company’s outlook is poor or deteriorating, its stock can keep going lower even if there is a dividend, because there is always the possibility that the dividend will be cut or eliminated, whereas the bond interest is a contractual obligation and must be paid as long as the company is able.

Table 11.2 Convertible Bond Price Stabilizing as Stock Price Falls

Stock price	Bond price	Coupon yield	Current yield	Yield to Maturity *
\$80	\$1,600	5.0%	3.1%	Negative
70	1,400	5.0	3.6	Negative
60	1,200	5.0	4.2	2.3%
55	1,100	5.0	4.5	3.6
50	1,000	5.0	5.0	5.0
45	900	5.0	5.6	6.6
40	900	5.0	5.6	6.6
30	900	5.0	5.6	6.6
20	900	5.0	5.6	6.6

*Based on 8-year maturity

ADVANTAGE OF CONVERTIBLE BONDS FROM THE ISSUING COMPANY'S POINT OF VIEW

Since the conversion feature adds the possibility of unlimited price appreciation (which nonconvertible bonds do not have), a convertible bond is obviously more attractive to the bondholder, other things being equal. Thus, if a company chooses to sell convertible bonds, it may be able to sell them with a lower coupon than if it were selling nonconvertible bonds. How much lower is a function of the attractiveness of the conversion feature? Suppose, for example, CDE Company has an A rating and its stock is selling at \$40. If CDE were to sell nonconvertible bonds it would have to pay the current interest rate on similar A-rated bonds, which is 6%, or a \$60 annual coupon for each \$1,000 bond. If instead, CDE sells convertible bonds that convert at \$40 per share (i.e., into 25 shares) the bonds would be very attractive because any upward movement in the stock would immediately cause an upward movement in the price of the bonds. Thus, investors might be willing to buy these convertible bonds with only a 3% yield, or a \$30

annual coupon instead of the \$60 coupon for straight (nonconvertible) bonds.

If, on the other hand, CDE's convertible bonds only converted into 20 shares (at \$50 per share) they would not be quite as attractive. In this case, the converted value of the bond today is \$800 (20 shares x \$40/share stock price = \$800), and the stock would have to move up from \$40 to about \$50 before the bonds began to move with it. Thus, in this latter case with the conversion price at \$50, the conversion feature is less attractive, although it still could be quite rewarding at some time in the future. With the less attractive conversion feature, the coupon necessary to get investors to buy the bonds would be greater than the 3% that was necessary with the more attractive conversion feature, but would still be less than the 6% that would be necessary without a conversion feature. Perhaps the coupon would need to be 4% or 5%. In sum, the more attractive the conversion feature, the lower the interest the company will have to pay to get investors to buy their bonds. While paying a lower interest rate is an obvious advantage to the company, the related disadvantage is that if the bonds are converted, the more shares they convert into, the more earnings per share will be diluted.

Another advantage to a company is that sometimes, if a company is having problems and needs to borrow money quickly, it is possible that investors would only be willing to buy bonds with prohibitively high coupon rates. In that case, a convertible bond with an attractive conversion feature might enable the company to sell bonds with a lower coupon rate it could afford to pay.

PREMIUM AND DISCOUNT TO CONVERSION

Let us look again at the bonds of BCD Corporation (see Table 11.1). Assuming BCD's stock is selling at \$60, it is possible—in fact, it is highly probable—that the bond will not sell at exactly its converted value of \$1,200. Suppose the bond is selling at \$1,224. In that case, we would say it is selling at a \$24 *premium to conversion* (i.e., \$24 above its converted value of \$1,200). Normally, however, the premium is expressed as a percent of the converted value, and we would say it is “selling at a 2 percent premium to conversion.” In other words, it is selling for a price which is 2 percent higher than its converted value ($\$24 \text{ premium} / \$1,200 \text{ converted value} = 2\%$).

$$\frac{\text{Dollar premium above converted value}}{\text{Converted value}} = \frac{\$1,224 - 1,200}{\$1,200} = \frac{\$24}{\$1,200}$$

$$= .02 = 2\% \text{ Premium to conversion}$$

Similarly, if the bond is selling at less than its converted value, it is selling at a *discount to conversion*. Suppose the bond is selling at \$1,182. That represents an \$18 discount from converted value, or a 1½ percent discount.

$$\frac{\text{Dollar discount from converted value}}{\text{Converted value}} = \frac{\$1,200 - 1,182}{\$1,200} = \frac{\$18}{\$1,200}$$

$$= .015 = 1\frac{1}{2}\% \text{ Discount to conversion}$$

One reason a bond sells at a *discount to conversion* is that if you wanted to buy the bond, convert it, and sell the common stock, you would have to pay commissions for buying the bond and selling the stock; and thus the bond is actually “worth” slightly less than its converted value. More frequently, however, convertible bonds sell at a premium to conversion, for a number of reasons. The first relates to the stock’s liquidity. Suppose you expect a stock to go up, but very little of that stock is traded in a day (i.e., trading volume is low). If you try to buy a lot of that stock, you might push the price up past what you want to pay for it. As an alternative, you could buy the convertible bond instead of the stock. But if other investors are thinking the same thing, you may have to bid up the bond price to a *premium to conversion* in order to acquire all the bonds you want. You can do this and still, in effect, be “buying the stock” at an attractive price.

A second reason a convertible bond may sell at a premium is that the bond’s interest would make the bond more attractive than the stock if the stock paid no dividend or a dividend which is less than the interest on the bond. You might have the same capital gain from either the stock or the convertible bond if the stock goes up, so it may be better to buy the bond and also get the higher yield. Furthermore, suppose you are wrong and the stock goes down. By buying the bond instead of the stock, you at least have some protection against an extreme decline.

A third reason that convertible bonds might sell at a premium to conversion is that many bond mutual funds are not permitted to buy stocks,

so those funds may be willing to pay up, i.e. pay a premium to conversion to buy a convertible bond, because it is the only way they can participate in a stock's appreciation.

Do not confuse premium and discount to conversion (converted value) with premium and discount to par. For instance, if the bonds of BCD Corporation are selling at \$927 and its stock is selling at \$45, the converted value of the bond is \$900 (20 shares x \$45/share = \$900). With the bond priced at \$927, it is selling at a 3 percent premium to conversion and a 7.3 percent discount to par. If the bonds were selling at \$990, they would be selling at a 10 percent premium to conversion and a 1 percent discount from par.

Investors look at a convertible bond's premium to conversion as a measure of the bond's risk. The larger the premium to conversion, the greater the downside risk. For example, a convertible bond selling at a 10 percent premium to conversion would have a greater risk than the same bond with a 2 percent premium to conversion. A bond selling at a discount from conversion would have relatively less risk unless the stock declined.

CALL RIGHTS AND SINKING FUND

A convertible bond may be callable or have a sinking fund, or both—the same as a nonconvertible bond. If a company calls a convertible bond, or if it is about to be redeemed under a sinking-fund provision, the bondholder almost always has the opportunity to convert it first if he chooses to. By calling the bond, the company can sometimes “force” people to convert if the bond is selling above par. For example, suppose BCD's bonds are selling at \$1,200, reflecting the underlying stock price of \$60 a share, and the bond's call feature says that if the bond is called this year, the company must pay a call premium of 4% (review call premiums in Chapter 10). If the company wants to “force” conversion, it simply exercises its right to call the bonds and the bondholders are faced with a choice: they can either let the bond be called and receive \$1,040 (par plus the 4% call premium), or they can convert the bond and receive \$1,200 worth of stock. Obviously, they would choose the latter. On the other hand, if the stock price was low and the convertible bond was selling at less than \$1,040 (par plus the call premium) then the holders would not convert. Rather, they would let the bond be called away and take the \$1,040.

Sometimes the call feature on a convertible bond says that the bond may only be called if the stock has appreciated above the conversion price by a specified amount, perhaps 25% to 50%, and stayed above for a certain period of time, typically 20 to 30 days. This is referred to as a *provisional call* or a *soft call*. A hard non-call means that for the period of the hard non-call, the bond may not be called for any reason.

EFFECT OF CONVERTIBLE BONDS ON EARNINGS PER SHARE

We saw in Chapter 4 that the price an investor should be willing to pay for a share of stock is related to its current and expected future earnings per share (EPS). Forecasting earnings is always a difficult task, and a convertible bond further complicates the forecast, because converting some or all of the convertible bonds into stock will change earnings per share.

When a convertible bond is converted into stock, two things happen which affect earnings per share. First, the number of shares of stock outstanding increases. This will *reduce* earnings per share. Second, when a bond is converted to stock, the bond no longer exists, and therefore the company will not have to pay the bond's coupon (interest). Lowering the company's interest expense will *increase* earnings. When both of these changes are made in calculating EPS, it most often results in EPS being *lower* than what it would have been had the bonds not been converted. When this occurs, we say that earnings per share have been *diluted* as a result of the bond's conversion. Or, to put it another way, we say the convertible bond is *dilutive*. Sometimes, however, the decreased interest expense and increased number of common shares that come from converting the bonds results in EPS being *higher* than it would have been had the bonds not been converted. In this case we say the convertible bond issue is *anti-dilutive*.

Knowing the change in EPS caused by converting a convertible bond is important because investors must decide whether to value their stock based on EPS assuming the convertible bonds will not be converted, or using the (probably lower) EPS figure based on assuming the bonds will be converted. Because both EPS figures, before and after conversion of convertible bonds, are useful, accounting rules* require that when a company reports its earnings per share to shareholders, it must report two EPS figures: *Basic*

EPS and Diluted EPS. Basic EPS assumes that the company's convertible issues are not converted. Diluted EPS assumes that all the company's dilutive convertible issues *are* converted.

** The Financial Accounting Standards Board is the group of accountants and investment people who are authorized by the Securities and Exchange Commission to make the accounting rules that public companies must follow.*

Definitions

- **Basic earnings per share.** The earnings per share figure that results from dividing the actual net earnings for the year (or quarter) by the number of shares outstanding at the end of the year (or quarter), without converting any convertible issues. (The calculations of basic earnings per share actually calls for using the weighted average number of shares outstanding during the year, not the end-of-year number of shares. The weighted average takes into consideration that there may have been a different number of shares outstanding at different times during the year. The authors, however, prefer to use the year end figure because it is a closer approximation to the number of shares that will be outstanding in the future, and stock prices are forward looking.)
- **Diluted earnings per share.** The earnings per share figure that results from converting all convertible issues which are dilutive. Convertible issues which are anti-dilutive are not converted.

The latter definition is correct as far as it goes, but is not complete. The diluted EPS calculation also considers a number of other factors that can give rise to additional shares outstanding. These include convertible preferred stocks (discussed Chapter 13), warrants, rights, and stock options.* The latter three items usually have far less impact on EPS than convertible bonds or convertible preferreds, and will not be addressed. Suffice it to say that if the number of additional shares from all these sources is significant, they will need to be included in the company's diluted earnings per share figure that is reported to the public.

** Stock options in this case refer to options given by a company to its employees to buy company stock from the company. It has nothing to do with*

the put and call options investors can buy through their stockbroker on the options exchanges. These latter kinds of options have no effect on company earnings, and they are not discussed in this book. Warrants and Rights are options occasionally given to shareholders during a financing which enables shareholders to buy more stock (newly issued shares) from the company. When and if the warrant and/or rights are exercised, like options, they will add to the number of shares outstanding.

When a company's Basic EPS and Diluted EPS are very different, which should investors use to value the stock?

Let's assume BCD Corporation is estimated to have Basic EPS of \$4.00 and Diluted EPS of \$2.80. Assuming the stock is thought to merit a price/earnings ratio of 10x, what is the stock worth?

EPS		P/E		Stock value
\$4.00	x	10x	=	\$40
		or		
\$2.80	x	10x	=	\$28

Since the bonds have not in fact been converted, the actual, or Basic EPS is \$4, but would you be willing to pay \$40 for the stock knowing that bondholders might convert their bonds, and thereby dilute EPS? Probably not.

Most investors would use the lower diluted EPS figure, and thus would attempt to value this stock based on earnings of \$2.80. If those investors believe the stock should be valued at 10 times earnings, they would be willing to pay up to \$28 for the stock, but not higher.

On the other hand, what if the bonds are never converted and simply get redeemed at maturity? In that case, if the stock is valued at 10 times earnings, the stock might be attractive up to \$40 per share and therefore would be very attractive if its current trading price was around \$30 per share.

In practice, most professional investors try to make a judgment as to whether a company's convertible issues are likely to be converted before maturity. If it appears that most or all of the company's convertible issues will be converted, then investors are advised to use Diluted EPS. If it appears that most or all of a company's convertible issues are unlikely to be converted, Basic EPS should be used. Investors cannot know for certain if a

convertible issue will be converted, but it may be possible to make an educated guess. For example, if a company's stock is selling at \$10 per share, and the company's convertible bonds convert into common shares at \$40 per share, and the convertible bonds mature in one year, most likely these convertible bonds will not be converted before maturity. Conversely, if a company has convertible bonds which convert at \$30 per share and the stock price is well over \$30, it is quite likely that the convertible bonds will be converted, unless the company reports some unexpected bad news and the stock falls substantially.

For companies whose Basic EPS and Diluted EPS are close to each other, perhaps less than a 5% difference, it probably makes little difference whether Basic or Diluted EPS is used. For companies where Basic and Diluted EPS are quite different, as with Company BCD above, it is safer (i.e., more conservative) to use Diluted earnings unless you are reasonably certain that the convertible issues will not be converted.

CONVERTING A CONVERTIBLE BOND

Because companies are required to show both Basic and Diluted earnings figures in reports to shareholders, most readers will never have occasion to go through the mechanics of converting a bond, and this section may be skipped without losing the continuity of the book. Going through it, however, will improve the reader's familiarity with financial statements, and thus readers are encouraged to go through this section time permitting.

To learn how to convert a convertible bond into stock and calculate diluted earnings per share, let's look at Company EFG. Shown below are EFG's income statement for 2014, and the lower right side (capitalization portion) of EFG's balance sheet as of December 31, 2014. The income statement includes the calculation of Basic Earnings Per Share. The *capitalization* portion of the balance sheet is the only part of the balance sheet that is affected by the conversion process, so it is the only part that is shown here.

EFG Basic EPS – before assuming conversion of bonds

Income Statement for 2014

Sales		\$ 100,000
Expenses		
CGS	\$ 60,000	
SGA	24,000	
Interest	<u>6,000</u>	
	\$ 90,000	
		<u>\$ 90,000</u>
Profit before tax		\$ 10,000
Tax (50%)		<u>5,000</u>
Net profit		\$ 5,000

$$\text{Basic EPS} = \frac{\text{Net Profit}}{\text{Shares Outstanding}} = \frac{\$5,000}{1,250} = \$4 / \text{share}$$

Part of Balance Sheet at 12/31/14

Capitalization

Long-term debt		
4% Mortgage bonds	\$ 50,000	
10% Convertible bonds	\$ 25,000	
Equity		
Common stock at par \$1	\$ 1,250	
(1,250 shs. Outstanding)		
Additional paid-in capital	\$ 40,000	
Retained earnings	\$ 120,000	

Information to Be Used in Converting Bonds and Calculating Diluted EPS:

1. There is \$25,000 in convertible bonds outstanding. Since each bond has a face value of \$1,000, there are 25 convertible bonds. Note that the amount of *long-term debt* on the balance sheet is always the face value of the bonds outstanding. It is not reflective of the current price of the bond.
2. Each convertible bond converts into 40 shares of common stock. Since there are 25 convertible bonds outstanding, the total issue of convertible bonds converts into 1,000 shares of stock.
$$25 \text{ bonds} \times 40 \text{ shares per bond} = 1,000 \text{ shares}$$
3. The annual interest payable on the convertible bonds is 10% (the coupon rate) times the face value of the bonds outstanding (\$25,000). Therefore the total amount of interest on the convertible issue is \$2,500 per year.
4. The annual interest on the 4% Mortgage bonds is 4% times its face value of \$50,000, which comes to \$2,000.
5. The total interest expense for the year, shown on the income statement, was \$6,000. This \$6,000 includes the \$2,500 paid to the convertible bondholders, the \$2,000 paid to the mortgage bondholders, and \$1,500 paid to holders of some other debt. The \$1,500 might represent interest on short-term debt or it may represent interest on some bonds that were outstanding at the beginning of the year but were redeemed sometime during the year, and therefore do not appear on the year-end balance sheet. We do not know, and it does not matter.

The Conversion Process

When EPS is being calculated assuming a bond issue has been converted, it is always assumed that the bonds were converted at the beginning of the year. The following calculations are made:

1. Since the convertible bonds are assumed to have been converted to stock at the beginning of the year, the bonds would have ceased to exist at that time. Therefore, interest on the bonds would not have been paid that year. So the \$2,500 interest on the convertible bonds, which was included in the company's total \$6,000 interest expense, has to be removed, leaving \$3,500 in interest expense for the year. Note that this also changes the pre-tax profit and hence the taxes and after-tax profit.

2. Since the convertible bond has been converted into 1,000 new shares of stock, the new 1,000 shares must be added to the 1,250 shares already outstanding, giving a new total of 2,250 shares outstanding.

As a result of these changes, the adjusted income statement and balance sheet would look as follows. Numbers that have changed as a result of the conversion process appear in italics.

EFG Diluted EPS--after assuming conversion of bonds

Income Statement for 2014

Sales		\$ 100,000
Expenses		
CGS	\$ 60,000	
SGA	24,000	
Interest	<u>3,500</u>	
	\$ 87,500	<u>\$ 87,500</u>
Profit before tax		\$ 12,500
Tax (50%)		<u>6,250</u>
Net profit		\$ 6,250

$$\text{Diluted EPS} = \frac{\text{Net Profit}}{\text{Shares Outstanding}} = \frac{\$6,250}{2,250} = \$2.78/\text{share}$$

Part of Balance Sheet at 12/31/14

Capitalization

Long-term debt

4% Mortgage bonds \$ 50,000

Equity

Common stock at par \$1 \$ 2,250

(1,250 shs. Outstanding)

Additional paid-in capital \$ 64,000

Retained earnings \$ 120,000

Note that the \$25,000 face amount of 10% convertible bonds has been removed from Long-term debt, and the same dollar amount has been added to Equity on the balance sheet. This makes sense because the bonds were converted to equity. The \$25,000 was divided between Common at par and Additional paid-in capital according to the rules presented in Chapter 2; i.e., \$1,000 was added to Common at par (because par value is \$1 and there are

1,000 new common shares) and the remaining \$24,000 was allocated to Additional paid-in capital. Retained earnings do not change as a result of conversion of convertible bonds.

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PREFERRED STOCK

When JMC raised \$20,000 in 2013 to build a new plant, the company chose to sell bonds (i.e, use debt financing). The company considered selling common stock, an equity financing, but as we learned in Chapter 7, debt financing turned out to be the more attractive alternative. Another alternative, not considered by JMC at that time, was to sell preferred stock.

Now, in early 2014, JMC again wishes to raise money, but the choice between selling new common stock or selling bonds is more difficult. JMC stock has been trading at a low price/earnings ratio because the company's earnings declined last year, and investors seemed unsure whether earnings would resume their growth trend. With its stock selling at a low P/E, Jones knew that to raise the money the company needed to modernize its plant, and to meet other company needs, JMC would have to sell so many shares of new common stock that the currently outstanding shares would be substantially diluted, and worth much less. On the other hand, JMC now had quite a bit of debt. Its debt-to-total capitalization ratio was over 50%, and its interest coverage ratio was only about 2-to-1. Jones knew that if the company sold new debt, its interest costs would be even greater, further lowering the interest coverage ratio, and leaving the company at risk of being unable to make its interest payments if business conditions deteriorated. So JMC did not want to risk adding any new debt to the company. Since neither a common stock offering nor a debt offering seemed attractive, Mr. Jones decided to look into the possibility of raising money by selling an issue of preferred stock. He called Mr. Gaines, JMC's investment banker, and asked him to come in and explain preferred stock. He made the following presentation.

OVERVIEW OF PREFERRED STOCK

At first glance, preferred stock seems more like bonds than common stock. This is because the dividend on a preferred stock is generally fixed, like the interest on a bond. In addition, some preferred issues must be redeemed (bought back by the company), may have a sinking fund, and may be callable—again, characteristics more typical of bonds than common stock.

Despite this bond-like appearance, preferred stock is equity, not debt, and is listed under *Equity* on a company's balance sheet. An exception is some newer kinds of preferreds, which are sometimes called *hybrid preferreds*, *synthetic preferreds*, or *trust preferreds*. These newer kinds of preferreds are usually listed on the balance sheet separately from regular preferred stock. In this chapter, except where noted, the discussion will refer only to regular preferred stock (commonly called “traditional” preferred stock), the kind that companies have been issuing for over a hundred years. To keep the distinction clear between traditional preferred stock and the newer kinds, traditional preferred issues will be called *preferred stock*, whereas the newer kinds will be referred to as *trust preferreds*, or *hybrid preferreds*. The term *preferred securities* is now commonly used to refer to all kinds of preferreds. Because the features of traditional preferreds are somewhat different than those of trust preferreds, it is important that investors know which they are talking about when considering an investment decision. Trust preferreds are discussed in Chapter 13.

Some traditional preferred stock issues, like some bonds, may be convertible into common stock. Preferred stock that is not convertible into common stock is called *straight* preferred. The characteristics of straight preferreds that we discuss here almost always apply to convertible preferreds as well. Convertible preferreds are also discussed in Chapter 13.

Companies that issue preferred stock often have more than one issue of preferred stock outstanding. This is because each time the company wanted to issue preferred, different prevailing interest rates and other market conditions made it necessary to offer different dividend yields and other terms in order to attract new investors at that time. There is no limit to the number of preferred issues that a company can have, but each preferred stock issue must first be authorized by the common stockholders. When a company has more than one issue of preferred stock, the different issues are

usually designated as Series A, Series B, etc. There is no other significance to these designations.

Preference Stock

Some traditional preferred stock issues are called preference stock. When a company has both preferred stock and preference stock outstanding, both are considered equity but the preferred usually stock is senior to the preference stock. “Senior” means: 1) if the company does not have enough money to pay the dividend on all its preferred and preference issues, the preferred stock holders are entitled to receive their dividend before the preference stock holders receive theirs, and 2) if the company is liquidated, the preferred stock issues will be paid off ahead of the preference stock issues. Also, some companies simply use the term “preference stock” instead of “preferred stock.”

THE PREFERRED DIVIDEND

A major difference between preferred stock and common stock is in the right to receive dividends. The dividend paid to common stockholders, called the common dividend, is paid at the discretion of the board of directors. The common dividend can change frequently, moving up or down, or not be paid at all, depending on the success of the company. By contrast, most preferred stocks pay a fixed dividend that is set at the time the preferred is initially issued. A few preferred stocks, discussed later in this chapter, provide that the dividend can move up or down by a limited amount, and for these preferreds, there is usually a formula that determines the dividend level. The dollar amount of the fixed dividend, or the formula, usually become part of the company’s Articles of Incorporation. Most preferred stocks specify a quarterly dividend, although some pay monthly, and a few only pay semiannually.

Even though the amount of the preferred dividend and the frequency of payment are set, the payment of a preferred dividend is not a contractual obligation like the payment of interest on a bond. The preferred dividend, like the common dividend, must be voted on by the board of directors each time it is due. However, the directors almost always vote to pay the preferred

dividend unless the company has not earned enough to pay it, and even then they usually pay it unless the company is short of cash and expects to remain so for the foreseeable future. Thus, when a preferred stock is initially issued, the directors are, in effect, stating that they intend the payment of the preferred dividend to be an extremely high priority use of the company's future profits and cash for as long as the preferred stock is outstanding, which may be forever.

The importance of paying the preferred dividend is that investors who buy preferred stock generally do so for the regular dividend income it provides, and with the assumption that the dividend has a very high probability of being paid. Thus, if the directors failed to vote to pay a preferred dividend payment when the company was able to pay it, investors would be very unlikely to buy preferred stock of that company again, and the company might lose the ability to do a preferred financing the next time it wanted to raise money. Therefore, directors want to build a reputation for always paying the preferred dividend, even when it is difficult for the company to do so.

The same thing is true to a lesser extent for the common dividend. The dividend on a common stock, while less important to investors than that on a preferred stock, is nevertheless an important consideration in buying some common stocks. A company that has a reputation for paying its common dividend through good times and bad is likely to attract a wider group of investors and, therefore, possibly sustain a higher common stock price than it would if the common dividend were periodically reduced or omitted. Reducing or eliminating a common dividend sends a negative signal to the markets, indicating that the company does not have, or expect to have, the free cash flow needed to maintain their dividend. As a result, the company's stock is likely to fall. In addition, certain investment funds have a mandate that securities must pay a dividend to be eligible for purchase by the fund. Thus, eliminating a dividend reduces the potential investor base. Company directors know this, and as a result, only cut or eliminate the common dividend when absolutely necessary.

Cumulative and Noncumulative Preferred Stock

Preferred stocks always specify that if a preferred dividend is not paid, then no common dividend may be paid in that quarter. When a dividend has

not been paid, we say it has been *omitted*. When a dividend has been omitted for one or more quarters, and then the company begins to pay it again, we say the dividend has been *resumed*. For *noncumulative* preferred stock, once the preferred dividend has been *resumed*, the company is then free to declare whatever common dividend it wants.

If the preferred dividend on a *cumulative preferred* has been omitted for one or more quarters, no common dividend can be paid until *all* the omitted preferred dividends from the past are paid up. When a preferred dividend has been omitted for one or more quarters, we say the preferred is *in arrears*. When all the arrearages have been paid, the company is once again free to declare any common dividend it wants. Thus, the first reason a preferred stock is 'preferred' is that its dividends are prioritized over dividends paid on common stock.

Preferreds with Fixed Dividends

Preferred stock issues which have a fixed dividend might appear on the balance sheet in any of the following ways. In each case, the annual dividend is fixed at \$2.00.

8% Preferred Stock (Liquidating value \$25)

8% Preferred Stock (Stated value \$25)

8% Preferred Stock (Par value \$25)

8% Preferred Stock (Redemption value \$25)

8% Preferred Stock

\$2.00 Preferred Stock

Most preferreds issued in recent years show the dividend as a percent of the preferred stock's liquidating value (liquidating value is discussed later in this chapter.) In this case, the liquidating value is usually also the price for which the preferred stock was initially sold by the company. Here, the annual dividend is 8% of \$25, or \$2 per year. If this preferred pays quarterly, then the dividend would be \$0.50 per quarter. Other companies might show the same preferred dividend as a percent of par value, stated value, or redemption price; and the 8% would be multiplied by that value to determine

the annual dividend. Note that the 8% in the preferred's title does *not* refer to 8% of the market price (i.e., the price the preferred stock is trading for on the market.)

In the next to last line above, the preferred is listed without either par, stated, or other value, and it would be necessary to refer to the footnotes to the financial statements to determine the dollar amount of the dividend.

Older preferred stocks show the dividend in dollars, as in the last line above. For this preferred, each outstanding share is entitled to receive annual dividends totaling \$2.00. It would seem a lot simpler if all preferred stock dividends were shown in dollars rather than as a percent of some other figure, and perhaps that style will return.

Preferreds with Variable Dividends: Adjustable Rate Preferreds and Participating Preferreds

Not all preferreds pay a fixed dividend. We will list here a few kinds of preferred stocks for which the dividend can change.

1. *Adjustable Rate Preferreds*, also called *Floating Rate Preferreds (FRPs)*—These preferreds pay a dividend which is adjusted up or down with each dividend payment, much like the interest payment on Variable Rate Notes described in Chapter 10. Adjustable rate preferreds, known as ARPs, are usually listed on the balance sheet as just “Adjustable Rate Preferred.” The title cannot specify a dividend because the dividend is always changing. ARP dividend payments are typically adjusted up or down depending on the level of the yield of a specified benchmark interest, typically LIBOR* or a specified US Treasury Note.**
2. *Auction Rate Preferreds*, also called *Auction Preferreds*, *Auction Market Preferred Stock*, or *Remarketed Preferreds*—These preferreds require that at periodic intervals, holders of these preferreds (and other investors who may be interested in owning them) participate in a dutch auction, and the dividend rate is reset to the lowest rate where all the preferred stock can be sold to old or new buyers. Auction preferreds are sold primarily to financial institutions and will not be discussed further in this book.

3. Participating Preferreds—Participating preferreds specify that their dividend can move up or down in some circumstances. For these kinds of preferreds there is a formula, established at the time the preferred is issued, that determines when and by how much the dividend will change. For some participating preferreds the dividend will move up if the company’s earnings reach a specified level. For other participating preferreds the dividend will move up if the common stock dividend moves above a specified level. While these participating preferreds can therefore participate in the success of the company, their dividend changes are typically smaller than the changes that might be expected in a common stock dividend if the company is successful. Nevertheless, because the dividend can go up if the company prospers, the market price of a participating preferred stock may behave somewhat like a common stock.
4. Others—Some preferred stocks specify that the dividend automatically goes up or down after a certain date, or if some other specified circumstance is met. In most of these cases the amount by which the dividend changes is pre-specified, or determined according to a formula. One such preferred specified an increased dividend if the price of oil exceeded a specified level. There is no limit to the variety of features that companies and their creative investment bankers have come up with.

** LIBOR is the London Interbank Offered Rate. It is the interest rate at which banks lend to each other for short periods of time, such as 3 months. This a very large and active market, and thus is taken by most investors to be a true representation of prevailing interest rates. The LIBOR rate has come to be used as a benchmark for many different types of interest rate comparisons.*

*** For example, an ARP might specify that each dividend will be at an annualized rate that is 2% points above the yield of the most recently issued 10 year maturity U.S. Treasury Note. So if that U.S.T. Note was issued at a yield of 3.6%, the next preferred dividend would be paid with an annualized yield of 5.6%. Since the dividend is paid quarterly, the dividend would be one-fourth of 5.6%, or 1.4% of the ARP’s par value. If the ARP has a par value of \$100, the dividend payment would be \$1.40.*

ARPs typically have “collars”; which are limits on how high or low the yield

can go. A typical collar might specify that the ARP's dividend can go no higher or lower than 3% points above or below the yield of the initial dividend payment. This protects the company from having to pay too great a dividend in the event that yields go way up, but also protects the investor from receiving a very small dividend in the event that yields go way down.

THE DIFFERENCE BETWEEN DEBT INTEREST AND PREFERRED DIVIDENDS

The interest paid to a bondholder and the dividend paid to a stockholder may appear to be the similar, but there are some important differences, both from the company's point of view and the recipient's point of view.

The first difference between interest and dividends is the way they are treated on the company's income statement. An interest payment is an expense which is deducted from sales (along with the other expenses) when calculating profit before taxes. This deduction results in a tax savings to the company. A dividend, whether paid on preferred stock or common stock, is not an expense; it is a payment made with the company's after-tax profit. Thus, there is no tax savings resulting from a company paying a preferred dividend. But note that the amount of the preferred dividend is deducted from net profit after taxes when calculating Earnings Per Share.

Second, recall that interest paid on a bond is a contractual obligation of the company that issued the bond. If the interest is not paid on time, bondholders can declare the company to be in default, and have the right to demand that the entire principal amount of the bond (as well as the interest owed) be repaid immediately. If the interest and principal are not then repaid, the bondholders can go to court and ask that the company be declared bankrupt.

For preferred stocks, the dividend payment is *not* a contractual obligation, and if the preferred dividend is not paid, the preferred shareholders do not have any way to enforce payment. Preferred stocks usually specify only that if preferred dividends have not been paid for a specified number of quarters, typically four or six quarters, then the preferred stockholders will have the right to elect two directors of their choosing to the board of directors. While it is helpful for the preferred stockholders to have their own representatives on the board of directors, the

preferred stockholders' inability to force the company to redeem their shares, or to force the company into bankruptcy, is a key feature that distinguishes preferred stock as equity, rather than debt.

From the point of view of the recipient, the difference between bond interest and preferred dividends is primarily how it is taxed. For individuals, there is little difference between how interest income and dividend income are taxed, but to corporations there is a big difference. Although corporations pay tax on all the interest income they receive, corporations are allowed to exclude 70% of their dividend income from taxation. This is known as the dividends received deduction. Preferred stocks that qualify for this 70% exclusion from corporate taxes are often referred to as "DRD Preferreds."*

Because of this tax break, most traditional preferred stocks are bought either by corporations or by individuals in tax-free accounts, such as IRAs. The tax break for corporations does not apply to trust preferred securities (discussed in Chapter 13); consequently, trust preferreds are sold primarily to individuals.

** To see the tax benefit of the DRD, let's look at ABC Corporation which owns another company's bonds and preferred stock. ABC receives \$100 in interest income from the bonds and \$100 in dividend income from the preferred stock. ABC's tax rate is 40%. The \$100 of interest income will be taxed at 40%, so ABC will pay tax of \$40 on the interest. For the \$100 of dividend income, ABC first excludes 70%, or \$70, from taxation. Thus, only \$30 of the dividend income is taxable. That \$30 is then taxed at the 40% tax rate, which results in a tax of only \$12, considerably less than the tax on the bond interest that ABC received.*

ISSUING PREFERRED STOCK

Issuing preferred stock is like issuing common stock in that, first, it must be authorized by the common stockholders. Once the authorization is written into the company's Articles of Incorporation, the directors usually have discretion in setting the final terms, such as the dividend, redemption date (if any) etc. Then, if the issue is going to be sold to the public, it must be registered with the Securities and Exchange Commission. (Recall registration can be avoided by selling the stock under Rule 144A or

Regulation S as noted in Chapter 5.) Like common stock and bonds, public issues of preferred stock are usually sold through investment bankers.

The price at which a company initially sells a preferred stock is not related to the price of its common stock. Recall from Chapter 4 that the price of a common stock is related to the company's current and future earnings outlook. The brighter the outlook for company earnings (and potential dividends), the higher the price/earnings ratio investors will be willing to pay for the stock. This is not true of preferred stock. Because the dividend on most preferred stocks is fixed, or only varies slightly, the price investors are willing to pay for a preferred stock is determined primarily by its yield.

If JMC wants to sell a new issue of preferred, it will have to sell it at a yield which is in line with the yield of similar companies' preferreds. Let's say that similar company preferred stocks are selling at about a 5.9% yield. JMC will probably have to offer a slightly higher yield to induce investors to buy the new JMC issue with which they are less familiar. Let's assume that JMC's investment bankers advised them that an 6% yield would be necessary to ensure that all the new stock is quickly sold. At this point it does not matter whether JMC sells the preferred stock at \$100 per share with an \$6 dividend, or \$50 per share with a \$3 dividend, or \$25 per share with a \$1.50 dividend. An investor willing to invest \$1,000 in JMC preferred stock would be indifferent as to whether she bought 10 shares at \$100 each, or 20 shares at \$50 each, or 40 shares at \$25 each. Regardless, she would end up with the same \$60 in annual dividends, or an 6% yield based on her initial investment of \$1,000. Most preferreds issued today are sold at \$25 or \$50 per share, although a few years ago it was more common to see preferreds sold at \$100.

LIFE OF A PREFERRED STOCK

Perpetual and Redeemable Preferreds

Some preferred stock issues, like common stock, may be outstanding forever unless the company buys them back on the secondary market and retires them. These preferreds are called *perpetual preferreds*. Other preferreds are more like bonds in that they have a fixed life. Such preferreds have a *redemption date*, or a *mandatory* or *guaranteed redemption date*,

which is like the final maturity date for a bond (i.e., the day that all the shares of that preferred issue that are still outstanding must be redeemed). A few redeemable preferred issues also have a sinking fund, sometimes called a *retirement fund*, but most do not.

Some preferreds, whether or not they have a mandatory or guaranteed redemption date, have an *optional redemption* feature. The optional redemption is like the *call* feature of a bond (Chapter 10), and says that the company has the right to set an early redemption date and buy back the preferred shares directly from the shareholders. The terms of the optional redemption feature will state when the company has this right (it typically begins 5 years after the preferred was issued), and what redemption price the company must pay the shareholders for their stock. When a preferred has a redemption feature, optional or mandatory, it always specifies that after the redemption date the preferred no longer earns dividends. So preferred shareholders have no reason not to redeem their shares at their redemption date. From a company's point of view, an optional redemption right is preferable to trying to buy the preferred stock back on the open market because stockholders may not want to sell.

When a preferred stock has a guaranteed redemption date, it would seem more appropriate to treat it as long term debt rather than equity. The reason that such preferred stock is thought of as equity is that if the company is unable to redeem the preferred on the redemption date, the preferred stockholders cannot force the company into bankruptcy; whereas if a company is unable to repay its bonds at maturity, the bondholders have a contractual right to force the company into bankruptcy.

Refunding a Preferred

A company issuing a preferred stock would like to have the option to redeem it at any time for a couple of reasons. First, because if interest rates decline, the company would benefit by issuing a new preferred with a lower dividend and using the money to repay the preferred with the higher dividend. This process is called *refunding*. Refunding does not refer to the company buying the preferred back and retiring it; that is called *redemption*. Second, if the company has excess cash available, by "calling" or redeeming the preferred the company will no longer have to pay the preferred dividend.

To understand the benefit of *refunding* a preferred, consider the following example. Assume a company has 1,000,000 shares outstanding of a \$100 par value Series A Preferred stock which pays an annual dividend of \$8 per share. The company has the right to redeem these shares at any time at \$100 per share. Now, suppose interest rates have fallen and similar preferred stocks can now be issued with a yield of 7%. Because the company has the right to redeem its 8% Series A Preferred, it could sell a new 1,000,000 share issue of a 7% Series B Preferred for \$100 per share, and use the money to redeem the 8% Series A Preferred issue. Since the new Series B issue has a dividend of only \$7 (7% of the \$100 issue price), the company would be lowering its annual preferred dividend payment from \$8,000,000 to \$7,000,000, an annual savings of \$1,000,000.

While a company would obviously like to have this flexibility to redeem and refund its preferred stock, the owners of the \$8 Preferred issue would just as obviously not want to have their \$8 dividend preferred redeemed at a time when it could only be replaced with a new preferred with a \$7 dividend. For this reason, when a preferred is originally issued, if its terms permit “refunding” the issue by using the optional redemption privilege, the company will probably have to issue the preferred with a slightly higher dividend than it would have paid had the preferred not been redeemable at the company’s option.

PREFERRED STOCK RATINGS

The agencies that rate bonds for the safety of their interest and principal repayments also rate preferred stocks for the safety of their dividend and redemption repayments (if any). Moody’s Investors Services and Standard & Poor’s ratings for preferred stocks are shown below.

Standard & Poor’s uses the same designations for its preferred stock ratings as it uses for its bond ratings, but investors understand that preferred stocks are naturally less safe than bonds (and debentures), because even the lowest priority (most junior) debentures of a company are senior to all the company’s preferred stock. No preferred dividends can be paid, or preferred shares redeemed, unless all the required payments to bond and debenture holders are up to date.

Moody’s distinguishes its preferred stock ratings from its bond ratings (see Chapter 8) by using lowercase letters for preferred stocks.

<u>Moody's</u>	<u>S&P</u>	
aaa	AAA	safest
aa	AA	
a	A	
baa	BBB	
ba	BB	
b	B	risky
caa	CCC	
ca	CC	
c	C	

Any preferred stock rated caa or CCC or below, is either not current on its dividend payments, or is deemed likely to stop paying its dividends at some point in the future.

CALCULATING EARNINGS PER SHARE WHEN THERE IS A PREFERRED STOCK OUTSTANDING

The term *earnings per share* (EPS) means earnings per *common* share. The number of preferred shares outstanding is *not* added to the number of common shares when calculating earnings per share. This is because the Earnings per share figure is only intended to measure how much the common shareholders benefit from the company's earnings.

Since preferred shareholders receive their dividend before common shareholders get any dividend, the preferred dividend is subtracted from the company's net profit after tax, and the remaining profit is called *profit available for common shareholders*. It is the *profit available for common* that is divided by the number of common shares outstanding to get Earnings per common share.

Because "earnings per share" always means "earnings per common share," it is not necessary to add the word "common," and most investors just say "earnings per share." To repeat, a correct calculation of earnings per common share uses the net earnings minus all preferred dividends.

Similarly, the correct calculation of earnings per share uses only the number of *common* shares outstanding, *not* common shares plus preferred shares. This is because after the preferred shares have received their fixed dividend, they do not get to take advantage of any growth in profit available for common dividends (with the occasional exception of participating preferreds discussed earlier.) To see how to calculate earnings per share for a company which has a preferred stock and a common stock issue outstanding, let's look at Company ABC which has the following two issues of stock outstanding.

Issue	Shares outstanding	Dividend per share	Total dividend
Preferred	40	\$2	\$80
Common	100		

	Income Statement (A)	Calculation of earnings per share (B)
Sales	\$ 1,000	\$ 1,000
Cost of Goods Sold	– 400	400
Selling and admin expense ...	– 150	150
Interest Expense	– 50	50
Pretax Profit	400	400
Taxes (assuming 50% rate)	– 200	200
Net Profit	\$ 200	\$ 200
Less: Preferred dividend		80
Equals: Profit Available for common		\$ 120

$$\frac{\text{Profit available for common}}{\text{Common shares outstanding}} = \frac{\$120}{100} = \$1.20 / \text{share}$$

For another example, let's look at XYZ Company, which has the following stock issues outstanding.

Issue	Shares outstanding	Dividend per share	Total dividend
Series A preferred	200	\$5	\$1,000
Series B preferred	100	6	600
Common stock	1,000		

**Income Statement
and Calculation of Earnings per Share**

Sales		\$100,000
Less: COGS Expense		60,000
SGA Expense		18,000
Interest Expense		2,000
Earnings before income tax		20,000
Income Tax		– 10,000
Net earnings	=	10,000
Less: Total preferred dividend		1,600
Equals: Earnings available for common		\$ 8,400
<u>Earnings for common</u>	=	<u>\$8,400</u>
<u>Common shares outstanding</u>	=	<u>1,000</u> = \$8.40 / share

In this calculation, the entire preferred dividend of both preferred issues is subtracted in arriving at *earnings available for common*. The earnings for common is then divided by the number of common shares outstanding. If we had incorrectly used net earnings of \$10,000, and also incorrectly used the combined common and preferred shares outstanding, the calculated EPS would be \$7.69/share (\$10,000 divided by 1,300 shares). This is a meaningless number.

Question: What is the net earnings of XYZ Company? Answer: \$10,000.

Do not confuse the net earnings of a company with the earnings available for common. The difference is the preferred dividend, which is one of the things the directors may choose to do with company profit. In XYZ Company, the board chose a long time ago, when the Series A and Series B preferreds were issued, to use some of future profits to pay preferred dividends.

LIQUIDATING PREFERENCE

We saw earlier that one way in which a preferred stock has priority over common stock is in its prior right to receive dividends. A second way in which a preferred stock has priority over a common stock is in its right to receive money in the event the company liquidates. Recall that when a company liquidates, either voluntarily or in the event of bankruptcy, first it sells all its assets and then pays off all its liabilities. If there is any money left over, it goes to the stockholders. However, if the company has any preferred stock outstanding, the preferred shareholders get a certain amount of money before the common shareholders get anything. The amount of money each preferred share gets is called its *liquidating preference* or *liquidating value*. Each share of preferred stock outstanding in a given issue has the same liquidating preference (i.e., entitles the holder to the same amount of money in the event of liquidation). But different issues of preferred stock may have different liquidating preferences. The liquidating preference is set when the preferred is initially issued and, like the preferred dividend, rarely changes except in the case of a few unusual preferreds. A preferred issue's liquidating preference may be the same amount for which the preferred was sold, or it may be different.

A typical preferred stock portion of a balance sheet of a company with more than one issue of preferred stock outstanding might look like this:

Equity

- \$3.75 Noncumulative preferred Series C (authorized 60,000 shares, outstanding 10,000 shares) (liquidating preference \$50 per share)
- 7.2% Cumulative preferred Series D (authorized 10,000 shares, outstanding 8,000 shares) (liquidating value \$25 per share)
- 5% Cumulative convertible preferred Series E (authorized 40,000 shares, issued and outstanding 1,500 shares) (liquidating value \$10 per share)
-

If this company were liquidated, the following table shows the amount of money that would be paid to the preferred shareholders, assuming there was enough available after all the other liabilities had been paid off:

	Shares outstanding		Liquidating preference		Total
Series C:	10,000	x	\$50	=	\$500,000
Series D:	8,000	x	\$25	=	\$200,000
Series E:	1,500	x	\$10	=	\$15,000
Total liquidating value				=	\$715,000

After the \$715,000 is paid to the preferred shareholders, any remaining money would be split up among the common shareholders. If there is less than \$715,000 available for the preferred stockholders, then there might be a predetermined priority among each series of preferred as to which gets paid first, or they might all have equal priority, in which case each series would get an equal portion of its liquidating value. When there is a priority of one preferred over another in the event of liquidation, the one with the lower priority is sometimes called a *preference stock* instead of a preferred.

Note that this company has no Series A or Series B preferred stock. Most likely, there was a Series A and B outstanding at some time in the past, but both were redeemed (i.e., bought back by the company and retired), or perhaps they were convertible preferreds which were converted to common stock.

BOOK VALUE PER COMMON SHARE

In Chapter 4, book value per common share was defined as total assets less total liabilities divided by the number of common shares outstanding. That definition must now be modified to consider the liquidating value of preferred stock. *Book value per common share* is now defined as total assets, less total liabilities, less the liquidating value of preferred stock (if any), divided by the number of common shares outstanding.

Definition

- **Book value per common share.** Total assets, less total liabilities, less liquidating value of preferred stock (if any), divided by the number of common shares outstanding.

To calculate book value per common share, first calculate the book value (step 1) and then divide the book value by the number of *common* shares outstanding (step 2). Do *not* add the preferred shares to the common shares.

Company MNO Balance Sheet

Assets		Liabilities	
Current Assets		Current Liabilities	
Cash	\$ 100	Bank debt payable	\$ 150
Accounts receivable	300	Taxes payable	50
Inventory	<u>200</u>	Other liabilities	<u>100</u>
Total current assets	\$ 600	Total current liabilities	\$ 300
Fixed Assets		Long-Term Debt	
Property	\$ 100	4% Mortgage bonds	\$ 200
Plant	250	7% Debentures	140
Equipment	<u>850</u>	8% Subordinated debentures	<u>60</u>
	\$ 1,200	Total Long-term debt	\$ 400
Total Assets	\$ 1,800	Ownership Equity	
		\$2.50 Preferred Outstanding 50 shares Liquidating value \$5/share	\$ 100
		Common @ par \$.50 Outstanding 200 shares	\$ 100
		Additional paid-in capital	250
		Retained earnings	<u>650</u>
		Total equity	<u><u>\$ 1,100</u></u>
		Total Liabilities and Ownership Equity	\$ 1,800

Book value per common share of Company MNO is calculated as follows:

Step 1.	Total Assets	\$ 1,800	
	less: total liabilities	\$ 700	
	less: liquidating value of preferred	\$ 250	← (50 preferred shares x \$5 liq. value/share=\$250)
	Equals: book value	\$ 850	
 Step 2.	 <u>Book Value</u>	 = $\frac{\$850}{200}$	 = \$4.25/share
	Common shares outstanding		

Thus, if company MNO were to liquidate, and assuming it could sell all its assets for exactly their carrying value on the books, each share of common stock would receive \$4.25 after all the liabilities had been paid off *and* after the preferred shares received their liquidating value.

Book value per common share is usually available from published financial services, or is given in company annual reports, but these figures sometimes do not correctly consider the liquidating value of preferreds, so readers should consider doing this calculation themselves.

PREFERRED STOCK ON THE BALANCE SHEET

When a company sells a new issue of preferred stock (a primary offering), the proceeds are added to *Cash* on the left side of the balance sheet, and to *Equity* on the right side of the balance sheet. In the Equity section, however, companies can carry their preferred stocks in a variety of different ways, including at par or stated value, at liquidating value, or at redemption value.

Par or Stated Value

The amount of money a preferred stock is initially sold for is sometimes declared to be its *par value*, or *stated value*, and that amount appears next to the preferred stock's listing in the Equity section. Other companies treat

preferred stock like common stock, and declare only a small par value and put the rest of the proceeds from the preferred offering under Additional Paid in Capital. The par or stated value of a preferred stock, like a common stock, has little or no investment significance. In some states, however, companies pay a tax based on the par value of its stock. This is why companies often declare a very low par value.

Liquidating Value and Redemption Value

Some preferred stocks have no par or stated value, and are carried on the balance sheet at either their liquidating value or their redemption value. In these cases, the liquidating or redemption value is usually also the amount for which the preferred was initially sold.

A preferred stock's liquidating value, redemption value, and par or stated value can all be the same or can all be different. There is no significance to whether they are the same or different.

A Capitalization with Many Preferred Stocks

The capitalization section of the balance sheet of a company with several preferred stocks might look as shown below. This balance sheet shows the preferred stocks carried in a variety of different ways so the reader will be familiar with each of them. Most likely, a company will consistently choose one way or another, although even this may not be true for a company with some older and some newer preferreds. Note that this balance sheet has no trust preferred securities. These will be addressed in Chapter 13.

Table 12.1 Capitalization

Long-term debt

4 % Mortgage Bonds	\$16,000,000
6 % Sinking Fund Debentures	25,000,000

Equity

\$2.40 Noncumulative preferred	55,200 ?
Authorized 60,000 shares	
Issued and Outstanding 55,200 shares	
\$3.20 Cumulative preferred, Series A	640,800 ?
Par Value \$1	
Authorized 400,000 shares	
Issued 22,000 shares	
Outstanding 16,020 shares	
7.85% Cumulative preferred, Series B	2,500,000
Par Value \$25	
Authorized 100,000 shares	
Issued and Outstanding 100,000 shares	

8.2% Series C preferred	—
Authorized 100,000 shares, none issued	
Series D Adjustable Rate Preferred	4,000,000
Liquidation Value \$50 per share	
Authorized 120,000 shares	
Outstanding 80,000 shares	
4.4% Cumulative convertible preferred	631,200 ?
Liquidating value \$40 per share	
Authorized 50,000 shares	
Outstanding 6,312 shares	
Common at Par \$2	2,000,000
Authorized 2,000,000 shares	
Issued and Outstanding 100,000 shares	
Additional Paid in Capital	17,650,000
Retained Earnings	<u>33,473,000</u>
Total Stockholders Equity	<u>\$60,950,000</u>

The \$2.40 Noncumulative Preferred and the \$3.20 Cumulative Preferred Series A look like the oldest preferreds issued by this company, because their dividends are shown in dollars rather than as percentages. The \$2.40 Noncumulative Preferred is most likely the oldest since it does not have a series designation. The information provided about the \$2.40 Noncumulative Preferred gives no indication of its par or stated value, or its liquidating value. To get this information, we would need to refer to the financial statement footnotes, or to the company's Articles of Incorporation.

The \$3.20 Cumulative Preferred, Series A, shows fewer shares outstanding than were issued. Most likely, the company bought back some of the issued shares.

The dollar value at which the Series B is carried on the balance sheet is its par value (par value \$25 x 100,000 shares outstanding = \$2,500,000) and the Series D is carried at liquidating value (liquidation value \$50 x 80,000

shares = \$4,000,000). The other preferreds are carried at figures for which we cannot determine the origin, as indicated by the question marks. Those figures could be par value, stated value, redemption price, or liquidating value; although for the Series A, it appears that it is not the Par Value, and for the Convertible preferred it appears it is not the Liquidating Value. Again, to find out, we would need to refer to the company's articles of incorporation or other sources.

The description of the Series D does not tell us how many shares were originally issued, but there are fewer Series D shares outstanding than were authorized. There is no way to tell from the information given if more of the Series D shares were outstanding at one time and then bought back (redeemed) by the company.

The convertible preferred also has fewer shares outstanding than authorized, and again, there is no way to tell from the information if the outstanding 6,312 shares were all that were ever issued, or if more had been issued but some were either converted to common stock or redeemed by the company.

The Series C, although authorized, was never issued. Possibly, the company decided not to issue it, either because interest rates moved higher than the company was willing to pay, or possibly the rating agencies rated the preferred lower than expected, which would have required the company to pay a higher dividend than it was willing to pay. Another explanation might be that the Series C was authorized for a particular purpose, such as to pay for the acquisition of another company, but the acquisition deal fell through.

PREFERRED STOCK YIELD

When discussing the yield on a preferred stock, it is important to state whether you are referring the yield based on par value of the preferred, or based on the market price. Let's look at an 8% Preferred with a par value of \$25. It is currently trading at \$26.50 on the stock exchange.

The 8% in the title indicates that the annual dividend in dollars is 8% of the \$25 par value, or \$2 per share. That 8% figure is sometimes called the *securities rate*, but that is not what is generally meant by yield. The yield on a fixed rate preferred stock, such as this one, usually refers to the annual

dividend, in dollars, divided by the current price at which the preferred is trading.

$$\frac{\text{Annual dividend}}{\text{Price on market}} = \frac{\$2.00}{\$26.50} = 7.57\% \text{ yield}$$

This may be called the *current yield*, and is the same calculation we did when calculating the current yield on a bond, except that for a bond we used the annual interest payment instead of the annual dividend.

If a preferred has a guaranteed redemption date, then we can also calculate a yield-to-redemption date, which is the same as the yield to maturity for a bond. For perpetual preferreds (those that have no redemption date), it is not possible to calculate a yield-to-redemption, and thus the current yield is the only relevant yield.

RETURN ON EQUITY RATIO

In Chapter 4, the Return on Common Shareholder's Equity ratio was defined as Net profit after tax divided by Stockholders' Equity. At that point, JMC's balance sheet had no preferred stock outstanding, so the return on equity was just the Common stockholder's equity. For a company with preferred stock outstanding, the return-on-equity definition must now consider the preferred equity.

Some analysts prefer to calculate return on total equity, that is, including both common and preferred equity in the denominator, as shown immediately below. In this case it would be most appropriate to use Net income before the preferred dividend in the numerator. This way, the ratio is comparing the *total* return to the *total* equity base.

$$\text{Return on total Equity} = \frac{\text{Net income before Preferred Dividend}}{\text{Common + Preferred Shareholder equity}}$$

The preferred equity would be the total of the dollar amounts listed on the balance sheet beside each preferred stock issue, such as those shown in Table 12.1. A possible problem with this way of calculating total preferred equity is that the balance sheet carrying value of one or more of the preferred equity issues may not be equal to the amount of money the company received from the offering of that preferred stock. To the extent that this is

the case, it is possible that some of all of the “missing” equity is in Additional Paid in Capital, in which case the *total* equity figure (but not the preferred equity figure) would still represent all the cash that came in from all the stock offerings.

Analysts wishing to calculate a return on just the common equity should exclude the preferred equity from the denominator, and use just the Net Income less preferred dividends in the numerator.

$$\text{Return on Common Shareholders Equity} = \frac{\text{Net income less Preferred Dividend}}{\text{Common Stock at Par + Additional Paid in Capital + Retained Earnings}}$$

As discussed above, the denominator in the latter equation could be distorted if some of the preferred equity value had been put in Additional Paid in Capital.

13

Convertible Preferred Stock and Hybrid Preferred Securities

CONVERTIBLE PREFERRED

Some preferred stocks, like some bonds, are convertible into common stock. Convertible preferreds have all the features of straight preferreds described in Chapter 12, but have the added feature that they may be converted into common stock. Convertible preferreds are usually convertible at any time by the preferred stockholder, although in some cases they may only be convertible before or after a specified date. Most convertible preferreds convert into a fixed number of common shares, but like convertible bonds, some convertible preferreds specify that the conversion ratio can change over time or be linked to the company's profitability or some other factor. For example, an unusual convertible preferred might state the following:

“This convertible preferred may not be converted before January 1, 2020. After that date, the holder may convert the preferred, at his or her option, at the rate of 2 common shares for each share of convertible preferred, up until December 31, 2022. Beginning January 1, 2023 these convertible preferred shares may be converted into common stock at the ratio of 2.4 shares for every share of convertible preferred.”

When a company has a convertible preferred outstanding, the company is required to report both *Basic* and *Diluted* Earnings Per Share just as the company must do if it has convertible bonds outstanding; see Chapter 11. The calculation of Basic Earnings Per Share assumes that the convertible preferreds *have not* been converted; and the Diluted Earnings Per Share figure assumes that the convertible preferreds *have* been converted to common stock. For companies which have both convertible bonds and non-convertible preferreds outstanding, the Diluted EPS figure would require that most or all convertible bonds and convertible preferreds be converted

When calculating a stock's price/earnings ratio, most investors use Diluted Earnings Per Share, as it is the more conservative approach. However, if it seems unlikely that the company's convertible issues will ever be converted, then Basic Earnings Per Share would be the better figure.

Recall from Chapter 11 that anti-dilutive issues are those convertible bonds or convertible preferred stocks which, if converted to common stock, would cause earnings per share to be higher. Most convertible issues are dilutive; that is, they result in EPS being lower as a result of the conversion process. When calculating Diluted EPS, we only convert those convertible issues which are dilutive, i.e., result in earnings per share being lower.

CONVERTING A CONVERTIBLE PREFERRED

Readers not interested in the mechanics of converting convertible preferreds can skip the remainder of this section without losing continuity of the book. Going through the process, however, will further familiarize you with the concepts, and thus it is presented here for readers who wish to go through it.

In the following examples, we calculate Basic and Diluted Earnings Per Share for Company PQR. Note that the Series A preferred stock is not convertible, and the conversion rate for the Series B preferred is fixed at 2 common shares for each convertible preferred share.

Company PQR
Income Statement

Sales	\$10,000
COGS	5,000
SGA	2,000
Interest Expense	<u>1,000</u>
Pretax profit	\$ 2,000
Income Tax	<u>1,000</u>
Net Profit	\$ 1,000

Company PQR
Stock Outstanding

\$4 Series A Preferred

Outstanding: 50 shares

\$1 Series B Convertible Preferred

Outstanding: 100 shares

Conversion ratio: each share
converts into 2 shares
of common.

Common Stock

Authorized: 800 shares

Outstanding: 500 shares

Example 1: Calculate Basic Earnings Per Share

Step 1. Calculate profit available for common

Net profit	\$1,000
Less: Pfd. Dividend on Series A	200
Less: Pfd. Dividend on Series B	100
	<hr/>
Equals: Profit available for common	\$700

Note : The Series B preferred in this example is not assumed to have been converted. Since it is therefore still outstanding, its dividend would have to be paid before any dividend could be paid to common stockholders.

Step 2. Determine the number of common shares outstanding

Common shares: The 500 shares outstanding. There is no change. The Series B preferred stock is not converted because we are calculating Basic earnings per share.

Step 3. Calculate Basic EPS

$$\frac{\text{Profit for common}}{\text{Common Shares}} = \frac{\$700}{500} = \$1.40 \text{ per common share}$$

Example 2: Calculate Diluted Earnings Per Share

Step 1. Calculate profit available for common

Net profit	\$1,000
Less: Pfd. Dividend (Series A only)	<u>200</u>
Equals: Profit available for common	\$800

Note : There is no Series B preferred dividend because the Series B preferred is assumed to have been converted into common stock.

Step 2. Calculate the diluted number of common shares outstanding

Common shares: 500 originally outstanding
+ 200 from conversion of Series B preferred stock
(100 Series B preferred shares x 2
common shares per preferred share)
<hr/>
= 700 total common shares for diluted EPS

Step 3. Calculate Diluted EPS

$$\frac{\text{Profit for common}}{\text{Diluted Shares}} = \frac{\$800}{700} = \$1.14 \text{ per common share}$$

HYBRID SECURITIES AND TRUST PREFERRED SECURITIES

Common stock, traditional preferred stock, bonds, and debentures constitute the vast majority of the equity and debt securities outstanding

today. In recent years, however, companies have been issuing an increasing number of securities that have characteristics of both debentures and preferred stock, and thus are called *hybrid securities*. The most frequently issued kind of hybrid securities are called *Trust Preferred Securities*, which will be explained below.

Trust Preferred Securities, which we will refer to as TPS in this chapter, and other similar hybrid securities, are becoming an important part of the preferred market. Trust preferreds and traditional preferred stock (discussed in Chapter 12), are similar in some ways, but are sufficiently different in other ways that investors participating in the preferred market must be careful to know which they are buying and what the difference might mean. This is particularly important because the term *Preferred Securities*, which is a general term that encompasses both traditional preferred stock and the newer hybrids and trust preferreds, is often used casually to refer to either kind. TPS are also sometimes referred to as *capital securities*, when they are issued by banks.

To confuse the terminology more, note that about 10 years ago, the term *Preferred Securities* was commonly used to refer only to trust preferred and hybrids, as distinguished from *Preferred Stock*, which meant traditional preferred stock. Older texts might still use *Preferred Securities* that way.

To review: In this chapter, the term *preferred stock* will be used to refer to traditional preferred stock that has been in use for over 100 years. Preferred stock is 100% equity, and payments to preferred stockholders are dividends. The term *preferred securities* is a general term meant to include both preferred stock and trust preferred securities and other hybrids. We will use the terms *trust preferred securities*, *trust preferreds*, or just *TPS*, to refer to both trust preferreds and other hybrids.

TRUST PREFERRED SECURITIES

Trust Preferred Securities were created by investment bankers to enable their clients to raise money by selling a security that has the advantages of both bonds and preferred stock. The primary advantage of issuing bonds is that the interest payments are an expense which is deducted *before* taxes, and

therefore reduces the company's taxes. The primary advantage of preferred stock is that it is equity. Because increasing equity improves a company's debt/equity or debt-to-total capital ratio, the company's credit rating improves. This, in turn, lowers the interest rate the company will have to pay on future borrowings. TPS have both of these advantages.

To make TPS attractive to individual investors, most are issued at \$25 per share. This \$25 is usually referred to as the *Liquidation amount*, or may be referred to as the *par amount* or *par value* of the TPS. It is the amount the company will have to pay back at the TPS redemption date, or if the company is liquidated.

Trust Preferred Securities' Similarity to both Preferred Stock and Debentures

Like preferred stock, most trust preferreds specify a quarterly payment to shareholders, although some pay monthly. Hybrids and trust preferreds are also like traditional preferreds in that if the investor does not receive his quarterly payment, he does not have the immediate right to declare the company in default. On the other hand, TPS are like debentures in that: 1) most have a mandatory redemption date—the date the company *must* buy back the securities from shareholders—which is like the maturity date on a bond, and 2) many TPS have an optional redemption privilege—the company's right to buy the securities back before the mandatory redemption date—which is like the call feature on a bond or debenture. This combination of equity-like and debt-like features is why these securities are called hybrids.

From the issuing company's point of view, TPS differ from traditional preferred stock in that the quarterly payment to the security holders is a tax deductible expense, whereas dividends paid to holders of traditional preferred stock holders come out of the company's after tax profit.

The Trust Preferred Security's Payment to Shareholders Is Called a Distribution

The payment to holders of traditional preferred stock is a dividend. But for trust preferreds, because the company can deduct this payment before taxes, it is more like an interest payment than a dividend. On the other hand, it is not exactly an interest payment either, as we will see below. Consequently, payments to holders of TPS are simply referred to as *distributions*. However, because TPS are similar to both debentures and preferred stock, it is still common to hear the terms dividend, interest, and distribution used interchangeably when referring to TPS payments.

A trust preferred's distribution is usually expressed as a percentage of the liquidation amount. So an 8% quarterly paying TPS with a liquidation amount of \$25 would have an annual distribution of \$2.00, or a quarterly distribution of \$.50 per TPS share. The 8% is also known as the *security rate*.

The market price of most trust preferreds behaves like the price of a share of preferred stock or a bond. That is, the price moves up or down so its current yield and yield to maturity (see Chapter 8) are in line with similarly rated securities.

The Preferred Security's Distribution May Be Deferred for Up to Five or Ten Years

Almost all trust preferreds have a provision which allows the company to defer making the distribution payments for a specified period of time (usually either five years or ten years) before the security holders have the right to enforce payment. This differs from a bond's or debenture's missed interest payment. Recall that if a bond's interest payment is not made, bondholders typically have the right, after a short "grace period," to enforce payment immediately, first by declaring a default and demanding immediate repayment of the entire bond issue, and then by forcing the company into bankruptcy if necessary.

While the TPS issuer has this right to defer distributions, a company is unlikely to defer making the distributions unless it is in serious financial trouble. If a company defers a payment, the price of the TPS will likely plunge, and the company will find it difficult to sell new preferred securities of any kind in the future.

Trust preferreds usually specify that the distributions to shareholders are cumulative. This means that if a company does defer any distribution payments, all the missed payments must be made up before any dividends can be paid to traditional preferred stockholders or to common stockholders.

Corporate Structure Necessary to Issue Such Securities

Most readers have little need to understand how the trust subsidiary structure works, but understanding it helps one to understand the titles or descriptions of some of the TPS that may appear on company balance sheets or in footnotes to the balance sheets.

To create a security that has both the tax deductibility of bond interest and the equity treatment of preferred stock, and still be in compliance with tax laws, requires a complex structure. The most common structure is for the company wishing to raise money, to set up a subsidiary (a separate company) which issues the new trust preferred securities and thereby raises money. That money is then lent by the subsidiary to the parent company. The subsidiary is usually set up in a legal form known as a *trust*. This is why preferred securities that are set up this way are referred to as “trust preferred securities”. Some hybrid securities are issued by using a partnering company rather than a trust, or in other ways. Here, we will only discuss one kind, the trust preferred securities.

To understand this subsidiary trust structure, let’s watch JMC raise money by issuing a trust preferred security. To begin, JMC sets up a new company which it calls JMC Financing. JMC Financing is a separate company, but it is owned entirely by JMC. In the language of Wall Street, JMC Financing is a *wholly owned subsidiary* of JMC, and JMC is the *parent* company.

To start JMC’s money raising process, JMC Financing (the subsidiary) sells an 8% Trust Preferred Security to the public, raising \$10 million. JMC Financing then lends the \$10 million to its parent, JMC. JMC, in exchange for borrowing the \$10 million, issues an 8% Junior Subordinated Deferrable Interest Debenture to JMC Financing. (In this chapter, we may abbreviate this as “jr. sub. deb.” or just j.s.d. Junior Subordinated Debentures can be reviewed at the end of Chapter 8. They are almost always the lowest priority debt in a company.)

When the time comes to make a distribution payment to the 8% TPS holders, this is what happens. First, JMC, the parent, makes an *interest payment* on the 8% jr. sub. debts. to the subsidiary. Then, the subsidiary uses the same money to make a *distribution payment* to the holders of the 8% TPS.

The subsidiary's only reasons to exist are: 1) to sell the 8% TPS to investors, 2) to loan the money raised to the parent (JMC), 3) to hold JMC's jr. sub. debts. as its only asset, and then 4) to pass through the distribution money from the parent to the 8% TPS holders. Because this is all the financing subsidiary does, these subsidiaries are often referred to as "special purpose" subsidiaries, or special purpose entities (SPE's) or special purpose vehicles (SPV's).

By using this structure (with JMC Financing as a "pass through") JMC is, in fact, paying interest on a junior subordinated debenture, and because it is interest, it is a tax deductible expense for JMC. If this seems complex, it is. However, this financing subsidiary structure (or some equally complex alternative) is necessary to give the TPS distribution the desired tax deductibility, while allowing the security to be treated as equity.

Why Preferred Securities Are Treated as Equity

Since the jr. sub. debts. which JMC issued to JMC Financing will have to be paid off eventually, the question arises as to why the rating agencies and investors treat these j.s.d.'s and TPS as equity. First, although the j.s.d.'s and TPS usually have a redemption date, that date is typically 30 to 60 years after issue. That span of time is well beyond the investment horizon for most investors, and thus for all practical purposes the money raised from these securities can be thought of as permanently in the company, and therefore, treated as equity. Second, as discussed earlier, the company has the ability to defer distributions for typically 5 or 10 years without the security holders having the right to begin legal action to get paid. This inability to act is similar to a preferred stockholder's inability to act to receive unpaid preferred dividends.

In sum, the combination of a very long time to redemption and the company's right to defer distributions for 5 to 10 years essentially leave the TPS holders in a position that is much more like that of equity holders than

debt holders. As a practical matter, if a company has been unable to pay distributions for 5 years, chances are that the company is in enough financial trouble that other security holders who are more senior, such as bond holders or senior debenture holders, will have already started taking action against the company.

Trust Preferred Securities on the Balance Sheet

Most companies issuing TPS show only the underlying Junior Subordinated Debentures on the parent's balance sheet. The 8% Trust Preferred Security, which properly belongs on the financing subsidiary's balance sheet, may not show anywhere, or will most likely appear only in the parent's balance sheet footnotes. If the parent company's balance sheet showed both the junior sub. debts. and the TPS, it would be double counting the obligation.

While showing the jr. sub. debts. on the parent balance sheet is most common, some TPS issues show on their parent's balance sheet with a title, such as "Preferred Securities in Subsidiary Trusts," or "Guaranteed beneficial Interests in Corporation Junior Subordinated Deferrable Interest Debentures" or "Junior Subordinated Deferrable Interest debentures Held In Trusts". Many other variations or similar words also show up, both on the balance sheet and in footnotes.

If the company chooses to show the jr. sub. deb., it will most likely appear as part of Long Term Debt on the balance sheet. If the company shows the TPS with one of the longer titles, such as those shown above, it may show them: 1) as a sub-category under preferred stock, 2) include it in "Other Long-Term Liabilities," or 3) create a separate line that is above preferred stock and below long term debt. That in-between location is sometimes referred to as the *mezzanine*.

On Wall Street, the term mezzanine financing refers to raising money by selling securities that come somewhere between senior debt and equity. Convertible bonds and convertible preferreds are usually thought of as mezzanine financing. Trust preferred securities are always thought of as mezzanine financing. But non-convertible preferred stock and subordinated debentures other than junior subordinated debentures may or may not be considered mezzanine.

Regardless of what it is called, TPS should be treated as part of the company's total capitalization when calculating the debt-to-total capitalization ratio. Most investors would also treat it as debt in the numerator of that ratio, but, as discussed above, because these securities have some equity characteristics, some investors might treat it as equity.

The capitalization table below shows, in italics, four places where the TPS might appear on a balance sheet. Note that "Other Long Term Liabilities" shows a larger number than the other TPS titles. This is because Other Long Term Liabilities would likely contain some items in addition to the TPS.

Long Term Debt	
5% Mortgage Bonds	\$10,000,000
7.6% Senior Debentures	\$30,000,000
→ 8% Junior Subordinated Debentures	\$40,000,000
→ 8% Mandatorily Redeemable Preferred Securities of Subsidiary Trust	\$40,000,000
→ Other Long Term Liabilities*	\$52,000,000
Stockholders Equity	
→ 8% Preferred Securities in Subsidiary Trusts	\$40,000,000
5.75% Preferred Stock Series E	\$6,400,000
6.20% Cumulative Preferred Series F	\$12,000,000
Common at Par \$1 (authorized 50,000,000 shares, issued 42,986,000 shares, outstanding 42,986,000 shares)	\$42,986,000
Additional Paid in Capital	\$115,774,000
Retained Earnings	\$866,291,000

* Includes \$40,000,000 of TPS and \$12,000,000 of Other Long Term Liabilities.

Trust Preferred Securities on the Income Statement

Most companies treat TPS distributions to shareholders as part of interest expense, because the company is in fact paying interest on the underlying j.s.d.'s. But companies may also categorize the distribution on the income statement under some other headings, sometimes as vague as "Other Expense," or "Non-operating expense". Regardless of what it is called, the distributions are made before taxes, and there is a jr. sub. deb. which gives rise to the distribution, so it is effectively the same as interest expense.

But should it be treated as interest when calculating the interest coverage ratio? It is, in fact, interest, but because interest payments on these securities can be deferred for 5 or 10 years before the security holders have the right to enforce payment, perhaps it should not be treated as interest for purposes of this ratio. The authors take a conservative approach and suggest including it as interest because even though payment of this interest is deferrable, if the company is unable to make the payment, it suggests the company is in trouble, and that will impact the prices of all of its securities.

Preferred Securities from the Investors' Point of View

Trust Preferred securities offer investors two advantages compared to bonds or debentures: higher yield and better liquidity. The higher yield, however, reflects that TPS are lower in the capitalization, and are riskier than bonds or debentures, in two ways. First, in a bankruptcy liquidation, all the company's other bonds and debentures would be paid off in full before the TPS holders received anything. Second, the company's right to defer distribution payments means that a financially weakened company could easily stop making the TPS distributions even though it continued to pay interest on its bonds and more senior debentures. With trust preferred securities' lower priority in bankruptcy, and their distribution being the first to be eliminated, we would say that the trust preferred securities are much *lower priority in the capitalization*, or are *deeply subordinated* to the more

senior bonds and debentures. Thus, at the first sign that the company's financial condition is weakening, the preferred securities' price might fall substantially, whereas the company's bonds and debentures might only decline modestly. An additional risk to TPS holders is that if the company does defer any distribution payments, the holders must nevertheless pay income tax as if they had received the distribution. This does not apply to dividends that have been omitted on preferred stock. For this reason investors in preferred securities must be careful to know what kind of preferred they are buying.

For individual investors, trust preferred securities are also more liquid than bonds, meaning they are easier to sell at a known price. Because most bonds and debentures are traded primarily over-the-counter, their trading prices are invisible to non-institutional investors. Individual investors have no way to know what the last price was, and brokers can mark the price of the bonds up or down to a greater degree when filling a buy or sell order. Because TPS are traded on an established exchange, investors can always see the price of the last trade, as well as the current bid and offered prices, and the trading history, and therefore can be more confident of buying or selling at a fair price.

Part 3

Company Assets and Cash Flow

Fixed Assets, Depreciation, and Cash Flow

The topics covered in this chapter are not the kinds of things that are generally heard in investment discussions at cocktail parties. In fact, these topics may seem more like accounting issues than investment-related concerns. But it is necessary to learn how accountants present these items in the financial statements and footnotes of a company's annual report in order to understand and interpret them. An informed investor must know when something is simply an accounting detail and when it has an impact on company earnings, and hence, investment results. In this chapter, we will see how to account for wear and tear and disposal of a company's plant and equipment, and how it affects a company's earnings and, therefore, its stock price. Importantly, we will also see that *cash flow* is not the same as *earnings*.

DEPRECIATION

When we looked at the balance sheet of JMC in Chapter 3, Fixed assets appeared as follows:

Fixed assets:	
Property	\$ 3,000
Plant	13,000
Equipment	<u>44,000</u>
Total fixed assets	\$ 60,000

The figures for property, plant, and equipment reflect JMC's initial cost of these assets. (Note that the initial cost of fixed assets includes the purchase price *and* all the expenditures necessary to put the asset in place and get it ready for use.) With the passage of time, however, the value of these assets changes from what they originally cost. For instance, machine tools wear out over time, or better manufacturing techniques are developed, rendering an older machine tool obsolete.

When buildings or equipment wear out and become worth less than their original cost, the company has obviously lost something of value. This loss to the company must be reflected on the financial statements. Suppose, for example, Company ABC bought a machine tool for \$10,000. At the time of purchase, \$10,000 is added to the Equipment account. From experience, the company knows the tool will last about 10 years before it is worn out and must be replaced. The company could carry the tool on the books (in the Equipment account) at \$10,000 for 10 years, and then, when the tool is disposed of, reflect the loss as an expense of \$10,000 on the income statement. But in reality the tool wears out gradually over the 10 years, and thus it would be more appropriate to gradually reflect the loss in the value of the tool over the 10 years. Let us assume the machine wears out evenly over the 10 years. Since it cost \$10,000 and is expected to last 10 years, we can say it is losing its original value at the rate of \$1,000 a year, or, in the language of Wall Street, it is depreciating by \$1,000 a year. How do we show this depreciation on the financial statements?

For simplicity, let us assume this machine tool is Company ABC's only asset, and that it was acquired January 1, 2013. At the time the asset was acquired, the Fixed assets account would appear as follows:

Company ABC	
Part of January 1, 2013 Balance Sheet	
Fixed assets:	
Plant and equipment	\$ 10,000

During the year the tool would be depreciated by \$1,000, so the Fixed asset account at the end of the year would look like this:

Company ABC	
Part of December 31, 2013 Balance Sheet	
Fixed assets:	
Gross plant and equipment	\$ 10,000
Less: Accumulated depreciation	<u>1,000</u>
Net plant and equipment	\$ 9,000

Definitions

- **Gross plant and equipment.** *Gross* refers to initial cost. As long as a company owns an asset, that asset's *original* cost is included in Gross plant and equipment, regardless of how much it has been depreciated.
- **Accumulated depreciation.** The total amount by which all the assets in the Gross plant and equipment account have been depreciated down through the years. Accumulated depreciation of *one* piece of equipment is the total amount by which *that* asset has been depreciated down through the years. Here, the company has only one asset, so the accumulated depreciation of that asset is equal to accumulated depreciation of all assets—in this case, \$1,000.
- **Net plant and equipment.** Net is simply Gross plant and equipment less Accumulated depreciation. When computing the book value of the company, it is the Net plant and equipment that is used, not the gross. Similarly, the book value of a *single piece of equipment* is equal to the original cost of *that piece of equipment* less the accumulated depreciation of that piece of equipment.

Thus, the book value of Company ABC's machine tool was \$9,000 at December 31, 2013. The \$1,000 of depreciation taken on the machine tool also appears as an expense on the income statement for 2013.

Company ABC Income Statement from January 1 to December 31, 2013		
Sales		\$ 10,000
Expenses:		
Cost of goods sold	\$ 4,000	
SG&A	1,500	
Interest expense	500	
Depreciation expense	<u>1,000</u>	
Total expenses	<u>7,000</u>	<u>7,000</u>
Profit before tax		3,000
Tax expense		<u>1,500</u>
Profit after taxes		\$ 1,500

Depreciation is almost always listed as a separate expense item, as in this example, but some companies include it in Cost of goods sold (COGS) or in Selling, general, and administrative expense (SG&A), or both, such as shown here.

Company ABC
Income Statement from
January 1 to December 31, 2013

Sales		\$ 10,000
Expenses:		
Cost of goods sold	\$ 4,600	
SG&A	1,900	
Interest expense	<u>500</u>	
Total expenses	<u>7,000</u>	<u>7,000</u>
Profit before taxes		3,000
Tax expense		<u>1,500</u>
Profit after taxes		\$ 1,500

In this income statement, \$600 of depreciation expense has been included in Cost of goods sold, and \$400 of depreciation expense has been included in the SG&A account. In a real company, there would be no way to know how much of the depreciation expense was in each category unless it was disclosed in the footnotes.

In its second year, 2014, the machine tool would be depreciated by another \$1,000. Assuming there is still only the one asset in the company, the fixed assets portion of the balance sheet at the end of the second year would look like this:

Company ABC
Part of December 31, 2014 Balance Sheet

Fixed assets:		
Gross plant and equipment		\$ 10,000
Less: Accumulated depreciation		<u>2,000</u>
Net plant and equipment		\$ 8,000

Note that Accumulated depreciation *on the balance sheet* is the total of all the depreciation for the current and past years. On the other hand, the depreciation expense on the 2014 *income statement* would still be only \$1,000. The depreciation expense on a given year's income statement is only *that year's* depreciation.

At the end of 10 years, assuming no other assets were purchased in the interim, Fixed assets would appear as follows:

Company ABC	
Part of January 1, 2022 Balance Sheet	
Fixed assets:	
Gross plant and equipment	\$ 10,000
Less: Accumulated depreciation	<u>10,000</u>
Net plant and equipment	\$ 0

What happens if the machine tool is still working? The answer is, nothing changes. Since the asset has been depreciated down to \$0, it is not depreciated further. Thus, in each succeeding year the fixed assets portion of the balance sheet would remain the same as at December 31, 2022 until the machine tool was sold or disposed of. Then, all its figures—Gross plant and equipment, and Accumulated depreciation and Net plant and equipment (which in this case is \$0), are taken off the balance sheet.

In some companies assets are all lumped together into one category—*Property, plant, and equipment*. More frequently, company financial statements show separate accounts of property, plant, and equipment in separate accounts. Other categories may also appear depending on the nature of company assets. The fixed assets portion of a typical balance sheet may look like this:

XYZ Corporation	
Part of the December 31, 2014 Balance Sheet	
Fixed assets:	
Gross property	\$ 5,000
Gross property, plant, and equipment	
Plant	\$ 50,000
Equipment	<u>100,000</u>
	150,000
Less: Accumulated Depreciation	<u>60,000</u>
Net plant and equipment	\$ 90,000 <u>90,000</u>
Net property, plant, and equipment	\$95,000

There is no way to tell how much of the \$60,000 of accumulated depreciation on the balance sheet reflects depreciation of the plant and how much reflects depreciation of the equipment. There is also no way to tell how many years' worth of

depreciation are included in the \$60,000. All we know for sure is that the total of the depreciation for all the assets still owned by the company is \$60,000.

Notice that property (land) is recorded separately and not depreciated. This is because property does not wear out in the usual sense. In fact, its value frequently increases over time, but the estimated increase is not reflected on the balance sheet. Land is almost always carried on the books at initial cost until it is sold.

DEPRECIATION'S IMPACT ON COMPANY EARNINGS

Understanding depreciation and watching the annual changes in a company's depreciation expense are important to investors because depreciation changes can give hints about upcoming changes in company earnings. This, in turn, can directly impact the price of the company's stock. Consider, for example, High Flying Airlines Corporation (HFA). HFA has 100 shares of common stock outstanding, and the company's income statement for the past four years is as follows:

HFA				
Income Statements for 2010 - 2013				
	2010	2011	2012	2013
Sales	\$ 10000	\$ 11,000	\$ 12,000	\$ 10,000
Cost of goods sold	5,000	5,500	6,000	5,000
SG&A	1,000	1,100	1,200	1,000
Depreciation	<u>3,000</u>	<u>3,000</u>	<u>2,800</u>	<u>2,400</u>
Total expense	9,000	9,600	10,000	8,400
Pretax profit	1,000	1,400	2,000	1,600
Tax (at 50%)	500	700	1,000	800
Net income	\$ 500	\$ 700	\$ 1,000	\$ 800
EPS	\$ 5	\$ 7	\$ 10	\$ 8

From 2010 to 2012 the company's sales and earnings grew. In 2013, however, HFA lost business to other airlines (lost market share) and sales and earnings fell. Looking at the individual expense numbers, however, we see some interesting differences, which can help investors project future results.

Notice that Cost of goods sold in each year increased by the same percent as the Sales increased. Thus the Cost of goods sold remained at a constant 50 percent of Sales. Similarly, the Selling, general, and administrative expense also went up by the

same amount as Sales each year, and therefore remained at a constant 10 percent of Sales each year, but Depreciation expense from 2010 to 2011 did not go up. And in 2012 and 2013 Depreciation expense began declining by increasing amounts. What this almost certainly indicates is that an increasing number of the company's airplanes are becoming fully depreciated, and therefore no further depreciation is being reflected on the financial statements. As investors, if we read the annual report and other company releases carefully and see that HFA is not currently planning any major new purchases of airplanes, we can reasonably conclude that depreciation expense will continue to fall. Thus, if we assume that air travel will be up in 2014 and that HFA's market share recovers, then HFA's sales are likely to at least return to the 2012 level. If we further assume that Cost of goods sold and SG&A will continue to be about the same percentage of Sales as in past years, we can come up with the following earnings estimate for 2014.

	2013 Actual	2014 Estimated earnings
Sales	\$ 10,000	\$ 12,000
Cost of goods sold	5,000	6,000
SG&A	1,000	1,200
Depreciation	2,400	2,200
Total expense	8,400	9,400
Pretax profit	1,600	2,600
Tax (at 50%)	800	1,300
Net income	\$ 800	\$ 1,300
EPS	\$ 8	\$ 13

Of course, we don't know for certain by how much depreciation will decline, nor for that matter do we know for certain that sales will recover in 2014. But each of the assumptions in the 2014 estimated earnings appears reasonable based on HFA's history, and current growth in the airline industry. Thus, as investment analysts, we can make a reasonable forecast that HFA's earnings per share will jump substantially in 2014 to a new high level, considerably above the previous peak in 2012. If so, this could be a great opportunity to buy the stock.

On the other hand, HFA will likely have to sell its old aircraft and purchase a new generation of more modern airplanes if it wants to remain competitive. In that case, depreciation expense will increase sharply in the year HFA begins depreciating its new aircraft. The increased depreciation expense will lower earnings. In addition, interest expense will go up if HFA needs to borrow money to buy the new airplanes. Thus, earnings could fall sharply in 2015 or 2016 even if air travel continues to rise

and HFA maintains its market share. Realizing this, investors would be suspicious of the high earnings in 2014, and the stock might not do well despite those record earnings. Remember, the market is *forward looking*.

In sum, an investor should always watch changes in a company’s depreciation to see what impact it might have on future reported earnings. Investors should also look at all the company’s annual reports, periodic filings with the S.E.C., and press releases, and read business newspapers and industry journals that might provide hints of company plans, such as HFA’s need to buy new airplanes. With all this available information, the investor is then in a position to make a more informed judgment about the prospects for the company’s earnings, and how that might impact the price of the stock.

SELLING OFF AN ASSET

When a company sells an old building or piece of equipment, or otherwise disposes of it, its gross cost, accumulated depreciation, and net book value are all removed from the balance sheet. To see how this is done, let’s look again at the fixed assets portion of XYZ Corporation’s 2014 balance sheet, and see how the changes below are reflected.

XYZ Corporation		
Part of the December 31, 2014 Balance Sheet		
Fixed assets:		
Gross property		\$ 5,000
Gross property, plant, and equipment		
Plant	\$ 50,000	
Equipment	<u>100,000</u>	
		150,000
Less: Accumulated Depreciation	<u>60,000</u>	
Net plant and equipment	\$ 90,000	<u>90,000</u>
Net property, plant, and equipment		<u>\$ 95,000</u>

1. During 2015, a piece of equipment that had cost \$20,000 and had been depreciated down to a book value of \$6,000, was sold for \$7,000 cash.
2. XYZ Corporation made no new purchases of property, plant, or equipment in 2015.
3. Depreciation for 2015 was \$5,000.

To reflect these events, the following accounting entries would be made:

Gross plant and equipment at 12/31/14	\$ 150,000
Less: Original cost of equipment sold	<u>20,000</u>
Gross plant and equipment at 12/31/15	130,000
Accumulated depreciation at 12/31/14	60,000
Less: Accumulated depreciation of equip. sold off	<u>14,000</u>
	46,000
Plus: Depreciation for 2015	<u>5,000</u>
Accumulated depreciation at 12/31/15	51,000
Net plant and equipment at 12/31/14	90,000
Less: Book value of equipment sold off	<u>6,000</u>
	84,000
Less: Depreciation expense for 2015	<u>5,000</u>
Net plant and equipment at 12/31/15	<u>\$ 79,000</u>

Thus, at the end of 2015, the fixed assets portion of the balance sheet would appear as follows:

XYZ Corporation	
Part of the December 31, 2015 Balance Sheet	
<hr/>	
Fixed assets:	
Gross property	\$ 5,000
Gross property, plant, and equipment	
Plant	\$ 50,000
Equipment	<u>80,000</u>
	130,000
Less: Accumulated Depreciation	<u>51,000</u>
Net plant and equipment	\$ 79,000 <u>79,000</u>
Net property, plant, and equipment	<u>\$ 84,000</u>

In addition to these changes in Fixed assets, there will also be some other changes on the financial statements. First, the price for which the equipment was sold is added to the Cash account under Current assets. Note that the price for which the equipment was sold has no effect on the fixed assets portion of the balance sheet. Also, since the piece of equipment was sold for \$7,000 and had a *book value* of \$6,000, a profit of \$1,000 must be recorded on the income statement. Had the equipment been sold for \$2,000, a loss of \$4,000 would have been recorded. The amount of profit or loss recorded in selling off used equipment is usually very small compared to the overall profit or loss of the corporation. Unfortunately, there is often no way to tell from the financial statements how much this profit or loss was. If it was large it could give a false impression of the company's earnings growth, but the company would probably be required to disclose it in a footnote.

Frequently, an asset will wear out or become obsolete before it is fully depreciated (down to \$0). If it is not or cannot be sold it is deemed 'retired' but remains the property of the company. In this case the accounting is the same as if the asset were sold for \$0. This is sometimes called *writing off* an asset. For example, if XYZ Corporation had a piece of equipment costing \$5,000, which had been depreciated to \$2,000, and had become worthless, the company would *write-off* the remaining \$2,000 all at once (i.e., bring \$2,000 to the income statement as Depreciation expense, and add \$2,000 to *Accumulated depreciation* to bring the asset's net book value to \$0).

When the piece of equipment is actually thrown out, or otherwise disposed of, the \$5,000 would then be removed from both the *Gross plant and equipment* and the *Accumulated depreciation* accounts.

METHODS OF DEPRECIATION

Depreciation, we said, reflects the declining value of an asset to the company. Earlier, we assumed that company ABC's machine tool depreciated evenly over a period of 10 years. This is not necessarily a valid assumption. Often it is not possible to say how rapidly the value of an asset deteriorates. In the case of a company car, for example, as long as the car can get a salesperson from one place to another it might be said that the value of the car to the company has not depreciated at all. On the other hand, as the car gets older it is worth less in the used car market if the company decides to sell it. Further, since the car is older, it is more likely to break down and become worthless all at once.

How does a company decide how quickly to depreciate an asset? Should depreciation be taken evenly over the estimated life of an asset, as in Company

ABC's machine tool? Or should more depreciation be taken in the early years and less in the later years?

When an asset is depreciated evenly over its estimated useful life, it is called *straight-line depreciation*. When the asset is depreciated more in the early years and less in the later years, it is called *accelerated depreciation*. The rationale for using accelerated depreciation is that: (1) equipment frequently wears out sooner than expected; (2) resale value generally declines at a more rapid rate in the early years; and (3) equipment often becomes obsolete sooner than expected, possibly because a better piece of equipment comes along to replace it, or possibly because the company stops making the product the equipment was used for. Another, perhaps more important reason for using accelerated depreciation is the tax advantage it gives, which will be explained shortly.

Four of the more common methods of computing depreciation are: (1) straight-line, (2) modified accelerated cost recovery system or MACRS, (3) double-declining-balance, and (4) sum-of-the-years' digits. The latter three are different methods of accelerated depreciation. To compare these methods, let's look at BCD Corporation, which bought a machine tool costing \$10,000 at the beginning of 2014. The expected life of the tool is five years. Therefore, if straight-line depreciation is used, the tool would be depreciated by \$2,000 each year, or 20 percent per year.

The step-by-step computation of each year's depreciation under MACRS, double-declining-balance, and sum-of-the-years' digits depreciation can be found in any good accounting text and will not be shown here. Rather, in Table 14.1, we show just the results for double-declining-balance and Sum-of-the-years digits. MACRS was designated by the I.R.S. and is more commonly used than either of these two but is more difficult to work with (MACRS requires the assumption that all assets bought during the year were bought in the middle of the year, and thus a half year's depreciation must be taken in the first year) to show the effects of differences between straight-line and accelerated depreciation, so will be ignored in this example.

Table 14.1 Depreciation Comparison Table

	Straight-line depreciation	Accelerated depreciation	
		Double-declining balance	Sum-of-the-years'-digits
Original cost	\$ 10,000	\$ 10,000	\$ 10,000
Depreciation yr. 1	\$ 2,000	\$ 4,000	\$ 3,333
Book value (end yr. 1) ...	8,000	6,000	6,667
Depreciation yr. 2	2,000	2,400	2,667
Book value (end yr. 2) ...	6,000	3,600	4,000
Depreciation yr. 3	2,000	1,440	2,000
Book value (end yr. 3) ...	4,000	2,160	2,000
Depreciation yr. 4	2,000	864	1,333
Book value (end yr. 4) ...	2,000	1,296	667
Depreciation yr. 5	2,000	518	667
Book value (end yr. 5) ...	0	778	0

The choice of depreciation method will impact current and future earnings. Looking at Table 14.1 we see that using either method of accelerated depreciation, the depreciation expense in the early years is greater than what it would be using straight-line depreciation. Conversely, in the later years, accelerated depreciation is less than straight-line. Thus, earnings will be lower in the early years using an accelerated depreciation method because of the greater depreciation expense. If all other things remain the same, earnings will increase in the later years as depreciation expense falls. Of course, other things won't remain equal, because each year, the company is buying new assets. So, for a company using accelerated depreciation, investors can expect depreciation to increase sharply in the first two years after a big increase in capital spending (fixed asset purchases), and expect declining depreciation after years of minimal capital spending.

Note that at the end of the fifth year, the double-declining-balance method of depreciation has not fully depreciated the asset to \$0, but has left a small book value of \$778. This is called a *residual value*. These residual values are sufficiently small that they do not affect the company's decision to use straight-line or accelerated depreciation.

Why should a company choose straight-line rather than accelerated depreciation, or vice versa? Consider the following case. In 2014, BCD Corporation had sales of \$40,000. Its combined Cost of goods, SG&A, and Interest expense were \$20,000. For convenience, we have lumped these expenses together on the income statement below. The company has 1,000

shares of stock outstanding. BCD's income statement, depending on whether the company chooses straight-line or accelerated-depreciation, would be as follows:

BCD Corporation		
Income Statement for 2014		
	Straight-line	Accelerated
Sales	\$ 40,000	\$ 40,000
COGS + SG&A + Interest Expense	<u>20,000</u>	<u>20,000</u>
Profit before depreciation and taxes	20,000	20,000
Depreciation	<u>2,000</u>	<u>4,000</u>
Profit before taxes	18,000	16,000
Taxes (at 50%)	<u>9,000</u>	<u>8,000</u>
Profit after taxes	\$ 9,000	\$ 8,000
Earnings per share	\$ 9	\$ 8

If BCD wants to show the highest possible earnings per share in the current year (2014), it would use straight-line depreciation, but it would have to pay higher taxes if it does so. If the company wanted to pay the lowest possible taxes, it would use accelerated depreciation. Since both these alternatives are desirable, what does the company do? The answer is, both. When filing its income tax return, the company uses accelerated depreciation. When reporting earnings to the public, it uses straight-line depreciation.

DEFERRED TAXES

Using both methods, straight-line depreciation for reporting to shareholders and accelerated depreciation for tax purposes, creates an interesting problem. The income statement in the company's annual report to shareholders would show taxes of \$9,000, as in the left column above. But the actual taxes payable would only be \$8,000 (assuming that the taxes had not been paid yet). This difference is reconciled by setting up a new account on the liability side of the balance sheet called *Deferred taxes*, which in this case would equal \$1,000. The reason for this is as follows. By using accelerated depreciation for tax purposes, but not for reporting to the shareholders, BCD ends up paying lower taxes in the early years of the asset's life (compared to what it would have paid if it used straight-line depreciation for tax purposes) but will then make up for this by paying higher taxes in the later years of the asset's life. In effect, then, by choosing to pay taxes using accelerated depreciation, BCD is simply deferring

the time when it actually has to pay a portion of its tax, relative to when the income statement says the taxes were paid under straight-line depreciation.

The deferred taxes, then, will be “paid off” in the third, fourth, and fifth years of the asset’s life, which are the years when accelerated depreciation becomes less than straight-line depreciation (see Table 14.1). In these later years, the income statement using straight-line depreciation will show lower taxes than are actually being paid.

The Deferred tax account is usually placed between Long-term debt and Equity on the balance sheet, as shown here. Thus, the capitalization portion of BCD’s balance sheet might look like this:

Capitalization	
Long-term debt	
5% Mortgage bonds	\$ 20,000
7% Debentures	4,000
Deferred tax	1,000
Stockholders’ equity	
Common stock (\$2 par)	
(authorized 2,500 shares;	
outstanding 1,000 shares)	
	2,000
Additional paid-in capital	14,000
Retained earnings	40,000
Total stockholders’ equity	<u>\$ 56,000</u>

To review, the Deferred tax account in the capitalization portion of the balance sheet arises on the reports to shareholders because the company has chosen to use a different method of depreciation accounting when preparing its tax returns for the IRS than it uses when reporting to shareholders.

To state it yet another way, the presence of a Deferred tax account in the capitalization section of the balance sheet is telling investors that some portion of the income tax expense shown on the income statement in the reports to shareholders has not yet been paid, but will be paid in future years. This is important because if the company is actually paying less money for taxes than the income statement shows it is paying, it implies that the company is currently earning more cash than the income statement indicates. This will be discussed more fully in the “Cash Flow” section of this chapter, and again in Chapter 16.

CHANGING THE METHOD OF DEPRECIATION ACCOUNTING

From an investment point of view, it is important to realize that a company can have a degree of control over its earnings when choosing or changing its method of depreciation. A company that has always used accelerated depreciation for both tax and shareholders' report purposes might be able to mask a decline in earnings per share in a bad year by changing its depreciation method for shareholders to straightline, thus increasing reported earnings.

Identifying this type of accounting change, which can distort the reported earnings per share and give a misleading impression of a company's growth, is an important task for any investor. Fortunately, accounting rules require that a change in the method of depreciation (or any other accounting change) that produces a "significant distortion" in earnings, must be explained in the footnotes to the financial statements. While a "significant distortion" has not been precisely defined, it is usually taken to mean a change that affects earnings by more than 5 percent or 10 percent of the reported figure.*

** One of this author's more memorable investment analysis reports was about a company that had many small items distorting earnings, none of which was significant, but together resulted in a very significant distortion of earnings over a three year period which enabled the company to report rapid earnings growth while actually having relatively flat earnings. All of the information needed to uncover this problem was in the financials and footnotes. This was a strong reminder to always read the footnotes in detail and ask the company's investor relations people to explain anything you do not understand that looks like it might be important.*

Of course, a company cannot keep changing accounting techniques back and forth to suit its needs. One of the basic principles of accounting is that a company, having selected a method of accounting, must apply it consistently over the years. Occasional changes are acceptable, however, and it is this occasional change that must be analyzed carefully because a company may do it to "hide" a decline in earnings in a bad year.

Accelerated depreciation is considered more conservative than straight line depreciation. In general, when choosing among accounting options, the more conservative method is the one that shows lower earnings in the current year, even though allowing higher potential earnings in future years. The opposite of conservative accounting is called liberal accounting. Companies that use liberal accounting techniques will show maximum possible earnings in the current year, which to some extent will result in lower earnings in future years. Other things being equal, companies with conservative accounting generally tend to receive

higher price/earnings ratios than companies with liberal accounting. One reason a company may choose liberal accounting options is that the company hopes to do an equity financing soon and wants to report the highest possible earnings in order to get the stock price higher so it can do the equity financing with minimal dilution.

CASH FLOW

Cash flow is the money flowing into and out of a company. When Company BCD purchases raw material for inventory and pays cash, cash is flowing out of the company (cash outflow). If BCD purchases raw materials on May 15 but does not plan to pay for them until June 15, the cash outflow will not take place until June 15.

Similarly, when BCD sells finished goods to a customer, if the customer pays cash or writes a check, that is immediate cash inflow for BCD. If the customer does not pay for the goods at the time of purchase, there is no cash inflow at that time. The cash inflow will take place perhaps 30 or 60 days later, or whenever the customer actually pays cash or delivers a check to BCD. (It could be argued that cash inflow does not really take place until the check is cashed, but that is just a matter of a day or two and can be ignored by investors.)

Although it is natural to think of cash flow as being the same as the “earnings” of a company, cash flow is in fact different from earnings. Depreciation expense in particular can cause cash flow to be quite different from the earnings that companies report to shareholders. To see how cash flow can differ from earnings, let’s look again at Company BCD’s income statement for 2014. For now, assume BCD uses accelerated depreciation for both taxes and reporting to shareholders.

Company BCD		
Income Statement from Jan. 1, 2014 to Dec. 31, 2014		
(Using Accelerated Depreciation)		
Sales		\$ 40,000
Expenses:		
COGS	\$ 14,000	
SG&A	4,000	
Interest	2,000	
Depreciation	4,000	
	24,000	24,000
Profit before tax		16,000
Tax (at 50%)		8,000
Net profit		\$ 8,000

This income statement shows a profit of \$8,000, but the cash flow will turn out to be different. To calculate the cash flow for 2016, let's look at each item on the income statement and see how it impacts cash flow.

—Sales

The sales figure fairly accurately reflects the cash that “flowed” into the company. It is not perfect because some of BCD’s customers in December 2014 probably had not paid for their purchases by year end. In that case, the money owed to BCD would be reflected in BCD’s accounts receivable on the balance sheet on the December 31, 2014. On the other hand, the accounts receivable that had been on the balance sheet at the *beginning* of 2014 (reflecting sales made in late 2013) were probably received in 2014. Therefore, BCD’s cash inflow in 2014 was probably reasonably close to the sales figure; with cash not yet received from late 2014 sales being offset by cash received in early 2014 from late 2013 sales. The cash inflow is usually close enough to the sales figure that investors can simply treat Sales as cash inflow.

—Cost of Goods Sold

Cost of goods sold reflects cash paid out by the company to purchase raw material and pay wages, but COGS does not equal the cash outflow exactly because BCD may not have paid for all its purchases yet. In addition, the company might have sold some goods in early 2014 for which the raw material and labor costs had been paid in 2013. Similarly, BCD might have paid for goods in 2014 that are still in sitting in inventory on December 31, 2014, and will not be sold (and therefore become Cost of goods sold) until 2015. Despite

these timing differences, the Cost of goods sold figure (shown as COGS on the income statement) is usually a close enough approximation to the actual cash that flowed out of the company during the year that investors can treat it as if it were a cash outflow item.

—**Selling, General & Administrative Expense**

SG&A expense reflects cash paid out for some labor, such as company accountants and security guards; some goods, such as office supplies; and probably some services, such as advertising, printing the company's annual report, and the like. SG&A expense, like COGS expense, is not a perfect indication of cash outflow, but it is likely to be close enough that investors can treat it as a cash outflow item.

—**Interest Expense**

Interest expense can also be treated as a cash outflow item. Again, it may not be perfectly accurate, but it is close enough.

—**Depreciation Expense**

This expense item is different. Depreciation expense does not reflect cash outflow. Depreciation is an accounting entry reflecting the wearing out of fixed assets that were purchased in past years. There is no cash outflow as a result of depreciation expense. The cash outflow took place in prior years when the company purchased the plant and equipment.

In the language of Wall Street, depreciation is a *noncash expense*, meaning that no cash flows out of the company as a result of depreciation expense. By contrast, cost of goods sold expense, selling, general, and administrative expense, and interest expense are considered *cash expenses* because they reflect cash paid for these goods and services in the same year.

—**Taxes**

For the most part, corporations pay taxes in the year the profit is earned. Thus, for now, *tax expense* should be treated as a cash outflow item. We will see shortly that an adjustment may need to be made.

Now that we have examined how to handle each item separately, let's go back and compare Company BCD's income statement to its cash flow statement.

Company BCD Income Statement for 2014 (Using Accelerated Depreciation)		Company BCD Cash Flow Statement for 2014 + is cash flow in - is cash flow out	
Sales	\$ 40,000	Sales	+ \$ 40,000
Expenses			
COGS	\$ 14,000	COGS	- 14,000
SG&A	4,000	SG&A	- 4,000
Interest	2,000	Interest	- 2,000
Depreciation	4,000		
	<u>\$ 24,000</u>		
Profit before tax	16,000		
Tax (at 50%)	<u>8000</u>	Taxes	- 8,000
Net profit	\$ 8,000	Cash flow	+ \$ 12,000

The cash flow statement (right side of chart) shows a net cash inflow of \$12,000, which is \$4,000 greater than the net profit of \$8,000. This is because in the calculation of net profit (left side of chart), depreciation expense of \$4,000 was deducted from sales even though depreciation does not represent cash outflow. Thus, to calculate cash flow, one can either subtract all the cash expenses from sales, as we did in the right-hand column here, or one can use a shortcut method—that is simply to take the net profit (\$8,000) and *add back* the depreciation (\$4,000), which gives the same \$12,000 net cash inflow. The reason this shortcut method works is that it is just adding back the \$4,000 of depreciation expense that had been subtracted out on the income statement.

The calculation of cash flow becomes a little more complicated when investors are given financial statements that use straight-line depreciation accounting, even though the company pays taxes based on accelerated depreciation. In this case, the only difference in the cash flow calculation from that presented in the cash flow statement above is how taxes are handled. Recall from earlier in this chapter that when a company uses accelerated depreciation for tax calculations, but straight-line depreciation for reporting purposes, the tax expense reported to shareholders is usually greater than the actual tax paid, and when this happens the company must create a new account called *Deferred tax* on the balance sheet to reflect the difference. Thus, when calculating cash flow for a company that uses accelerated depreciation for taxes, but straight-line for reporting purposes, *it is necessary to add the increase in deferred taxes for the year to get the correct cash flow for the year.* Why this is so is not always easy to grasp at first, but the procedure is easy to follow, as shown here.

Example: Starting with the income statement for a company which uses straight-line depreciation for reporting to shareholders, but accelerated

depreciation for tax purposes, calculate cash flow.

Company BCD
Income Statement for 2014
(Using Straight-Line Depreciation)

Sales		\$ 40,000	
Expenses:			
COGS	\$ 14,000		
SG&A	4,000		
Interest	2,000		
Depreciation	2,000		
	\$ 22,000	\$ 22,000	
Profit before tax		18,000	
Tax (at 50%)		9,000	
Net profit		\$ 9,000	

Calculate cash flow using the shortcut method

Net profit		\$ 9,000	
Add back:			
Depreciation		2,000	
Deferred Tax		1,000*	
Net cash flow		\$ 12,000	

* Recall from the *Deferred Taxes* section above that BCD's *Deferred tax* for 2014 was \$1,000.

Note that the cash flow works out to the same \$12,000 figure whether the company uses straight-line depreciation or accelerated depreciation for reporting to shareholders.* The cash flow that we have just calculated is usually called *cash flow from operations*.

* The reason they work out to the same figure is this: When using straight-line depreciation, as compared to accelerated depreciation, Net profit from the income statement is higher by \$1,000, and Deferred tax "adds" another \$1,000 to the Cash flow calculation. This combined \$2,000 is exactly offset by Depreciation being \$2,000 lower; and the Cash flow correctly works out to

\$12,000 either way. Also, technically speaking, Deferred tax does not “add” \$1,000. It is actually an adjustment that corrects the \$9,000 of Taxes stated on the income statement to the \$8,000 actually paid.

Definition

- **Cash flow from operations (CFO or CF ops).** The amount of cash generated by the company from making and selling its products or services. It does *not* include cash raised by selling new stock or bonds. Those would be called *cash flow from financing (CFF or CF fin)*.

It is important to be able to calculate cash flow, because, as we will see in Chapter 16, what a company *needs* to do with some (and possibly all) of its cash flow, and what it *chooses* to do with the rest of its cash flow (if there is any extra), can have a significant impact on the company’s stock price.

REVIEW OF KEY POINTS

Depreciation is a non-cash expense reflecting the wearing out of fixed assets. The choice of depreciation method will impact current and future year earnings. Because depreciation expense is deducted from sales to calculate earnings, *but does not represent an expenditure of cash in the same year*, the amount of cash that the company earns from operations in a given year will usually be greater than the earnings shown on the company’s income statement for that year. The amount of cash a company earns making and selling its products or services is called *cash flow from operations*. Cash flow from operations is most easily calculated by starting with the company’s reported earnings and adding back Depreciation and any increase in deferred taxes during the year. By adding back the increase in deferred tax, the investor does not have to worry about whether the company is using straight-line depreciation or accelerated depreciation.

Cost versus Expense, Capitalizing Assets, and Write-offs

THE DIFFERENCE BETWEEN A “COST” AND AN “EXPENSE”

In general conversation, the words *cost* and *expense* mean the same thing. From an accounting perspective, however, they have very precise and different meanings. Nevertheless, even Wall Streeters use the words loosely and often use one when they mean the other. When you understand clearly the difference between a cost and an expense, two things will happen. First, a great deal of accounting will begin to make more sense, and second, when the words are used interchangeably you will usually know what is meant from the context in which it is used.

The following definitions of cost and expense often initially create confusion, but the subsequent examples will clarify the concepts. Finally, a specific company example, SFC Corporation, is presented to show the investment importance.

Definitions

- **Cost.** A cost is incurred when a company pays for something, or becomes obligated to pay for something. When a cost is incurred, it may or may not also be an expense.
- **Expense.** An expense is any and all dollar figures that are deducted from sales to reach net profit. An expense always reflects a cost, but the cost may not have occurred in the same year. It may have occurred in a prior year, or it may be expected to occur in a future year.

When a company makes a purchase, it may pay in cash, or create an account payable (which must be paid later). In either case, a cost has been incurred. When Jones Mousetrap buys some wood to use to make mousetraps, the price of the wood is put in Inventory. Since JMC is obligated to pay for that wood, whether paid in cash now or later, the purchase of inventory is a cost. It is not an expense because nothing has to be brought to the income statement to be deducted from Sales. That does not happen until the finished goods in Inventory are sold. When finished goods are sold, their dollar value comes out of Inventory, and goes into Cost of goods sold expense. Since inventory is usually converted to finished goods and sold within one year, some people think of an inventory purchase as an expense as well as a cost, but that is not accurate.

Let's consider interest payments. When interest is paid, it is both a cost and an expense. It is a cost because it was paid. It is an expense because it is deducted immediately from Sales in order to calculate profit.

What about the wages earned by an employee? If wages are paid for building mousetraps that have already been sold, then the wage payment is both a cost and an expense. If the wages are paid for building mousetraps that have not yet been sold, the payment is a cost but not yet an expense. That cost will be carried in Finished goods on the balance sheet until those mousetraps are actually sold. When those mousetraps are sold, both the wage cost and the raw material cost will be taken out of Finished Goods and become *Cost of Goods Sold expense*. In sum, the costs of making the mousetraps do not become an expense until the traps are sold.

When wages are paid for general and administrative work, such as a portion of the wage paid to A better in the example in Chapter 1, it is both a cost and an expense. It is a cost because it was paid. It is an expense because it is brought directly to the income statement and deducted from Sales at the time (or in the period) it was paid. Thus SG&A expense is called a *period expense* because it is deducted from Sales in the period in which the cost is incurred. This is not true of wages paid for building mousetraps, which *might* become Cost of goods sold expense in the period the cost was incurred, or might become Cost of goods sold expense in a later period, depending on when the traps are sold.

Another example of a cost is when a company declares a cash dividend. The cash might not actually be paid for three weeks, but the company has an obligation to pay the dividend and therefore has incurred a cost. Note that we say the cost is incurred when the dividend is declared, not when it is actually paid out three weeks later. The dividend cost will never be expensed. A dividend payment is not deducted from sales when calculating profit. A dividend payment

is something the company directors may choose to do with some of the company's profit.

CAPITALIZING AN ASSET

When a company buys a machine tool, a cost is incurred. Because the machine tool will be used for many years, the cost of the machine tool is put under Fixed assets on the balance sheet. Most of this cost will *not* be deducted from sales in the year of purchase in deriving net profit. Therefore, when a fixed asset is purchased, a cost is incurred but *not* an expense. (More precisely, most of the asset's cost does not become an expense in the first year. If the asset is acquired in the middle of the year, a half year's depreciation expense will be recorded in the first year. So for an asset with an expected life of 10 years that is acquired mid-year, 1/20th of the asset cost will be added to depreciation expense.) In the language of Wall Street, the cost of the machine tool is *capitalized*, not *expensed*. In other words, the cost of the asset will go on the balance sheet as a fixed asset and will be depreciated over the appropriate number of years.

When a capitalized asset is depreciated, the depreciation taken in any given year is an expense, but *not* a cost. The depreciation is an expense because it is deducted from sales in deriving net profit. Depreciation is not a cost because there is no obligation to pay for something. The obligation to pay for the machine tool was incurred in a prior year. Thus, when the cost of an asset is capitalized and then depreciated in later years, what has really happened from an accounting point of view is that *the expensing of the cost is deferred to later years*. Practically all costs eventually have to be expensed. Exceptions are: (1) the purchase of land, because it is not depreciated, (2) the declaration of a dividend, because it is paid with after-tax profit, and (3) repayment of the principal portion of a debt obligation.

Definition

- **Capitalizing an asset**—means putting the asset's cost on the balance sheet under Fixed Assets, Property, Plant, and Equipment, or some other title, and not *expensing* the entire cost in the first year. A capitalized asset will then be depreciated (expensed) over an appropriate number of years. Land is an exception. Its cost is capitalized, but it is not subsequently depreciated.

The rationale for capitalizing the cost of the machine tool and expensing it gradually over a period of years is that since the machine tool is going to be used to help generate sales over several years, it would be appropriate to account for its cost over the same period. The way this is done is by reflecting its cost, through depreciation expense, over the period of years that the machine tool is expected to be used.

DEFERRED EXPENSE

In the previous chapter we said an asset is depreciated because it wears out. While this is true, it is also accurate, from an accounting viewpoint, to say that an asset is depreciated because its cost is being expensed over a period of years, which perhaps equals the estimated time it takes to wear out.

Thus, any capitalized asset may be thought of as creating a deferred expense, that is, the expensing is deferred from the time of the purchase until later. In fact, many balance sheets contain an asset category called *Deferred expense*. This title does not tell you much. It only tells you that a cost was incurred for something and has not yet been expensed. By this definition, plant and equipment could be listed on the balance sheet as deferred expense. But in practice, plant and equipment are always listed separately as discussed in Chapter 14. Deferred expense on the balance sheet usually refers to a variety of mostly smaller items.

Sometimes a balance sheet will use the title “Deferred costs” or “Deferred charges” instead of “Deferred expenses.” These terms mean the same thing but are not as precise. *Charge* is a loose word that can mean a lot of things depending on context, but usually means “expense.” If the conceptual difference between cost and expense is understood, we can usually tell from context what is meant by charge, cost, or expense.

Deciding whether to capitalize an asset or to expense it is not always straight forward. For instance, a machine tool will last for many years, and therefore its cost is capitalized and then depreciated (expensed) over a number of years. But certain parts, such as the cutting edges, have to be replaced monthly, or even daily. If the company buys a large supply of cutting edges at one time, should their cost be capitalized or expensed? What about the tires on a company truck that might last 6 months or 18 months, depending on usage and whether they are retreaded? In trying to answer these questions, it should be apparent that there is some discretion involved in making these decisions. This discretion creates an opportunity for management to influence (sometimes manipulate) its earnings. A

conservative company will *expense* all these discretionary items (i.e., deduct them from sales in the year they were purchased, either as COGS or SG&A) and report a lower profit. A company with liberal accounting will *capitalize* such items and depreciate them over a period of years. Hence, the company with liberal accounting will show higher earnings in the initial year because it only expensed a small portion of the discretionary items, but will show lower earnings in the later years because it will have to deduct the depreciation expense (which the conservative company had fully expensed in the first year).

When a company expenses the entire cost of an asset in the year the asset was acquired, we might also say that its cost was fully expensed or *written off* that year. The term *written off*, therefore, simply means “expensed.” A write off usually refers to expensing the full amount of an asset, but it would be equally correct to say “20 percent of a machine tool was written-off in one year,” meaning the machine tool was depreciated by 20 percent in that year. For example, assume a machine tool cost \$10,000 and was depreciated on a straight-line basis over five years. All the following sentences mean the same thing:

1. The tool is being depreciated by \$2,000 per year.
2. The tool is being written off by 20 percent, or \$2,000 per year.
3. The capitalized value of the tool is being charged to earnings at the rate of \$2,000 per year.
4. The cost of the tool has been deferred and is being expensed evenly over a five-year period.

The fourth sentence is actually not correct. It is not the *cost* of the tool which has been deferred; it is the *expensing* of the cost that has been deferred. Nevertheless, one may hear it phrased that way.

Amortizing a Deferred Charge

Plant and equipment are not the only costs that are capitalized and then expensed over a number of years. For example let us look at the patent acquisition costs of Super Fast Computer Corp. (SFC). SFC has been awarded many patents as a result of the research and development (R&D) work it does in-house. In addition, SFC recently acquired a portfolio of patents from another computer company. By current accounting rules, SFC’s costs of in-house R&D must be “expensed” (taken as an expense on the income statement) in the year in which the costs occurred, whether or not those costs resulted in a patent or useful product. However, the cost of the portfolio of patents that was acquired

from another company must be capitalized; that is, its cost goes on the balance sheet as an asset which will be expensed over a number of years. Because the patent portfolio is an *intangible asset*, the expensing of its cost is referred to as *amortization* rather than depreciation. Intangible assets are items which are of value to a company but can not be touched, such as a trademarks, copyrights, franchise rights, patents and more. When the capitalized cost of an intangible asset is expensed, we say it is amortized, not depreciated. Depreciation usually refers to expensing, or writing off the cost of hard assets, such as plant and equipment that are deteriorating in value. A patent portfolio is not a hard asset, and may in fact increase in value as it enables new features or new products to be added to the company's existing lines. *Amortization* does not imply a deterioration of assets, but just refers to the deferred expensing of a cost incurred in a prior year. The portfolio of patents could therefore be listed on the balance sheet in a number of ways; as an Intangible Asset, as a Deferred Expense, as a Deferred Charge, or simply as Acquired Patents. Any of these titles would be accurate.

Let's look at where the capitalized cost of the patent portfolio and amortization expense go on the balance sheet and income statement. Assume the patents were acquired on December 31 of 2013 for \$80,000.

Part of Balance Sheet	
SFC Corp 12-31-2013	
Long Term Assets:	
Gross Plant and Equipment	\$100,000
less: Accumulated Depreciation ...	40,000
Net Plant and equipment	60,000
Intangible Assets	\$80,000

The patent portfolio is being amortized evenly (straight line) over 20 years (5% of the original cost per year) which is the expected useful life of the patents. So the amortization in 2014, the first full year of amortization, will be 5% of \$80,000, or \$4,000 per year. Also in 2014, the SFC's plant and equipment is depreciated by a total of \$10,000. So the same portion of the balance sheet will look as follows on December 31, 2014:

Part of Balance Sheet	
SFC Corp 12-31-2014	
Long Term Assets:	
Gross Plant and Equipment	\$100,000
less: Accumulated Depreciation	50,000
Net Plant and equipment	50,000
Intangible Assets	\$76,000
(net of amortization)	

Note the accounting difference. Plant and equipment are almost always shown with the original cost (Gross P & E), the Accumulated depreciation, and the Net Plant and equipment. So the \$10,000 of depreciation expense is added to Accumulated Depreciation, which results in a \$10,000 reduction in Net Plant and Equipment. On the other hand, Intangible assets, and other Deferred expenses, are typically shown with only the remaining unamortized amount. So SFC's \$4,000 of amortization for the year is deducted from the beginning of the year \$80,000, leaving \$76,000. There is no way to tell from this balance sheet how much amortization was taken in prior years.

Amortization on the income statement may be shown as a separate expense item, as in the income statement immediately below, but most companies combine it with Depreciation expense as shown in the second income statement below:

**SFC Income Statement for 2014 – Depreciation and
Amortization Shown Separately**

Sales		\$200,000
less expenses:		
Cost of Goods Sold	\$100,000	
Selling, Gen, & Admin	66,000	
Depreciation	10,000	
Amortization	4,000	
Interest	6,000	
Total expenses	186,000	186,000
Profit before tax		\$14,000
Tax (at 50%)		7,000
Net Profit After Tax		\$7,000

**SFC Income Statement for 2014 – Depreciation and
Amortization Combined**

Sales		\$200,000
less expenses:		
Cost of Goods Sold	\$100,000	
Selling, Gen, & Admin	66,000	
Depreciation and Amortization ..	14,000	
Interest	6,000	
Total expenses	186,000	186,000
Profit before tax		\$14,000
Tax (at 50%)		7,000
Net Profit After Tax		\$7,000

SFC's acquired patent portfolio is shown as an Intangible Asset on the balance sheet above. It could just as correctly (from an accounting point of view) have been called Deferred Expenses, Deferred Charges, Deferred Costs, or best: Unamortized Cost of Acquired Patent Portfolio. The later, of course, is

the most descriptive because it tells what the asset is that caused the Deferred Expense. As mentioned earlier, Deferred Cost, (as we use the term Cost in this book) is a poor choice of words because it is not the cost that is deferred; it is the expensing (amortizing) of the cost that is being deferred. For most big companies, a more general term such as Deferred Expenses is likely to be used because there are typically many small items within the category and no specific term would be correct for all.

Capitalizing SFC's \$80,000 cost of its acquired patent portfolio, and amortizing it on a straight-line basis (evenly) over 20 years could be stated in any of the following ways. Each statement means the same thing.

1. SFC capitalized an \$80,000 intangible cost and is expensing it by 5%, or \$4,000, per year.
2. SFC is carrying its patent acquisition cost as a deferred charge (or deferred expense) on the balance sheet and will write it off evenly over 20 years.
3. The capitalized value of the acquired patent portfolio is being amortized evenly over 20 years.
4. Deferred charges, reflecting intangible acquisition costs, will be amortized straight line over 20 years.

Although each of the four sentences is clear, footnotes in a company's annual report or Securities and Exchange Commission filings are unfortunately not always as clear. For example, the same information might be presented as a footnote that says something like, "Deferred Expenses reflect the cost of certain assets which will be amortized in a manner reflecting their expected benefit to the company." This is vague and gives no clue as to the reason for the deferred expense, or how long it will impact earnings.

The point here for investors is that the appearance on the balance sheet of a deferred asset account, or a sharp increase in such an account, whether called deferred costs, deferred expenses, deferred charges, intangible assets, or something similar, is a warning flag that even though the company's reported earnings may be increasing, there might be some large outflow of cash (a cost) that has not yet been expensed on the income statement. Therefore, the company's financial condition or future earnings, or both, might not be as strong as indicated. In such a case, investors should ask the company how big an impact the deferred expense will have on future years' earnings.

Intangible Assets and Goodwill

Acquired patents are just one kind of intangible asset. An intangible asset might also be a copyright, a franchise agreement, or a brand name. The presence of an Intangible Asset account on the balance sheet, however, usually indicates that the intangible asset was purchased, rather than developed by the company. For example, let's look at Regal Drinks, Incorporated (RDI), a maker and distributor of healthy fruit drinks. When RDI develops a successful brand, they enjoy all the benefits of owning that brand, but they do not show it as an intangible asset on the balance sheet because it was developed in-house. On the other hand, if RDI were to acquire a brand name by purchasing another company, then accounting rules might require RDI to show some of the acquisition cost of that brand as Intangible Assets on the balance sheet. Suppose RDI bought COF Company which developed and sells instant coffee under a well-established brand name. RDI paid \$1,400,000 for COF company. At the time of the acquisition, the book value of the assets of COF Company was \$1,100,000, and COF had total liabilities of \$200,000, so the net book value of COF was \$900,000. Accounting rules require the following accounting: First, RDI must determine the *fair market value* of COF assets. In this case, a study of COF assets showed that a fair market value of COF assets was about \$1,200,000, slightly higher than their book value of \$1,100,000. After subtracting COF's liabilities of \$200,000, the *net* fair market value (FMV) of COF's assets was \$1,000,000. However, RDI paid the original owners of the COF Company \$1,400,000, which is \$400,000 greater than the net FMV of COF. So, RDI has purchased \$1,000,000 of fair market value COF assets, but it has also purchased the coffee company's brand name. Thus, the \$400,000 of RDI's cost above the \$1,000,000 of COF's net FMV of assets would be attributed to the value of the brand name, and would be called *goodwill*, an intangible asset.

Calculation of Goodwill

Step 1

Fair market value of acquired COF assets	\$1,200,000
Less: total COF liabilities	200,000
<hr/>	
Equals: Net FMV of COF assets	1,000,000

Step 2

Price RDI paid* for COF	\$1,400,000
Less: Net FMR of COF assets	1,000,000
<hr/>	
Equals: Goodwill created in purchase of COF company	400,000

*The price paid may be in cash, or may be paid in value of RDI common or preferred stock, or paid in exchange for another asset or assets

In the case of SFC's acquisition of a patent portfolio, we saw above that the intangible asset of the patent portfolio had to be amortized. However, when the intangible asset Goodwill arises from the acquisition of one company by another, it is not amortized. Rather, it stays on the balance sheet as an asset and, per accounting rules, must be tested for *impairment* every year. Impairment means a loss of value. As long as the instant coffee brand that RDI acquired with the purchase of COF is still selling and generating good profits for RDI, then the value of the intangible asset is not impaired, and the goodwill on the balance sheet remains unchanged. However, if the instant coffee brand stops selling well, and RDI's expected profits from the brand are much lower, or a loss is expected, the value of the goodwill would be deemed impaired and its value on the balance sheet would have to be reduced, or *written down* to the then expected value.* This write-down of the value of the intangible asset may appear as amortization, but if it is a large number, it more likely will appear as a separate expense item on the income statement. We will see an example of an impairment expense later in this chapter.

* One way the value of the intangible brand name is estimated is by forecasting the sales, profits, and cash flow that are expected to be generated by the goodwill asset (the coffee brand in this case) for a number of years, and comparing that to the balance sheet carrying value of the Goodwill. If the future expected value of the cash flows is only equal to half of the value of the

Goodwill on the balance sheet, then the Goodwill would be impaired and must be written down by half.

Goodwill on the balance sheet can arise for reasons other than acquisitions. When it is a small dollar amount relative to the company size, it may be included under Intangible Assets, or Deferred Expense or something similar. When goodwill is a large amount, it will likely be shown as Goodwill under long-term or fixed assets on the balance sheet.

Definition

- **Goodwill.** When Company A acquires Company B, and pays more for Company B than Company B's net fair market value of assets, the difference is called Goodwill and goes on Company A's balance sheet. Goodwill is an intangible asset. It is worth something, but you cannot touch it.

The investment significance of goodwill can be minimal or substantial. The appearance of *Goodwill* on a balance sheet, then, is a flag for investors that the company's book value might be overstated if, in fact, the value of the item reflected in Goodwill has declined or is expected to decline. This is important because some investors look at book value per share as a price against which to value the price of the stock. This gives rise to an improved definition of book value called *tangible book value*, which is discussed shortly.

Goodwill associated with a popular consumer brand may have a very long life, but in the past few years there have been a number of cases in the high tech industry where large amounts of goodwill had to be written off. In these cases, high tech companies attempting to broaden their product lines purchased other companies for prices above their net fair market value, and in so doing, created Goodwill on their balance sheet. But because of the high rate of obsolescence of products in the high tech industry, and perhaps for other reasons as well, the acquired products in many cases were not successful and thus the goodwill resulting from the acquisition had to be written off. In many such cases, the goodwill write-down knocked the stock down substantially because investors were not aware that the acquired products had not worked out.

While the balance sheet account '*Deferred Charges*' may include goodwill, Deferred Charges can also arise from prepaid expenses, such as an insurance premium that was paid in advance. Suppose RDI pays an insurance premium of \$6,000 for three years of insurance in advance. Since RDI is now insured for three years, the cost of the insurance should be amortized or charged to earnings

(expensed) evenly over the three years. This and similar items like it are typically included in Deferred Charges, and if small, may have no investment significance.

With the Goodwill now on the balance sheet, RDI's Balance sheet looked as follows:

RDI			
Balance Sheet at 12/31/14			
Assets		Liabilities	
Current assets:		Current liabilities	
Cash	\$ 1,000,000	Short-term debt	\$ 500,000
Accounts receivable ...	3,000,000	Accounts payable	4,000,000
Inventory	<u>4,500,000</u>	Total current liabilities ..	<u>4,500,000</u>
Total current assets	8,500,000	Long-term debt:	
		7% bonds due 2022	7,000,000
Fixed assets:		Stockholder's Equity	
Gross PP&E	21,000,000	Equity	
Less: Accum. Depr.	<u>7,000,000</u>	Common Stock	500,000
Net PP&E	14,000,000	Additional paid-in capital	4,604,000
Intangible assets:		Retained Earnings	<u>6,356,000</u>
Goodwill	400,000	Total equity	11,460,000
Deferred charges	<u>60,000</u>	Total liabilities	
	460,000	and equity	<u>\$ 22,960,000</u>
Total assets	<u>\$ 22,960,000</u>		

BOOK VALUE AND TANGIBLE BOOK VALUE

In Chapter 12, book value was defined as total assets, less total liabilities, less liquidating value of preferred stock. When calculating book value, it is more prudent to also subtract intangible assets and call the result *tangible book value* instead of just *book value*.

Definition

- **Book value.** Total assets, less total liabilities, less liquidating value of preferred stock.

- **Tangible book value.** Total assets, less intangible assets, less total liabilities, less liquidating value of preferred stock.

Since RDI does not have any preferred stock, its book value and tangible book value can be calculated as follows:

	Book value	Tangible book value
Total assets	\$22,960,000	\$22,960,000
Less: Intangible assets		– 460,000
		= 22,500,000
Less: Total liabilities	– 11,500,000	– 11,500,000
	<u>\$11,460,000</u>	<u>\$11,000,000</u>

Note that people frequently say “book value” when they mean “tangible book value.” Tangible book value is the more conservative calculation. It is preferred by most investors, first, because it is hard to know whether the intangible assets really have any current value, and second, because intangible assets, such as goodwill, more often than not, cannot be sold for any significant value if the company goes bankrupt.

Tangible book value is sometimes called *tangible net worth*. Net worth just means equity. Therefore, *tangible net worth* means equity less intangible assets. The terms *book value*, *net worth*, and *tangible net worth* are often used interchangeably. The tangible book value of RDI of \$11,000,000 is very close to its total book value or net worth of \$11,460,000. This is frequently the case when there are few or no intangible assets. Nevertheless, it is not a good idea to assume that the book value equals equity or net worth. It is always safer to calculate book value yourself, particularly when there is preferred stock outstanding or a large amount of intangible assets.

AMORTIZATION AND CASH FLOW

In Chapter 14 we saw that the *cash flow from operations* that a company generates is usually greater than the reported profit. This is because depreciation expense is deducted from sales, which reduces profit, even though it does not represent a cash outflow. Amortization of capitalized costs (deferred expenses)

produces a similar result. Like depreciation, amortization is an accounting entry reflecting the expensing of costs incurred in prior years. Amortization is deducted from sales, which reduces profit, but amortization does not reflect a cash outflow in the same year. The cash outlay that gave rise to the capitalized cost or deferred expense may have occurred many years earlier.

When calculating a company's cash flow from operations, amortization is treated the same way as depreciation: That is, it is added back to net profit to arrive at cash flow from operations, as we saw in the prior chapter. Thus, if Company BCD had \$2,000 of depreciation and \$500 of amortization, its cash flow statement might look as follows:

Company BCD – Cash flow from operations using the shortcut method:	
Net profit	\$ 9,000
Add back:	
Depreciation and amortization	\$ 2,500
Deferred tax	\$ <u>1,000</u>
Net cash inflow	\$ 12,500

EBITDA

In Chapter 4 we saw that the term EBIT stands for *earnings before interest and taxes*. EBIT is most useful when calculating the interest coverage ratio (Chapter 4). Investors also look at the *EBIT margin*, that is, EBIT divided by Sales, which is a good profit margin ratio to use when comparing different companies because by looking at the profit before interest and taxes, the profitability of each company is compared without considering that companies may have different tax rates or different levels of interest that resulted from financing with different proportions of debt and equity in the past. Similarly, interest levels could also vary simply because one company sold bonds at a time when interest rates were lower than when the other company sold bonds.

EBITDA stands for *earnings before interest, taxes, depreciation and amortization*. This earnings figure is essentially the *operating earnings* we saw in Chapter 4. Investors like to look at EBITDA because it is a measure of the company's efficiency, or ability to generate profit, just from a day-to-day

operating perspective. Interest expense relating to long term borrowing is relatively fixed and independent of company sales, wages, raw materials and other day-to-day costs. Similarly, depreciation and amortization are relatively fixed expenses not tied directly to day-to-day COGS or SG&A expenses. Depreciation and Amortization relate to the cost of fixed assets and certain intangible assets which may have been acquired over a number of years.

For this reason, EBITDA as a percentage of sales, or the EBITDA margin, is a good way to compare companies in the same industry. Companies in the same business will have similar operating needs; raw materials, labor, packaging, shipping, etc., but each company might have very different depreciation and amortization expenses because it acquired fixed assets at different times, some by building new plants, some by acquiring them through purchase of other companies. Also, different companies may use different depreciation techniques, or may have different amounts of intangible assets requiring capitalization. Similarly, different companies will have different levels of interest expense due to different financing histories.

Comparing companies by their EBITDA margins eliminates the effect of different depreciation and amortization accounting procedures and levels, as well as different interest payment levels, so it puts the calculated profit margins on an apples-to-apples basis.

The EBITDA margin is simply EBITDA divided by Sales. Using SFC's income statement above, we can calculate the pretax profit margin, the EBIT margin, and the EBITDA margin as shown below:

Calculate:	Pretax Profit Margin	EBIT Profit Margin	EBITDA Profit Margin
Sales	\$200,000	\$200,000	\$200,000
Expenses			
COGS	100,000	100,000	100,000
SGA	66,000	66,000	66,000
Depreciation	10,000	10,000	
Amortization	4,000	4,000	
Interest	6,000		
Total Expenses	186,000	180,000	166,000
Pre-tax profit	\$14,000		
EBIT profit		\$20,000	
EBITDA profit			\$34,000
Percent of Sales	7%	10%	17%

Investment analysts will look at all three profit margins. The important thing is to use the same margin calculation consistently whether comparing companies or watching one company's profit margin progress over multiple quarters or years.

EXTRAORDINARY WRITE-OFFS

The terms *write-off* and *write-down*, like many other words used in the investment community, have a variety of meanings or connotations depending on how they are used. The normal depreciation of assets, we said, can be thought of as a write-down. This type of write-down is quite regular, because assets are continuously being depreciated or written down. Similarly, amortization of intangible assets can be thought of as a regular write-down.

The terms write-off and write-down are used more frequently, however, in a case where an asset has become useless and is being written down to either \$0 or scrap value all at once. For example, assume a machine with an expected life of eight years breaks down after five years and the company does not want to

repair it because its repair cost is too high. Since this machine was not yet fully depreciated, the company must now write it down to \$0 or scrap value because that is all it is now worth. Another example might be a company car that is only one year old and is in an accident that is not covered by insurance. The company could get the car repaired, but decides to replace it with a new car. The old car would have to be written off. As a final example, consider a furniture company that has a large inventory of a certain style of bedroom set that is not selling well. After trying different advertising approaches without success, management finally decides this style is unlikely to ever sell well and the product is taken off the market to be used for scrap wood. Therefore, its dollar value in *finished goods inventory* must be written down to scrap value.

These three kinds of write-offs are not as regular as depreciation, and most often amount to a small dollar figure relative to the company's overall financial results. When the amount is small, the company will simply include such write-off expenses in the income statement as part of the cost of goods sold, or selling, general, and administrative expense, or depreciation, depending on the company's normal accounting procedures. In practice, there are probably a few such small write-offs in every quarter so their effects are not be noticeable in the company's pattern of reported EPS, and therefore will not be misleading to investors.

Typically, however, most companies make more of these adjustments in the fourth quarter. Perhaps it is just human nature for management to put off admitting it made a mistake on that style of bedroom set. Of course, it is also possible that management is intentionally delaying such write-offs because they want to get the stock as high as possible early in the year and therefore want to show the maximum possible earnings. This could be done either because the company plans to have a stock offering or because members of the company's management want to sell some of their own personal stock. It is unethical and illegal to show artificially high earnings for either of these last two reasons. In any case, these fourth quarter write-offs can make a company's fourth quarter earnings harder to predict than any of the first three quarters.

In the event that such write-offs are a significant proportion of income, perhaps 5 percent or more, the company should explain it in a footnote. In a case where such write-offs were extremely large, the company would be required by accounting rules to note them separately as extraordinary items. One common way such an extraordinary write-off may arise is when a company sells off or closes a division or product line that is no longer making a profit. Such a write-off might include: 1) writing down the value of the closed or sold plant and equipment, 2) the value of any unsold inventory, 3) severance and other costs

associated with laying people off, 4) expected future warranty costs for the products that were sold before the division or product line was closed, 5) related legal and accounting expenses. This kind of write-off is sometimes called a *restructuring cost*. An extraordinary write-off could also result if a fire or natural disaster destroyed a plant and it had to be written off.

These extraordinary write-offs and restructuring costs are also referred to as *nonrecurring costs*, meaning that they do not occur regularly in the normal operations of the company. Nonrecurring write-offs can badly distort the progression of a company’s earnings, and therefore impact the stock price. So it is important for investors to understand the effect on reported earnings of an extraordinary or nonrecurring write-off, and remember to use earnings from continuing operations (i.e. earnings that exclude the effect of non-recurring items) when valuing a company.

For an example, let’s look at Boom Boom Dynamite Company, which had an explosion in one of its four plants in December of 2014. The plant was not insured. Had there not been an explosion, the year-end financial statements would have looked like this:

Part of Balance Sheet BBD Company (12-31-2014)	
Fixed assets:	
Gross property, plant, and equipment	\$12,000,000
Accumulated Depreciation	7,000,000
Net property, plant, and equipment	5,000,000

BBD Company
Income Statement for 2014

Sales		\$6,000,000
Expenses		
COGS	\$2,000,000	
SG&A	500,000	
Depreciation	400,000	
Interest	<u>100,000</u>	
Total expense	3,000,000	<u>3,000,000</u>
Profit before tax		3,000,000
Tax		<u>1,500,000</u>
Net profit		\$1,500,000
EPS (500,000 shares outstanding)		\$3.00/share

The explosion, however, destroyed a plant that had an original cost of \$5 million and had been depreciated down by \$3 million to a book value of \$2 million; that is, the accumulated depreciation on the plant from when it was built until the explosion was \$3 million. Since the plant was destroyed, it has to be removed from the books. Thus, the \$5 million cost is removed from Gross PP&E, and the \$3 million of accumulated depreciation and the \$2 million of Net PP&E are also removed. The Fixed assets portion of the balance sheet, then, looked like this:

Part of Balance Sheet
BBD Company (12-31-2014)
(After write-off)

Fixed assets:		
Gross property, plant, and equipment		\$7,000,000
Accumulated Depreciation		<u>4,000,000</u>
Net property, plant, and equipment		3,000,000

Since the book value of the destroyed plant was \$2 million, the company has incurred a \$2 million loss. This loss must be expensed, or written off against earnings. It could either be included in Cost of goods sold, or Depreciation, or handled separately as an extraordinary item. The latter two methods are shown below:

BBD Company Income Statement for 2014 (Plant write-off included in Depreciation)		
Sales		\$6,000,000
Expense		
COGS	\$2,000,000	
SG&A	500,000	
Depreciation	2,400,000	
Interest	<u>100,000</u>	
Total expense	5,000,000	<u>5,000,000</u>
Profit before tax		1,000,000
Tax		<u>500,000</u>
Net profit		\$500,000
EPS (500,000 shares outstanding)		\$1.00/share

By including the plant destruction in Depreciation, the reported earnings of \$1 per share look a lot worse than the \$3 per share the company is capable of earning when it is operating normally. While BBD may not be capable of earning \$3 per share next year without the plant, it may be able to earn closer to \$3 per share than \$1 per share, and retain its customers by producing more in its remaining plants, and possibly temporarily buying dynamite from competitors to service its customers, until a new plant can be built. Once the new plant is built, earnings can be expected to return to around the \$3 per share level. Therefore, including the plant write-off in Depreciation does not give the financial statement reader a fair picture of what actually happened, and may be misleading by implying that a \$1-per-share earnings level is more typical for the company, rather than springing back to the \$3 level when the new plant is opened. The following presentation, with the plant write-off handled as an *extraordinary or nonrecurring item*, is preferable.

BBD Company
Income Statement for 2014
(Plant write-off handled as extraordinary item)

Sales		\$ 6,000,000
Expense		
COGS	\$ 2,000,000	
SG&A	500,000	
Depreciation	400,000	
Interest	100,000	
Total expense	3,000,000	3,000,000
Profit before tax		3,000,000
Tax		1,500,000
Profit before extraordinary item		\$ 1,500,000
Extraordinary loss		
(net of tax at 50%)		\$ 1,000,000
Net profit		\$ 500,000
EPS (before extraordinary loss)		\$ 3.00/share
EPS (including extraordinary loss)		\$ 1.00/share

Note how the tax is handled. The plant write-off is a tax deductible expense when calculating taxes. Therefore, as a result of the \$2,000,000 loss, \$1,000,000 was saved in taxes. The \$1,000,000 tax savings, however, is deducted from the extraordinary loss that caused it, rather than from the normal earnings of the company. This is because the purpose of presenting the extraordinary item separately is to show what the company's results would have been with and without the extraordinary loss. Thus, *taxes* are listed as \$1,500,000 even though only \$500,000 was paid. Similarly, the extraordinary loss (net of tax) is listed as \$1,000,000, even though the loss was actually \$2,000,000.

EFFECT ON STOCK PRICE

The important point here is that when an extraordinary or nonrecurring event occurs, investors must attempt to find out what caused it, and what temporary or lasting effects it will have on the company's operations. With that information the investor can then make an informed judgment about the impact on the company's stock price. If the effect of the write-off is expected to be temporary, the income statement can be reconstructed (as above) to reflect what operations would have looked like without the extraordinary item. This is often referred to as *earnings from continuing operations*.

In the case of BBD, the \$3 per share earnings figure is probably more representative of the company's future earnings than the \$1 per share. Thus, what would probably happen is that, when the news of the plant explosion got out, the stock would go down briefly, as investors were initially uncertain about what long-term effects it would have on the company's ability to generate earnings and pay dividends. But as investors learned that the company's earnings progress would only be temporarily harmed and not permanently impaired, the stock would probably return to near its former level.

The extraordinary write-off in this example resulted from the unexpected destruction of plant and equipment. An extraordinary or nonrecurring write-off can also occur when a company manufactures a large quantity of a particular product and then discovers that the product cannot be sold. In such a case, the inventory would have to be written off or written down to scrap value. Finally, a goodwill impairment can be treated as an extraordinary write-off and in an income statement such as that above, we might see "Profit before Goodwill impairment" instead of "Profit before extraordinary item."

Cash Flow

A company's ability to generate earnings and pay dividends over a period of time is perhaps the most important factor affecting its stock price. To have a more complete picture of a company, however, and to be better able to forecast stock moves, investors must look beyond earnings and also look at a company's cash flow.

Over a period of time, *cash flow from operations* will be the most important source of cash; but cash flow, into or out of the company, can also arise from other sources. In most companies' annual reports you will see, in addition to the income statement and balance sheet, a *statement of cash flow*. The cash flow statement is usually broken into three categories: cash flow from operations; cash flow from financing activities; and cash flow from investing activities. Let's first look at each of these categories separately and then look at some cash flow statements to see what they can tell us about a company.

CASH FLOW FROM OPERATIONS

As we saw in Chapter 14, *cash flow from operations* refers to the cash that flows into the company from selling its products or services, less the cash that flows out of the company to pay for raw materials, wages, and other expenses necessary to run the company on a day-to-day basis, such as accounting fees and office supplies. We also saw that cash flow from operations is not the same thing as earnings. This is because depreciation, amortization, and deferred tax expense are subtracted from *sales* when calculating earnings, but are not subtracted from sales when calculating cash flow. Thus, the easiest way to calculate the cash flow from operations is to start with the earnings and *add back* depreciation, amortization, and any increase in deferred taxes. A typical cash flow from operations statement might look like this:

Cash flow from operating activities:	
Net profit	\$ 10,000,000
Add back:	
Depreciation and amortization	2,000,000
Deferred tax	<u>600,000</u>
Net cash flow from operations	<u>\$ 12,600,000</u>

In practice there will also be a number of other, usually smaller items, such as changes in accounts receivable, accounts payable, inventory, and other accounts, which contribute to or deplete cash, and are included in the cash flow from operations calculation. For a company with financial problems, these other additions to, or subtractions from, cash flow may be very important. For healthy companies, however, investors can usually make a reasonable judgment of cash flow from operations from just the items shown in the chart above, and we will limit ourselves to these in this book.

Keep in mind throughout this chapter that the figure for net cash flow from operations is not just the cash coming in from sales. It is the net result of subtracting the day-to-day operating expenses (wages, raw materials, interest expense, and so on) from sales. If a company is not generating enough cash to meet these day-to-day operating needs, it will be out of business quickly. Thus, when we talk about what a company might do with its cash flow from operations, we are referring to the cash flow *after* those day-to-day operating needs have been met.

CASH FLOW FROM FINANCING

Cash flow from financing activities is straightforward. Cash inflow from financing occurs when the company raises money by issuing new equity securities, such as common or preferred stock, or by borrowing. Borrowing includes selling a new issue of bonds or borrowing from a bank, insurance company, or other financial institution. Cash outflows from financing can arise from repaying the principal amount of a bond, debenture, or other loan at maturity, or buying these debt securities back under a sinking fund or call provision, or just buying them on the open market and retiring them. Note that the interest payment on a loan or bond is not considered a cash outflow from

financing. Interest is more appropriately included in the cash flow from operations because interest is paid on a regular basis.

Cash outflows from financing activities also includes the payment of both common and preferred dividends, and money spent to repurchase shares of the company's outstanding preferred issues or common stock.

CASH FLOW FROM INVESTING

Cash flow from investing activities usually does *not* mean buying stocks and bonds, although that is what investing means to most people. From a company's point of view, investing means buying new plant and equipment in order to make either more products, or to make them faster, better, or cheaper. New plant and equipment can refer to buildings, machines to make products, trucks to ship the products, cars to drive salespeople to customers, computers to keep the books, and even the company's kitchen and cafeteria equipment. If a company buys stock or bonds of other companies, that would also be investing activity, but that is not what is typically meant by investing activity in this context. In this chapter, investing activities will refer to a company's purchasing new plant and equipment, unless otherwise specified.

Cash outflows from investing activities might also include buying another company. Suppose JMC bought the Swift Rat Trap company, and the Hungry Dog Food Company (HDF). The cost of purchasing these companies would be cash outflow from investing. If a few years later, JMC decided to get out of the dog food business, any money received from the sale of HDF would be considered a cash inflow from investing activities. In this case it might be considered disinvesting. Similarly, if a company sells any of its property, plant, and equipment, no matter how much it has been used and depreciated, the money received from the sale would be disinvesting, or cash inflow from investing activities.

Review of Terminology

When a company buys new plant and equipment it is called *capital spending*, or we can say the company is making capital *expenditures*. Keep in mind the distinction between capital spending and spending for inventory. Capital spending, which is cash outflow from investing, refers to spending for plant, equipment, tools, and other assets that will be used to make the company's

products. Such capital *equipment* usually remains in the company for many years.

At JMC, the purchase of screwdrivers, saws, and other tools, as well as the building in which the traps are made, is considered *capital spending*, or *capital costs*.

Inventory refers to the materials that will be used up and become part of the product that is being sold. In the case of JMC, wood, metal, and labor costs incurred to make mousetraps are all inventory costs. Spending for inventory would be part of the cash outflow from operations, not a cash flow from investing.

In the language of Wall Street, purchases for inventory are *expensed*, meaning that they are usually deducted from sales in the period (year or quarter) that the cost is incurred. However, as previously discussed, this is not strictly true. Purchases for inventory go on the balance sheet in Raw Materials and then become Finished Goods, and don't really get "expensed" (i.e., become Cost of Goods Sold expense) until the goods are actually sold. We as investors, however, can usually "round off" a little and simply think of inventory purchases (costs) as being expenses.

Capital spending, on the other hand, is not expensed, but rather is *capitalized*, meaning its cost is put on the balance sheet and will be depreciated over a number of years. Thus, capital spending (spending for new plant and equipment) would be cash outflow from investing.

To review, a company's cash flow, in or out, can arise from operations, financing, or investing. Whether a company survives and prospers, and therefore how its stock will behave, will depend in large part on how much cash flow comes in, how it comes in, and how the company spends or uses its cash flow. A company's cash flow from operations is its most important source of cash flow. If cash flow from operations is sufficient to meet all the company's basic needs, plus have enough left over for expansion and growth, or to pay increasing dividends to shareholders, then the company is in good shape and its stock is likely rising. If the company is unable to generate enough cash flow from operations to meet basic needs, then the stock is likely declining, or has already declined.

USES OF CASH FLOW—SURVIVAL NEEDS

We will look first at what the company *must* do with its cash flow to survive, and later look at what it *may* do with its excess cash after survival needs have

been met. Once again, keep in mind that *cash flow from operations* is the cash available after day-to-day spending needs for inventory, labor, interest expense, and the like have been deducted from sales.

Debt Retirement

A company must repay its debt obligations on time. This includes bank loan repayments and bond sinking fund and maturity repayments, for example. If the company is unable to meet these obligations, the lenders can usually have the company declared bankrupt. Recall that interest payments on debt are treated as part of day-to-day operating requirements, not as part of the principal repayments.

Maintenance Level of Capital Spending

The *maintenance level* of capital spending is the minimum amount of spending necessary for the company to replace old or worn out machinery, or to replace obsolete machinery with new and better equipment to make the company's products. If JMC did not keep up with the latest manufacturing equipment, other companies might be able to make mousetraps cheaper, sell them for a lower price than JMC, and put JMC out of business. Maintenance capital spending does not include buying new machinery to expand the plant and grow the company. That is *discretionary* capital spending. Also, maintenance capital spending does not include the cost of making minor repairs or adjustments. These latter costs, which occur regularly, are part of day-to-day operating expenses and are included in the cash outflow from operations, most likely in Costs of goods sold or SG&A expense.

Preferred Dividends

Preferred dividend payments may not actually be a survival need because failure to pay the preferred dividend cannot result in bankruptcy, but the obligation is so strong that failure to pay it is usually a sign that a company is in trouble. Further, if the company is unable to pay its preferred dividend, it is certainly not going to pay a common dividend, and most likely does not have any excess cash to use for growth. Similarly, the distribution on a Trust preferred security (TPS) may not look like a survival need because the company can defer it for 5 or 10 years, but for investors, it is safest to treat TPS distributions as a

survival need. For the remainder of this chapter, we will use “preferred dividends” to mean both preferred stock dividends and TPS distributions.

In sum, investors must look at the cash flow from operations and see if it is adequate to meet: 1) debt principal repayment requirements, 2) a maintenance level of capital spending, and 3) preferred dividends. If cash flow is not adequate to meet these minimal needs, the company’s stock is probably not a good investment, unless there is a reason to believe that the company will only be cash-short for a year or two, and the company will be able to finance the shortfall with a new issue of stock or bonds, if necessary, to get past the bad year or years.

THE SIMPLIFIED CASH FLOW STATEMENT

Most company annual reports break cash flow into the three categories listed above—cash flow from operations, cash flow from financing activities, and cash flow from investing activities. However, for investors, it is usually more revealing to focus on the whole picture of a company by recasting the cash flow statement into what is called the *sources and uses of funds* statement. In this statement, shown below, investors can see the pattern of cash flows over time. A more detailed cash flow statement will be explained later in this chapter. For this simplified statement, assume the dollar figures are in millions, so, for example, the depreciation and amortization for the company grew from \$21 million in 2011 to \$24 million in 2013.

Company ABC Cash Flow Statement – earnings growing						
	Actual			Forecast		
	2011	2012	2013	2014	2015	2016
Sources						
1. Net income	\$50	54	59			
Add back:						
2. Depreciation and amort.	21	23	24	25	25	25
3. <u>Incr. in deferred tax</u>	<u>4</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>
4. Cash flow from operations	\$75	82	88			
Uses						
5. Debt principal repayments	\$25	15	30	30	150	22
6. Maintenance capital spending	15	15	20			
7. <u>Preferred dividend</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u> </u>
8. Cash flow uses	\$45	35	55			

Company ABC appears to be doing well. Net income has been growing (line 1), and total cash flow from operations (line 4) has been sufficient to meet all the survival needs (line 8) and still have cash left over for additional capital spending for growth, or payment of common dividends. But notice that in 2015, the company will have a large debt repayment of \$150 that cannot be met from cash flow from operations unless net income almost doubles, something that does not seem likely based on the past few years' history. It is possible, however, that Company ABC could *refinance* this debt repayment; that is, issue new bonds (or stock) to obtain the money necessary to repay the old debt. If investors expect that ABC is likely to continue to do well—meaning earnings are likely to continue rising—then most likely the \$150 debt repayment in 2015 can be refinanced. But what if the level of debt repayment is scheduled to stay at \$150 in 2016 and 2017 as well? Then it is less certain that investors will be willing to buy new stock or bonds of this company. Further, what if earnings had been trending down, not up, or were expected to fall sharply? Let's look at the cash flow statement using those assumptions.

Company ABC Cash Flow Statement – earnings declining						
	Actual			Forecast		
	2011	2012	2013	2014	2015	2016
Sources						
1. Net income	\$ 50	54	46	20	10	0
Add back:						
2. Depreciation and amort.	21	23	24	25	25	25
3. <u>Incr. in deferred tax</u>	<u>4</u>	<u>5</u>	<u>5</u>	<u>—</u>	<u>—</u>	<u>—</u>
4. Cash flow from operations	\$ 75	82	75	45	35	25
Uses						
5. Debt principal repayments	\$ 25	15	30	30	150	150
6. Maintenance capital spending	15	15	20			
7. <u>Preferred dividend</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>5</u>
8. Cash flow uses	\$ 45	35	55			

Under these assumptions, without even guessing at deferred tax, it is clear that the company's cash flow from operations (line 4) will fall far short of what is needed to meet debt principal repayments (line 5), and this does not even consider anything for capital spending. The cash flow shortage, combined with the rapidly deteriorating earnings outlook, would make investors very skeptical about refinancing ABC's debt. The company would need to say or do something to convince investors that the downturn in earnings is only temporary, and that earnings are likely to come back strongly. In the absence of such assurance, it is unlikely that investors will want to buy new bonds from the company, and with the poor earnings outlook, it is likely that the stock would fall to the point where the company could not sell enough new shares of stock to raise the required funds. Under these assumptions, Company ABC appears unable to meet the debt repayment due in 2015 and is clearly in trouble. Although the company can survive until then, investors can see the trouble coming and the stock is likely a highly risky investment.

OBTAINING CASH FLOW INFORMATION

It is the job of security analysts, or any investors, to make or obtain estimates of the sources and uses of cash flow, and then to make investment judgments from them, as we just did. Estimating a company's net income (the top line on the cash flow statement) is usually the most difficult. The analyst must bring together her knowledge of the state of the economy, the outlook for the company's products, the company's competitive position in its industry, its selling prices and the outlook for the company's materials and wage costs, and so on. Some companies will help or guide analysts making earnings estimates, but history shows that this guidance is not always accurate, and investors are advised to apply their own judgment to a company's guidance about its earnings outlook and to look at how their estimates compare to estimates available on various investment related websites.

The other cash flow items are usually easier to obtain or forecast. Depreciation and amortization usually do not change much from year to year. If total capital spending is rising, depreciation is likely to rise in the following years. If capital spending is declining, then depreciation is more likely to decline in subsequent years. In any case, most companies are willing to give investors their estimate of depreciation and amortization for the current and perhaps following year. Company forecasts of these figures can usually be taken as reliable as they are less subject to the uncertainty of business conditions. Similarly, companies often make public forecasts of their capital spending budget for the year, or are willing to provide it to investors who request it. Companies may also be willing to say how much of the capital spending budget is for expansion and how much is for maintenance, although sometimes it is hard to distinguish.* For instance, a new plant or piece of equipment might be purchased both to replace an old, inefficient piece, but also be able to produce many more parts per day.

** Since many companies do not distinguish between maintenance and growth capital spending, most analyst deduct total capex (capital expenditures) from operating cash flow to arrive at Free Cash Flow. This is slightly less accurate because almost every company has some room to cut back capex when earnings are down. But if a company cannot afford any capital spending beyond a maintenance level for a few years, it is likely that the company has problems and is not a good investment.*

The required debt repayment schedule for the next five years is almost always available in the footnotes to the financial statements in the annual report and in the company's 10-K filing with the S.E.C. The preferred dividend usually does not change from year to year unless the company issues new preferreds or redeems or buys back and retires outstanding preferred shares.

FREE CASH FLOW

Now that we have seen the things that a company must do with its cash flow in order to survive, we are able to define *free cash flow*. Free cash flow is the cash flow from operations that the company is free to spend on whatever it wants after it has met its basic survival needs of debt repayment, maintenance-level capital expenditures, and possibly preferred dividends. In the example of company ABC above, free cash flow can be calculated by subtracting cash flow uses (line 8) from cash flow sources (line 4). Thus, in the *Cash Flow Statement—earnings growth*, ABC had free cash flow of \$30 in 2011, \$47 in 2012, and \$33 in 2013.

Definition

- **Free cash flow.** Cash flow from operations, less debt repayment requirements, less preferred dividends, less the maintenance level of capital spending.

Some investors or financial services might define free cash flow slightly differently, perhaps not deducting preferred dividends because failure to pay the preferred dividend cannot cause the company to be declared bankrupt, or excluding some other minor items. But the concept of free cash flow—cash that can be used at management’s discretion after all survival requirements have been met—should be clear.

USES OF FREE CASH FLOW: INCREASING SHAREHOLDER VALUE

A company with free cash flow has a number of alternatives as to what it can do with its free cash flow to increase shareholder value. Several common uses are described below.

Increase Capital Spending

The company can buy new plant and equipment above what is needed for maintenance. Expanding manufacturing capacity enables the company to make

more products, which can generate more sales, which can lead to higher profits. Sooner or later this should be reflected in a rising stock price.

Increase the Dividend to Common Stockholders

Dividends, of course, pass value to the shareholders immediately. Also, investors usually regard an increased common dividend as a sign that the company is confident about the future. Companies generally do not like to raise the dividend if they think it likely they will have to lower it again shortly. Increases in the common dividend can sometimes have an immediate impact on the company's stock price. Other times, however, when a company has substantial free cash flow, investors can see the likelihood of a dividend increase ahead of time, and the stock may move up before the dividend increase is actually announced. In such cases, the stock may then actually decline shortly after the dividend increase is announced. Such a decline right after the company announces a dividend increase would, of course, be a surprise to investors who have not been analyzing the company's free cash flow, and realized ahead of time that a dividend increase was highly probable. This is an important lesson that we will see again in Chapter 18: *The stock market anticipates; that is, stock prices often react to events, such as dividend changes, before they actually occur*. On the other hand, if the dividend increase had not been expected, the stock will likely rise when the dividend increase is announced.

Similarly, if free cash flow is large enough that investors have been anticipating a large dividend increase, but the company announces only a small dividend increase, then investors might be disappointed and take that as a sign that the company's prospects are not quite as good as they thought, and the stock might decline. For this reason, investors carefully monitor a company's dividend policy and changes in cash flow. That is, they look at past history to see when and by how much the company has typically raised or lowered the common dividend in response to changing business conditions and company earnings. This enables them to better anticipate future changes and therefore forecast stock price moves.

Repurchase Company Bonds or Prepay Other Debt

By prepaying debt to banks or other lenders, or buying back the company's bonds on the open market (even if there is no sinking fund requirement), the company can lower its interest expense. This, in turn, increases earnings, which further enhances shareholder value. Also, if a debt issue is completely retired, it

will free the company from any restrictions placed on it by the covenants in the loan agreement.

Hoard Cash

Allowing cash to build also increases shareholder value (up to a point). Initially, the cash will probably be invested in marketable securities that are earning interest, which adds to earnings. But more importantly, investors can anticipate that the cash will be used when management sees an attractive opportunity. This might include broadening the company's product line, diversifying into a new business, improving efficiency, buying another company, and so on.

When a company allows its cash to build, the appearance of the cash or marketable securities on the balance sheet may call attention to the company, and it may itself become a takeover target of larger companies. As those larger companies bid to acquire the cash-rich company, its stock goes up—a direct increase in shareholder value.

Because the members of management of most companies do not want their company to be taken over, they do not want to attract unwanted attention by letting cash build on the balance sheet. For this reason, another use of free cash flow that has become more common in recent years is buying back some of the company's outstanding common stock.

Repurchase the Company's Outstanding Common Stock or Preferred Issues

Companies with free cash flow will sometimes buy back their common stock, and as a result of having fewer shares outstanding, earnings per share will be higher. Buying back stock with free cash flow provides management with more flexibility when compared to paying a dividend; that is, when a company only expects to have excess cash from time to time, they can use that cash to repurchase company stock (provided the board of directors has authorized them to do so). By contrast, for the directors to feel confident enough to raise the dividend, they must feel confident that free cash flow will remain consistently strong for the foreseeable future to enable them to maintain the higher dividend rate.

When a company announces its intention to repurchase some of its stock, the stock often goes up; first, because the company's buying can directly lift the price, second, because the resulting increase in earnings per share makes the

stock look cheaper, and third, because it signals that management believes the company's stock is undervalued. On the other hand, company managers and directors know that the announcement of the intention to repurchase the company's stock can push the price up, and some managements may announce their intention to repurchase company stock even if they never intend to do it. Thus, when investors see a company announce a stock repurchase program, they should look at the company's cash flow and see if the company will realistically have enough free cash flow to enable them to buy back a meaningful amount of stock.

Repurchasing the company's outstanding preferred stock may also increase earnings per share by eliminating the preferred dividend. Recall that the preferred dividend (not the common dividend) is deducted from net earnings in calculating earnings per share.

In sum, free cash flow creates an opportunity to pay down debt, repurchase stock, or increase capital spending. The greater the free cash flow, the greater the opportunities to increase shareholder value, thereby driving the stock higher. Free cash flow does not automatically increase shareholder value. If JMC uses its free cash flow to expand its capacity to make more mousetraps, but then cannot sell the additional traps, then the cash it used to expand the plant may have been wasted. Similarly, if a company uses free cash flow to go into a new business, but fails in that new business, then again the shareholders will have lost value.

There are many ways that company directors or management can use free cash flow to add to shareholder value as noted above. They have the option of buying back stock or bonds, increasing the dividend, increasing capital spending for growth, or any combination of these. Investors, on the other hand, will notice how management is using its free cash, and will make their own decisions as to how management's decisions may impact near and future earnings, and hence shareholder value and the price of the stock.

CASH FLOW STATEMENTS: WHAT TO LOOK FOR

In the cash flow statements earlier in the chapter, we looked at Company ABC's cash flow from operations to see if it was adequate to meet survival needs. Now let's look at some more detailed cash flow statements. The statements are set up in a slightly different format, which should better

demonstrate whether the company is generating free cash or needs to raise new cash.

In Company XYZ's cash flow statement below, all the dollar figures are in millions of dollars, but we will leave out the zeros so the numbers are easier to follow. Assume it is early 2014. Let's look at each line item.

XYZ Cash Flow Statement (\$ millions)							
	Actual				Forecast		
	2010	2011	2012	2013	2014	2015	2016
1. Net Income	\$ 10	12	12	15	17	18	
Add back:							
2. Depr. and amort.	5	6	7	7	8	9	9
3. <u>Deferred tax</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
4. Cash flow from ops.	\$ 16	20	21	25	28	30	
minus:							
5. Debt repayments	0	2	10	2	2	20	4
6. <u>Preferred dividend</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
7. = Free cash flow ops	15	17	10	22	25	9	
minus:							
8. Common dividend	4	5	5	6	6	6	
9. <u>Capital spending</u>	<u>10</u>	<u>10</u>	<u>12</u>	<u>14</u>	<u>15</u>	<u>12</u>	<u>12</u>
10. = Net cash flow before external financing	1	2	-7	2	4	-9	
plus:							
11. <u>External financing</u>	-	-	<u>11</u>	-		?	
12. = Net change in cash *	1	2	4	2			

* Line 12 will not be exactly the net change in cash. Recall that to simplify, we excluded changes in cash that resulted from changes in accounts receivable, accounts payable, inventory and the like. Thus, line 12 would be closer to correct if we called it the "Net change in working capital" rather than the change in Cash. Working capital, which is defined as current assets minus current liabilities, encompasses any increases or decreases in cash due to increases in accounts receivable, accounts payable, inventory, and so on.

Line 1. Net income grew from 2010 through 2013 and is forecast to keep growing in 2014 and 2015. 2016 is too far away to forecast but at this time there is no reason to expect any major changes, so we can project that net income will be somewhere near the 2015 level.

Line 2. Depreciation and amortization have been rising along with capital spending (line 9), because the increased spending means there is more equipment to depreciate. As capital spending declines in 2015 and 2016, the depreciation can be expected to level off and then decline.

Line 3. Deferred tax is a hard number to forecast, but for this company it has generally risen with earnings. In any case it is a small number compared to the other sources of cash flow from operations, so we can just assume that it will remain steady at \$3 a year.

Line 4. Cash flow from operations has been growing steadily for this company and is projected to continue. But we cannot be certain that it is adequate to meet all needs until we examine the rest of the cash flow statement.

Line 5. The company had a large debt repayment in 2012 and has another large one due in 2015. The cash flow from operations in 2012 was big enough to cover that year's debt repayment. Based on the 2015 forecast, the cash flow from operations in 2015 (\$30) should be large enough to meet the 2015 debt repayment (\$20). But that alone does not tell the whole investment story, and we need to look further down the cash flow statement.

Line 6. The preferred dividend is a small item for this company and does not have a major impact on the cash flow statement.

Line 7. The company has been able to generate free cash flow every year, which investors like to see. But we also see from lines 8 and 9 that XYZ apparently likes to maintain or raise the common dividend each year, as well as maintain a high level of capital expenditures. This meant that in 2012, the year when the big debt repayment was due, the company needed to resort to an outside financing.

Line 8. Between 2010 and 2013, the dividend rose each year except in 2012, which was the year of the cash shortfall that required external financing. From this we might infer that the company will not raise the dividend in 2015 when it appears that another cash shortfall will necessitate another external financing. In fact, it is always possible that the company will cut the dividend and reduce capital spending in 2015 in order to avoid having to do an external financing, but based on the 2012 experience, this seems unlikely. It would be helpful if we had a longer history to look at in order to judge what the company might do.

Investors analyzing XYZ Company should ask the company: "Would you cut the dividend in order to avoid an external financing in 2015?" Companies

usually give vague answers filled with “maybe’s” and “if’s,” but analysts can nevertheless get a sense of what management is thinking. After following a company over a period of time, investment analysts are better able to judge company actions and comments.

Based on past history we could forecast a small dividend increase in 2014 and then no change in 2015, but note that capital spending will still be rising in 2014. So anticipating the big debt repayment in 2015, the company directors might decide not to raise the dividend, thereby reducing the amount that will need to be raised in an external financing in 2015. Conversely, management could reason that raising the dividend will send a positive sign to the market, and thus the stock price might be high, so the company could do its external financing with new shares of common, which, with a higher stock price will result in less dilution.

Line 9. Management indicated that they expected capital spending to peak at \$15 in 2014 and then decline modestly. But they also said that the maintenance level of capital spending was only \$3 to \$6 million per year, so they could cut back sharply on capital spending in 2015 if they wanted to reduce the size of, or avoid doing, an external financing.

Line 10. This line clearly shows whether the company’s net cash flow each year is positive or negative, thereby indicating the years when investors should be concerned about the possibility of new financing, or might expect reductions in or increases in the dividend.

Looking down the 2012 column, it is clear that the cash flow from operations was adequate to meet the scheduled debt repayment, but fell short of the amount needed to meet all the cash outflows (the debt repayment, *plus* the common dividend, *plus* the company’s capital spending budget). Line 10 shows that the cash shortfall in 2012 was \$7 million. From Line 11 we can see that the company did an external financing to cover the shortfall, and thus did not need to reduce the common dividend or reduce capital spending. From this we might judge that as long as the earnings outlook remains strong, the company will likely prefer to do another external financing in 2015 rather than cut the dividend or reduce capital spending. Whether they actually choose to do this in 2015 will depend on a number of factors, including the company’s outlook at that time and the condition of the financial markets; that is, how much additional interest the company will have to pay if they do a debt financing, or the price at which new stock can be sold.

Line 11. This shows the size of the external financing, and we can see that the company raised more cash than was needed to meet the shortfall. Companies may do this for a number of reasons. First, given the time and expense of an

external financing, it makes sense to raise a little extra cash so the company does not need to concern itself with another external financing in the immediate future. On the other hand, management would not want to raise too much extra, because there is a cost to raising money. In the case of a debt financing, there will be the additional interest cost. In an equity financing (new stock), there will likely be earnings dilution. Whether the company decides to do an equity financing or a debt financing will depend on which appears most attractive at the time. If the company's price-earnings ratio is high (which means there will be little or no dilution), the company will most likely do an equity financing. If the company's price-earnings ratio is low (implying a lot of dilution) and interest rates are low, the company will be more inclined to do a debt financing, because the additional interest expense will have a lesser impact on earnings per share than the dilution from an equity financing (Review Chapter 7 for the calculations to determine the impact on earnings per share of a debt or an equity financing.) If the price-earnings ratio is low and interest rates are high, then the company will likely raise the least amount required in order to avoid either dilution or too big an increase in interest expense. Or the company may try to avoid a financing by slashing capital spending and reducing the dividend.

Another reason that a company may raise more than the requisite shortfall is the need for increased *working capital* as the company grows. Working capital means money that is tied up in inventory and accounts receivable and the like. In order to keep the cash flow statement easy to read, we have not included the cash flow changes from these items. But if the company is growing, it is reasonable to assume that it will need more working capital; that is, it will need to carry more inventory and pay more wages, which means more cash is tied up while waiting for the inventory to be sold and customers to pay their bills. A growing company, therefore, has a need for cash for both capital expenditures for new plant and equipment (long-term) and for working capital (short-term) needs. Ideally, of course, cash flow from operations will provide enough cash to cover both needs, and thereby avoid an external financing.

In sum, XYZ appears to be a stable, growing company. The cash flow statement tells us that the company is not afraid to spend heavily on new plant and equipment (line 9- capital spending) while paying a dividend of about 40% of earnings. The company did not cut capital spending or dividends when it was cash short in 2012, but instead chose to do an external financing. With earnings expected to continue growing in 2014 and 2015, there seems to be no reason why the company would choose to cut capital spending or dividends in 2015 if the stock price remains high enough or if interest rates are low enough to make a new financing attractive. Nevertheless, we as investors would be wise to assume

there will be no dividend increase until XYZ is past the debt repayment and possible new financing in 2015.

A Less Predictable Cash Flow Statement

Now let's look at a company with more erratic net income, Low Flying Airlines. Again, assume it is now early 2014 and all the dollar figures are in millions. Because net income is less predictable for this company, we do not make any attempt to project the 2016 cash flow. Rather, it is more useful to make two forecasts for 2015, a *low (worst case)* and a *high (best case)* forecast. In the worst case forecast, we estimate minimal earnings and the lowest we think depreciation and deferred taxes are likely to be. This way, we can see what the lowest cash flow is likely to be for the company. Our best case forecast shows the highest we think cash flow might be. While the results will likely come in somewhere between these extremes, having the worst and best case forecasts gives us a good feel for the company.

Low Flying Airlines Cash Flow Statement (\$ millions)							
	Actual				Forecast		
	2010	2011	2012	2013	2014	2015 low	2015 high
1. Net Income	\$ 12	30	-12	8	15	6	30
Add back:							
2. Depr. and amort.	20	22	20	18	16	20	24
3. <u>Deferred tax</u>	<u>3</u>	<u>2</u>	<u>0</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>3</u>
4. Cash flow from ops.	\$ 35	54	8	28	33	27	57
minus:							
5. Debt repayments	10	24	11	11	8	7	7
6. <u>Preferred dividend</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
7. = Free cash flow	25	30	-3	17	25	20	50
minus:							
8. Common dividend	4	4	1	2	2	2	4
9. <u>Capital spending</u>	<u>21</u>	<u>20</u>	<u>12</u>	<u>10</u>	<u>14</u>	<u>40</u>	<u>50</u>
10. = Net cash flow before external financing	0	6	-16	5	9	-22	-4
plus:							
11. <u>External financing</u>	<u>-</u>	<u>-</u>	<u>16</u>	<u>-</u>	<u>-</u>	<u>?</u>	<u>-</u>
12. = Net change in cash	0	6	0	5	9		

Line 1. Net income has been very erratic for this company. Because it costs about the same amount of money to fly a plane between two cities regardless of how many passengers are on it, a small increase in the average number of passengers per flight can produce a significant change in the airline's earnings. This makes it very hard to forecast airlines' future earnings, and therefore investors would be wise to use a wide range of forecasts. Our high end, or best-case estimate for 2015, shows how good things are likely to be if all goes well; and the low end, or worst-case estimate, reflects where we think earnings are likely to be if business turns down.

The process of making an earnings estimate is beyond the scope of this book. It is the job of professional securities analysts. For this discussion we will assume that the earnings estimates for 2014 and 2015 were obtained from published consensus estimates, which reflect the average estimates of all analysts covering this stock whose estimates are publically available. For 2014

the analysts are forecasting earnings to be about twice the 2013 level, with a range of \$15 million to \$20 million. We will be conservative and use the low end of that range, \$15 million. Forecasting 2015 earnings is more difficult because it is further away and a lot can change between now and then, and the airline analysts are using a wider range for their estimates. The highest estimate in 2015 reflects the assumption that earnings return to the 2011 level of \$30 million. The lowest estimate assumes earnings drop to \$6 million. This is a wide range of earnings, but since either end of the range is possible, we as investors must look at the consequences for the company and stock if either comes to pass.

Line 2. Depreciation for this company is a much more important part of cash flow than it was for XYZ above. This is generally true for *capital intensive companies*.* Depreciation has been declining in recent years, probably reflecting the declining capital expenditures from 2010 to 2013 and the declining depreciation on the company's older airplanes. Note that depreciation is forecast to jump in 2015, reflecting the sharp increase in capital spending that year.

** Capital intensive means that a large portion of the company's costs are for capital equipment; that is, the company is dependent on a lot of expensive machinery or equipment. Companies like automobile or appliance manufacturers that fabricate a lot of metal are capital intensive because they need a lot of machinery, presses, forges, and the like to work the metal. Airlines and railroads and electric power companies are also capital intensive because of the cost of the equipment. These capital intensive companies will have a high level of depreciation, reflecting the expensing of the capital cost to buy that equipment. In contrast, service companies such as brokerage firms, advertising agencies, and insurance companies are labor intensive, meaning that labor costs are the largest part of their total costs. Service companies do have some capital costs, such as their offices and computers, but the depreciation of these items is far less important than their labor costs. Capital intensive companies also have labor costs, but they are less significant than the capital costs.*

Line 3. Deferred tax is hard to forecast but is a small part of the total cash flow from operations.

Line 4. Like net income, cash flow from operations for this company is very volatile, and the annual figure itself will mean more when we see what it needs to be used for.

Line 5. Debt repayments consistently run at a high level for this company, probably indicating that the company maintains a high level of debt. Fortunately, in 2011 when the company had a very large repayment, earnings were strong and the company was able to meet the debt repayment with cash flow from

operations. On the other hand, in 2012, even with a smaller debt repayment, the company was unable to generate enough cash flow from operations to meet the debt repayment, and needed to do an external financing. Debt repayments appear minor in 2014 and 2015, and reference to the footnotes in the annual report shows that they stay low in 2016 and 2017 as well. Thus, debt repayment, while important, does not appear to be the major factor in the company's finances in the next few years.

Line 6. The company has no preferred stock.

Line 7. Free cash flow went negative in 2012, meaning the company had to either use cash reserves or raise external capital. The company chose the latter (line 11). Our forecasts show that free cash flow will remain positive in 2014 and 2015 but will not be adequate to meet 2015 capital spending needs.

Line 8. The common dividend was cut sharply in 2012 when the required debt repayment (line 5) was greater than the cash flow from operations (line 4), and outside financing was required. The company could have chosen to maintain the \$4 million dividend, as it was not a very large figure, but with the company losing money and some uncertainty at that time as to when the company might become profitable again, the company directors decided it was prudent to reduce the dividend. This would not have been viewed favorably by the company's investor base. On the other hand, the fact that they did not eliminate the dividend altogether suggests that they did not feel that the company was in serious trouble. When earnings recovered in 2013, management cautiously began to raise the dividend again, a sign that they were optimistic about the potential for continued recovery of earnings. Another dividend increase in 2014 or 2015 seems unlikely, however, because the company will probably prefer to save cash for the big capital spending program that is scheduled to begin in 2015 (line 9). Alternatively, management might reason that they are most likely going to need to do an external financing in late 2015 or 2016 and therefore by raising the dividend early in the year, the stock price might rise so that an equity financing can be done with minimal dilution. We will assume that if earnings return to the old high level of \$30 million (our best case estimate), the dividend might be increased back to the \$4 million level.

Line 9. It is typical for capital intensive companies to have a big capital spending program for a few years that substantially modernizes or expands the plant and equipment, and then have capital spending decline to a low maintenance level for a period. For airlines, a big spending program would reflect upgrading or expanding their fleet of planes. In fact, the company had stated in its annual report that it would be buying a new generation of airplanes to replace more than half its fleet, and that the spending program was projected

to cost between \$40 million and \$50 million in 2015 and somewhat less in 2016. We will use the low end of management's range for the 2015 low-end estimate. This assumes that if earnings are poor that year, the spending program may be delayed—that is, the delivery of some of the planes may be pushed back a year.

Line 10. Given the company's capital spending needs and debt repayment schedule, net cash flow has never been very big, and in fact went negative in 2012 and appears likely to be negative again in 2015 and possibly 2016, depending on the size or timing of the capital spending program. If earnings appear likely to come in near the low end of the 2015 range, then cash flow will be very negative and a large financing will be necessary unless the company is able to delay a large portion of its capital spending program, and it reduces or eliminates the dividend. Even if earnings come in at the high end of the 2015 forecast range, the company will have negative cash flow for the year, but in this case the amount will be small and the company should have no trouble financing it, possibly with just short-term bank borrowing.

From line 10, therefore, investors can see that the earnings level in 2015 will be critical. If earnings are down from the 2014 level, a large outside financing will be necessary, and that could be very expensive. In a debt financing (borrowing) the company would probably have to pay a high rate of interest for a couple of reasons; first, because this company already has a lot of debt, and second, with the company's erratic earnings, bond investors will consider this a high-risk company. An equity financing would probably also be expensive (in terms of dilution) because if earnings are at a low level and the company needs a lot of money, the stock will almost certainly be down, which means a lot more shares will need to be sold to raise the money.

Thus, the stock is likely to go down unless earnings are coming through at a high level. Since a low stock price could make it impossible to do an equity financing, it is possible that the company could be unable to fund (pay for) its new planes and the company might be forced sell out to another airline or might be headed toward bankruptcy.

Since investors are generally cautious, the stock will probably not rise while investors wait to see if earnings will be strong. If earnings are disappointing, the stock may then decline sharply, but if earnings are strong, the stock could move up sharply. Thus, investors will closely watch each quarter's report to see how earnings are trending. They will also be watching other airlines' earnings for indications of how airlines in general are doing, and watching industry statistics to see whether air travel is increasing or decreasing. They will also be watching the newspapers for price wars on tickets, which would hurt company earnings

even if the volume of ticket sales is rising. In sum, investors will be watching everything they can to anticipate earnings before they are reported.

In this chapter we looked at two companies where debt repayments were critical items on the cash flow statements and one company where a major capital spending program was a critical item. Every company's situation is different. The important lesson here is that investors must look beyond the income statement and look at the cash flow statement to see if cash flow from operations is sufficient to meet all requirements and still have enough left over to provide for company growth, or increased dividends, or whatever the company's directors may choose. Cash flow projections can show us, in advance, whether a company's cash flow from operations will be sufficient to meet its upcoming debt repayment and capital spending needs and therefore will give us an indication of whether the company may need to do an outside financing, or may be inclined to cut the dividend. These facts will usually have a direct impact on whether the stock is going up (or down).

Inventory Accounting—Impact on Company Earnings

We saw in Chapter 1 that when Jones Mousetrap Company sold a mousetrap, the cost of manufacturing the mousetrap was removed from *Finished goods inventory* on the balance sheet and added to *Cost of goods sold* expense on the income statement. In that simple example, we were able to calculate the exact cost of each mousetrap, which was the combination of the raw materials cost plus the labor cost that went into making the trap. In many companies, however, keeping track of the inventory cost of each item manufactured is either not practical or not possible, so certain assumptions must be made. We will see in this chapter that different, but reasonable, assumptions can cause reported earnings to be either higher or lower than they otherwise would be.

LIFO AND FIFO INVENTORY VALUATION ASSUMPTIONS

Let's look at a company where it is not possible to know exactly what the inventory cost was, and see what assumptions they must make. Consider a copper company that buys raw copper ore, smelts and processes it, and then sells finished copper. In this company the inventory cost is difficult to compute because new ore is being continuously added to the melting furnace and mixed with the old ore already there.

Assume that on January 1, the Dirty Copper Company (DCC) bought 1,000 pounds of raw copper at \$6 per pound and put it into a smelting furnace or vat for processing. On February 1, DCC added another 1,000 pounds of raw copper to the vat, but this time DCC paid \$7 per pound. On March 1, DCC added another 1,000 pounds at \$8 per pound. There were now 3,000 lbs. of copper all mixed up in the vat at a total cost of \$21,000.

January 1	1,000 lbs. at \$6/lb.	=	\$ 6,000
February 1	1,000 lbs. at \$7/lb.	=	7,000
March 1	1,000 lbs. at \$8/lb.	=	8,000
			<u>\$ 21,000</u>

On March 31, DCC sold 2,500 pounds of finished copper at \$10 per pound, for a total sale of \$25,000. How much did the 2,500 pounds cost DCC? That is, what cost should be taken out of *Inventory* and added to *Cost of goods sold*? Did DCC sell all of January's \$6 copper plus all of February's \$7 copper, plus half of March's \$8 copper? Or did DCC sell all of March's \$8 copper, all of February's \$7 copper, and half of January's \$6 copper? There is no way to know since all the copper was mixed evenly in the vat. Thus, one of three assumptions must be made. First, it can be assumed that the *first* copper that came in was the first that was sold. Using this assumption, all the January, February, and half of the March copper was sold. This method of inventory accounting is called *FIFO—first in, first out*. Second, it can be assumed that the *most recent* copper to come in was the first copper to go out. That is, all the March, February, and half the January copper was sold. This method of inventory accounting is called *LIFO—last in, first out*. Third, it can be assumed that the copper was sold at an average price of the three. While some companies keep inventories on an average-cost basis, this takes quite a bit of paperwork because new raw materials are usually coming in at different prices throughout every working day, and goods are usually being sold throughout every working day. Thus, most companies find it more practical to use either the FIFO or the LIFO method. Which of the two methods is chosen can have a meaningful effect on reported earnings, as shown.

FIFO		LIFO	
Cost of 2,500 lbs.		Cost of 2,500 lbs.	
1,000 lbs. @ \$6/lb. =	\$ 6,000	500 lbs. @ \$6/lb. =	\$ 3,000
1,000 lbs. @ \$7/lb. =	7,000	1,000 lbs. @ \$7/lb. =	7,000
500 lbs. @ \$8/lb. =	4,000	1,000 lbs. @ \$8/lb. =	8,000
<u>2,500 lbs.</u>	<u>\$17,000</u>	<u>2,500 lbs.</u>	<u>\$18,000</u>

Income Statement Using FIFO		Income Statement Using LIFO	
Inventory Accounting		Inventory Accounting	
Sales	\$25,000	Sales	\$25,000
Cost (FIFO)	<u>17,000</u>	Cost (FIFO)	<u>18,000</u>
Profit	\$ 8,000	Profit	\$ 7,000

Left in Inventory at March 31	Left in Inventory at March 31
500 lbs. @ \$8/lb. = \$4,000	500 lbs. @ \$6/lb. = \$3,000

LIFO accounting results in Cost of goods sold being valued at most-recent cost (called *current* cost), whereas FIFO accounting results in Cost of goods sold being valued at oldest cost (called *historical* cost). Thus, in a period when the purchase price of raw copper is steadily rising (as in our example), LIFO results in a higher Cost of goods sold, leaving lower profit. Also, LIFO leaves a lower cost for the inventory remaining on the balance sheet. Conversely, FIFO inventory accounting results in a lower Cost of goods sold and higher profit, and it leaves a higher cost for the inventory reported on the balance sheet. Note that the selling price of the finished copper has nothing to do with the LIFO/ FIFO difference. Obviously, the higher the selling price the more profit; but regardless of the selling price, the FIFO cost of goods sold in this example will always be lower than the LIFO cost of goods sold, and therefore, the FIFO profit will always be higher than the LIFO profit for any given selling price *when the price of copper is rising*.

Again, the statements in the last paragraph are true as long as the price of copper is rising. If the purchase price of raw copper is steadily falling, the

opposite would be true (i.e., the words *higher* and *lower* would be reversed). Work this out for yourself by making up a similar example but with prices steadily falling.

Thus, in a period of rising prices, if an investor is looking at two companies that have the same EPS, stock price, P/E multiple, and are similar in every other way except that one uses LIFO and the other uses FIFO, the company that uses LIFO would probably be the better stock to buy because, if it switched to the FIFO inventory method, earnings would increase and the stock might go up. If these two companies were truly similar except for the LIFO/FIFO accounting difference, the company using LIFO would likely sell at a slightly higher price-earnings ratio, reflecting the potential earnings improvement. Or, another way to look at it, the LIFO company would likely get a higher price/earnings ratio because it has a higher “quality” of earnings.

ADJUSTING THE INVENTORY VALUE AT YEAR-END TO LOWER-OF-COST-OR-MARKET

At the end of the year, if the price for which the finished goods inventory can be sold has fallen to a level which is below its value on the balance sheet, most companies will reduce the inventory value on the balance sheet down to the price for which it can be sold. The amount by which the inventory value is lowered is also added to Cost of goods sold for the year. This is called *writing the inventory down* or *adjusting the inventory to the lower-of-cost-or-market* (LOCOM). *Cost* in this case means what the inventory cost to make, whether using LIFO or FIFO assumptions. *Market* means what the goods can be sold for on the open market today. Of course, if the price for which the goods can be sold is higher than the inventory cost, whether determined by LIFO or FIFO, there is no inventory adjustment to be made.

To illustrate when a LOCOM inventory adjustment might occur, and how big it might be, suppose DCCs only sales and purchases of copper during the entire year were those in January-March, shown above. DCC’s

uses FIFO accounting for inventory purposes and adjusts the year-end inventory on a Locom basis, if necessary. When the treasurer of DCC was initially putting together the financial statements for the year, they looked like this:

Income statement 1/1/12 to 12/31/12		
Sales		\$25,000
Cost of goods sold	\$17,000	
SG&A	3,000	
Depreciation	1,000	
	<u>21,000</u>	<u>21,000</u>
Profit before tax		4,000
Tax		<u>2,000</u>
Profit after tax		<u><u>2,000</u></u>

Balance sheet 12/31/12
Company Using FIFO Inventory Accounting

Assets	Liabilities
Current assets:	Current liabilities:
Cash \$ 1,000	Short-term debt \$ 4,000
Inventory 4,000	Taxes payable 1,000
Accts. Receivable 2,000	Total cur. liabilities 5,000
Total current assets 7,000	Long-term debt none
	Equity
Fixed assets:	Stockholder's equity:
Gross PP&E 20,000	Common stock 1,000
Accum. Depreciation 7,000	Capital surplus 5,000
Net PP&E 13,000	Retained earnings 9,000
Total assets <u>\$ 20,000</u>	Total liabilities & equity ... <u>\$ 20,000</u>

Before these statements were made final, however, the treasurer realized that the price for which the finished copper could be sold had fallen to \$7 per pound. But DCC was carrying its inventory at a value of \$8 per pound.

Thus, the inventory had to be *written down* to \$7 per pound.

On balance sheet:	500 lbs. @ \$8/lb.	=	\$ 4,000
At market price:	500 lbs. @ \$7/lb.	=	<u>\$ 3,500</u>
	Inventory write-down		\$ 500

This \$500 is subtracted from Inventory to reflect a more realistic value of the inventory, and is taken as an expense on the income statement in the Cost of goods sold. The rationale for expensing it is that the decline in the price of

finished copper resulted in a loss of value to the company (i.e., the finished copper is worth less now than when it was processed).

After these adjustments, the new financial statements would appear as follows. The account numbers that have changed are in italics.

Income statement 1/1/12 to 12/31/12		
Sales		\$ 25,000
Cost of goods sold	<i>\$ 17,500</i>	
SG&A	3,000	
Depreciation	1,000	
	<u>21,500</u>	<u>21,500</u>
Profit before tax		<i>3,500</i>
Tax		<u>1,750</u>
Net profit		<u><u>1,750</u></u>

Balance sheet 12/31/12
Company Using FIFO Inventory Accounting with LOCOM

Assets	Liabilities
Current assets:	Current liabilities:
Cash \$ 1,000	Short-term debt \$ 4,000
Inventory 3,500	Taxes payable 750
Accts. Receivable 2,000	Total cur. liabilities ... <u>4,750</u>
Total current assets 6,500	Long-term debt none
	Equity
Fixed assets:	Stockholder's equity:
Gross PP&E 20,000	Common stock 1,000
Accum. Depreciation <u>7,000</u>	Capital surplus 5,000
Net PP&E 13,000	Retained earnings <u>8,750</u>
Total assets <u>\$ 19,500</u>	Total liabilities & equity ... <u>\$ 19,500</u>

In addition to the change in Inventory, note also the following changes. On the income statement, the *Cost of goods sold* increased by \$500, the amount of the inventory write down. This, in turn, lowered the *Profit before taxes*, *Tax*, and *Net profit* accounts. Therefore, on the balance sheet, *Taxes payable* is lower; and since profit is lower, *Retained earnings* is also lower.

Note that had the company been using LIFO accounting, the inventory on the balance sheet would have had a cost of \$6 a pound, and there would have been no inventory adjustment, because in that case, the inventory would already be valued at the lower of cost (\$6) or market (\$7).

The important point here is that in an industry where raw materials prices are falling, investors must be aware of the possibility of year-end inventory write-downs. The semiconductor industry provides an excellent example. As semiconductor technology improved, semiconductor chip selling prices came down. This induced more electronic goods manufacturers to use semiconductor chips. The larger volume of business enabled chip

manufacturers to further increase manufacturing efficiency with the result that further selling price declines continued. New semiconductor products went through a similar cycle whereby selling prices started high and gradually came down as even better semiconductor chips were introduced.

Since the price at which chips can be sold is usually declining, chip manufacturers try to keep as little inventory on hand as possible; but of course there are always some products in inventory that have not been sold which will have to be written down when their expected selling price falls below manufacturing cost. In some years, the amount of unsold product requiring a LOCOM write down will be larger than in other years. These varying LOCOM write-downs produce an erratic pattern of earnings over time. To try to smooth out the effects of such write-downs, most manufacturers of these products write down their inventory every quarter if necessary. Thus, the adjustment at the end of the year should be no bigger than the other quarterly adjustments, and a smoother flow of earnings should result.

If the company only adjusted its inventory at the end of the year, it might show high earnings for the first three quarters and then practically nothing, or even a loss in the fourth quarter. The total earnings for the year would be the same whether the inventory write-downs were taken each quarter or only at year-end; but if the entire write-down were done at year-end, it would create a false impression of high profits during the first three quarters. With high profits in the first three quarters, investors might be misled to believe that the company's outlook was better than it really was, and they would bid up the price of the stock. Then, when the disappointing earnings were reported in the last quarter, the stock would plunge as people saw their mistake. More important, the fear that this might happen again could cause investors to avoid the stock in the future. By having an inventory write-down and earnings adjustment every quarter, the company's quarterly stream of earnings would be smoother, negative surprises would be avoided or minimized, and more investors might be comfortable holding semiconductor stocks. Such stocks, then, over a period of time, will likely sell at a higher average price than if negative earnings surprises were continually occurring.

Unexpected Inventory Write Downs

In the case of semiconductor chips, where prices are almost continuously falling, and the companies write down their inventory every quarter, such write-downs might only produce minimal distortion to the company's earnings growth pattern. But in other businesses in which inventory write-downs are not the norm, such write-downs can come as a surprise to investors. Sometimes this can be an indication that the company is having a serious problem, and the stock should be sold, and other times the write-down may be a non-recurring, or one-time event that will have minimal impact on the company's long term growth, and thus can be ignored.

To see an example of each, let's look at Specialty Computer Corp. (SCC). SCC is a medium sized company that has enjoyed increasing sales and earnings selling specially designed computers for specific industrial applications for which normal PCs or business computers are not adequate. The table below shows SCC's historical earnings growth, and expected earnings over the next two years, as estimated by investment analysts who follow the company closely.

	2011	2012	2013	2014E	2015E
Earnings per share	\$1.10	\$1.35	\$1.64	\$2.00	\$2.40

In April of 2014, SCC announced its earnings for the first quarter (which ended March 31.) Investors and analysts who followed the company had been expecting earnings per share of somewhere between \$0.40 and \$0.50 per share. Instead, reported earnings were only \$0.12 per share. The earnings release said that sales of a certain model of its computer line had been disappointing due to pressure from competitors. Fewer of that kind of computer were sold, and the company had to sell them at a lower price in order to compete. In addition, the company said that the remaining unsold inventory of that model was nearly obsolete and could only be sold at a price below its cost of manufacture. As a result, management said it took an *inventory write-down* which, by itself, reduced earnings per share by \$0.10.

Investors now had to change their earnings forecast for the year. SCC had reported earnings of only \$0.12 per share in the first quarter. Because the \$.10 inventory write-down was "non-recurring," meaning that it should not happen again, investors could reasonably "add back" the \$0.10 per share to the reported earnings of \$0.12 per share, and say that first quarter earnings

would have been \$0.22 per share had the non-recurring write-down not happened. But even had earnings been \$0.22 per share, it was still well below the forecast of \$0.40—\$0.50 per share. This indicated that something was wrong, which of course was confirmed by SCC’s press release which said that increasing competition was rendering one of its models obsolete, meaning that sales of that computer would no longer be contributing to sales and profits.

So even though part of the earnings shortfall was non-recurring, it was clear that SCC is likely to have lower earnings for some period of time, perhaps a long time, unless they could redesign the obsolete computer and regain their sales growth. At this time there is no way to know how long that might take, or if it will happen at all. The stock of SCC will undoubtedly fall to a level which reflects expectations of much lower earnings, and the risk that SCC might never regain its market share.

In practice, investment analysts would contact the company, computer consultants, and perhaps customers of SCC to try to get a better idea of how serious the problem is with the disappointing SCC model. Meanwhile, investors might now estimate that second quarter earnings will be closer to the \$0.22 per share that SCC would have earned in the first quarter, had the inventory write-down not occurred, and earnings estimates will likely be revised lower for both the full years 2014 and 2015. The resulting earnings pattern might now look something like this.

	2011	2012	2013	2014E	2015E
Earnings per share	\$1.10	\$1.35	\$1.64	0.75*	\$0.90

* Includes non-recurring inventory write-down of \$0.10 per share.

With these lower earnings estimates, and investors having less confidence in the company’s future growth rate, the stock could easily fall to less than half the level it had been trading at before the problem was announced.

This is an example where an inventory write-down indicated a significant problem. Although part of the reason for the lower-than-expected earnings may have been “non-recurring,” it reflected a problem (the obsolete

model) that might take years to correct. In the next example, the inventory write-down is larger, but does not appear indicative of an ongoing problem.

Let's look at another computer company, KLM Industries. KLM's earnings history and forecasts were the same as those for SCC (prior to the disappointing SCC news.)

	2011	2012	2013	2014E	2015E
Earnings per share	\$1.10	\$1.35	\$1.64	\$2.00	\$2.40

It is now November of 2014, and KLM's earnings per share for the first half of the year were \$0.92. Earnings estimates for the third quarter (which ended on September 30) had been in a range of \$0.50—0.55 per share, and the estimates for all of 2014 were about \$2.00 per share. But KLM surprised investors by reporting third quarter earnings of only \$0.34 per share. The press release said that there was a write down equal to \$0.20 per share reflecting some computer boards that had a manufacturing defect. The defect was discovered too late to salvage the computers that contained the bad boards. As a result, the carrying value of the computers with the defect that were still in inventory were *written down to zero*, accounting for a \$0.14 per share inventory write-down.

In addition, a few of the defective computers had been shipped to customers. As a result, the company announced that it also had incurred extraordinary warranty costs to repair or replace those computers, and would incur some additional, one time only, costs to correct the manufacturing process that caused the defect. The costs of these latter two items came to \$.06 per share.

Upon the release of the news, the stock price immediately fell from \$40 to \$28. Although it appeared from the press release that the defect and all the related costs and expenses were nonrecurring, investors couldn't be sure that the announcement was not masking a deeper problem.

Over the next few weeks, however, as investment analysts talked to KLM management and checked with KLM customers, it appeared that the problem was no worse than had been announced, and would not have any long term impact on the company. The stock began to move back up.

Looking again at third quarter earnings, KLM had reported \$0.34 per share, but also said the non-recurring write-off of bad inventory and related costs was equal to \$0.20 per share. Adding the \$0.20 back to the reported \$0.34, it appears that KLM would have earned \$0.54 per share had the problem not occurred—right in line with analysts’ estimates of \$0.50–0.55 per share. The press release also indicated that fourth quarter earnings might be slightly lower than previously expected, because KLM was not sure it could rebuild inventory fast enough to meet demand during the quarter.

The company further said that it expected to be caught up by the end of the year, and that no permanent loss of customers was anticipated. In other words, there would be little or no lasting effect on the company.

With this information, investment analysts now lowered their earnings per share estimates for 2014 to a range of \$1.70–\$1.80. Many analysts also lowered their 2015 estimates modestly, just to be cautious, but others kept their 2015 earnings estimates at \$2.40 per share, as it appeared that all the costs and expenses associated with the manufacturing problem would be resolved before 2015. The earnings pattern now looks like this.

	2011	2012	2013	2014E	2015E
Earnings per share	\$1.10	\$1.35	\$1.64	1.70*	\$2.30 - 2.40

* Includes non-recurring write down of inventory and related costs of \$.20 per share.

Most likely, the stock will recover to where it had been before the November earnings announcement. Although 2014 earnings will be lower than originally expected, it appears that nothing happened that would impact the company’s long term earnings growth.

We have just seen examples of inventory write-downs that had very different implications for the company’s stock. In the first example, the write down reflected a serious company problem that was going to lead to a loss of customers, and would take some time to recover from, if ever. This would likely hurt the stock price significantly and for some time to come. In the second example, the inventory write-off was caused by a one-time, non-recurring problem and was not expected to lead to a loss of customers or reduction in the company’s long-term growth potential. As a result, the

initial price decline in the stock when the inventory write-down was announced turned out to be a great buying opportunity for investors.

Thus, alert investors, upon seeing an announcement of an inventory write-down, will respond quickly; find out the reasons for the write-down, make a judgment as to the size and duration of the impact on the company, and then buy or sell the stock as they think appropriate.

SUMMARY

Determining the value of Inventory and Cost of goods sold is rarely as easy as in the case of JMC. Fluctuating prices of raw materials, as well as selling prices of finished goods, can combine with LIFO or FIFO accounting techniques and LOCOM inventory write-downs to produce distortions in a company's reported earnings that can be misleading to investors who are trying to determine a company's ability to generate future earnings growth. Investors must pay close attention to footnotes in a company's financial statements, and to management's comments in press releases, quarterly earnings calls, and annual reports to shareholders.

Part 4

Why Stocks Go Up and Down

Price/Earnings and Other Evaluation Ratios: When Is a Stock Cheap or Expensive?

Ask a professional investor why stocks go up and down, and you will be told that each situation is different. That statement is probably correct, but it is not very useful. In this chapter, we will provide a framework for understanding and evaluating stock price behavior. First, we will discuss the price-to-earnings ratio, which is the method most used by investors to value a company's stock. We will then look at how to evaluate the relationship between a stock's P/E ratio and the company's earnings growth rate. We will see that the market is a *discounting mechanism*, which is Wall Street language meaning that stock prices (and P/E multiples) often move up or down *in anticipation of* changes in future earnings. We will also look at the price-to-cash-flow ratio, Enterprise Value/EBITDA, and other metrics investors use to value a stock. Taken together, these valuation methods will help the reader determine when a stock is undervalued, fairly valued, or overvalued.

STOCK PRICES ARE RELATED TO A COMPANY'S LONG-TERM EARNINGS OUTLOOK

A company's ability to generate a profit over time is ultimately what creates increasing shareholder value and will be reflected in a rising stock

price. In Chapter 4 we showed why the price of a share of stock can best be related to a company's earnings and the dividends it is currently paying, or potentially could be paying in the future to its common stockholders. We saw in Chapter 16 that the best measure of the company's ability to pay dividends in the long run is its ability to generate free cash flow—that is, cash flow after the company has met its “survival” needs; debt repayment, maintenance level capital spending, and preferred dividends. A company that has cash on the balance sheet can always choose to pay a dividend, or a company can borrow money to pay its dividend, but eventually the company's cash gets spent, and the ability to borrow more money dries up as the company takes on too much debt. Thus, again, the best measure of the ability of a company to pay dividends in the long run is the company's ability to continuously generate enough earnings to meet all company needs and have enough left over to pay dividends.

If a company is earning enough to pay a dividend, it may not matter whether the company is actually paying the dividend. The stockholders benefit whether there is a dividend or not. Whatever earnings are not being paid as dividends are being retained in the company as reflected in the Retained Earnings account (see Chapter 2), and can be spent on such things as new plant and equipment, more sales and other personnel, new product development, and acquisitions of other companies, all of which enable the company to grow faster. This can result in even larger dividends in the future and a higher stock price.

This is why small, rapidly growing companies usually do not pay dividends. These companies expect that by reinvesting earnings back into the company now, it will lead to a higher level of earnings in the future. This expectation of higher future earnings causes the stock to move up now as the market discounts (anticipates) the higher future earnings.

As successful companies mature and generate more and more free cash flow, they often times initiate a dividend. Since company management and directors are best positioned to assess the company's long term potential, their decision to initiate a dividend sends a positive signal to the market, indicating their confidence in the company's future prospects and its ability to generate enough free cash flow to fund its operations and pay a dividend to shareholders. Investors like to see a steady—or even better, a steadily increasing dividend. In either case, for small, rapidly growing companies, or

for mature dividend paying companies, it is the long term growth and free cash flow that drives stock prices.

THE PRICE/EARNINGS RATIO

The price/earnings ratio, or P/E, is probably the most commonly used tool for determining whether a stock is cheap or expensive. The P/E ratio is simply the stock's current price per share divided by the earnings per share of the company. (A common mistake that many new investors make when calculating P/E is to divide the price *per share* by total net income, rather than net income per share.) To calculate the P/E multiple, either divide price per share by earnings per share, or divide the company's total market capitalization by total net income; both will result in the same value for P/E.

$$\text{P/E ratio} = \frac{\text{Stock price per share}}{\text{Earnings per share}} = \frac{\$30}{\$2} = 15x$$

This company is earning \$2 a share and its stock is selling at \$30 a share. Thus, it has a P/E of 15x. That is, its stock is selling at 15 times its earnings per share. On Wall Street, one might hear “the stock is selling at fifteen times.” The words *earnings per common share*, or *earnings per share*, are assumed and do not need to be said. One might also say, “The stock is selling at a 15 multiple,” or “The market is capitalizing this company's earnings at 15 times.” These all say the same thing and are used interchangeably. Other abbreviations for the price/earnings ratio are P.E.R., P.E., P-E, or just PE.

As we look at how price multiples are used in valuing a stock, we will use EverConnect (EVCT) as our primary example. The company provides cloud storage and related services, allowing customers to store their photos, documents, and videos on the cloud, so that they can be accessed from any computer, tablet, or phone with an internet connection. Some examples will use other companies.

When talking about a company's price/earnings ratio, it is important to specify which year's earnings you are talking about. With EverConnect stock at \$30 in September 2013 and the earnings forecasts shown in Table 18.1, we can calculate EVCT's P/E ratio for each year.

**Table 18.1 Calculating EVCT Price/Earnings Ratios
with EVCT Stock at \$30/Share**

EVCT @ \$30/share	2012A	2013E	2014E	2015P
Estimated earnings per share (EPS)	\$1.82	\$2.00	\$2.20	\$2.42
Price/earnings ratio (P/E)	16.5x	15.0x	13.6x	12.4x

In Table 18.1, the “A” beside 2012 means *actual*. That year has been completed and earnings were \$1.82 per share. The “E” beside 2013 and 2014 means *estimated* and the “P” beside 2015 means *projected*, implying a lower confidence than the nearer years’ estimates.

With EVCT stock at \$30 in Sept. 2013 and EVCT’s 2012 reported earnings of \$1.82, we would say EVCT is selling at a P/E of 16.5 times *trailing* earnings. *Trailing* means the P/E is based on the past year (2012) or past 4 quarters.

Other terminology you will see in P/E discussions include: “NTM” which means the earnings expected over the Next Twelve Months, and “LTM” which means earnings reported over the latest or Last Twelve Months. For instance, a discussion of LTM EPS in early April of 2013 would include the earnings reported for the first quarter of 2013 (the quarter ending on 3-31-13), and the earnings for the last three quarters of 2012. In early April 2013, the NTM estimate refers to an earnings estimate for the remaining three quarters of 2013 and the first quarter of 2014. The term “Trailing 12” means the last 12 months (same thing as LTM).

You might be wondering, “Where do these estimates come from?” Investment banks such as Morgan Stanley, Goldman Sachs, and others, employ analysts to follow stocks and issue earnings estimates and stock ratings on the companies they follow. Many of these earnings estimates are available to the public. All of the published estimates for a particular company are then aggregated by data providers such as FactSet, Bloomberg, and Thomson, to arrive at a consensus estimate. The consensus can be the average or the median estimate. Consensus estimates are available from a variety of internet services such as Yahoo! Finance. Some brokers like Ameritrade also provide consensus earnings estimates for their clients. Other data providers such as FactSet, Bloomberg, and Thomson, which are

available for an expensive monthly subscription fee, have a broader database.*

** Depending on the data source you are looking at, the time period for earnings estimates can be described in a number of different ways. Some data providers will use the actual years, i.e., 2013, 2014, etc. Others will label the year FY1, FY2, and FY3. For example, if in September 2013, an investor were analyzing a company with a December 31 fiscal year end, the FY1 consensus estimate would be the estimate for December 31, 2013. Likewise, the FY2 estimate would be the consensus earnings estimate for the year ended December 31, 2014. For a company that had a June 30 fiscal year, a P/E calculated in Sept. 2013 would use the EPS estimate for the fiscal year end June 30, 2014 as FY1, 6/30 2015 as FY2, etc. While most companies have a December 31 fiscal year end, each company has the discretion to select the fiscal year end that makes the most sense. For instance, companies in the retail sector typically have a January 31 year end so that the companies can better account for the large number of sales in December and related returns in January.*

Value investor and CEO of Berkshire Hathaway, Warren Buffet, has noted that using a trailing P/E ratio (which incorporates past year's earnings) is akin to "investing by using the rearview mirror." (Mauboussin, Michael. *More Than You Know: Finding Financial Wisdom in Unconventional Places*. New York: Columbia Business School Publishing, 2008.) This is because the price of a stock reflects investors' expectations of *future* performance. For this reason, forecasted earnings—rather than past year's earnings—should be used when looking at P/E ratios. When forecasted earnings is used, the calculated P/E is referred to as a "forward P/E."

Looking again at Table 18.1, we would say EVCT is selling at 15.0 times this year's (2013) estimated earnings, 13.6 times next year's estimated earnings, and 12.4 times 2015 projected earnings. Instead of writing "15.0 times," we usually just write "15x," which is read, "15 times." So we can say EVCT sells at 15x this year's earnings, 13.6x next year's earnings, and so on. The terminology used thus far is very important to stock price discussions, and the reader should become familiar with it quickly.

CHANGES IN EARNINGS OR THE P/E MULTIPLE, OR BOTH, CAN DRIVE STOCK

PRICE CHANGES

Changes in Earnings

If the price/earnings ratio stays the same over a period of time, then a stock's move will be entirely the result of the changes in earnings. Look at EverConnect, assuming it is September 2013.

$$\frac{\text{P / E}}{15x} \quad \times \quad \frac{\text{2013 EPS est.}}{\$2.00} \quad = \quad \frac{\text{Sept. 2013 Stock Price}}{\$30}$$

EVCT is selling at 15x the current year's (2013) earnings estimate. A year later, in September 2014, if the P/E remains the same (15x) and earnings have grown at 10%, then the stock price will be up 10%, from \$30 to \$33; the same percentage as the earnings gain.

$$\frac{\text{P / E}}{15x} \quad \times \quad \frac{\text{2014 EPS est.}}{\$2.20} \quad = \quad \frac{\text{Expected Sept. 2014 Stock Price}}{\$33}$$

If EVCT is a company that generally has steady earnings growth and little change in its P/E, investors can expect the stock to go up or down in line with the earnings. The stock price will still fluctuate over time because different investors will have different earnings forecasts and different ideas of what price/earnings ratio ought to be paid, and will choose different times of the year to start putting the 15x P/E ratio on next year's earnings.

Changes in P/E

The stock price can also change if the market (investors) believes the stock deserves to trade at a higher or lower multiple. Here again are the consensus EPS estimates (forecasts) as of September 2013 and the forward P/Es.

EverConnect @ \$30/share

	<u>2012 A</u>	<u>2013 E</u>	<u>2014 E</u>
Estimated EPS	1.82	2.00	2.20
Implied P / E		15.0x	13.6x

EverConnect's third quarter ended September 30, 2013 (3Q 2013) was reported on October 15. While EverConnect's earnings have historically grown at 10% per year, the company's 3Q 2013 results came in much stronger than expected, indicating that growth for the full year 2013 was likely to be above the historical 10% growth rate. Both sales and earnings were up sharply. On the conference call with investors* following the earnings report, management noted that the company is benefitting from the accelerating growth in tablet computing. Management further explained that they expected EVCT's more rapid sales and earnings growth to persist into next year and beyond. Management raised its earnings "guidance," saying that earnings growth was now expected to remain above the historical 10% growth rate, but did not give a specific earnings forecast. That guidance led Wall Street analysts and other investors to raise their earnings estimates. As a result of this "beat and raise quarter," Wall Street analysts covering EVCT revised their estimates higher for 2013 and 2014. The consensus forecasts for EverConnect's earnings moved up to \$2.18 for 2013 and \$2.60 for 2014, and expectations for the company's long-term growth rate were increased from 10% per year to between 16% and 20%. In November, a month after the earnings announcement, the stock moved up to \$40/share (see Table 18.2). As a result, the P/E on 2013 earnings expanded from 15.0x to 18.3x, and the P/E on the 2014 consensus estimate rose from 13.6x to 15.4x. The stock's move from \$30 to \$40 reflects both higher earnings forecasts and a higher multiple.

** Many companies hold conference calls for investors after each quarter's earnings are reported, or if there are other significant developments. On the call, management will review the results and sometimes give guidance about future sales and profitability. There is normally a question and answer period. Due to time limitations, widely held companies usually allow questions only from professional investors, but everyone is welcome to listen. The day, time, and phone-in number for the*

call, or web access link, are usually available on the company's website, often under an Investor Relations link.

The higher P/E that investors are willing to pay for EverConnect in November reflects their anticipation of more rapid growth in late 2013 and beyond as a result of the company's exposure to the rapid growth in the tablet market EVCT serves. In other words, the company's P/E multiple "expanded" to reflect the company's higher growth profile.

Table 18.2 Effect of Better-than-Expected Earnings

Stock price, EPS estimates, and P/E before the quarter (as of Sept. 2013)

Stock Price	2013		2014	
	EPS Est.	P/E	EPS Est.	P/E
\$30	\$2.00	15.0x	\$2.20	13.6x

Stock price, EPS estimates, and P/E after the quarter (as of Nov. 2013)

Stock Price	2013		2014	
	EPS Est.	P/E	EPS Est.	P/E
\$40	\$2.18	18.3x	\$2.60	15.4x

In this example, EverConnect's P/E multiple expanded rapidly as the stock moved from \$30 to \$40 in a month following the 3Q earnings "upside" surprise. Investors did not wait for the higher expected growth in earnings per share to occur. This *anticipation* by the market is a key concept that investors must understand. We will return to it.

The higher P/E that investors were willing to pay for EVCT reflected anticipation of more rapid growth beginning in late 2013 and beyond. It did *not* reflect investors deciding that the \$2 or \$2.18 earnings estimates for 2013 by themselves deserved a higher P/E. The higher P/E based on 2013 earnings was a byproduct of the stock's price move to reflect the more rapid growth expected in 2014 and beyond.

Changes in P/E generally occur much faster than changes in earnings. Investors who buy stocks where they see slow, steady earnings growth in stable companies can expect more or less steady stock performance relative to the market. Investors who buy stock in companies where they anticipate

changes in the P/E ratio can generally expect faster and bigger stock price moves relative to the market.

THE PRICE LEVEL OF A STOCK DOES NOT DETERMINE WHETHER THE STOCK IS “HIGH” OR “LOW”

How often have you heard someone say, “I am not going to buy that stock. The price is so high that I cannot buy enough shares to matter?” The following example illustrates the fallacy in that statement.

Suppose it is October 2013 and an investor calls his broker and says he has \$1,200 to invest. The broker recommends buying XYZ Industries, which is currently selling at \$60 per share. He expects XYZ earnings for this year, 2013, to be \$5 per share. Therefore, the stock is currently selling at 12x earnings. The broker also expects earnings to be up 50% next year to \$7.50 a share, and thinks the P/E ratio will remain at about 12x in the future. Thus, the broker is assuming the following:

	Estimated EPS		P/E ratio		Stock price
Current year: 2013	\$5.00	x	12x	=	\$60
Next year: 2014	\$7.50	x	12x	=	\$90

The investor with \$1,200 would currently be able to buy “only” 20 shares at \$60 each. A year from now, if the broker was right about earnings jumping 50% and the P/E remaining at 12x, then the investor would make a profit of \$600, or 50%.

	Number of shares		Price per share		Total dollars
Bought:	20	x	\$60	=	\$1,200
Sold:	20	x	\$90	=	\$1,800
Profit:					\$ 600

Now consider what would happen if XYZ had had a 5-for-1 stock split just before the investor bought the stock. In the event of a stock split (discussed in Chapter 6) the stock price and earnings per share are divided by the amount of the split. So after the split the stock price and earnings would look like this:

	Estimated EPS		P/E ratio		Stock price
Current year: 2013	\$1.00	x	12x	=	\$12
Next year: 2014	\$1.50	x	12x	=	\$18

After the split the stock would still be selling at 12x earnings, but now the investor with \$1,200 can buy 100 shares. XYZ earnings are still expected to grow at 50% in 2014; but as a result of the 5-for-1 stock split, the new EPS estimate for 2014 is \$1.50 per share ($\$7.50 \div 5$). The P/E ratio does not change because of the stock split. Therefore, the investor with \$1,200 would now have the following projected investment results.

	Number of shares		Price per share		Total dollars
Bought:	100	x	\$12	=	\$1,200
Sold:	100	x	\$18	=	\$1,800
Profit:					\$ 600

Notice that the projected profit to the investor is the same with or without the stock split. That is, the profit is the same whether the investor bought 20 shares of the higher-priced stock or 100 shares of the lower-priced stock. What determines the gain (or loss) in a stock is not the initial absolute price level of the stock, but is either (1) the percentage change in earnings if the P/E stays the same, as was the case here, or (2) the change in the P/E if the earnings level stays the same. Usually, of course it is a combination of the two, but in any case, the total profit earned by the investor is independent of the absolute price level at which the stock began, or the number of shares the investor was able to buy.

THE P/E, NOT THE ACTUAL PRICE, DETERMINES WHEN A STOCK IS “HIGH” or “LOW”

To understand this, let’s look at Company A and Company B. Both are in the same business, have the same expected growth rate of earnings, and both pay out 50% of earnings as dividends. But Company A sells at a lower price/earnings ratio.

	Earnings per share	P/E ratio	Price of stock	Dividend per share at 50% of earnings	Yield to investor per share of stock
Company A	\$10	10x	\$100	\$5	5.0%
Company B	2	25x	50	1	2.0

An investor with \$100 could buy one share of Company A and get a 5% yield on his money.

$$1 \text{ share Company A: } \frac{\$5 \text{ Dividend}}{\$100 \text{ Investment}} = 5\%$$

If the same \$100 were used to buy two shares of Company B, the investor would receive \$2 in dividends (\$1 per share), or a 2% yield on his investment.

$$2 \text{ shares Company B: } \frac{\$2 \text{ Dividend}}{\$100 \text{ Investment}} = 2\%$$

Therefore, although a share of Company A (selling at \$100) costs twice as much as a share of Company B (selling at \$50), we can say Company A is really the *cheaper* or lower priced stock, because it is yielding more dividends to the investor per dollar of investment. This higher dividend yield is a result of Company A’s lower price/earnings ratio.

To see this another way, look again at the comparison of Company A and Company B, but this time, assume Company B’s price/earnings ratio has

fallen from 25x to 10x, equal to that of Company A. Each company still has the same EPS it had before, but since investors are now only willing to pay 10 times earnings for Company B, its stock has fallen to \$20. Let's see how much dividend the investor can get for a \$100 investment in Company A or Company B.

	Earnings per share	P/E ratio	Price of stock	Dividend per share at 50% of earnings	Yield to investor per share of stock
Company A	\$10	10x	\$100	\$5	5.0%
Company B	2	10x	20	1	5.0

An investor with \$100 could still buy one share of Company A and therefore receive one dividend of \$5, for a yield of 5%.

$$1 \text{ share Company A: } \frac{\$5 \text{ Dividend}}{\$100 \text{ Investment}} = 5\%$$

Or, with Company B's stock having declined to \$20, the investor could now buy five shares of Company B, and since each share of Company B pays a dividend of \$1, the investor would now receive a total of \$5 in dividends, also a yield of 5%.

$$5 \text{ shares Company B: } \frac{\$5 \text{ Dividend}}{\$100 \text{ Investment}} = 5\%$$

What has happened is that Company B's lower P/E ratio resulted in a lower stock price, which enabled the investor to buy more shares of the stock and hence receive more dividends. Now, with the P/Es the same, a \$100 investment in either company yields the same amount of dividends, and we could say that both stocks, Company A and Company B, are "equally priced" or "equally valued" in terms of dividends earned per dollar of investment. This is true even though Company A still sells at a much higher price (\$100) than Company B (\$20). Other things being equal, an investor should now be indifferent between buying one share of Company A or five shares of Company B.

Note that in this example Company A and Company B were equally valued based on their equal dividends and equal P/Es. But equal P/Es should only reflect equal valuation when both companies are growing at the same rate. If Companies A and B both have the same earnings today, but Company A's earnings are growing at a faster rate than Company B's earnings, then Company A would likely sell at a higher P/E (and therefore higher price), reflecting the fact that earnings or dividends received by Company A shareholders in the future are expected to be higher than the earnings or dividends received by Company B shareholders.

At this point we have talked about the P/E being related to the expected earnings growth rate. The P/E an investor will be willing to pay for a stock is also related to the risk, or his confidence in his projected earnings growth. For example, an investor who is highly confident that a company will grow at a 10% annual rate would likely be willing to pay a higher P/E than another investor who also thinks that the company's most likely growth rate is 10%, but is less confident in her estimate because she is worried that an unexpected competitor may emerge, which increases the risk that her 10% earnings growth forecast will not be met.

WHETHER A STOCK'S P/E IS "HIGH" or "LOW" MAY BE BETTER JUDGED ON FUTURE EARNINGS THAN PRESENT EARNINGS

If two companies were identical today except that they were expected to have different earnings growth rates, the P/E would still be the best way to judge which stock is cheaper, but now the comparison is more difficult. In this case, it is more useful to determine which stock is cheaper by comparing the current price to the expected earnings a few years out.

Let's look again at EverConnect and compare it to its competitor DisConnect. Both companies have EPS in the current year of \$2 and a dividend payout ratio of 50% of earnings. DisConnect's product has become less popular with consumers, and as a result, the company's earnings are expected to grow at a rate of only 6% a year despite the strong industry growth trends. EverConnect's earnings are expected to grow at 16%

annually, so the earnings growth progression will look as shown below. Note that in this example, the earnings and earnings growth rates of EVCT are unrelated to the levels in the prior EVCT examples.

Table 18.3 High Growth vs. Low Growth Earnings Estimates

	<u>FY1</u>	<u>FY2</u>	<u>FY3</u>	<u>FY4</u>	<u>FY5</u>
EverConnect	\$2.00	\$2.32	\$2.69	\$3.12	\$3.63
<i>Y/Y Growth*</i>		+ 16%	+ 16%	+ 16%	+ 16%
DisConnect	\$2.00	\$2.12	\$2.25	\$2.38	\$2.52
<i>Y/Y Growth</i>		+ 6%	+ 6%	+ 6%	+ 6%

* *Y/Y=year over year, meaning this year's period compared to the same period a year ago. In this case we are comparing each full year to the prior full year. Y/Y can also denote a specified quarter compared to the same quarter a year earlier.*

Now, using today's stock prices of \$30 for DisConnect and \$36 for EverConnect, let's compare the price/earnings ratio and the dividend yield for the two companies this year, three years out, and five years out.

Current Year (2013)

	Stock Price		EPS Est.		P/E	Current Dividend (50% payout)	Dividend Yield
DisConnect	\$30	÷	\$2.00	=	15x	\$1	3.3%
EverConnect	36	÷	2.00	=	18x	1	2.8

Based on the current year, DisConnect appears to be the cheaper stock. It has a lower P/E and a higher dividend yield. But based on the expected EPS and dividends 3 years out, the P/E ratios and dividend yield comparisons look different.

Expected 3 years out

	Stock Price		EPS Est.		P/E	Est. Dividend (50% payout)	Expected Yield
DisConnect	\$30	÷	\$2.25	=	13.3x	\$1.13	3.8%
EverConnect	36	÷	2.69	=	13.4x	1.35	3.8

Using the three-year-out EPS estimates and today's stock price, it appears that EverConnect and DisConnect are trading at about the same multiple of 13.4x, and have the same expected dividend yield. So it's hard to say which is the cheaper stock based on these measures.

Now let's look five years out.

Expected 5 years out

	Stock Price		EPS Est.		P/E	Est. Dividend (50% payout)	Expected Yield
DisConnect	\$30	÷	\$2.52	=	11.9x	\$1.26	4.2%
EverConnect	36	÷	3.63	=	9.9x	1.82	5.1%

Looking at the expected P/E's and yields five years out, would you rather own EVCT at \$36 or DSCT at \$30 today? With EVCT's lower P/E and higher yield, and faster growth rate, EVCT is clearly the cheaper stock. If investors are confident about their forecasts, we would expect EVCT to start moving higher now, "discounting" some of the future expected growth. Note that if DSCT stays at \$30 and EVCT moves up from \$36, EVCT's higher current year (FY1) P/E and lower dividend yield will make EVCT look even more overvalued today compared to DSCT. But we can see that EVCT's higher valuation on today's earnings and dividends are justified by the much higher earnings and dividends expected five years out.

Let's also look at this another way. Let's assume that five years out, both companies are selling at a P/E of 15x that year's earnings (FY5).

Expected 5 years out

	EPS Est.		P/E		Stock Price
DisConnect	\$2.52	x	15x	=	\$38
EverConnect	3.62	x	15x	=	54

DisConnect would be selling at \$38 and EverConnect at \$54. Now let's look at the percentage gain in each stock.

	Stock price today	Stock Price in 5 years	Percentage gain
DisConnect	\$30	\$38	27%
EverConnect	30	54	50

Comparing these expected stock price gains, we can now say that EverConnect clearly appears to have been the cheaper stock in FY1 (2013), and again we can see that EverConnect's faster EPS growth justified its higher P/E ratio in FY1. *Because EverConnect is growing faster, it was a better buy in FY1 at a P/E of 18x than DisConnect was at a P/E of 15x.* Or, to state it another way, EverConnect's stock was *lower, or cheaper*, in FY1, despite its higher P/E ratio at that time.

Finally, if EverConnect deserved to be selling at a higher P/E than DisConnect in FY1 because of its faster growth rate, then it should also be selling at a higher P/E five years out (FY5), if its faster growth rate is expected to continue. If so, EverConnect will be selling higher than \$54 a share, and the percentage gain in EverConnect's stock price would be even greater.

Thus, from this example we can see that when attempting to value a stock based on its price/earnings ratio and dividend yield, it is important to look not just at this year's earnings and dividend, but at future expected earnings and dividends as well.

A few words of caution are needed here. First, forecasting the future with precision is impossible. The best that we—or any analyst—can do is look at available information and using our experience and judgment, make informed forecasts. But even without precision, our forecasts about earnings,

and reasonable judgments about P/Es, enable us to establish parameters about stock prices and valuation which are useful in our decision making.

THERE IS NO SUCH THING AS A CORRECT PRICE/EARNINGS RATIO, BUT THERE ARE WAYS TO HELP DETERMINE AN APPROPRIATE LEVEL

We just saw that if two companies are growing at different rates, the company with the faster growth rate should have the higher P/E. But there is no absolute measure of what P/E an investor should pay for a given growth rate. There have been many studies attempting to determine what P/E should be paid for a given growth rate of earnings or dividends, but there have always been too many “other” factors for such studies to be very useful. This does not mean that investors should not try to compare growth rates to P/Es. Studying this relationship for a number of stocks you follow is an excellent way to increase your comfort level with those P/Es and stock prices, even though you probably will not find the perfect formula.

In practice, most investors do not try to calculate a mathematically “correct” P/E. Rather, by watching the prices, earnings, and P/Es of a group of stocks over a period of time, they develop a feel for how the stocks behave, both individually and compared to each other.

In this section, we present three ways to look at P/Es to help judge what P/E appears reasonable for a given stock. First, we look at the company’s historical P/E ratios, i.e. what were the high and low P/Es in prior years? If the company’s past growth rate is expected to be about the same in the future, and if market conditions in general are about the same, then the past P/E ratios may be a good guide in helping to decide what P/E should be appropriate today. One should then consider what might be different to cause the stock to sell at a higher or lower P/E today. That is, what might be happening to the company, or the industry it serves, or in the economy in general, that could cause an increase or decrease in the company’s growth rate or other factors that impact the P/E? What might happen to change investors’ confidence that the forecasted growth rate can be achieved? For example, if a major competitor went out of business, investors might not

only expect a company's future growth rate to be faster, but in addition, investors would have more confidence in their forecasts of company earnings because there is less fear of competition. Conversely, if a company were dependent on a raw material that was getting harder to obtain and subject to steep price increases, then investors' confidence in their earnings estimates would be lower and the stock might sell at a lower P/E.

A second step in trying to determine a P/E for a company is to look at the P/Es of similar companies and then consider what is different between the companies and why one should have a higher or lower P/E than the others. Looking at the computer software industry for example, some small companies with one or two good products might be growing very rapidly initially, but when they get bigger they will find themselves competing against the giant software companies that have a larger market share. As the smaller companies find it difficult to compete successfully against the larger, dominant companies, their growth might come to an abrupt halt. So the smaller companies, although growing rapidly now, may deserve a lower P/E than their current growth rate would suggest. Many small software companies encountering this problem ultimately sell themselves to a large software company. So investors in small software companies should look at recent software company buyouts to see what was the typical P/E or range of P/Es that the acquiring company paid.

The third step is to compare the P/E of the stock you are analyzing to the P/E of the stock market as a whole. P/Es are affected by broad market conditions. When interest rates are low, P/Es in general tend to be high. An old rule of thumb says that at times when interest rates are low, the P/E should be twice the expected growth rate of earnings. For example, if a company's earnings had been growing at a rate of 10% a year and were expected to continue to grow at that rate, a P/E of 20x would be considered reasonable. Of course, companies never grow at exactly the same rate each year, and in fact growth rates often come in spurts and then slow down. So even if a company's growth rate had "averaged" 10% a year, investors will still have to make a judgment as to whether they feel comfortable paying a P/E of twice the growth rate.

When interest rates are high, stocks generally sell at lower P/Es, often at P/Es that are less than their growth rate. For example, a company that had been growing at 10% a year might trade at a P/E of 9x or less.

In sum, investors trying to decide what P/E to pay for a stock, or at what P/E to sell the stock, can look at: (1) the company's historical P/Es, (2) comparable companies' P/Es and (3) relative P/Es, as a guide. They should also look at broad market trends to see if P/Es in general are rising or falling. By comparing past conditions with current conditions, investors will often have a good basis for determining an appropriate price/earnings ratio today. The next three sections will look at the three types of P/E analyses listed above.

HISTORICAL P/E MULTIPLE ANALYSIS: WHEN IS A STOCK “LOW” OR “HIGH”? (CHEAP OR EXPENSIVE)

To see how past P/Es can help determine whether a stock is high or low, let's look at Diversified Manufacturing Inc. (DMI). DMI's earnings growth has averaged about 10% a year. As Table 18.4 shows, the growth has not actually been 10% in any year, but over a period of time it has averaged about 10%, or more correctly, has *compounded* at 10%.*

Table 18.4 Earnings Growth for DMI

Year	Earnings per share	Percent increase over previous year
2010	\$ 0.91	
2011	0.96	5.5 %
2012	1.11	15.6
2013	1.25	12.6
2014	1.33 est.	<u>6.4</u>
		10.025% average increase
		10.0% compound growth

The stock's price range and P/E ratio range for the same period are shown in Table 18.5. Assume it is now December 2014 and the stock price is \$27.

** Actually, the average growth rate is 10.025 percent per year. To be mathematically correct, it is the compound growth rate that is exactly 10 percent per year. Compound growth rate is defined as the growth rate that would be necessary so that if the company grew at exactly the same percentage rate each year, it would grow from a specified level (\$.91 in 2010 in this case) to another specified level (\$1.33 in 2014 in this case). The compound growth rate is not concerned with the earnings levels in the middle years. They could be anything. The compound growth rate for Company DMI, then, is exactly 10 percent. Unfortunately, there is no simple way to calculate a compound growth rate, so if you don't have a calculator that can do it, you can approximate it with an "average" growth rate by adding up the growth rates for each year and dividing the total by the number of years.*

Table 18.5 Stock Price Range and P/E Ratio Range for DMI

	EPS	Price			P/E		
		High	–	Low	High	–	Low
2010	\$0.91	\$23	–	\$13	25x	–	14x
2011	0.96	27	–	15	28x	–	16x
2012	1.11	28	–	17	25x	–	15x
2013	1.25	34	–	20	27x	–	16x
2014	1.33 est.	37	–	23	28x	–	17x
2015	1.60 est.						

Table 18.5 shows that the stock price has typically fluctuated in a wide range each year, and the P/E has reached at least 25x each year and has typically been as low as 15x–16x each year. This does not necessarily mean that it will be this high or this low each year, or that it cannot go higher or lower in any future year, but the historical range is still a good first guidepost to forecasting the future P/Es.

With the stock at \$27 in December 2014, investors will probably be focusing on 2015 earnings. This is because investors typically buy a stock today focusing on where they think it will be 6 to 12 months in the future. With 2015 EPS estimated at \$1.60, and the stock at \$27, it would then be selling at 16.9x 2015 earnings and would look “low”—that is, it is selling at

the low end of its historical P/E range. Let's try to estimate the upside potential of the stock, and the downside risk.

Unless the stock market is depressed in 2015, or there is some development suggesting a decline in the company's expected growth rate, it is reasonable to assume, based on the stock's history, that at some point during the year the stock price will reach 25x earnings or more. This suggests the stock could reach as high as \$40 per share.

$$\frac{\text{2015 EPS estimate}}{\$1.60} \times \frac{\text{Assumed P / E}}{25x} = \frac{\text{Expected stock price}}{\$40}$$

With the stock currently at \$27, we can see a possible \$13 upside move to \$40, or a 48% gain. On the other hand, the downside risk, based on the historical P/E range, is that the stock could get as low as 15x 2015 earnings.

$$\frac{\text{2015 EPS estimate}}{\$1.60} \times \frac{\text{Assumed P / E}}{15x} = \frac{\text{Expected stock price}}{\$24}$$

Thus, we can see a downside risk of \$3, to \$24, or an 11% loss. Looking at an expected upside gain of 48% and a downside risk of only 11%, the reward/risk ratio is 48% / 11%, about 4:1, so the stock looks "low," or attractive based on historical P/Es, and should be bought.

Now let's assume the stock has appreciated to \$32 by March 2015. Assume, also, that the 2014 earnings came in at \$1.35, slightly above the \$1.33 estimate, and the \$1.60 estimate for 2015 remains unchanged.

	EPS	Price	P/E
2014	\$ 1.35	\$32	
2015	\$ 1.60 est.	\$32	20.0x

At this point, the stock is selling at 20x estimated 2015 earnings, about the middle of its historical P/E range of 16x–25x, and the expected gain and risk appear to be as follows:

	2015 EPS		Expected P/E		Expected price	Gain or loss from \$32
Upside:	\$ 1.60 est.	x	25x	=	\$40	\$8 gain
Risk:	\$ 1.60 est.	x	16x	=	\$26	\$6 loss

With the stock at \$32, the appreciation potential now appears to be about \$8, a 25% gain, and the downside risk is about \$6, from \$32 to \$26, a 19% loss. The reward/risk ratio is now 25%/19%, or 1.3x, a much less attractive ratio than in December.* One might now say the stock is *fairly valued* based on 2015 estimated earnings.

* *Some investors look for a reward/risk ratio of 3:1 or 4:1 when evaluating potential “longs” (i.e., stocks they want to hold).*

If the market as a whole was expected to fall, DMI might be expected to fall with it, and the stock should be sold. But if the market were expected to rise, the stock should be held, or more purchased, because in a strong up market, stocks often go to the high end of their historical P/E range, or higher.

By August 2015 the stock reached \$41, a new high. The earnings estimate for 2015 was still \$1.60, so the stock was selling at 26x expected 2015 earnings, near the high end of its historical range. But at this point, even if the stock went to 28x earnings, or \$45 per share, there would only be \$4 further upside per share, whereas the downside risk from \$41 could be to 15x earnings, or \$24 per share, a \$17 decline (\$41—\$24 = \$17) if the market went down, or if some unexpected bad news came out about the company. The likelihood of a decline all the way to \$24 does not seem too great, however, since by early fall investors may begin to focus on 2016 earnings, which, if higher, will make the P/E look lower. In fact, analysts’ earnings estimates for 2016 were around \$1.80 per share, a 12½% increase from the 2015 level. So the P/Es looked as follows:

	Estimated EPS	Stock Price	P/E
2015	\$ 1.60	\$41	26x
2016	\$ 1.80	\$41	23x

Based on the 2015 earnings estimate, the stock at \$41 looked “fully valued” as there seemed to be a lot more room for a decline than there was for a gain. But based on the 2016 EPS estimate of \$1.80, the stock was selling at 23x, closer to the mid-point of the historical range. But in August, 2015, earnings for 2016 are still pretty far away and the stock seems to have more downside risk than upside potential. A cautious investor might sell it. This is because with the stock at the high end of its historical P/E range, any disappointing news about company earnings could have a substantial downside impact on the stock, whereas good news might produce only a small gain. At \$41, the stock is *fully valued* or *fully priced*, and leaves little room for disappointment. In the argot of Wall Street, at \$41/share, DMI is “priced for perfection,” meaning everything has to go perfectly for the company to justify the stock’s valuation, otherwise the stock is more likely to decline, possibly precipitously.

Suppose that in November 2015, with the stock at \$39, the company released news that caused analysts to lower their earnings estimates for 2015 from \$1.60 a share to around \$1.40, and to lower their estimates for 2016 from \$1.80 to \$1.55 a share. Based on the lower earnings estimates, the P/Es would look higher, and once again be at the high end of the historical P/E range.

	Estimated EPS	Stock Price	P/E
2015	\$ 1.40	\$39	28x
2016	\$ 1.55	\$39	25x

In addition, having been surprised by the company announcements in November, investors would have a lot less confidence in their earnings estimates, and may only be comfortable buying or holding the stock at a lower P/E than previously. Also, the growth rate of earnings would suddenly

look a lot lower, also causing investors to revise downward the P/E they might be willing to pay for the stock. At this point we might say the stock appears to be *overpriced* based on the new 2015 and 2016 earnings forecasts, and should be sold.

The lowering of the earnings forecasts in November points to a problem with using past year's P/E as a guide to the future. Recall that the stock reached a high of \$41 in August when 2015 earnings were forecast to be \$1.60. But assuming that 2015 earnings eventually come in at \$1.38, the historical record would show the high price for the year of \$41 and the actual EPS of \$1.38, which implies a price/earnings ratio of 29.7x. This would appear to be a new high P/E. But investors did not actually think they were paying 29.7x earnings for the stock. At the time the stock reached \$41, the 2015 earnings forecast was \$1.60 and the apparent P/E was 25.6x. The historical record does not reflect the change in investors' EPS forecasts. For this reason, historical P/Es, especially the high and low extremes, must be treated cautiously.

We can now give one definition, with qualifications, of *low* and *high*.

Definitions

- **Low.** When a stock is selling at the lower end of its normal or expected P/E range (or below), it is *low*, or *undervalued*, *underpriced* or *cheap*.
- **High.** When a stock is selling at the upper end of its normal or expected P/E range (or higher), it is *high*, or *overvalued*, *overpriced*, or *expensive*.

The qualifications are these. The historical P/E range of a stock can only be considered a reasonable guide to the future P/E range if: (1) the growth rate of earnings is expected to remain about the same as it was; (2) nothing has changed in the company or the industry it serves, or the economy in general to affect one's confidence in his earnings estimates; and (3) the whole market's evaluation of P/Es has not changed. That is a big set of "ifs," and reminds us that there are no simple quantitative rules for stock selection. Investing is arguably more an art than a science.

In the case of DMI, the stock sold in a normal (excluding extremes) P/E range of 16x–25x while it was achieving a growth record averaging 10% a

year. When it briefly looked like the company was going to achieve a higher growth rate, its P/E tended to be higher, 25x–28x. If the growth rate is expected to return to about 10%, the P/E range of 16x–25x might again be considered more likely. But if the recent lowering of earnings estimates reflects problems at the company which are expected to persist, then there may be a decline in the growth rate for an extended period, and the stock may be more likely to trade at the lower end of the P/E range, perhaps 14x–17x, or even lower. Over a few years the stock could establish a new P/E range of perhaps 10x–18x, rendering the old 16x–25x range no longer relevant.

Words such as overpriced, fully valued, undervalued, cheap, and the like, are constantly used on Wall Street and are best thought of in terms of the price/earnings ratio, or in some cases, as we will see later, in terms of the price/cash flow ratio or EV/EBITDA ratio. The distinctions between overvalued and fairly valued, or fairly valued and undervalued, are fuzzy as you can see from the preceding example. Nevertheless, Table 18.6 might help put some perspective on these words.

Table 18.6 Historical Record for DMI

	EPS	Price			P/E		
		High		Low	High		Low
2010	\$0.91	\$23	–	\$13	25x	–	14x
2011	0.96	27	–	15	28x	–	16x
2012	1.11	28	–	17	25x	–	15x
2013	1.25	34	–	20	27x	–	16x
2014	1.33	41	–	23	30x	–	17x

P/E range	Evaluation
Over 26	High, overpriced, overvalued
26–23	Fully priced, fully valued
23–19	Fairly priced, fairly valued
19–16	Low, underpriced, undervalued
16–14	Cheap
Below 14	Very Cheap!

Again, these ranges are subjective. Another writer might say the stock is overpriced, or overvalued, only above 28x earnings, undervalued only below 17x earnings, and so on.

A would-be investor once asked a Wall Street magnate how to make money in the stock market. The magnate replied, “Buy low and sell high.” The would-be investor walked away muttering, “Yes, but how do I know what is low and what is high except in retrospect, and then it is too late.” In light of this analysis, it is evident that the would-be investor misinterpreted the answer. What the magnate meant was this: It is best to buy a stock only if it is selling at the lower end of its P/E range relative to your best estimate of earnings. Then the probability of price appreciation as the future unfolds is greater than the probability of decline. If a stock is selling at the upper end of its historical P/E range, perhaps you should not buy it, or should sell it if you own it, not because it cannot go higher, but because the downside in the event of bad news is greater than the upside if all goes well.

COMPARING THE P/E's of SIMILAR COMPANIES

In addition to assessing whether a stock is expensive or cheap by looking at the current multiple relative to its historical range, we can also look at the company's current multiple relative to that of other, similar companies. In *The Little Book of Valuation*, Aswath Damodaran notes that “a comparable firm is one with cash flows, growth potential, and risk similar to the firm being analyzed.” (Damodaran, Aswath. *The Little Book of Valuation: How to Value a Company, Pick a Stock and Profit*. New Jersey: Wiley, 2011.) Realistically, one is unlikely to find a comparable company that meets all of these requirements, so most investors find it easier to make a list of *peers*; companies in the same industry that are somewhat similar in their characteristics. Then, after comparing their P/E's, one can look at the differences between the companies to try to explain why the P/E's were different. Table 18.7 includes the current P/E for EverConnect and four peers. With this information, we would ask: “Is EverConnect overvalued, fairly valued, or undervalued relative to its ‘comps’?”

Table 18.7 Comparables Analysis

	<u>EVCT</u>	<u>Peer #1</u>	<u>Peer #2</u>	<u>Peer #3</u>	<u>Peer #4</u>	<u>Peer avg.</u>
P/E	18.0x	19.2x	17.3x	15.5x	15.1x	16.8x
Long Term Growth Est.	16%	15.7%	13.6%	12.1%	12.4%	13.4%

We can see that EverConnect trades at a premium to most of its peers. By “premium” we mean EVCT's P/E is higher than that of most of its peers. Based strictly on the multiple itself, we would say that the stock looks overvalued. But this would be a naïve conclusion. We need to look at what factors are driving the P/E multiple. While a stock's P/E multiple is influenced by many factors, we have established that the dominant factor is expected future earnings growth. (This is why some growth investors argue that the most expensive (highest P/E's) firms are often the best investments.) Therefore, any good relative value comparison will include growth rate estimates for the companies being compared. Table 18.7 also includes the expected long-term growth rate for each company.

Where do long-term expected growth rates come from? As discussed earlier, on Wall Street, many investment banks, brokerage firms and advisory services have investment analysts who spend years analyzing an industry and the companies in it. For example, an analyst following the pharmaceutical industry will look at all the major drugs a company sells, make an estimate of the annual sales and profitability of each, how many years each has left on patent, what new drugs are being developed (that the company is willing to talk about) and what is the competition, market size, and expected market share for the new drugs, and importantly, the probability that those drugs will get FDA approval to be sold. Based on his or her research and years of experience following the industry, he or she will come up with an expected earnings growth rate. Data gathering firms such as FactSet, Bloomberg and others can pull together all the publicly available forecasts of a company's expected growth and publish a "consensus" or average of the forecasts. Expected growth rates for companies can often be found in public libraries in services such as The Value Line, or do a Google search for "Abbott Labs growth rate," or similar.

With the expected growth rates, we can now compare the P/Es of different companies, adjusting for different expected growth rates. This can be done with the price/earnings-to-growth (or PEG) ratio, which is calculated by dividing the P/E multiple by the expected growth rate. As you would expect, different investors will have different growth rate expectations, and therefore come to different figures for the PEG ratio, and therefore, about stock valuation. Often times, investors will simply use the consensus long-term growth estimate provided by the published services covering the stock.

Using consensus estimates for long-term growth, the PEG ratio for EverConnect and the PEG ratio for the peer group are as follows:

$$\text{PEG}_{\text{EverConnect}} = \frac{\text{P/E ratio}}{\text{EPS Growth Rate}} = \frac{18.0}{16.0} = 1.13$$

$$\text{PEG}_{\text{Industry}} = \frac{\text{Average P/E}}{\text{Average Growth Rate}} = \frac{16.8}{13.4} = 1.26$$

In this case, EverConnect's PEG ratio (1.13) is lower than that of the peer group (1.26). This indicates that while EverConnect has a higher P/E

multiple than the group, the stock may be undervalued after adjusting for the EverConnect's faster expected growth rate. This assumes that the companies being compared are all perceived to have equivalent levels of risk (a very subjective factor). It also assumes that P/E's are in fact higher for companies with faster growth rates (which isn't always true). Thus, the PEG ratio, like P/E or other valuation metrics, is not a perfect measure. As we have said before, there is NO perfect measure, but experience watching these valuation ratios, along with quarterly earnings reports, changes in management's guidance, and changes in consensus estimates (i.e., earnings estimate revisions), as well as company and industry news, will help you make more informed decisions.

At this point, we have only talked about the P/E being related to the expected earnings growth rate. The P/E an investor will be willing to pay for a stock is also related to many other factors, quantitative as well as subjective; how well management is regarded, product reputation, the company's market share and niche within the industry, geographic exposure, debt ratios, return on asset ratios (see Chapter 4), operating margins, and more. Many investors set up a matrix, listing the companies across the top, and company characteristics such as those just listed, down the side. After filling in the spaces, you will often see patterns emerging which correlate well with the companies' P/E's.

USING RELATIVE MULTIPLES

To evaluate a company relative to the market, some investors use a relative P/E multiple; that is, they compare the P/E of their stock to the P/E of the market. For the P/E of the market, investors typically use the P/E for a readily available index such as the Standard and Poor's 500 Index or the Russell 1000 Index. For example, the relative P/E—commonly referred to as the relative multiple—for EverConnect, using the S&P 500 index, is shown below. The P/E for the S&P 500 index is currently 14.3x.*

$$\text{Relative P/E} = \frac{\text{P/E ratio}_{\text{EverConnect}}}{\text{P/E ratio}_{\text{S\&P 500}}} = \frac{18.0x}{14.3x} = 1.26 = 26\% \text{ premium}$$

The P/E for an index is typically calculated by dividing the index price by the combined earnings of all the companies. For example, the S&P 500 index as well as the trailing twelve months combined S&P 500 earnings is readily available in the Wall Street Journal and on Yahoo! Finance.

A relative multiple greater than 1.0 signals that the company is trading at a premium to the market, while companies with a relative multiple less than 1.0 are selling at a discount to the market. Stocks with a low relative multiple are “comparatively cheap,” meaning that investors pay less for the same dollar of earnings. In this case, we would say EverConnect is selling at a 26% premium to the market. To put that number in perspective, we could look at how the relative multiple has changed over time and where it is relative to its historical range (and average). We can also look at how the 26% premium compares to the relative multiple of its peers. Finally, we can look at how the growth rate for EverConnect compares to the growth rate for the market as a whole. This type of analysis is particularly helpful when trying understand the impact of macroeconomic, tax, or regulatory factors impacting an entire industry. For instance, the relative multiple for a number of medical device companies contracted when the Affordable Healthcare Act (better known as Obamacare) was approved. To analyze the impact of the Act on the stocks in the industry, we could compare the companies’ P/E’s to both the market and S&P 500 Pharmaceuticals Index (or more broadly, the S&P 500 Healthcare Sector). The change in the multiples would give us a sense of the impact of the Affordable Healthcare Act on the individual stocks in the industry and sector. This type of analysis is covered in detail in the next chapter. Note that here we referred to the Act’s impact on the *stocks*. In fact, we also need to look at how the Act impacts each company’s business. Differences in expected business impact may account for differences in P/E’s, or changes in P/E’s.

In sum, investors trying to decide what P/E to pay for a stock can look at the company’s past P/Es, at similar companies’ P/Es, or at the relative P/E as a guide. They should also look at broad market trends to see if P/Es in general are rising or falling. In doing so, investors will often have a good basis for determining an appropriate price/earnings ratio today.

STOCK PRICES ANTICIPATE

One of the most important lessons for new investors to learn is that stock prices often anticipate future earnings or events—sometimes correctly and sometimes incorrectly—rather than simply reacting to events. When an event is not anticipated, i.e. when a company releases news that is a total surprise, and which will have an impact on the company’s earnings outlook, positively or negatively, the market will react sharply and quickly. But usually, a company’s stock price at any point in time reflects investors’ expectations of future events, and then may react minimally or not at all when investors see how actual news stacks up against expectations built into the price of the stock. In the language of Wall Street, we would say the stock price has been “discounting” expected earnings or other news, such as a major product introduction.

Inexperienced investors are often surprised when a company introduces an important new product, and the stock goes down. This can happen because investors expecting increased earnings growth from the new product will buy the stock well ahead of the expected introduction thereby pushing the price higher. These investors know that if they wait, others will have purchased the stock and bid it up in anticipation of the expected earnings gains. This is especially true when the new product is a high volume consumer product that is widely anticipated. You can see this by looking at Apple’s stock price movement prior to and after the announcement and launch of the iPhone 5. For all but one version of the iPhone, investors who waited until the introduction date missed much or all of the stock’s rise. The iPhone 5, however, was a disappointment, as it either lacked features or just had fewer improvements than expected. After it was introduced, the stock went down because the disappointment implied that it would produce less earnings than originally expected. Also, the disappointment caused Apple followers to wonder if the company has lost its innovative edge under new management. If true, this could have negative implications for Apple’s long term earnings growth, and therefore the P/E investors would pay for Apple.

A Wall Street maxim says, “Buy the anticipation, sell the news.” Like all maxims, this sometimes turns out to be good advice, and sometimes does not.*

** A corollary maxim is, “Buy the rumor, sell the announcement”. Stocks often move up on rumors. “Buying rumors” is dangerous because if the rumor is shown to be false, the stock could quickly give back any rumor-based appreciation.*

Anticipating earnings

In addition to anticipating new product introductions, stock prices will move up in anticipation of improved quarterly sales and earnings, and decline in anticipation of lowered earnings expectations. For example, if a company had earnings per share of \$2.00 in 2012 and investors were generally expecting the company to earn \$3.00 per share in 2013, the stock would most likely move up during the year 2013 in anticipation of the \$3.00 earnings level. When the company reports its actual earnings for the year, if earnings were near the forecast \$3 level, the chances are the stock would not move very much, if at all, because the stock had already moved up to a level that reflected (discounted) investors' anticipations of \$3.00 EPS. If the company reported earnings of \$3.50, then the stock would probably move higher, reflecting the \$.50 per share surprise above the \$3.00 that had been anticipated. Conversely, if the company had reported earnings of \$2.50, the stock would probably fall. It would not fall because the company reported a gain from \$2.00 to \$2.50; it would fall because the stock price had been discounting (incorrectly, as it turned out) earnings of \$3.00 per share. So when only \$2.50 was reported, the stock was, in retrospect, too high. The falling stock price would reflect the disappointment between the \$2.50 actually earned and the \$3.00 anticipated. The disappointing earnings may also imply that investors had been overly optimistic about the company's earnings growth rate for 2014 and beyond. Lowering long term growth expectations will also put downward pressure on the stock.

However, if the \$2.50 EPS includes a one-time, non-recurring write-off (see Chapter 15) without which earnings would have been about \$3.00 per share, then the stock might not go down at all, or may go down initially when the \$2.50 EPS is reported, but then bounce back after investors read the company's earnings press release, or listen to the conference call, and learn that the earnings disappointment was due to a non-recurring event and that the company's earnings from continuing operations were around \$3.00 per share, and the long term growth expectations for the company were not impacted by the non-recurring event.

The term "earnings surprise" is used to describe the difference between the EPS reported by a company and the consensus estimate; it can be expressed in dollar or percentage terms. If a company reported \$3.50 EPS

versus a consensus expectation of \$3.00, we would say the company beat the consensus by \$.50, or EPS came in 16.6% above consensus.

Typically, a positive earnings surprise will result in a stock moving higher, while a negative surprise would have the opposite effect. But this is not always true. Look at the following example.

Company ABC – consensus earnings expectations as of December, 2013

	<u>2012A</u>	<u>2013E</u>	<u>2014E</u>
E.P.S.	\$2.00	\$3.00	\$4.00

In February of 2014, Company ABC reported its fourth quarter and full year results for the year ended December 31, 2013. The results were unexpectedly strong and the full year 2013 earnings came in at \$3.50 per share, well above the consensus EPS estimate of \$3.00. But along with the earnings announcement, the company also said that in 2014, due to increasing competition, they expected narrowing profit margins and slowing of the sales growth rate, and thus their earnings “guidance” was for flat or lower earnings in 2014. In this case, the stock would likely decline despite the 4Q 2013 upside earnings surprise. As we have said before, stock prices reflect current *and future* expected earnings growth. In this case, despite the higher than expected current earnings, it was clear that whatever future growth rate in EPS had been anticipated, was now too high, and investors could expect the stock to be under pressure until there was more clarity on the reasons for the downside guidance, and investors again felt they could make confident judgments about ABC’s long term earnings growth.

Management’s Guidance

For many companies, management provides annual EPS guidance either in the fourth quarter of the preceding year or in the first quarter of the current fiscal year. Some companies also provide quarterly guidance. The “guidance” is typically a range for expected sales, certain costs, and possibly EPS. Some companies don’t provide explicit EPS forecasts, but provide guidance for certain parts of the P&L such as sales and operating margin. With that, and assumptions about non-operating items (such as depreciation, interest, and tax rate), and their own economic forecasts, analysts and investors who follow a company closely can formulate an implicit EPS

forecast. Because company management (i.e., insiders) have more information about the company's fundamentals, most Wall Street analysts rely heavily on company guidance and typically issue EPS estimates that are within the range set by management.

Watching quarterly earnings

In the real world, no company grows smoothly (at the same rate) every quarter, so for investors there is always the risk of overreacting to the results of each quarter. For example, it is very common for a company to report better-than-expected sales and earnings in one quarter, and then worse-than-expected sales and earnings in the next quarter, even though the company is on track to meet full year and long term expectations for sales and earnings growth. It is very easy to misinterpret each quarter's results and quickly buy or sell at the wrong time, just because of this unevenness in earnings growth. Making the correct judgment as to when to buy or sell in response to fluctuating quarterly results, and when to ignore the "noise" and just hold the stock, is the art of investing and comes with long experience of watching stocks respond, or not respond, to fluctuations in quarterly earnings.

Often times, you will hear investors describe a stock's response to the quarterly earnings report in terms of high or low expectations. A "low expectation stock" is one that has been beaten up and now trades at a very low multiple. Investor expectations are low. In some cases, they are so low that a quarterly miss might result in the stock moving higher. One reason for this might be that in anticipation of a bad quarter, many investors "shorted" the stock,* forcing it down. Once the quarter is reported, there is no more bad news to anticipate, so those investors "cover their short," i.e. buy the stock back, and in so doing push the stock higher. For example, in F2Q08 (Fiscal Second Quarter of 2008), Palm Inc. reported EPS \$0.19, \$0.27 below consensus of \$0.46. Despite the significant earnings miss, the stock actually traded higher (+13.2%) reflecting just how low expectations for the company's performance were going into the quarter. The opposite is true for a high expectation stock. In this case, expectations run so high that a "beat" might result in a sell off. For instance, in 2Q12, Intuitive Surgical reported earnings of \$3.75 (+29% Y/Y), which was \$0.19 or 5% better than the consensus estimate. The beat was driven by higher-than-expected sales and margin expansion; all the right reasons from an investor's point of view.

Revenues increased 26% Y/Y to \$537M, +2.5% above the consensus. Operating margins expanded 250 bps Y/Y driven entirely by reduced SG&A spending. Management raised top line sales guidance to a range of +21-23% vs. prior guidance of +19-21%. Despite the solid quarter, the stock traded off 8.4% on that day. In this case, even though management beat on the quarter and raised guidance, the new guidance implied a deceleration vs. the first half of the year (1H12). For a “high expectations stock” like Intuitive Surgical, a seller of surgical robots, any even slightly negative news can result in price pressure. Here is a case where the maxim “Buy the anticipation, sell the news” was good advice.

** See Appendix for an explanation of short selling.*

It’s important to note that often a stock doesn’t just trade higher or lower on the day an earnings surprise is reported. The stock can continue to “drift” higher or lower in subsequent trading sessions as more investors analyze the quarterly data and rethink their views on the stock. For example, Intuitive Surgical’s stock “bled” lower for the next two trading session, losing another 5.2%.

Note that the upside or downside from an earnings surprise is more significant for debt-laden companies. In other words, a highly leveraged company that beats consensus estimates will likely see their stock go up significantly. This is because with improved earnings, the debt service requirements (interest and principal repayments) become more likely to be met. Conversely, the stock of the same firm would likely be punished if earnings miss consensus, because the company would be closer to a point where it might be unable to meet its debt service and would go into default. Investors should be particularly cautious with highly leveraged (high debt) companies around the times when earnings are expected to be reported.

VALUING A STOCK BY THE PRICE-TO-CASH-FLOW RATIO

Although the price/earnings ratio is the most common way that stocks are valued, investors also look at the price-to-cash-flow ratio. “Cash flow” in this context is typically defined as cash flow from operations (see Chapter 16) divided by the number of shares outstanding. As an example, the cash

flow statement for EverConnect is shown in Table 18.8. The data is shown in the same format as we used in Chapter 16.

Table 18.8 EverConnect's Cash Flow Statement

	Actual	Forecast		
	2013	2014	2015	2016
Sources				
1. Net income	\$24.0	26.4	29.0	32.4
Add back:				
2. Depreciation and amort.	50.0	54.0	58.0	58.0
3. Deferred tax	4.0	5.0	5.0	5.0
4. = Cash flow from operations	\$78.0	85.4	92.0	95.4
Uses				
5. Debt principal repayments	\$24.0	12.0	20.0	40.0
6. + Capital spending*	16.0	14.0	16.0	18.0
7. + Preferred dividend	5.0	5.0	5.0	5.0
8. = Cash flow uses	\$45.0	31.0	41.0	63.0
9. Free cash flow (line 4 minus line 8)	\$33.0	54.4	51.0	32.4

* As we saw in Chapter 16, investment analysts are divided over whether to use a company's total capital spending as a necessary use of cash flow, or just the (lesser) maintenance level of capital spending when calculating free cash flow. Here we will opt for total capital spending.

In Table 18.9 below, we calculate: (1) earnings per share, (2) cash flow from operations per share, and (3) free cash flow per share, by dividing the earnings or cash flow figures in lines 1,4, and 9 above by EVCT's 12 million shares outstanding, to get the per share figures shown below:

Table 18.9 Cash Flow Per Share and Earnings Per Share for EverConnect

	Actual		Forecast	
	2013	2014	2015	2016
Earnings per share	\$2.00	\$2.20	\$2.42	\$2.70
Cash flow from operations per share	\$6.50	\$7.12	\$7.67	\$7.95
Free cash flow per share	\$2.75	\$4.53	\$4.25	\$2.70

With the stock selling at \$30, we can now calculate the price/earnings ratio, the price-to-cash-flow-from-operations ratio, and the price-to-free-cash-flow ratio; see below.

Table 18.10 Calculated Price/Earnings and Price/Cash Flow Ratios For EverConnect

	Actual		Forecast	
	2013	2014	2015	2016
Price/earnings ratio	15.0x	13.6x	12.4x	11.1x
Price/cash flow from ops.	4.6x	4.2x	3.9x	3.8x
Price/free cash flow	10.9x	6.6x	7.1x	11.1x

EverConnect's price-to-cash-flow-from-operations ratio looks a lot lower than the price-to-earnings ratio. This is because the company's large depreciation figure reduces the net earnings, but does not reduce the cash flow. (Depreciation is a "non-cash" expense. If this concept is not familiar, it can be reviewed in the *Cash Flow* section in Chapter 14.) Whenever a company has a large depreciation figure (or deferred tax figure) that causes the net earnings to look very low compared to the cash flow from operations, the price-to-cash-flow-from-operations ratio may be a better basis for comparing the stock prices of two companies than the price/earnings ratio. This is because the low earnings figure does not really reflect the benefit to the shareholders of all the cash flow.

Thus, it is appropriate to use the price-to-cash-flow (which we define as price divided by cash flow from operations) whenever earnings are low relative to cash flow. It would be particularly prudent to use the price/cash-flow ratio when the company is either losing money, just breaking even, or

only making a very small profit. In any of these three cases, the price/earnings ratio would be meaningless. Also, the price/cash ratio might be better than the price/earnings ratio when comparing two or more companies that use different depreciation accounting methods. By using the price/cash flow, you would be comparing the companies on an equal footing, and the differences in depreciation technique would be irrelevant.

Investors should use price/cash-flow ratios as they would use the P/E ratios; that is, to compare similar companies, or to analyze one company's ratios over time. Comparing similar companies' multiples will often reveal interesting patterns that will help investors decide when a stock is cheap or expensive. When comparing cash flow multiples, all else equal, the lower the ratio, the cheaper the stock (just like with the price/earnings ratios). That said, to make the comparisons meaningful, comparisons of cash flow multiples should also consider each company's growth rate (just as we did with the PEG ratio earlier in this chapter).

Some investors prefer to look at the price-to-free-cash-flow ratio (price/FCF), because, as we saw in Chapter 16, free cash flow is really what is available to be spent to increase shareholder value (which might be accomplished by any or all of the following: paying down debt ahead of requirement, increasing the dividend, buying back stock, updating/upgrading plant and equipment, adding new products, expanding manufacturing capacity, or making accretive acquisitions). The price/free-cash-flow ratio, however, is more volatile than operating cash flow given that capital spending and debt repayments can change a lot from year to year. For instance, high capital expenditures—common among younger companies—leads to negative free cash flow. Also, in inflationary environments, capital spending requirements will exceed depreciation because depreciation is based on cash spent on plant and equipment years ago in a lower price environment. Thus, higher inflation leads to higher replacement and maintenance costs, so free cash flow will generally be lower in inflationary environments. Similarly, the price/free-cash-flow ratio might be distorted in some years by a large debt repayment, such as the situation for EverConnect in 2016.

Note that EPS and FCF/share are both \$2.70 in 2016. This is because the Depreciation, Amortization, and Deferred Tax “sources” exactly equaled the debt repayment, capital spending, and preferred dividend requirements.

VALUING A STOCK WITH THE PRICE-TO-SALES RATIO

Another valuation method appropriate in some cases is using the Price-to-Sales (or Price/Sales) ratio, which can be calculated by dividing the company's current market capitalization (Share Price X Total Shares Outstanding) by forward-looking or projected sales. Or, the ratio can be calculated on a per share basis: divide the stock price by the expected sales per share. Projected sales may either be the current or next fiscal year (FY1 or FY2), or a further out year.

The price/sales valuation method is most appropriate for valuing rapidly growing companies early in their product introductions/life cycle. At this stage, such companies typically can be expected to have minimal or negative earnings for the next few years. Thus a price/earnings ratio would have little or no meaning. The reason these young companies have minimal or negative earnings is due to initially high development and manufacturing costs, as well as the startup costs associated with marketing and selling their new products. For some companies it may take many years to generate sufficient sales volume to adequately cover the fixed manufacturing and overhead costs. Once this occurs, however, and the company is generating consistent earnings, investors will begin to value the stock on an earnings basis, using the P/E.

Table 18.11 below shows statistics and ratios that are typical of small capitalization medical device companies. Investors value such companies by both price-to-sales and price-to-earnings ratios where possible. Smaller cap medical device companies are often characterized by rapid sales growth, but with minimal or no earnings, as they are usually still in the costly early stages of introducing one or more of their products, and perhaps still in the development stage of other products. The companies in Table 18.11 are listed in order of descending price-to-sales, all typical of small cap medical device companies. The price/sales ratios vary from 6.4x to 1.3x, a typical wide range for smaller companies, even those with similar characteristics. Looking at the price/sales numbers, the correlation of the price/sales ratio with the expected sales growth rate is apparent, although not perfect. That is, the higher the expected sales growth, the higher the price/sales ratio investors are willing to pay.

Since many small cap medical device companies do not have earnings, they have no P/E ratio, or like Gammamed, have a P/E that is so high that it suggests Gammamed's profit margins and earnings have just barely passed breakeven, and are well below what the company should be able to achieve with continued growth in sales. But even excluding Gammamed's non-meaningful P/E, for those companies which do have earnings, and therefore a P/E ratio can be calculated, the correlation between the P/E ratio and the sales growth rate is much weaker if it exists at all.

Figure 18.11 Comparison of Price/Sales and Price/Earnings Ratios

Company	Price	Mkt Cap \$mil	2012 Sales \$mil	Est. 2 Yr per Annum Growth	Price to Sales FY2	Price to Earnings FY2
Medcon Inc	\$13	\$992	\$ 92	30%	6.4x	nm
UniSurgical	\$14	\$612	\$ 85	34%	4.0x	nm
Gammamed	\$19	\$589	\$126	23%	3.0x	158x
Medelec Corp	\$20	\$672	\$240	8%	2.4x	27x
VitalSigns	\$16	\$239	\$ 82	18%	2.1x	nm
Osteoproducts	\$9	\$315	\$122	11%	2.1x	21x
Surgassist	\$14	\$329	\$198	9%	1.4x	35x
BLT Medical	\$12	\$451	\$277	12%	1.3x	20x
<i>Average</i>				18%	2.8x	nm

VALUING A STOCK BASED ON EARNINGS POWER

Have you ever wondered why shares of small companies that have no earnings sometimes sell at high prices? Examples include development stage biotechs, internet startups when the internet was coming of age in the late 1990s (think Ebay, AOL, Amazon, et. al.), and later internet companies such

as Facebook, which went public in 2012 with a market cap of about \$100 Billion. (Recall that market cap, or market capitalization, is the price of stock multiplied by the number of shares outstanding.) The answer is that investors may be pricing the stock based on how much the company could possibly earn, or perhaps should be able to earn, if all goes well, i.e., management is able to execute: develop its product and get it to market at an appropriate price in a reasonable period of time before competitors come in. In fact, as we saw above, development stage companies are more typically valued on their sales potential than their earnings potential. But implicit in this multiple-of-sales measure is that the sales will lead to an appropriate level of earnings, so that is often just assumed. In the example below we will show the reasoning used to develop a sales estimate and convert it to earnings power. We will also take into consideration that most development stage companies run low on money and need to come back to the market with a follow-on offering (a new issue of stock after the company has already gone public) in order to raise sufficient funds to complete the development and rollout of their product. Of course this assumes the company has a promising product. If investors were not reasonably confident of the success of this product, they would not buy the stock in the offering and the company would eventually have to sell out to another company, or go out of business.

For our example, let's look at Universal Biotek (UB). UB was founded by three doctors who discovered a medicine that looked like a sure cure for a previously incurable disease. The company went public, selling new shares at \$12 to raise money to complete the development and begin clinical trials of the new drug, and to build a plant to manufacture the new medicine. Shortly after going public, as UB's story became well-known on Wall Street, the stock moved up sharply to about \$60. This is why: Investment analysts who specialize in health care stocks did some research and learned that about 100,000 people are diagnosed with this disease each year, and that the new drug therapy would be appropriate for about 80,000 of them. UB expects to be able to sell the treatment regimen for \$4,000 per patient. Thus, assuming successful development, favorable results from clinical trials, and FDA approval to market the drug, analysts could estimate that once the plant was up and running and the treatment was widely used by doctors, UB could generate sales of about \$320,000,000 a year (80,000 patients times \$4,000 per patient.) Some biotech investors would value UB stock based on the

potential for \$320 million in annual sales. Others will take the next step and assume that when UB reaches that sales level, it could attain a profit margin of 5% after tax. This is a reasonable assumption for a drug company with a monopoly on a needed product. A 5% net profit on sales of \$320 million is equal to \$16 million net profit. With 2 million common shares outstanding, we would say the company has *earnings power* of \$8 per share (\$16 million potential profit divided by 2 million shares.)

It might take three or four years, or more, before UB is earning anywhere near that amount, or it might never earn that much. Another company could discover a better or cheaper medicine. But right now, UB has a patented medicine and no known competition in the marketplace, and investors can see the potential to earn \$8 a share. To say it another way, if all goes well, the company has earnings power of \$8 a share. If we also assume that investors will be willing to pay a price/earnings ratio of 10x when the company earns that amount, then the stock would be worth about \$80 at that time. However, if the company has discovered other applications for its patented medicine or has other promising drugs under development, and thus it is likely that earnings will keep growing beyond the \$8 a share level, then the stock will more likely be selling at a P/E of 20x or higher. Rapidly growing drug companies often sell at P/E ratios of 20x or more. At 20x, UB stock would be selling at \$160, or 20x its projected earnings power of \$8 per share.

Again, it is much too early to say that UB can actually earn \$8 a share, so the stock is not likely to get anywhere near \$160 for a few years. The medicine might turn out to be ineffective, or have undesirable side effects. But right now, it looks very promising and the earnings power is so high that when the stock was at \$12 after the initial public offering, the potential gain was so great that many investors jumped in and bought the stock and bid it up to \$40. From this level, however, as enthusiasm waxes and wanes for UB's potential, the stock can be expected to be very volatile; that is, it will have sharp swings up and down as news comes out about the company's progress toward its \$8 earnings power.

In practice, development stage biotechs often have to come back to the market to raise new money for additional R&D, clinical trial costs, FDA filing costs, sales staff, manufacturing facilities (unless they have their product manufactured by an independent contract manufacturer), etc. UB, in fact, was running out of money and filed a registration statement with the

SEC for a follow-on offering. (Recall from Chapter 5 that an issue of new stock from an already public company, would be called a *follow-on offering*, or a *second* or *additional public offering* but should not be called a “secondary.” Because this follow-on offering is new stock being issued by the company, it would be a primary offering, and would be dilutive to the already outstanding shares.)

Let’s assume UB issued 1 million shares of new stock in the follow-on offering. Since UB had 2 million shares of stock outstanding before the follow-on offering, it would, after the offering, have 3 million shares outstanding. We would say the ownership has been diluted by 50% from 2 million shares to 3 million shares; and earnings power, or potential earnings per share, has been diluted from \$8 per share ($\$16 \text{ million profit} \div 2 \text{ million shares}$) to \$5.33 per share ($\$16 \text{ million profit} \div 3 \text{ million shares}$). If we assume, as before, that UB stock could be expected to sell at a P/E of 10-20x expected earnings, using potential EPS of \$5.33 would suggest a stock price between \$53 and \$107. This price range is below the expected stock price range of \$80—\$160 if the company had not had to do the dilutive stock offering, but it is still a substantial upside from the initial public offering of \$12 per share.

For internet stocks, a similar analysis takes place, but instead of patients and therapy costs, investors might look at the number of likely users of the internet service and the advertising revenues per user that the company might realize, and use these estimates to determine the company's earnings power. Investors in high flying early stage companies that do not have earnings, or are only earning a small fraction of their earnings power, must remember that these stocks don’t go up forever. Other investors are also doing this kind of price-to-sales and earnings power analysis. As the stock appears to some of them to them to be “fully valued” compared to its earnings power, some of them will sell, and eventually the stock will peak. We say eventually because investors will have very different ideas about the company’s earnings power and what valuation—what multiple of earnings or sales—is appropriate for the company.

VALUING STOCK WITH THE EV/EBITDA RATIO

Another valuation tool that is used frequently by investors is the Enterprise Value-to-EBITDA ratio. Like the P/E ratio, EV/EBITDA is a relative value measure, meaning it is best used for comparing one company to another, or to a peer group. Enterprise Value is a measure of the value of a company, and is discussed below. EBITDA, discussed in Chapter 15, is Earnings Before Interest, Taxes, Depreciation and Amortization. Because EBITDA is a measure of profit *before* interest payments, the EV/EBITDA ratio is essentially a measure of the value of the company divided by what the company earned, or can earn, in cash for *all* its security holders (stock and bond holders). The Price/Earnings ratio is also a valuation measure, but with the P/E, investors are looking at what a company is worth divided by what it earned, or can earn, for only its owners (stockholders).

In sum, the P/E ratio and the EV/EBITDA ratio are both valuation ratios. Each uses different definitions of value and earnings. Some investors prefer one to the other, but to do a thorough analysis of a company, one should calculate both ratios and compare them to similar companies. The two ratios can sometimes produce different results, as we will see below.

One reason some investors prefer the EV/EBITDA ratio to the P/E ratio is because EV/EBITDA can put companies on a more comparable basis. For instance, companies that are being compared may have different depreciation policies, or may operate with different levels of debt and interest payments, or may be taxed at different rates. EBITDA looks at cash flow before those items are considered, so EBITDA—rather than earnings—puts companies on a more directly comparable basis. To say it another way, using EBITDA allows us to view and compare the operating earnings of different companies without concern for differences in depreciation techniques, interest costs, or tax rates.

Enterprise Value

Before defining enterprise value let's review the definition of market capitalization (market cap). A company's market cap is the number of common shares outstanding, multiplied by the current price of the stock. In other words, market cap is what the company's equity is worth based on its stock price in the market. Enterprise value is a little more complicated. EV tells you what the company should be worth to a buyer. EV is defined as follows:

$$\text{EV} = \text{Market cap of stock} + \text{total debt outstanding} \\ \text{—cash on the balance sheet}$$

Why debt is added, and cash is subtracted can be confusing at first, but the reason debt is added back is because that debt will have to be paid back at some point. So if a company has a market cap of \$300 million, and has debt of \$50 million. Someone who could (theoretically) buy the company at today's market cap of \$300 million, would also have to pay \$50 million in a few years to repay the debt. So the buyer's total effective cost would be \$350 million. Similarly, if the company has \$25 million in cash, someone buying the company for \$300 million, upon owning the company, could pay himself the \$25 million as a dividend, effectively reducing his cost of buying the company to \$275 million. Using these figures, the EV of the company would be calculated as follows:

$$\text{EV} = \frac{\text{Market Cap}}{\$300 \text{ mil}} + \frac{\text{Total Debt}}{\$50 \text{ mil}} - \frac{\text{Cash}}{\$25 \text{ mil}} = \$325 \text{ million}$$

Because a buyer of this company would know that he would eventually have to pay off the \$50 million of debt, he would not attempt to buy the company unless he felt it was worth more than the enterprise value of \$325 million. We as investors, however, are not attempting to buy the company, so it is not clear whether market cap or enterprise value is a better measure of the worth of the company, and therefore whether EV/EBITDA or P/E is a better valuation ratio. But if the company you are analyzing is an attractive acquisition candidate, then calculating the enterprise value would help you evaluate what the takeover price might be, and therefore what you should pay for the stock in anticipation of a possible takeover bid.

The definition of enterprise value that most investors use is a little more complicated than shown above. In addition to adding total debt to the market cap, most users of EV also add back the *Noncontrolling Interest* (sometimes referred to as *Minority Interest*) figure on the balance sheet.

Non Controlling Interest

Non Controlling Interest (NCI), sometimes called Minority Interest, has not been discussed in this book, and for most companies, if there is any, it is small enough that it can be ignored. Non Controlling Interest (or Minority

Interest) has nothing to do with interest payable on debt. Non Controllable Interest on the balance sheet of a company reflects the fact that the company has purchased most of, but not all of, another company. Suppose EverConnect wanted to buy smaller competitor CloudStor. EverConnect made a public tender offer for all of the stock of CloudStor at an attractive price. But shareholders of only 90% of CloudStor stock tendered (offered) their shares, which EverConnect purchased. The owners of the remaining 10% of the shares of CloudStor refused to sell, and still own their shares. So CloudStor is now a *majority owned subsidiary* (90%) of EverConnect, and EverConnect is the *parent*. Accounting rules require that a parent company consolidate *all* the revenue and operating income from a majority-owned subsidiary on its financial statements. But the portion of the subsidiary's operating income that the parent does not "own" (10%) is then deducted on the parent company's income statement when calculating Earnings Per Share. This is because 10% of operating earnings really "belongs" to CloudStor's original stockholders (now minority stockholders).

On the parent's balance sheet there will be a line item called Non Controlling Interest or Minority Interest, which usually appears in the Equity section on the right hand side of the balance sheet. It is, in fact, an equity item, but it reflects the minority (10%) holders' equity, not the parents' equity. To say it another way, the Non Controlling Interest (NCI) account appearing on the parent's balance sheet is telling us that the dollar value in the NCI account reflects the portion of the equity that is NOT part of the parent's equity, even though all the other asset and liability figures of the subsidiary are fully (100%) included on the parent's balance sheet. Or more succinctly, the parent's balance sheet includes a line item for Non Controlling Interest to reflect the portion of the subsidiary's equity that the parent does not own.

When calculating the EV/EBITDA ratio, we must be consistent in either including or not including the NCI. Because the EBITDA calculation *does* include the non-controlling holders portion of EBITDA, we want to use an enterprise value calculation that also *does* include the NCI's portion. Therefore we must add the NCI shown on the parent's balance sheet when calculating Enterprise Value. This way, both EBITDA and Enterprise Value reflect 100% of the performance and 100% of equity, respectively.

Non Controlling Interest is confusing at first, and most often has only a small impact if any, in the investment analysis of a company. Nevertheless,

because it is one of the items added to market cap when calculating EV, we have included it here. Readers should feel comfortable moving on, even if Non Controlling or Minority Interest has not fully sunk in yet.

Calculating Enterprise Value

In calculating EV, some investors, when adding the total debt outstanding, also add the value of any preferred stock outstanding. That somewhat academic discussion is beyond what the authors intend here, but briefly, if the preferred stock has a mandatory redemption, it would be reasonable to treat it like debt. If the preferred stock is perpetual, then not treating it as debt may be best.

Let's look at the EV/EBITDA ratio for EverConnect. The calculations are presented in Table 18.12.

Table 18.12 EV/EBITDA Calculation

Calculation of EBITDA *All figures are in \$Millions*

Sales	\$ 76
Less: COGS*	21
Less: SG&A Expense	8
Less: R&D Expense	<u>4</u>
Equals: EBITDA	\$ 43

Calculation of Enterprise Value

Market Value of Common Stock	\$ 360
Plus: Total Debt	90
Plus: Preferred Equity	0
Plus: Minority Interest	0
Less: Cash & Equivalents	<u>5</u>
Enterprise Value	\$ 445

* *The Costs of Goods Sold figure excludes Depreciation and Amortization in this example.*

At the end of 2012, EVCT reported EBITDA of \$43 million and had an Enterprise Value of \$445 million. Taken together, the EV/EBITDA multiple for EverConnect at the end of 2012 was 10.3x (\$445M/\$43M).

$$\frac{\text{Enterprise Value}}{\text{EBITDA}} = \frac{\$445}{\$43} = 10.3x$$

Like the P/E ratio, EV/EBITDA can be expressed as a ratio (10.3x) as shown above, or can be expressed as a yield by inverting the formula to get EBITDA/EV. Looked at this way, EverConnect's EBITDA yield is 9.7% (\$43M/\$445M). As with other yield calculations, the higher the number the better. Investors could now look at (1) EverConnect's EBITDA yield

compared to the company's past years' EBITDA yield, and (2) the EBITDA yield of similar companies. If EverConnect is yielding more than it has in the past, this valuation metric would indicate that the stock is cheap—at least relative to where it has traded in the past—and potentially an attractive investment opportunity. The same would be true if the EVCT's EBITDA yield is more than the EBITDA yield of the company's peer group.

Now let's look at a real world example. In Table 18.13 we calculate EV/EBITDA for 5 pharmaceutical companies as of May 2011 and compare that return to the P/E ratio.

Table 18.13 Calculation of EV/EBITDA, and Comparison of EV/EBITDA and P/E for Pharmaceutical Companies in May 2011

Figures in \$billions, except per share figures

Source: FactSet and author assumptions

	BMY	ABT	MRK	PFE	LLY
Price	\$ 29	\$ 54	\$ 37	\$ 21	\$ 38
x Shares Outstanding	1.7	1.6	3.1	8.0	1.1
= Market Cap.	49.3	86.4	114.7	168.0	41.8
+ Total Debt	5.4	18.8	17.8	41.1	6.7
+ Preferred Equity	0.0	0.0	0.0	0.0	0.0
+ Noncontrol Interest	-0.1	0.1	2.4	0.5	0.0
- Cash & Equivalents	-6.8	-8.5	-13.0	-24.0	-6.7
= Enterprise Value	47.8	96.8	121.9	185.6	41.8
EBITDA	\$ 7.4	8.8	17.1	27.2	7.7
EV/EBITDA	6.5x	11.0x	7.1x	6.8x	5.4x
P/E	12.7x	11.6x	9.8x	9.1x	8.6x
EPS	\$2.28	\$4.66	\$3.77	\$2.31	\$4.41
EPS Long-Term Growth Rate Forecast	7.1%	12.8%	3.8%	3.7%	2.2%

Table 18.13 illustrates that different equity valuation ratios—EV/EBITDA and P/E—can give differing results in terms of valuation. BMY has the highest P/E in the peer group suggesting it is overvalued relative to the peer group. But BMY's below-peer-group average

EV/EBITDA suggests it is fairly valued. BMY's above average P/E may be due in part to its strong capital structure and operating profile, as BMY has the lowest leverage (debt-to-equity ratio) and the highest operating profit margins of the group (neither ratio shown here). It appears investors are willing to assign a high P/E to BMY due to the combination of these factors. Generally, higher leverage is viewed as higher risk, often resulting in a lower P/E; and vice versa, i.e., BMY's lower leverage implies lower risk, suggesting a higher P/E.

The lesson here is that BMY's higher P/E alone does not mean it is overvalued relative to its peers. Similarly, ABT's higher EV/EBITDA ratio does not mean ABT is overvalued. The difference in valuation ratios does suggest that investors should look at both companies' financial statements and sales and earnings outlooks, to see what differences show up. Such differences can often reveal insights that help investors in stock valuation and selection.

WHY STOCKS GO UP AND DOWN: A WORKING EXPLANATION

With our understanding of the P/E ratio, price/cash-flow ratio, and EV/EBITDA ratio, and how stock prices anticipate future events, we can now attempt a working explanation of why stocks go up and down.

- *Stocks go up and down in response to changes in perception of a company's ability to generate earnings and pay dividends, both this year and in the future.*
- *Changes in perception can arise from developments within the company, in the company's competitive environment, or in the economy in general.*

Many investors would quibble with this explanation, but we think readers will find it helpful when trying to understand and predict stock price behavior. Note that this explanation only addresses why stocks go up and down. It does not attempt to explain why a stock sells at a particular level. In fact, it may be easier to understand why stocks go up and down than it is to understand why they sell at a particular price. Earlier in this chapter, we

looked at valuation methods which can help us determine when a stock is undervalued, fairly valued, or overvalued. But a stock's being undervalued, by itself will not make it go up. In fact, according to one investment theory, the market is *efficient*, meaning that the price of a stock at any time is neither too high nor too low; that is, the current price reflects the net result of all the buy and sell decisions by all investors based on their interpretations of all the information that is known about the company at that time. The important question, then, is what will change to make the stock go up or down from the current level. To answer that question, investors' time may be best spent trying to determine what factors are most likely to cause investor perceptions about the stock to change. We refer to these as the key drivers, those factors that are likely to occur, and by themselves, will have an impact on the stock's behavior. This topic will be covered in an example in Chapter 19.

Investor perceptions can be impacted by an infinite number of developments. Innumerable events happen every day throughout the world that impact companies' near-term earnings and long-term earnings growth rates and, therefore, the price/earnings ratios that investors will be willing to pay for different stocks. Events that cause favorable changes in perception would likely boost the price of a stock, whereas unfavorable changes would likely push the price down. Let's look at a few examples of developments that would change investors' perception of a company's ability to generate earnings. This list is endless. Just a few examples are given to help sensitize you to thinking about how every bit of news can affect your stocks.

Events Creating Favorable Changes in Perception

- **Company development.** QuickFlip Burgers announced that it was consolidating its meat buying with a major supplier under a long-term contract that provided a substantial cost saving.
- **Industry development.** The government announced a change in chicken inspection procedures that would result in higher prices for chicken meals at fast-food outlets. This would make QuickFlip's burger restaurants relatively less expensive and therefore more attractive to customers.
- **Economic development.** Congress lowered the minimum wage by 20%. Since much of the labor in the fast-food industry is minimum

wage, costs would be expected to decline sharply, producing higher than previously expected earnings.

Events Creating Unfavorable Changes in Perception

- **Company development.** QuickFlip announced that its pension expense for retired employees was going to be much higher than management previously thought.
- **Industry development.** *The Wall Street Journal* reported that QuickFlip is losing market share to BiggerBurger, which had opened stores near QuickFlip and undercut their prices. This would result in market share loss for QuickFlip, as well as profit margin compression as it reduces prices to compete.
- **Economic development.** Gasoline prices increased sharply. Higher gasoline prices cause people to eat out less often. A food chain whose restaurants were mostly on the highways would be hurt more than a company whose restaurants were mostly in the cities.

Successful investors are always alert for developments such as these, that might impact their stocks. With time and experience, one will learn to distinguish between those new items that will have a significant impact, and those that will have only a minor or temporary impact.

WHAT INVESTORS SHOULD WATCH FOR

There is no substitute for experience. Investors should watch a group of stocks daily and stay tuned to all the news about those companies and the environments in which they operate: the competitive environment, the raw materials environment, the labor environment, and so on.

By watching how stock prices respond, or do not respond, to news developments over a period of time, you will develop an awareness of: (1) what expectations are reflected in a stock's price, (2) which information will likely impact future earnings, and (3) what the current sentiment of the market is toward the company and industry it operates in. To develop this awareness, investors should read/listen to the news daily, review industry periodicals, and peruse websites and blogs that relate to their stocks and

investment style. Alert investors will watch for developments that could affect their company in a positive or negative way, including the demand for their company's products, the price the company can charge for its products, the cost of manufacturing the products, and so on.

Financial newspapers such as *The Wall Street Journal* or *Investor's Business Daily* make it their business to extract the news that they think will be of greatest interest to investors. Television stations such as *CNBC* and *Bloomberg* do the same thing. As you read and listen to the media, look for frequently discussed topics that might alert to you a particular "investment theme." For instance, in this chapter we talked about the secular trend toward mobile computing, notably tablet computers. Think of how a blockbuster product such as Apple's iPad is shaping an entirely new industry. Use this information to identify potential investment opportunities. But don't limit the scope of your analysis to the market leader—Apple in this case. A useful exercise is to create a "food chain" analysis, which is a diagram of the suppliers and distributors used to bring a product to market. In the case of the iPad, key suppliers include Qualcomm (Baseband, transceiver) and Broadcom (WLAN, Bluetooth, GPS). Apple sells its units both directly and through network providers such as Verizon, AT&T, and Sprint. Increasing smartphone and tablet sales increases the demand for network capacity and spectrum, which puts pressure on these companies to expand their network capacity, and this trend benefits companies like American Tower. These companies—and others—comprise the tablet computing food chain, some of which might represent a better investment opportunity than the market leader.

After a period of time you will find yourself becoming sensitized to which factors are important and which are less meaningful or irrelevant. At that point you will know why stocks go up and down.

Why Stocks Go Up and Down

*“Talent hits a target no one else can hit;
Genius hits a target no one else can see.”
—Arthur Schopenhauer*

In Chapter 18, we provided a framework that can be used to understand and evaluate stock price behavior. Here, we will apply that framework to a publicly traded company. We understand readers' frustrations with books that focus on topics that work well in theory, but are difficult—if not outright impossible—to apply in practice. This “real world” example will not only underscore the key concepts from the book, but help you understand some of the subtleties that differentiate a good investment from a great one. This approach of learning by example always resonated with our students and we believe will serve the reader well.

Readers are encouraged to read the many footnotes in this chapter. A lot of detailed and directly relevant material in this chapter was placed in footnotes so as to not interrupt the flow of the material.

GETTING STARTED

Over the next several pages, we will analyze Abbott Labs' stock (symbol : ABT) as of January 26, 2011 to determine if the stock's recent underperformance has created a buying opportunity for investors. As part of the analysis, we will review many of the concepts covered throughout the book with the intent of developing a defensible position on Abbott's stock.

Analyzing a publicly traded company begins with understanding the company's history, products/services, current financial position, and competitive environment. Much of this information can be obtained online.

For instance, Yahoo! Finance provides a summary of the company's operations, key statistics, historical financial statements, and pertinent information on key executives. A company's website is also a good source of information, particularly on its product portfolio. A sample profile for Abbott Labs is provided in Figure 19.1.

Figure 19.1 Company Profile

Abbott Labs is a diversified global healthcare company with products in five categories: Pharmaceuticals (57% of revenues), Nutritionals (16%), Diagnostics (11%), Vascular (9%), and Diabetes Care (5%). The company generated \$35.2 billion in sales in 2010. The geographic mix was 43% U.S. and 57% outside the U.S. Some of the company's well known brands include: 1) HUMIRA, the leading biologic* for the treatment of Rheumatoid Arthritis, 2) infant and adult nutritionals such as Similac and Ensure, 3) the coronary stent, XIENCE, and 4) the FreeStyle family of blood glucose monitoring systems for diabetics. The company is headquartered in Abbott Park, Illinois and has 91,000 employees. Miles White has served as the CEO since 1998 and Chairman of the Board of Directors since 1999. Thomas Freyman is EVP and CFO, a position he has held since 2001.

Source: FactSet

** Unlike conventional drugs, which are made from chemicals, biologics are derived from living organisms.*

This profile was obtained from FactSet. A good profile, such as this one, provides investors with a summary of what the company does, its revenue by product category and geography, where it is headquartered, and who the C-level executives are. Reviewing the profile is a useful first step in understanding the company. It is also helpful to know the company's market cap and whether the stock is a constituent of any major stock market index. This will provide give you an idea of which indices may serve as appropriate benchmarks for comparison. Abbott Labs has a market cap of \$74 billion.* Given the company's market cap exceeds \$10 billion, it would be classified as a large cap stock. The stock is a constituent of the Standard & Poor's 500 Index and the S&P 500 Pharmaceutical Industry. The S&P 500 Index is a broad stock market index that is generally regarded as one of the best benchmarks of large cap stock performance in the U.S. The companies that comprise the S&P 500 Index are categorized by sector and industry. The

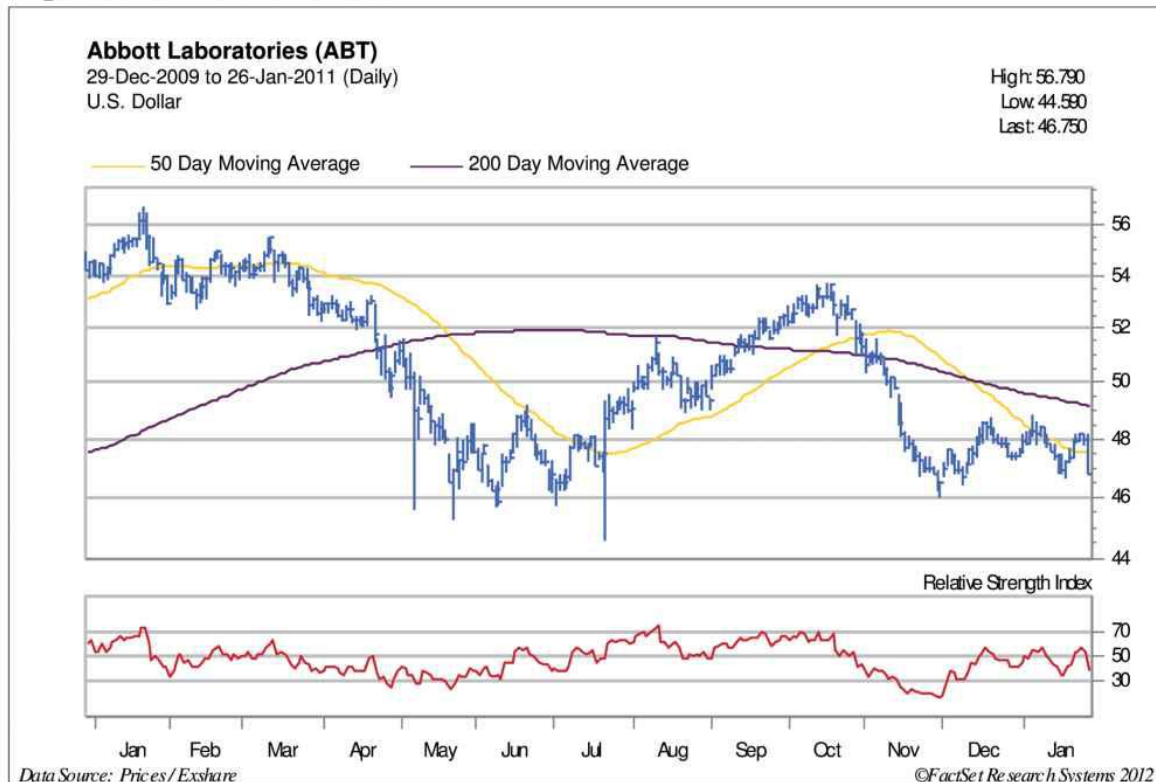
term “S&P 500 Pharmaceuticals Industry” simply refers to the group of pharmaceutical companies within the overall S&P 500 Index.

* *Market capitalization—commonly referred to simply as market cap—is the price of the stock multiplied by the number of shares outstanding. Typically, stocks with a market cap of \$250 million—\$2 billion are considered small cap. Mid cap stocks have a market cap of \$2 billion—\$10 billion, and large cap stocks have a market cap in excess of \$10 billion.*

DECIPHERING PAST PERFORMANCE

In any given year, an investor can usually look back and attribute a stock’s performance—good or bad—to just a few key factors. Let's look at Abbott Labs. Figure 19.2 illustrates the 1-year price performance of Abbott Labs from January 26, 2010 to January 26, 2011. Note that this stock performance chart includes a 50 day moving average (yellow line) and a 200 day moving average (black line.) Many investors look at moving averages for signs of expected stock price performance. This is part of what is referred to as *technical analysis*. In this book we are focused on fundamental analysis only. For those investors interested in learning more about technical analysis, an internet search for "Technical Analysis Books" will show many such texts. Similarly, interpretation of the Relative Strength Index at the bottom of the chart is not part of our discussion here.

Figure 19.2 Price Chart



Source: Interactive Data Corp via FactSet

Abbott Labs (ABT)

	Jan. 26, 2010	Jan. 26, 2011
Closing Price	\$54.48	\$46.75
% Change from Jan. 26, 2010 to Jan. 26, 2011		
ABT Stock		-14.2
S&P 500		+18.7
ABT's relative underperformance		-32.9

Source: Interactive Data Corp via FactSet

Over the past year, Abbott Labs' stock has fallen 14.2%, underperforming the S&P 500 by nearly 33%. Abbott's underperformance was driven primarily by 1) investor rotation out of the pharmaceuticals industry, and 2) potential competition for the Abbott's leading product, HUMIRA, an injectable Rheumatoid Arthritis (RA) drug.

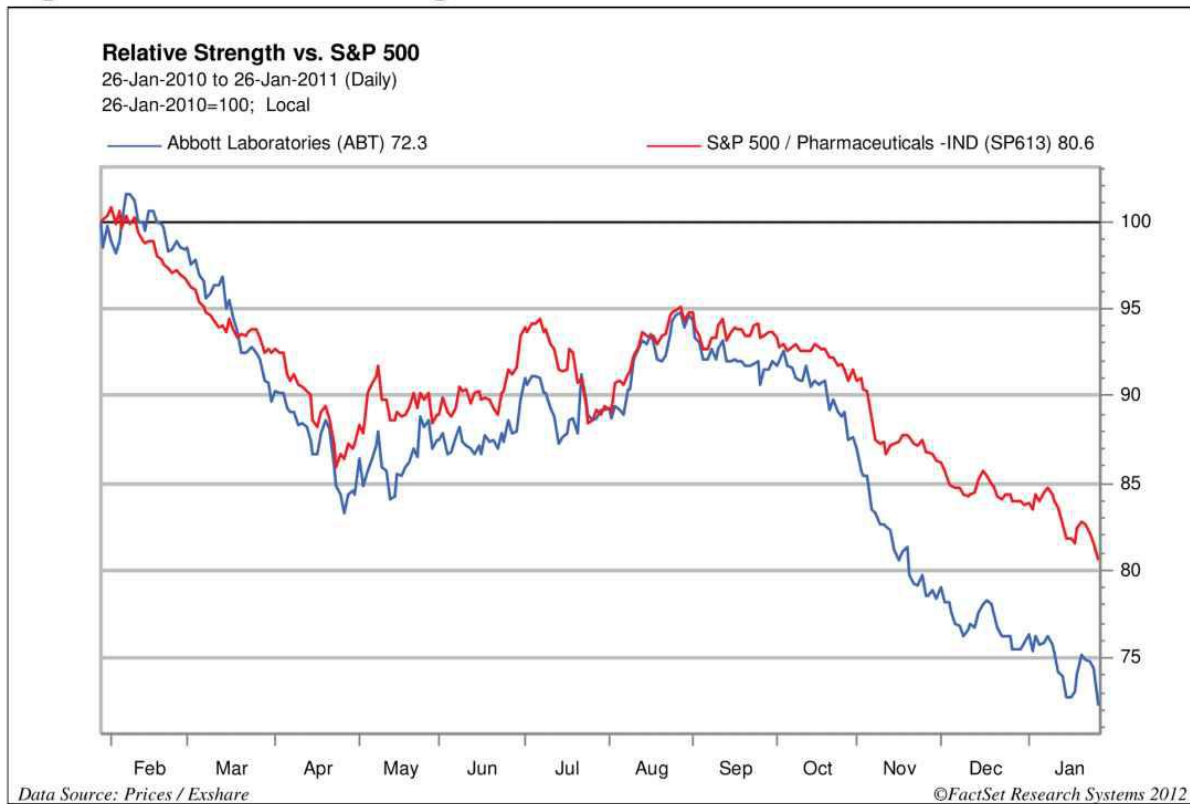
We will look first at the reasons for the rotation out of the pharmaceutical industry. The attractiveness of a particular industry or sector in the stock market is determined by a broad range of factors, including the regulatory environment. If it is perceived that these factors will have a negative impact on the operating performance of companies in a particular industry, that industry may fall out of favor. In that case, investors may “rotate” out of that industry and into other, more attractive industries. In January of 2010, the pharmaceutical industry faced a number of headwinds which resulted in rotation out of the sector over the ensuing year. These included:

- *Tough Regulatory Environment.* A Democratic Congress typically creates a challenging political environment for the pharmaceutical industry. In this environment, drug prices come under scrutiny, and pricing is an important component of organic revenue growth. In addition, the Food and Drug Administration (FDA) is now requiring more clinical data in support of approval of new drugs in the U.S. This is making the new drug development process longer and more expensive for drug companies. (The drug development process involves pre-clinical (non-human) testing as well as three phases of clinical (human) trials before a company can submit an application for FDA approval. According to innovation.org, the process takes 10-15 years and can cost \$800 million to \$1 billion.)
- *Patent Expirations.* Several pharmaceutical companies have blockbuster drugs—those that generate at least \$1 billion in annual sales—that will lose patent protection over the next few years. When a product loses patent protection, the company faces competition from generics companies such as Mylan (symbol: MYL). As a result, pharmaceutical companies with expiring patents must reduce their prices, often substantially, to compete with the generic manufacturer. For context, we estimate that drugs generating nearly \$50 billion in annual sales will lose patent protection in 2011 and 2012. (FDA Orange Book and authors' assumptions)
- *Pipeline Disappointments.* The pharma industry has experienced a series of new product (i.e., pipeline) disappointments in recent

years. These pipeline drugs were expected to offset some of the sales lost through patent expirations over the next few years.

The impact of these industry headwinds can be seen Figure 19.3, which is a *relative strength* chart for Abbott Labs over the past year. As the name implies, a relative strength chart illustrates how strong a stock has been relative to a benchmark of some kind. In this case, we chose the S&P 500 as the benchmark, or standard of comparison. In Figure 19.3, both the stock performance of Abbott Labs and the S&P Pharmaceutical Industry are shown relative to the S&P 500 Index. Since the S&P 500 is being used as the benchmark, its performance is always pegged at 100, which is the black line across the top of Figure 19.3.

Figure 19.3 Relative Strength Chart



Source: Interactive Data Corp via FactSet

As you can see, both Abbott Labs' stock (blue line) and the S&P 500 Pharmaceuticals Industry (red line) have been relatively weak *when compared to the S&P 500 Index*. By “relatively weak” we mean that both Abbott and peer group have underperformed the S&P 500. For instance, in

January 2011, Abbott's stock had a relative strength of 72, indicating that it underperformed the S&P 500 by 28% from January 2010 to January 2011.

Note: The stock market frequently exaggerates moves in either direction. The market, in this sense, reflects the emotional characteristics of investors who can get wildly enthusiastic about a stock and seem to overlook the risks, pushing the stock up to levels that seem too high relative to potential earnings and dividends, or can become overly concerned about a stock and push the price down to a level that suggests things are never going to get better. It is usually these extremes that create unique opportunities for investors who understand the company's fundamentals (and the key drivers of the stock).

Looking again at Figure 19.3 we see that Abbott's stock price performance mirrored that of the pharmaceuticals industry from January to September 2010, indicating that the company's underperformance was driven primarily by the aforementioned industry headwinds. Then, beginning in October, Abbott began to underperform its peers, as well as the S&P 500. The "divergence" in performance is likely the result of mounting concerns over increased competition for Abbott's flagship drug, HUMIRA. In early November, competitor Pfizer (symbol: PFE) announced positive Phase 3 data* for tofacitinib (tofa for short), a promising oral RA drug in development. Abbott's HUMIRA is one of the top selling RA drugs on the market. HUMIRA has been a strong contributor to Abbott's sales growth and a source of the company's high profit margins, because the operating margins on HUMIRA are notably higher than the average margin for the company. Other things being equal, patients prefer to take a pill over receiving an injection. As a result, Pfizer's announcement of an oral drug could have competitive implications for Abbott. Specifically, if Pfizer's RA drug is successfully brought to market, it can be expected to negatively impact HUMIRA's sales and profit margins.

** Phase 3 drug trials are usually the last, broadest, and longest trials for a new drug prior to approval. Many drug candidates successfully pass Phase 1 and 2 trials and then fail in Phase 3 where a larger patient sample and longer trial may identify safety issues that did not appear in earlier, shorter trials.*

The negative impact of the industry headwinds and potential new competition on Abbott's stock seems obvious *in retrospect*. One of our goals as investors, however, is to identify the 2-3 key drivers of performance *in*

advance. Understanding the key drivers will help us approximate the company's earnings growth rate and make a judgment about whether the P/E is likely to expand or contract. As we saw in Chapter 18, when a company has one or more clearly visible drivers that indicate an increasing growth rate, other things being equal, the P/E will likely expand. With clear drivers on the horizon, many investors will buy a stock before the drivers (e.g., new product introduction) emerge. Just the fact that there is an increased probability of accelerating growth will bring some investors in, thereby increasing the stock price. As we have repeatedly observed in this book, the stock market anticipates.

Next, we will look at the recent operating performance of the company, which will help us better understand the expectations currently reflected in the stock. With that, we will be better able to identify the key drivers for the stock over the next 12-18 months.

EVALUATING RECENT OPERATING PERFORMANCE

Two sources of information about a company's recent operating performance are: 1) the company's SEC filings and 2) the company's quarterly earnings conference call. These calls provide an opportunity for investors to listen to management's comments about the most recent quarter's operating performance and their outlook for the remainder of the year.

As noted in chapter 18, most management teams provide annual guidance (typically on the earnings call for the fourth quarter of the prior year) and then either lower, reaffirm, or raise guidance on the first, second, and third quarter calls. As part of their guidance, management typically provides their expectations for sales and earnings per share. The purpose of guidance is to help analysts forecast the company's operating performance for the fiscal year. It is understood that the guidance is management's best estimate at the time it is provided, but that it is subject to change. Investors listening to a company's earnings call over many quarters will develop a sense of whether management's guidance tends to be reasonable, too optimistic, or too conservative. Often times, the stock will react to the quarterly numbers and guidance updates, so it's helpful to either listen to the

call or read the earnings call transcript. Links to the conference calls can be found in the Investor Relations section of the company's website and are typically archived for at least 30 days. Since these conference call transcripts can span several pages, it's not practical to include one here. Rather, in Figure 19.4, we have included an earnings analysis of Abbott's fourth quarter (which we denoted 4Q10) performance. The company released the results for 4Q10 and full year 2010 on January 26, 2011. Shortly thereafter, they held a conference call to discuss the results. While the earnings release and subsequent call included commentary on both the 4Q10 and the full year results, this analysis only refers to Abbott's 4Q10 data. The earnings analysis is provided for two reasons: 1) so readers can see what a typical quarterly analysis looks like and 2) to provide the reader with a more detailed look at the company's fundamentals at the time of the analysis.

Figure 19.4 Sample Earnings Analysis For Abbott's 4Q10 Earnings Call

Line (1)		<i>\$Millions, except EPS</i>		Y/Y	Cons.
		4Q09A	4Q10A	% Chg	Est.
(2)					
(3)	Revenues	\$8,790	\$9,968	13%	\$9,889
(4)	Pharmaceuticals	\$4,849	\$5,939	22%	\$5,790
(5)	Nutrition	\$1,433	\$1,433	0%	\$1,420
(6)	Vascular	\$723	\$822	14%	\$820
(7)	Diagnostics	\$975	\$1,015	4%	\$1,040
(8)	Other	\$810	\$759	-6%	
(9)	COGS	\$3,664	\$3,960	7%	
(10)	Gross Profit	\$5,126	\$6,043	18%	
(11)	SG&A	\$2,190	\$3,297	19%	
(12)	R&D	\$737	\$977	33%	
(13)	Operating Income	\$2,199	\$2,469	12%	
(14)	Interest Expense	(\$94)	(\$129)	37%	
(15)	Other Expense	\$53	\$81	53%	
(16)	Pre-tax Income	\$2,158	\$2,421	12%	
(17)	Income Tax	\$312	\$396	27%	
(18)	Net Income	\$1,846	\$2,025	10%	
(19)	Diluted Shares	1,560	1,556	0%	
(20)	EPS	\$1.18	\$1.30	10%	\$1.29

(21)	Margins			
(22)	Gross Profit	58.3%	60.6%	+230 bps
(23)	SG&A	24.9%	26.1%	+110 bps
(24)	R&D	8.4%	9.8%	+140 bps
(25)	Operating Inc	25.0%	24.8%	-20 bps
(26)	Pre-tax Inc	24.6%	24.3%	-30 bps
(27)	Tax Rate	14.5%	16.4%	+190 bps
(28)	Net Income	21.0%	20.3%	-70 bps
(29)	Guidance			
(30)	Sales		high single digit growth	
(31)	Gross Margin		better than in 2010	
(32)	SG&A		somewhat above 27% of sales	
(33)	R&D		~10% of sales	
(34)	EPS		\$4.54-\$4.64	

Source: FactSet, company filings, and author assumptions

Analyst's Comments

Analyst's Comments

- Line (1) **\$Millions, except EPS:** This means that all figure are in millions expect earnings per share (EPS).
- (2) **4Q09A...:** After reviewing the earnings release and listening to the conference call, we compiled an income statement for the quarter. The statement includes the actual performance for 4Q10 and 4Q09. The "A" indicates that it is actual data. An "E" would be used for expected or forecasted data. The actual results were then used to calculate the year-over-year percentage change (Y/Y % Chg). When a company reports its quarterly results, they are typically compared to the same quarter a year ago to avoid distortions from seasonality and other factors. The final column includes the consensus estimates that were available for certain income statement items before the quarter was reported. The actual performance is compared to the consensus estimate. As noted in Chapter 18, sell-side firms such as JPMorgan, Goldman Sachs, and Morgan Stanley employ analysts to follow stocks and issue earnings estimates and stock ratings on the companies they follow. The estimates for a particular company are then aggregated by FactSet, Bloomberg, or Thomson to arrive at a consensus estimate.
- (3) **Revenues:** Sales increased 13% Y/Y to \$9,968M, \$79M better than the consensus estimate of \$9,889M. Management noted that sales grew +14% in constant currency terms. When a company consolidates its foreign results with its domestic results in financial statements, changes in foreign currency exchange rates can result in sales and expenses being different from the actual results in each country. So when management breaks out the "constant currency" numbers (i.e., what the results would have been if there had been no currency translation effects), it is very helpful to investors. It would be extremely difficult for anyone outside the company to know the translation effects. Management also noted that organic revenue growth was +3%. Organic revenue growth refers to the growth in a company's

sales generated through businesses that were present over the entire period. In other words, it excludes sales from businesses acquired during the period. As noted above, actual sales beat the consensus estimate by \$79M. Often times when describing company performance, sales and earnings are referred to as the “top line” and “bottom line”, respectively. Since actual sales exceeded the consensus estimate, we would say “the top line beat expectations.” By contrast, if the company’s results had fallen short of the consensus estimate, we would say “the company missed on the top line.”

- (4-8) **Revenue by Operating Segment:** In this case, the top line beat was driven by better-than-expected performance in international pharma. Pharmaceutical sales increased +23% Y/Y to \$5,939M. Within Pharma, U.S. sales increased +10% Y/Y to \$2,655M and international sales increased +30% Y/Y to \$3,284M. Sales in the company’s Vascular (+14% Y/Y to \$822M), Diagnostics (+4% Y/Y to \$1,015M), and Nutritionals (flat at \$1,433M) businesses were all in line with consensus estimates.
- (21) **Margins:** When analyzing operating expenses, we focus on margins. Here, each expense item is expressed as a percentage of sales. This allows us to assess company spending over time and to compare the company’s spending to that of other companies in the peer group.
- (13-25) **Operating Income and Operating Margin:** Operating income increased +12% Y/Y to \$2,469M with gross margin gains more than offset by higher SG&A and R&D spending. As a result, the operating margin deteriorated -20 bps to 24.8%.
- (22) **Gross Margin:** In 4Q10, Abbott’s gross margin expanded 230 basis points (denoted bps) to 60.6%; 230 bps Y/Y is equivalent to 2.3%. The Gross Margin expansion was attributed to “mix shift,” which means the mix of products sold had a higher gross margin than those sold in the past.
- (23) **SG&A:** As a percentage of sales, SG&A increased +110 bps

Y/Y to 26.1%, reflecting the costs associated with the Similac recall and costs associated with the recent acquisitions. Earlier in 2010, Abbott had initiated a voluntary recall of certain lots of its infant formula Similac over concerns that they did not meet the company's quality control standards earlier in 2010.

- (24) **R&D:** As a percentage of sales, R&D increased +140 bps to 9.8%.
- (18) **Net Income:** Net Income increased +10% Y/Y to \$2,025M, a lesser percent gain than operating income growth, due to a higher tax rate.
- (27) **Tax Rate:** The effective tax rate increased +190 bps Y/Y to 16.4%.
- (20) **EPS:** The number of shares outstanding was unchanged so EPS also increased +10% Y/Y to \$1.30, which was at the midpoint of management's earlier guidance range of \$1.29-\$1.31 and topped the consensus estimate of \$1.29 by \$0.01.
- (29) **Guidance:** Management issued guidance for full year 2011 (denoted FY11). The guidance will be used by analysts and investors forecasting performance for the coming year.
- (30) **Revenue Guidance:** Revenue is expected to increase "high single digits" with organic revenue growth in the mid-to-high single digit range.
- (31) **Gross Margin Guidance:** The gross margin is expected to be better than in 2010 (which was 58.6%) reflecting favorable product mix and efficiency initiatives, offset by US healthcare reform and European pricing measures.
- (32) **SG&A Guidance:** SG&A is expected to be somewhat above 27% of sales (vs. 28.7% in 2010) reflecting some SG&A leverage despite continued investment in emerging markets infrastructure across the businesses and the impact of U.S. healthcare reform. The term "leverage" in this case means

that current SG&A spending at the company can now support a higher level of sales. Therefore, SG&A spending as a percentage of sales is likely to decline. This will have a positive impact on both operating income and earnings.

- (33) **R&D Guidance:** Management expects to continue investing in R&D to drive long-term growth with R&D of ~10% of sales.
- (34) **EPS: Guidance:** FY11 EPS is expected to be in a range of \$4.54-\$4.64 (implying +9-11% Y/Y EPS growth), which brackets consensus of \$4.63 at the high end. Had the midpoint of guidance been above the consensus estimate, the stock might have moved higher as analysts revised their earnings estimates upward; this is known as a “positive earnings revision.” The opposite is also true. Note that Abbott’s EPS guidance reflects the negative impact of US Healthcare Reform as well as European austerity measures, both of which should be viewed as risks to be monitored.

In addition to discussing the details of the quarter and providing full year guidance, Abbott’s management announced a new reporting structure for its business units. This may seem insignificant on the surface, but it may be an indicator of upcoming capital deployment, an area where management has a history of making moves that benefit shareholders. Specifically, investors have been encouraging the company to spin off or sell some of its business units to unlock value. The new reporting structure could be an initial step toward a sale or spin off; companies will often times re-characterize certain operating units (i.e., lump certain operating divisions together) and then sell, spin off, or split off those units.*

** In a spin-off of an operating division, that division is structured as a separate company and shares of stock of the newly created company are given to the shareholders of the parent company. Therefore the shareholders of the parent company are losing nothing of value. In fact, they may be gaining. One reason companies spin off divisions is that the directors of the parent company feel that the price of their stock does not reflect the true*

worth of that division. By separating the division into a separate company, investors can see it as a stand-alone company, and the directors anticipate that the spun off division will be valued in the stock market at its true (higher) worth. Thus, a spinoff, in Wall Street language, is an attempt to “unlock” the value of a division for its shareholders. Unlike a spin-off, where shares of the newly created company are distributed to current shareholders of the parent company, a split-off requires shareholders to exchange shares of the parent for shares of the newly created company (should they choose to). For instance, Bristol Myers Squibb (symbol: BMY) split-off its nutritional segment, Mead Johnson Nutrition (symbol: MJN), in 2009. In that case, Bristol Myers’ shareholders had the option of exchanging their BMY stock for MJN stock.

ANALYZING FINANCIAL STATEMENT DATA

Now let’s look at Abbott’s financial statement data. First we will look at the company’s sales by product line and geography, which are presented in Figures 19.5 and 19.6, respectively. The business segment data will help us see which operating segments are growing and which are slowing, while the geographic segment data will illustrate which geographies represent future growth opportunities for Abbott Labs. With an understanding of the company’s sales, we will analyze Abbott’s income statement and balance sheet using Figures 19.7 and 19.8. As in previous chapters, we will use the financial statement data to calculate and analyze certain financial ratios, which will give us a good sense of the company’s profitability and financial strength.

Business Segmentation

Figure 19.5 Business Segments

<u>Sales (\$millions)</u>	Dec-07	Dec-08	Dec-09	Dec-10
Pharmaceutical	\$14,632	\$16,708	\$16,486	\$19,894
Nutritionals	4,388	4,924	5,284	5,532
Diagnostic	3,158	3,575	3,578	3,794
Vascular	1,663	2,241	2,692	3,194
Other	<u>2,073</u>	<u>2,080</u>	<u>2,725</u>	<u>2,753</u>
Total	\$25,914	\$29,528	\$30,765	\$35,167
<u>% of Total Sales</u>	Dec-07	Dec-08	Dec-09	Dec-10
Pharmaceutical	56.5%	56.6%	53.6%	56.6%
Nutritionals	16.9%	16.7%	17.2%	15.7%
Diagnostic	12.2%	12.1%	11.6%	10.8%
Vascular	6.4%	7.6%	8.8%	9.1%
Other	8.0%	7.0%	8.9%	7.8%
Total	100.0%	100.0%	100.0%	100.0%
Growth (Y/Y)	Dec-07	Dec-08	Dec-09	Dec-10
Pharmaceutical	18.0%	14.2%	-1.3%	20.7%
Nutritionals	1.7%	12.2%	7.3%	4.7%
Vascular	53.7%	34.8%	20.1%	18.6%
Other	193.2%	0.3%	31.0%	1.0%
Total	15.3%	13.9%	4.2%	14.3%

Source: FactSet

In 2010, Abbott Labs generated \$35.2 billion in sales. Pharmaceutical sales represent over half of Abbott's total sales. With the exception of 2009,

when Abbott's drug Depakote lost patent protection, the company's Pharmaceutical segment has posted double digit sales growth in each of the past four years. (Depakote, an anti-convulsant drug, had sales of \$1.3 billion in 2008 before the patent expired.) Segment growth has primarily been driven by HUMIRA, which 1) gained market share in Rheumatoid Arthritis, 2) received FDA approval for new indications (e.g., Crohn's Disease), and 3) received approval in new geographies (e.g., Japan). Nutritionals is the second-largest segment, accounting for roughly 16% of sales in 2010. Nutritional sales, which include Similac (infant formula), Ensure (nutritional shakes), and related products have been growing in the mid-single-digit range the last two years. Nutritional sales were negatively impacted by the Similac recall in 2010, but inventory returning to normal levels should support segment sales growth. Further, expansion into China represents another important driver of Nutritionals sales in the future. Vascular sales have steadily increased over the past five years as a result of the launch of XIENCE (the leading drug eluting stent,* which captured 30% market share within six months of launch). XIENCE's sales trends underscore the importance of a new product cycle and patent protection for drug and medical device companies such as Abbott. That said, given XIENCE's significant market share in a highly competitive industry, future sales growth in Vascular won't likely be as high as in the past.

** A Drug Eluting Stent (DES) is a small, metal scaffold that is inserted into blocked arteries of the heart, typically using a catheter, to open the blocked artery. Unlike bare metal stents, drug eluting stents dispense medication that helps prevent the artery wall from re-closing.*

Geographic Segmentation

Abbott Labs reports sales for 10 geographic regions: United States, Japan, Netherlands, Germany, France, Italy, Spain, U.K., Canada, and Other. Nearly 57% of current company sales are generated outside the U.S. Historically, the three largest geographic markets for drugs and medical devices have been the United States, Europe, and Japan. Looking forward, growth is being driven by the emerging markets where a combination of population size/growth and under-penetration (i.e., limited use or access for large segments of the population) creates a significant opportunity for companies such as Abbott Labs. Emerging markets are grouped together

under the heading “Other.” The recent acquisition of Piramal Healthcare’s pharmaceutical solutions business was designed to increase the company’s exposure to these high growth, emerging markets. (The \$3.7 billion Piramal acquisition was announced in May 2010.) Not surprisingly, growth of pharmaceuticals inside the US has slowed to mid-single digits as a result of high penetration rates and fewer new product approvals. Growth in Europe—particularly in 2009—has been negatively affected by austerity measures meant to address the economic and budgetary problems in those countries.

To see this, look at the decelerating growth in Year/Year Sales in Germany, France, Italy, and Spain from 2007-2009 in the bottom section of Figure 19.6 below. The level of growth in Japan (+27% over the past two years) has been supported by new product introductions; HUMIRA was approved in Japan in April 2008 and XIENCE was approved in January 2010.

Figure 19.6 Geographic Segments

(Source: FactSet)

<u>Sales (\$Millions)</u>	Dec-07	Dec-08	Dec-09	Dec-10
United States	13,252.2	14,495.0	14,453.0	15,194.0
Other	5,027.0	6,026.0	6,658.0	8,751.0
Japan	1,111.0	1,249.0	1,590.0	2,025.0
Netherlands	1,271.0	1,753.0	1,801.0	2,001.0
Germany	1,235.0	1,381.0	1,481.0	1,846.0
France	854.0	977.0	959.0	1,216.0
Italy	974.0	1,089.0	1,172.0	1,144.0
Canada	832.0	924.0	902.0	1,036.0
Spain	731.0	909.0	970.0	1,066.0
<u>United Kingdom</u>	<u>627.0</u>	<u>725.0</u>	<u>779.0</u>	<u>888.0</u>
Total	25,914.2	29,528.0	30,765.0	35,167.0
<u>% of Total Sales</u>	Dec-07	Dec-08	Dec-09	Dec-10
United States	51.1%	49.1%	47.0%	43.2%
Other	19.4%	20.4%	21.6%	24.9%
Japan	4.3%	4.2%	5.2%	5.8%
Netherlands	4.9%	5.9%	5.9%	5.7%
Germany	4.8%	4.7%	4.8%	5.2%
France	3.3%	3.3%	3.1%	3.5%
Italy	3.8%	3.7%	3.8%	3.3%
Canada	3.2%	3.1%	2.9%	2.9%
Spain	2.8%	3.1%	3.2%	3.0%
United Kingdom	2.4%	2.5%	2.5%	2.5%
Total	100.0%	100.0%	100.0%	100.0%
<u>Y/Y Growth in Sales</u>	Dec-07	Dec-08	Dec-09	Dec-10
United States	10.5%	9.4%	-0.3%	5.1%
Other	23.4%	19.9%	10.5%	31.4%
Japan	5.4%	12.4%	27.3%	27.4%
Netherlands	19.8%	37.9%	2.7%	11.1%
Germany	39.5%	11.8%	7.2%	24.6%
France	22.7%	14.4%	-1.8%	26.8%
Italy	14.9%	11.8%	7.6%	-2.4%
Canada	9.2%	11.1%	-2.4%	14.9%
Spain	25.4%	24.4%	6.7%	9.9%
United Kingdom	21.3%	15.6%	7.4%	14.0%
Total	15.3%	13.9%	4.2%	14.3%

Income Statement Data

Figure 19.7 is a detailed income statement for Abbott Labs. The data includes both historical data for 2007-2010 as well as forecasts for 2011 and 2012. (The consensus estimates for 2011 and 2012 reflect estimates for a subset of the brokers covering the stock.) Financial statements are available through a wide variety of sources including the company's annual report and its SEC filings, namely the 10K and 10Q. The 10K is a detailed, audited report that the company must submit annually within 90 days of the fiscal year end, while the 10Q is submitted to the SEC quarterly. The 10Q provides less detailed data than the 10K, but does contain management's commentary on the factors impacting the company. Other sources of financial data include a variety of subscription services, including FactSet, Bloomberg, Value Line, and Morningstar. For investors who don't want to incur the cost of these services, many public libraries have a subscription to Value Line, which includes reports on 1,700 companies. The Value Line reports contain a plethora of useful information about each company on a single page, including historical financial statement data and analyst commentary. Some libraries also provide access to Morningstar. The multi-page Morningstar reports include company profiles, a list of key investment considerations, analyst commentary, and both historical and projected financial data. These services are excellent resources for new and experienced investors alike.

Figure 19.7 Abbott Labs' Income Statement

	Actual				Avg	Forecast	
	2007A	2008A	2009A	2010A		2011E	2012E
Revenue	\$25,914	\$29,528	\$30,764	\$35,167		\$37,809	\$39,074
COGS	10,928	12,266	12,867	14,008		14,970	15,669
Gross Profit	14,986	17,261	17,897	21,159		22,839	23,405
R&D	2,479	2,655	2,700	3,478		3,709	3,751
SG&A	7,022	8,129	8,074	9,642		10,265	10,433
EBIT	\$5,485	\$6,478	\$7,123	\$8,039		\$8,866	\$9,221
EBITDA	\$7,340	\$8,317	\$9,213	\$10,276		\$11,248	\$11,749
Net Interest	-\$457	-\$327	-\$382	-\$446		-\$433	\$81
TAP*	\$498	\$119	\$0	\$0		\$0	\$0
Other	-\$26	\$213	\$235	\$176		\$20	\$20
Total Non-oper Income	15	5	-147	-272		-413	101
Pretax Income	\$5,500	\$6,482	\$6,976	\$7,768		\$8,453	\$9,322
Tax Rate	19.5%	20.0%	16.8%	16.3%	18.2%	15.8%	15.8%
Income Tax Exp	1,074	1,297	1,170	1,266		1,331	1,468
Net Income	\$4,426	\$5,186	\$5,806	\$6,501		\$7,121	\$7,854
Dil shares out	1,560	1,561	1,555	1,556		1,556	1,554
Diluted EPS	\$2.84	\$3.32	\$3.73	\$4.18		\$4.58	\$5.06
Dividend	1.26	1.39	1.55	1.82		\$2.07	\$2.34
Div Payout Rate	44.4%	41.9%	41.6%	43.6%	42.9%	45.2%	46.3%
Dividend Yield	2.3%	2.7%	3.0%	3.7%	2.9%		
Growth Rates	2007A	2008A	2009A	2010A	Avg	2011E	2012E
Revenue	15.3%	13.9%	4.2%	14.3%	11.9%	7.5%	3.3%
EBIT	12.9%	18.1%	10.0%	12.9%	13.4%	10.3%	4.0%
EBITDA	14.4%	13.3%	10.8%	11.5%	12.5%	17.7%	0.9%
Net Income	14.1%	17.2%	12.0%	12.0%	13.8%	9.5%	10.3%
EPS	12.4%	17.1%	12.4%	11.9%	13.4%	9.6%	10.5%
DPS	12.5%	10.3%	11.5%	17.4%	12.9%	13.7%	13.0%

* TAP referred to TAP Pharmaceuticals, a joint venture between Abbott Labs and Takeda. The joint venture was dissolved in 2008, which is why it has no impact on the financial statement from 2009-2012.

Margins	2007A	2008A	2009A	2010A	Avg	2011E	2012E
Gross Profit	57.8%	58.5%	58.2%	60.2%	58.7%	60.4%	59.9%
R&D	9.6%	9.0%	8.8%	9.9%	9.3%	9.8%	9.6%
SG&A	27.1%	27.5%	26.2%	27.4%	27.1%	27.1%	26.7%
EBIT (Oper Profit)	21.2%	21.9%	23.2%	22.9%	22.3%	23.4%	23.6%
EBITDA	28.3%	28.2%	29.9%	29.2%	28.9%	29.7%	30.1%
Pretax Income	21.2%	22.0%	22.7%	22.1%	22.0%	22.4%	23.9%
Net Income	17.1%	17.6%	18.9%	18.5%	18.0%	18.8%	20.1%

Source: FactSet, Company Filings, Author Assumptions

On an income statement, growth is typically measured on a sequential (quarter-over-quarter) or annual (year-over-year) basis. Below the income statement, we have calculated the year-over-year (Y/Y) growth rates for Abbott Labs. Using this data, we see that revenues grew by +14.3% Y/Y in 2010. To calculate the Y/Y growth rate of 14.3%, we would divide 2010 sales of \$35,167M by 2009 sales of \$30,764M. The slower, mid-single-digit sales growth in 2009 was the result of Depakote’s patent expiration, which was noted above. On average, Abbott’s sales have increased +11.9% annually over the past four years. Double digit sales (and earnings) growth is a good bogie for large cap companies such as Abbott Labs.

Operating income—referred to here as EBIT or Earnings Before Interest and Taxes—has grown at an average rate of 13.4% over the past four years. With operating income growing faster than sales, margins have been expanding. In the section labeled “Margins” above, specific line items such as operating income are expressed as a percent of total sales.* Margins can be used to identify trends for a specific company. Here, we see that Abbott Labs’ operating margins (EBIT divided by Sales) expanded between 2007 and 2010 as a result of ongoing efficiency initiatives and increased sales of HUMIRA and XIENCE, both of which have higher margins than the company average. The company’s SEC filings sometimes include the operating margins for certain, high-profile products such as these. If you cannot find the margin data you need in the recent filings, the company’s Investor Relations department may be able to help.

* *This section is sometimes referred as a “Common Size Statement” since by presenting the P&L items as a percent of total sales, companies of*

varying sizes can be compared on an apples-to-apples basis. For instance, Abbott's operating margin was 22.9% in 2010. So, we would say that for every \$1 in sales, Abbott's generated \$0.23 in operating income. That \$0.23 can be compared to the same figure for other companies in the peer group, regardless of size.

The margin analysis can also be used to make comparisons with other companies in the same peer group. Abbott's average operating margin over the past four years has been 22.3%, which is modestly lower than that of the pharmaceuticals industry (~23.8% over the same period). Because we attribute the industry's higher margins—particularly higher gross margins—to the high prices and lower costs of goods sold associated with blockbuster drugs, it is not surprising to see Abbott's lower operating margins relative to other pharmaceutical companies, given Abbott's diversified product base (i.e. less reliance on blockbuster drugs).*

** When conducting a margin analysis, it is important to analyze R&D and SG&A expense of the company relative to the peer group. For example, if SG&A expense as a percentage of sales is notably higher than that of the company's peers, there may be an opportunity for management to improve operating margins by reducing SG&A in the future.*

For Abbott Labs, most of the operating margin improvement has been driven by higher gross margins. R&D and SG&A as a percentage of sales haven't changed much over the past four years. SG&A spending did tick up in 2008 and 2010, reflecting increased spending ahead of the new product launches discussed above. With no major product rollouts over the next two years—and the synergies expected from the recent acquisitions—SG&A spending as a percentage of sales is expected to decline over the next two years, which should support operating margins. R&D is the “life's blood” of pharmaceutical companies. As noted on the 4Q call, R&D will likely remain around 10% of sales, so R&D spending is expected to be neutral to margins going forward.

Abbott's net income has grown at an average rate of 13.8% over the past four years. Net income growth has been supported by a lower tax rate (16.3% in 2010). Like the other companies in the pharmaceutical industry, Abbott's tax rate is well below the statutory corporate rate of 35%. Pharma companies domicile drug patents offshore to reduce the tax rate of these important products. With such low tax rates, there is risk that these rates trend higher over time as the government looks for ways to raise revenue.

Higher interest expense on debt used to finance acquisitions has largely offset the lower tax rate, which is why net income has grown at roughly the same rate as operating income over the past four years.

The net profit margin (18.5% in the most recent year) trails the peer group's 20.5% net margin. Again, this is the result of Abbott's diversified product offerings. That said, Abbott's net margin has been trending higher, and based on consensus estimates, is expected to continue to expand over the next few years due to lower operating expenses, lower interest expense (as the company repays debt), and a lower tax rate (from a higher proportion of sales being generated in low tax jurisdictions; this is referred to as "geographic mix shift"). This trend underscores the impact of one or two successful products which have patent protection. Margins cannot expand forever. There is a limit to how much cost cutting (from reduced SG&A or R&D spending) or mix shift (to selling higher margin products) is possible. This is why investors—all things equal—will pay more in terms of earnings multiple for companies whose earnings growth is being driven by sales growth rather than margin expansion.

Patent protection reduces or eliminates competition and permits annual pricing increases. With the loss of patent protection, a company loses its pricing freedom, and usually sees its selling prices decline sharply, as well as losing unit sales volume as generic competition grabs market share. This is why the loss of patent protection negatively impacts sales, operating margins, and net margins.

Increasingly, management teams are using free cash flow to reduce the company's outstanding share count. Relative to dividends, stock buybacks offer more flexibility in timing and amount. Buybacks can also be used to send a "signal" to the market that management believes the company shares are undervalued. Abbott Labs' has not been an aggressive buyer of treasury stock. The company's share count has been roughly flat over the past four years. The dividend, on the other hand, has steadily increased. In fact, the company has increased its dividend consecutively for the past 38 years. Thus, the board of directors is committed not only to paying a dividend, but to increasing it over time. The cash paid out to shareholders in the form of a dividend can then be reinvested in Abbott shares or re-deployed to other investment opportunities.

EPS has grown +13.4% annually over the past four years. Abbott's double digit earnings growth exceeds that of the pharmaceutical industry,

indicating that the company's products are growing faster than the market (i.e., the company is capturing market share). The company's earnings are projected to grow long-term at a rate of 10.1% based on the consensus long-term growth rate forecast (*Source*: FactSet Estimates). It's important to know the rate of growth expected for the future and how that rate compares with historical growth. In this case, the historical rate of 13.5% includes a strong contribution from share gains in the Rheumatoid Arthritis (from HUMIRA) and stents (from XIENCE).

Balance Sheet Data

The balance sheet for Abbott Labs is provided below. As with the income statement, the balance sheet includes historical data for 2007-2010 and forecasted data for 2011 and 2012. We have also calculated certain profitability, efficiency, leverage, and liquidity ratios for the company to gain further insight into the company's financial strength. These ratios were covered in Chapter 4.

Figure 19.8 Abbott Labs' Balance Sheet

Assets	Actual				Forecast	
	2007A	2008A	2009A	2010A	2011E	2012E
Cash & ST Inv	\$2,820	\$5,080	\$9,932	\$7,324	\$14,718	\$21,306
Accounts Rec	4,947	5,466	6,542	7,184	7,879	8,017
Inventories	2,951	2,776	3,265	3,189	3,767	3,941
Prepaid Exp, De- ferred Taxes, and Other	<u>3,324</u>	<u>3,721</u>	<u>3,575</u>	<u>4,621</u>	<u>4,665</u>	<u>4,928</u>
Total Current Assets	\$14,043	\$17,043	\$23,314	\$22,318	\$31,029	\$38,192
Long Term Assets						
Property, Plant & Equipment	7,518	7,219	7,619	7,971	8,092	8,233
Intangible Assets	15,849	15,138	19,492	28,082	22,667	21,234
Deferred Taxes	<u>1,178</u>	<u>1,945</u>	<u>858</u>	<u>790</u>	<u>855</u>	<u>855</u>
Total Assets	\$39,714	\$42,419	\$52,417	\$59,462	\$62,894	\$68,766

Liabilities

Short Term Debt & Curr Port of LT Debt	\$1,827	\$2,732	\$5,190	\$6,395	\$3,351	\$3,151
Accounts Payable	1,220	1,351	1,281	1,536	1,443	1,510
Salaries, Taxes, Dividends Payable	<u>6,056</u>	<u>7,508</u>	<u>6,579</u>	<u>9,332</u>	<u>12,814</u>	<u>14,602</u>
Total Current Liab	\$9,103	\$11,592	\$13,049	\$17,262	\$17,608	\$19,263
Long-Term Debt	9,488	8,713	11,266	12,524	12,238	11,988
Other Liabilities and Deferrals	<u>3,344</u>	<u>4,634</u>	<u>5,202</u>	<u>7,200</u>	<u>6,085</u>	<u>6,085</u>
Total Liabilities	21,935	24,940	29,518	36,986	35,931	37,336

Equity

Common Stock	6,104	7,444	8,258	8,745	8,505	8,505
Treasury Stock	-1,213	-2,626	-3,310	-3,917	-3,725	-3,967
Retained Earnings	10,806	13,825	17,054	18,927	24,002	28,214
Accumulated Other Comprehensive Inc*	2,082	-1,164	854	-1,364	-1,900	-1,404
Sharehldrs' Equity	17,779	17,480	22,856	22,391	26,964	31,430
Minority Interest	0	0	43	85		
Total Equity	<u>17,779</u>	<u>17,480</u>	<u>22,899</u>	<u>22,476</u>	<u>26,964</u>	<u>31,430</u>
Total Liab & Sharehldrs' Equity	\$39,714	\$42,419	\$52,417	\$59,462	\$62,894	\$68,766

Ratio Analysis	Actual				Forecast	
	2007A	2008A	2009A	2010A	2011E	2012E
<i>Profitability</i>						
Return on Assets	12%	13%	12%	12%	12%	12%
Return on Equity	28%	29%	29%	29%	29%	27%
<i>Efficiency</i>						
Asset Turnover	0.7	0.7	0.6	0.6	0.6	0.6
<i>Leverage</i>						
Total Debt Ratio	28%	27%	31%	32%	25%	22%
LTD-to-Assets	24%	21%	21%	21%	19%	17%
Assets-to-Equity	2.2	2.4	2.3	2.6		
Interest Coverage	12.0	19.8	18.6	18.0	20.5	NM
<i>Liquidity</i>						
Current Ratio	1.5	1.5	1.8	1.3	1.8	2.0
Quick Ratio	1.2	1.2	1.5	1.1	1.5	1.8

Source: FactSet, Company Filings, Author Assumptions

* The term “Other Comprehensive Income” represents certain gains and losses that are not recognized on the income statement, such as unrealized gains and losses from the sale of securities, translational gains and losses from foreign subsidiaries, and gains and losses on derivatives. Thus, “Accumulated Other Comprehensive Income” is simply the sum total of Other Comprehensive Income.

Profitability

Abbott’s return on assets (ROA), which we define here as net income divided by average (see below) total assets, was 12% in 2010 and has averaged 12% over the past four years. This ratio includes data from both the income statement (net income) and the balance sheet (average total assets). The income statement reflects the company’s performance over a 12-month period. The balance sheet, on the other hand, reflects the asset balance only

at the end of each fiscal year. As a result, we use the average of beginning and ending assets. In this case, we divided 2010 net income of \$6,501M by average assets of \$55,940M (calculated using beginning and ending assets of \$52,417M and \$59,462M, respectively). ROA is a profitability measure, indicating that for every \$1 in assets, management generated \$0.12 in net income. This is higher than the industry average of 10.5%.

Return on equity (ROE) is closely followed by investors as it provides a measure of profitability generated per dollar of shareholders equity. While most textbooks suggest looking for companies with returns of 15% or more, we prefer 20% as a hurdle rate. Abbott's ROE easily exceeds our hurdle rate; it was 28% in 2010 (\$6,501M in net income divided by average equity of \$22,624M). We would say that for every \$1 in equity, management generated \$0.28 in profit. Abbott Labs' ROE has averaged 29% over the past four years, which exceeds the industry average of ~23% over the same period.

The difference in the company's ROA of 12% and ROE of 28% reflects the "leverage effect;" in other words, Abbott has generated a higher return on equity for its shareholders by taking on debt.

Efficiency

The company's total asset turnover ratio, which is defined as sales divided by total assets, has consistently been 0.6x. Recall, asset turnover (referred to in the industry as "asset turns") measures management's ability to use company assets to generate sales. Thus, the higher the ratio, the better. With an asset turnover ratio of 0.6x, Abbott Labs is generating \$0.60 in sales for every \$1 in assets. This is in line with the asset turnover ratio for the pharmaceutical industry.

Leverage

The company's debt load is higher than that carried by its peer group. Abbott's total debt ratio (total debt divided by total assets) has ranged from 27%-32% over the past four years and has averaged 30% vs. ~20% for the pharmaceuticals industry. While the company uses more debt than its peers, the company does not appear "overextended" given the high level of free cash flow it generates annually, which can be used to make interest

payments and retire debt. In fact, the interest coverage ratio (EBIT divided by annual interest expense) is 18x. In other words, Abbott has its interest costs covered 18 times over. If management is choosing the right investments and the debt load isn't burdensome, the debt can allow the company to generate more sales (and earnings) than it could otherwise. We would argue that Abbott's higher debt level has allowed the company to take advantage of investment opportunities (e.g., the recent acquisitions) that it couldn't have otherwise. Even with the relatively higher debt load, Abbott's credit rating is AA+, so the level of debt is not a concern *for us*.

Liquidity

The current ratio is one of the most frequently used measures of liquidity. To calculate the current ratio, current assets (cash accounts receivable, inventory, and other) are divided by current liabilities (accounts payable and other liabilities due in the next 12 months). Abbott's current ratio has averaged 1.5x over the past four years. Thus, we would say that the company has \$1.50 in current assets for every \$1 in current liabilities, or that Abbott has its current liabilities covered 1.5x over.

A more conservative measure of short term liquidity is the quick ratio. To calculate the quick ratio, inventory is deducted from current assets before dividing by current liabilities. Inventory is excluded because it is the least liquid of the current assets. Inventory must first be sold and the proceeds converted into cash. When a company is having financial difficulties, it is often difficult to sell its inventory, or the inventory might only be saleable at a deep discount from its balance sheet carrying value. As a result, the quick ratio provides a more conservative measure of short-term liquidity. Adjusting for inventory, Abbott has \$1.30 in current assets for every \$1 in current liabilities, as indicated by the average quick ratio of 1.3 over the 4-year period. Like other ratios, it is helpful to compare the company's ratios to those of the industry; in this case Abbott's current and quick ratios are modestly better than those of the peer group. The pharmaceuticals industry has a current and quick ratio of ~1.4 and ~1.2, respectively. Thus, liquidity does not appear to be an issue for the company.

Cash Flow Data

Figure 19.9 Abbott Labs' Cash Flow Statement

	Actual				Forecast	
	2007	2008	2009	2010	2011	2012
Operating Activity						
Net Income	\$4,426	\$5,186	\$5,806	\$6501	\$7,121	\$7,854
Depreciation & Amortization	1,855	1,839	2,090	2,327	2,382	2,528
Other Items	786	314	-219	498	489	496
Net change in Working Capital	<u>-1,063</u>	<u>-40</u>	<u>-341</u>	<u>-617</u>	<u>1,277</u>	<u>1,280</u>
Cash Flow from Operations	6,004	7,299	7,336	8,619	11,269	12,157
Investing Activity						
Acquisitions net of Disposals	\$0	-\$250	-\$2,371	-\$6,290	\$0	\$0
Capital Spending	-1,656	-1,288	-1,089	-1,122	-1,178	-1,236
Purchase/Sale of Investments	553	-474	-233	1,959	0	0
Other Items	<u>-33</u>	<u>-75</u>	<u>-6</u>	<u>-1,876</u>	<u>0</u>	<u>0</u>
Cash Flow from Investing	-\$1,136	-\$2,087	-\$3,699	-\$7,958	-\$1,178	-\$1,236
Financing Activities						
Change in Debt	-\$544	-\$1,239	\$3,734	\$1,428	-451	-450
Change in Equity *	191	-73	-318	-293	-150	-242
Dividends	<u>-1,959</u>	<u>-2,174</u>	<u>-2,414</u>	<u>-2,837</u>	<u>-3,218</u>	<u>-3,642</u>
Cash Flow from Financing	-2,313	-3,486	1,002	-1,702	-3,819	-4,334

Source: FactSet, Company Filings, Author Assumptions

* The negative change in equity represents funds spent on share buybacks in excess of funds received for shares issued for stock options

	Actual				Forecast	
	2007A	2008A	2009A	2010A	2011E	2012E
Free Cash Flow	\$4,348	\$6,011	\$6,247	\$7,479	\$10,092	\$10,921
Free Cash Flow to Equity	\$3,804	\$4,772	\$9,981	\$8,925	\$9,641	\$10,471

Source: FactSet, Company Filings, Author Assumptions

Yield

Abbott's stock provides investors with a very attractive dividend yield of 3.7%, based on the 2010 dividend of \$1.82 per share and Abbott's stock price of \$47.91 on December 31, 2010. Abbott's dividend yield is higher than the peer group average of 2.8%. The increase in yield (shown in Figure 19.7) is a consequence of the annual increases in the dividend combined with the "pullback" in Abbott's stock. Dividends per share have increased at an average rate of 13% for the past four years, and as noted above, the company has increased the dividend consecutively for the past 38 years. By contrast, many other pharmaceutical companies have either held their dividend constant or cut their dividend when making large acquisitions in recent years. For example, Pfizer needed to cut their dividend in 2009 when they acquired Wyeth (symbol: WYE). Pfizer's large acquisition of Wyeth was done, in part, to address the company's desire to maintain growth despite the upcoming patent expiration of their blockbuster cholesterol drug Lipitor (expiration in Nov. 2011). Abbott's dividend payout rate is currently ~40% of earnings, and given the company's history, future dividend increases seem probable.

Free Cash Flow

Dividends represent the cash *actually paid* to a company's shareholders. The cash available for distribution to shareholders and creditors is referred to as Free Cash Flow (\$7.5 billion in 2010). We define Free Cash Flow here as simply cash flow from operations (\$8.6 billion in 2010) minus capital expenditures (\$1.1 billion in 2010). Abbott Labs' free cash flow is positive,

has increased each year for the last four, and is expected to continue to increase this year and next. We could also look at the Free Cash flow available to shareholders only, which is referred to as Free Cash Flow to Equity (denoted FCFE). Free Cash Flow to Equity is cash flow from operations (\$8.6 billion in 2010) minus capital expenditures (\$1.1 billion in 2010) plus the change in debt (\$1.4 billion in 2010), or \$8.9 billion. Free Cash Flow to Equity is more volatile than Free Cash Flow because it includes the change in debt (i.e., issuance and redemptions). For instance, FCFE increased significantly from \$4.77 billion in 2008 to \$9.98 billion in 2009 as the company raised debt to finance the Solvay acquisition. It then fell back to \$8.93 billion in 2010 as Abbott began paying down the debt.

When investing in a company with a large portion of earnings generated overseas, it is important to know whether the overseas profit can be repatriated (i.e. can the cash be brought back to the U.S., and if so, at what tax rate?). The U.S. tax on repatriated overseas profit has discouraged many companies from bringing cash back, limiting management's ability to deploy cash into new investments in the U.S. Given management's priorities to increase overseas exposure, Abbott has chosen to use the cash generated outside the U.S. to acquire international firms (e.g., Solvay in 2009 and Piramal Healthcare in 2011) to avoid repatriation. This strategy has still allowed the company to use U.S.-generated cash for dividends and other purposes. With these recent acquisitions and increased dividend, Abbott holds less cash than its peer group, but given the company's strong free cash flow, this doesn't appear problematic.

IDENTIFYING KEY DRIVERS

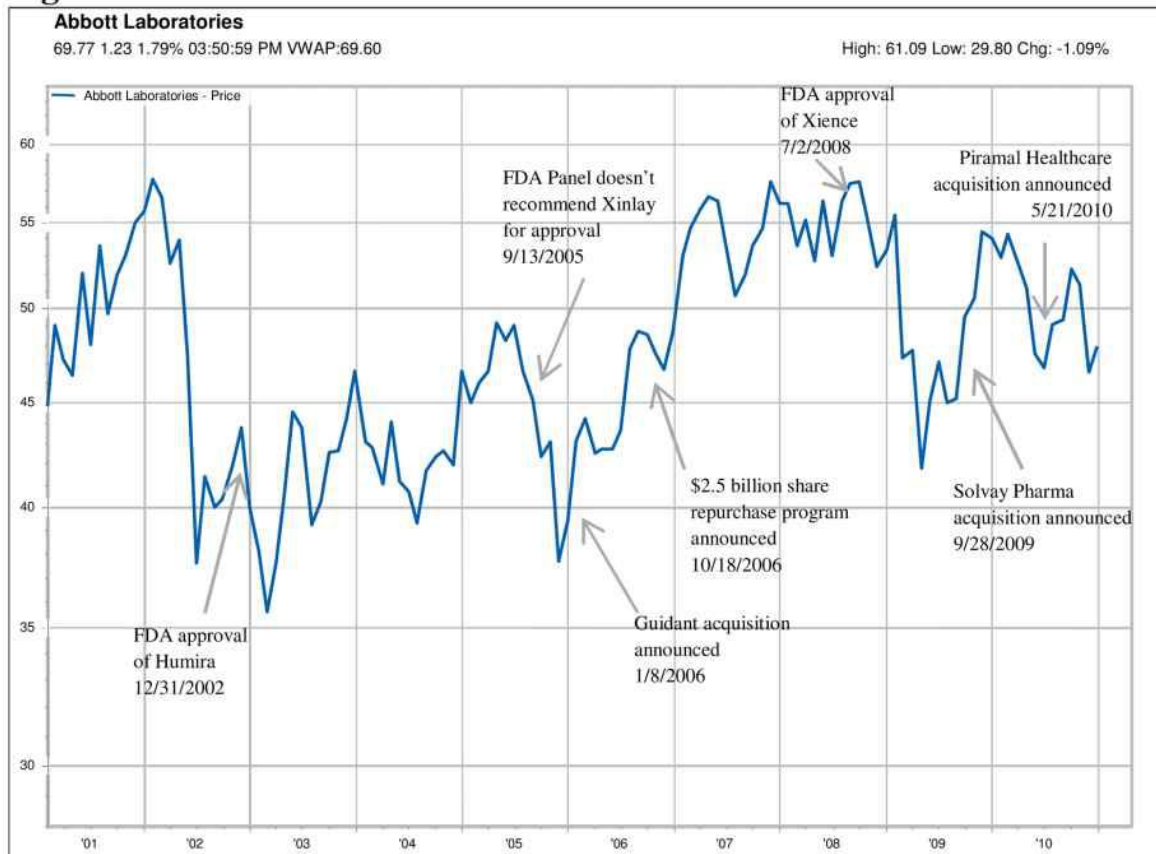
Every day, investors must make decisions with incomplete information. For that reason, we want to focus on those factors with the largest potential impact on the stock. In *Best Practices of Equity Research Analysts*, James Valentine defines "key drivers" as those factors that are expected to occur during the investor's typical investment time horizon and have an associated catalyst that, when triggered, will have a material impact on earnings, cash flow, or return. (Valentine, James. *Best Practices For Equity Research Analysts: Essentials for Buy-Side and Sell-Side Analysts*. New York: McGraw Hill, 2011.) While one might quibble with the precise definition of key drivers, as investors with limited time and incomplete information, our

time is well spent identifying and scrutinizing the key drivers of stock performance. Everything else is largely noise, especially in the short run where human psychology can have more to do with determining stock prices than the fundamental outlook for a company. This can often be seen by looking at a company's stock price history. In the short run, a stock's price behavior may sometimes appear unrelated to company fundamentals, but looking at long-term price behavior, the “noise” washes out and price action usually correlates very well with earnings, cash flow, and other fundamental factors.

The drivers can be company specific, industry related, or derived from the macroeconomic environment. A good starting point when trying to identify key drivers is to look at what factors have impacted the company's stock in the past. We have already addressed two of the key drivers of Abbott's performance over the past year—rotation out of the pharmaceutical industry and concerns over the competitive landscape. We will now extend that analysis over a longer period of time. In Figure 19.10, we have included a 10-year price chart for Abbott Labs' stock. On the graph, we superimposed some of the key company-specific drivers. One of the fastest ways to construct a chart such as this is to speak with someone who has closely watched the stock. This might mean talking to an investor who has owned the stock or analyst that covers the stock. Short of that, you can review news stories for the days of big moves, up and down. From the graph, we can see that performance has been driven by pipeline developments (i.e., significant new drug product events) and capital deployment (e.g., share repurchase announcements and M&A* activity); these factors are discussed below.

* “M&A” refers to mergers and acquisitions. With an acquisition, Company A buys a piece of Company B; while in a merger, Company A buys Company B in entirety. For our purposes, the differences can be ignored, and we use the terms interchangeably.

Figure 19.10 Abbott Labs' Historical Stock Performance



Source: Interactive Data Corp via FactSet

Pipeline Developments

Recall, in the sales analysis we learned that over half the company's revenue comes from Pharmaceuticals. There is an old adage about drug companies that holds true for Abbott Labs: drug company stocks trade on drug pipelines. We can see this in Figure 19.10 with the run-up in the stock *ahead* of the approvals of HUMIRA and XIENCE. (The pre-HUMIRA run up isn't so obvious because of the post 9-11 market.) Notice that the stock also ran up in anticipation of FDA approval of Xinlay, only to fall sharply when the FDA Panel failed to recommend the drug for approval in September 2005. Also noticeable here is that major stock market events can have a significant impact on a stock. ABT was caught in the sharp selloff following the 9/11 attacks in 2001, and again in the sell off associated with the 2008/2009 financial crisis.

Capital Deployment

Given the significant free cash flow generated by the pharmaceutical industry, capital deployment decisions are closely followed by investors. As an example, Abbott announced a \$2.5 billion share repurchase program in October 2006, which at the time would have equated to 3.5% of the \$72.3 billion in market cap. When a company buys back stock, earnings are spread over a smaller number of shares, so shareholders have a larger stake in the company's future earnings. As Peter Lynch noted, "If a company buys back half its shares and its overall earnings stay the same, the earnings per share have just doubled. Few companies could get that kind of result by cutting costs or selling more widgets" (Lynch, Peter. *One Up on Wall Street: How to Use What You Already Know to Make Money in the Market*. New York: Simon & Schuster, 1989).

Free cash flow that isn't distributed to shareholders in the form of dividends and buybacks can be used to pay down debt or for mergers and acquisitions (M&A). Abbott has completed a number of acquisitions in recent years. The mergers were used to either build out the company's product portfolio (e.g., acquired HUMIRA from Kos) or to gain exposure to particular end markets (e.g., recent acquisition of Piramal's drug business, which provided the company with access to the fast-growing emerging markets).

Based on our analysis (including that of the historical price performance), the key drivers for Abbott over the next 12-18 month will likely be:

- (1) Sales growth reported for key products and franchises
- (2) Accretion/dilution from recent acquisitions*
- (3) Capital allocation decisions (business acquisitions, drug collaborations with smaller companies, and/or share buyback authorizations)
- (4) Pipeline developments

** Accretion in this context refers to incremental earnings from acquired companies. Dilution, by contrast, occurs if the earnings of the acquired company are not enough to offset the increased number of shares outstanding as a result of the acquisition. Stocks often react negatively when a merger or acquisition is announced that will be dilutive to the acquiring company's earnings. This can happen even though management clearly*

states that within a year they expect the acquired company to add, or be accretive, to earnings. It may take a year or two for the synergies from the acquisition to be realized. By “synergies,” we mean the value created as a result of a merger. For instance, Abbott might acquire a small biotech company with a newly approved drug. Abbott can then use its own distribution network worldwide to generate higher sales on the drug than the biotech company (with limited distribution capabilities) could.

ESTIMATING FUTURE GROWTH

With an understanding of the company’s fundamental drivers, and a review of the company’s financial statements, we can begin to estimate future earnings growth, which is linked to stock performance. To estimate future growth, investors often begin with the consensus estimates. Investors can then modify those estimates based on their analysis of the company’s fundamentals. The analysts who cover Abbott Labs spend years analyzing the pharmaceuticals industry and the companies that comprise it. They look at all the drugs, medical devices, and nutritionals the company sells and estimate the annual sales and profitability of each based on the number of years each has left on patent. They also look at the drugs (typically referred to as “compounds”) that the company has in development. They assess the probability that the studies of these compounds will produce positive results and ultimately win FDA approval. Assuming that the compound is approvable, they analyze the size of the market, competitive landscape, and likely market share for the new drugs. The analyst puts all of these estimates into an earnings model, which is used to derive a long term growth rate. Then, companies like Thomson (through their First Call division), Bloomberg, and FactSet aggregate the estimates of all the analysts covering Abbott to arrive at the consensus estimate.

As noted above, the consensus long-term growth rate for Abbott Labs is currently 10.1%. Is this a reasonable growth rate? From the financial statement analysis, we know that the company has grown earnings at an average rate of 13.5% over the past four years due to strong contributions from HUMIRA and XIENCE. HUMIRA’s impressive results (+19% Y/Y in 2010) have been the result of: 1) market share gains (taking share from Johnson & Johnson’s Remicade and Amgen’s Enbrel), 2) expanded indications (e.g., approval of HUMIRA for Crohn’s disease), and 3) mid

single digit pricing increases. The drug now accounts for 33% of Abbott's Pharmaceutical segment sales and 19% of total company sales. Looking forward, management expects double digit sales growth over the next 3-4 years based on comments made at the 4Q10 call. Specifically, management noted that "obviously HUMIRA's growth will slow. At some point, it will begin to decline, but it will be a large and robust product because it's a very, very fine product in terms of what it does. It will be successful for a long time (Abbott Labs 4Q10 Earnings Conference Call Transcript, January 26, 2011)."

* Despite management comments, potential competition from oral competitors is a risk to HUMIRA's long-term outlook. Patients prefer oral medication (i.e., a pill) over injected medication where there is a choice. After reading a variety of analysts' reports and investing blogs and talking with other investors who currently hold the stock, it appears that for Pfizer's tofa to have a meaningful impact, it will need to be accepted for 2nd line use** and be supported by long-term safety data (which obviously takes time). Therefore, tofa does not seem to be an immediate or as sizable threat in our opinion.

** In addition to conference calls, some companies also periodically host investor/analyst days. These meetings, usually in-person but sometimes via teleconference or WebEx, tend to focus on management's long range plans and can be particularly useful in helping investors understand the key drivers of the company, and therefore the stock performance. Obviously, management can go into more depth in a half day or full day meeting than on an hour long conference call. The management team may also provide their estimates for sales, operating margins, and EPS over the next 3-5 years. If so, these figures should be compared to the Street's long-term growth estimate. Any difference between management's projections and analysts estimates should be scrutinized.*

*** Pharmaceuticals can be accepted for 1st, 2nd, or 3rd line use. Second line use simply means that the drug can be used only after patients fail to respond to first line treatments. For rheumatoid arthritis patients, first line therapies include aspirin and cortisone. HUMIRA is approved for 2nd line use.*

Abbott Labs holds the No. 1 position worldwide in stents driven by continued strong performance of XIENCE. The stent has continued to deliver strong results, particularly in Europe and Japan. Abbott has two follow-on products in development. XIENCE PRIME offers improved

deliverability. The product is already approved in Europe and is expected to receive FDA approval in the US in 2012. XIENCE Nano is being developed specifically for small vessels. The product is currently being reviewed by the FDA and has already received approval in Europe. With these next-generation products, XIENCE should continue to contribute to sales growth and operating margins. With that said, the penetration rates are high and other products, including Medtronic's (symbol: MDT) RESOLUTE are a risk. Market share can shift quite rapidly in medical devices when new products are introduced.

The emerging markets represent a growth opportunity for Abbott Labs and its industry. Most other pharma companies will be experiencing the patent expirations of important products/franchises over the next few years. (A "franchise" is simply a group of products—in this case, drugs—that are in the same therapeutic category. For instance, if a company offers three different drugs to treat diabetes, those three drugs would collectively be referred to as the company's "diabetes franchise.") To address the lost sales, the industry has begun to focus on selling their products in high-growth emerging markets such as China, India, or Brazil. Abbott is moving aggressively to gain exposure to these emerging markets as well. For instance, Abbott's recent acquisition of Piramal (the Pharmaceutical division of a large Indian company) increases the company's exposure to the rapidly growing Indian pharmaceutical market; as a result, emerging markets now represent 25% of the Abbott's total sales. In addition, the pharmaceutical companies have started to acquire or form strategic partnerships* with small biotech companies that have promising drugs in development. Like its peers, Abbott has been forming partnerships to develop promising therapies. Taken together, Abbott is likely to be one of the few companies in the sector that can post strong earnings over the next few years.

** In one common kind of strategic partnership, a pharmaceutical company will make an upfront payment to a small biotech company with a promising drug in development. As development continues, the biotech company will likely receive "milestone payments" from the pharmaceutical company when certain, pre-determined clinical hurdles are met and/or when final FDA approval is attained. In return, the pharmaceutical company will receive partial rights to the drug upon approval. This typically includes the right to sell the drug outside the U.S. or perhaps the right to participate in drug sales within the U.S. If the pharma company has acquired outside U.S.*

rights, it can use its foreign sales force to distribute the drug at minimal additional cost.

Given the high penetration rates for HUMIRA and XIENCE—and the competitive nature of the end markets they serve – growth will likely slow over time. Decelerating growth in these core products, however, should be partially offset by the company’s exposure to emerging markets. Taken together, the 10% long-term growth rate seems reasonable based on our analysis of the drivers of past sales and earnings. Furthermore, we know that earnings are estimated to grow 9.6% in 2011 and 10.5% in 2012 based on the consensus estimates included in Figure 19.7. These estimates are important because they provide us with a benchmark along the way that can also be used in evaluating the 10% long-term growth estimate. With the near term estimates bracketing the long-term growth rate, they too, validate the long-term estimate. In the next section, we will compare the long-term estimate to the price-earnings ratio to assess whether the stock is currently overpriced, underpriced, or fairly valued. Recall, the P/E an investor should pay for a stock is related to the expected earnings growth rate.

VALUATION ANALYSIS

Price/Earnings Ratio

Given that earnings power is a key determinant of stock value, we begin our valuation analysis by looking at the price/earnings (P/E) ratio. The forward P/Es for Abbott and other, similar companies in the pharmaceutical industry are listed in Figure 19.11. Since we are conducting the analysis in January 2011, and all the comparable companies have a calendar fiscal year, the EPS estimates used in the forward P/E are for 12/31/2011.*

** As noted in Chapter 18, a company’s fiscal year does not have to coincide with the calendar year. While a majority of companies use a calendar year, some do not. For instance, retailers such as The Gap [symbol: GPS] or Abercrombie and Fitch [symbol: ANF] use January 31st as their fiscal year end so that post-holiday returns occur in the same year as the holiday itself.*

Figure 19.11 Comparable Company Analysis Using the P/E Ratio

Company	EPS Est.	2011 P/E	Dividend Yield	LT EPS Growth
Abbott Laboratories	\$4.58	10.3x	3.7%	10.1%
Bristol-Myers Squibb	\$2.23	11.6x	4.9%	3.0%
Johnson & Johnson	\$4.87	12.4x	3.4%	6.2%
Merck & Co Inc	\$3.81	8.7x	4.2%	5.5%
Novartis AG ADS	\$5.38	10.8x	3.6%	5.6%
Pfizer Inc.	\$2.30	8.0x	4.1%	1.8%
<i>Average</i>		10.3x	4.0%	4.4%
<i>Median</i>		10.8x	4.1%	5.5%

Source: FactSet

We can see that Abbott Labs trades in line with the other companies in the pharmaceutical industry. By “in line” we mean the company's P/E of 10.3x 2011 EPS is equivalent to the industry average (also 10.3x), and at a modest discount to the median of similar companies (10.8x). Is Abbott’s multiple justified? Is it too high? Too low? To answer these questions, we must look at Abbott’s projected growth rate and how it stacks up next to those of its peers.

The P/E ratio is related to both the expected growth rate in earnings and the degree of confidence investors have in those estimates. The last column of Figure 19.11 is the expected long-term growth rate for each company in the industry. With the expected growth rate, we can now compare the P/Es of different companies, adjusting for the differences in expected growth rates. This can be done with the price/earnings-to-growth ratio (PEG), which is calculated by dividing the P/E multiple by the expected growth rate. For continuity, we used the consensus long-term growth estimate provided by Wall Street analysts covering the stocks (*Source:* FactSet). Note that

investors who believe that they have an edge in forecasting a company's future earnings and growth rate, should use their own numbers. This typically requires a significant "information advantage," which most investors do not have.

Using consensus estimates for long-term growth, the PEG ratio for Abbot Labs and the PEG ratio for the industry are as follows:

$$\text{PEG}_{\text{Abbott Labs}} = \frac{\text{P/E ratio}}{\text{EPS Growth Rate}} = \frac{10.3}{10.1} = 1.0$$

$$\text{PEG}_{\text{Industry}} = \frac{\text{Average P / E}}{\text{Average Growth Rate}} = \frac{10.3}{4.4} = 2.3$$

In this case, Abbott Labs' PEG ratio (1.0) is noticeably lower than that of the industry (2.3). This indicates that while Abbott has the same P/E multiple as the group, the stock may be undervalued after adjusting for the company's higher expected growth rate. Even if Abbott was trading at its higher 5-year average P/E multiple of 15.7x, it would still be attractive relative to other pharmaceutical companies based on a PEG of 1.5 (P/E of 15.4x divided by the forecasted earnings growth rate of 10.1%).

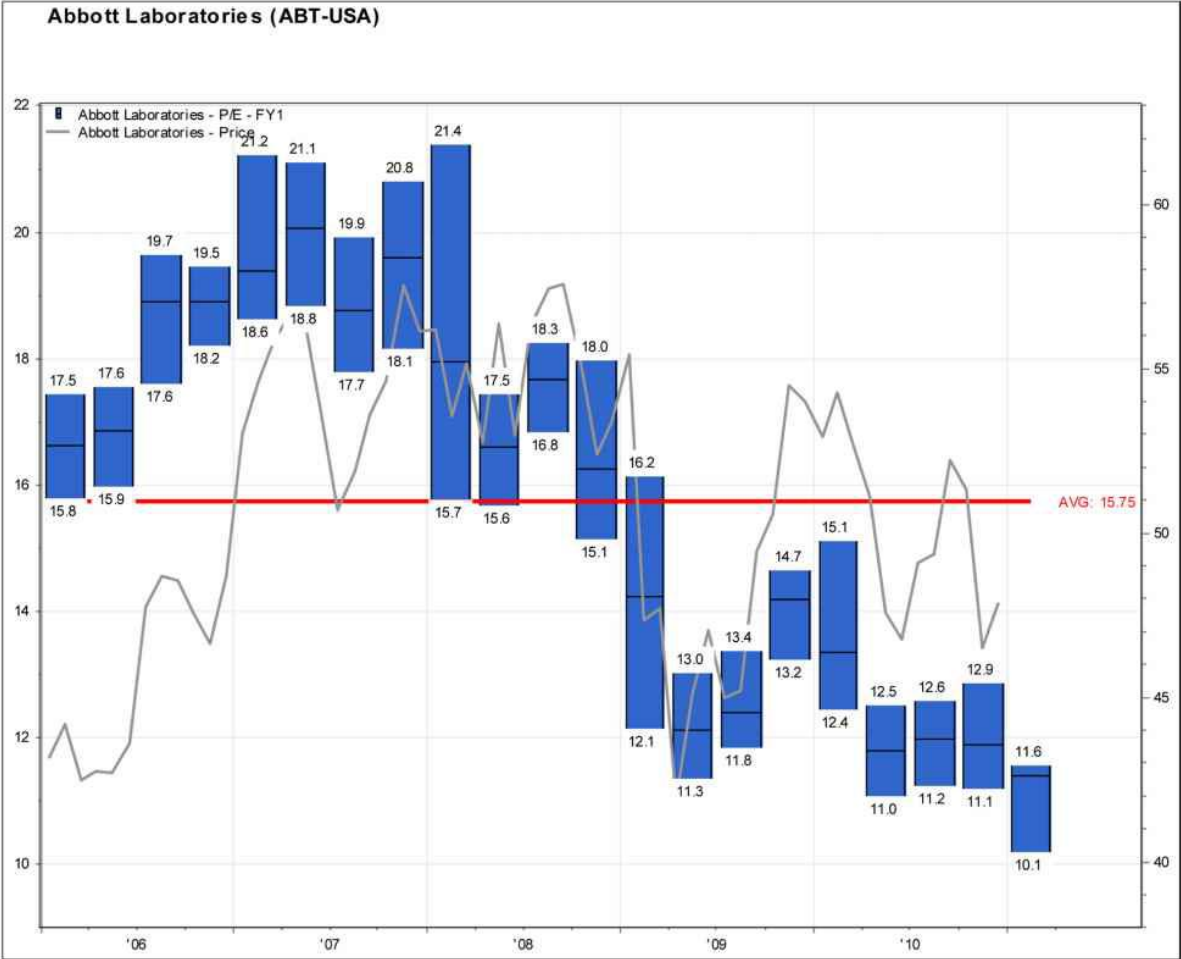
This lower PEG ratio, whether for Abbott or any other company, is why many investors argue that the most expensive firms (highest P/Es) are often the best investments; that is, because they are the most undervalued per unit of growth.*

** All financial measures have limitations that must be considered. For instance, the PEG ratio assumes that the companies being compared have the same level of risk and the same growth duration (i.e., will continue to grow at that rate for the same period of time). That is why it is important to look at more than one measure when assessing the value of a company.*

In addition to assessing whether a stock is cheap or expensive relative to its peers, we can also look at the company's current P/E multiple relative to its own historical range. When conducting an historical valuation analysis, we are attempting to identify the valuation range that the market has typically afforded to a stock and how it has changed over time. Investors should have an understanding of the peak, trough, and average multiples over the historical period being analyzed. In addition, investors should study periods of major changes in P/Es to understand the factors that caused the multiple to change.

Figure 19.12 illustrates the range of P/Es for Abbott Labs over a 5-year period beginning January 1, 2006. The data in this graph can be obtained through a wide variety of online and subscription services. Note that the vertical blue bars reflect the range of the P/E multiple in each calendar quarter, *not* the price range of the stock. The price of the stock is illustrated with the gray line.

Figure 19.12 Historical Multiple Chart



Source: FactSet Estimates and Interactive Data Corp via FactSet

From Figure 19.12, we see that in the second quarter of 2006 (typically written 2Q06), the stock traded at a P/E multiple that ranged from 15.9x to 17.6x. The black line that bisects the blue bar is the average multiple for that quarter (16.8x in 2Q06), and the red line that bisects the entire graph reflects the average multiple for the entire period (15.75x for the 5-year period depicted). These graphs can sometimes be used to identify inflection points in the stock meriting action.

From the graph, we can see that the peak and trough multiples over the 5-year period were 21.4x and 10.1x, respectively. In January 2011, the stock is trading at 10.3x, which is near its trough multiple. What is particularly noteworthy is that Abbott's P/E multiple didn't even reach this low in 2008 amidst the financial crisis. This suggests that either the stock is historically undervalued, or something has changed, either at Abbott or in the pharmaceutical industry, to suggest that the stock will be in a new era of lower P/E ratios. Given the 3.7% dividend yield, strong earnings growth forecast of 10%, and free cash flow that should easily sustain the dividend, we are inclined to believe the stock is historically undervalued.

As shown in Chapter 18, we can use the 5-year range to approximate the upside and downside on the stock. Using the peak multiple of 21.4x and the 2011 EPS estimate of \$4.58, the stock could reach as high as \$98 per share.

$$\begin{aligned}
 \text{Expected Stock Price Using} &= \text{2011 EPS Est.} \times \text{Peak P/E} \\
 \text{Peak Multiple} &= \$4.58 \times 21.4x \\
 &= \$98.01
 \end{aligned}$$

With the stock currently at \$46.95, the upside to \$98 would represent a 108% return. On the other hand, the trough multiple of 10.1x implies downside risk of 2% to \$46.25.

$$\begin{aligned}
 \text{Expected Stock Price Using} &= \text{2011 EPS Est.} \times \text{Trough P/E} \\
 \text{Trough Multiple} &= \$4.58 \times 10.1x \\
 &= \$46.25
 \end{aligned}$$

Looking at a potential upside gain of 108% and a likely downside risk of only 2% (an upside/downside ratio of 54:1), the stock looks very attractive *based on the 5-year P/E range*. However, this upside/downside rate seems unrealistic; for context, a range of 3:1 or 4:1 is what many investors look for when picking stocks. Looking again at Figure 19.12, the P/E trend has been declining for over three years suggesting that it may be a secular trend to a sustainably lower P/E range, not a rotational move. However, since no reason for a sustained lower P/E stands out in terms of company growth prospects, cash flow, or dividend sustainability, it is reasonable to assume

that rotation is the major factor driving the lower multiple. Even so, it may be more appropriate to use the stock's 5-year average multiple of 15.75x, rather than its prior peak of 21.4x when estimating potential upside.

$$\begin{aligned} \text{Expected Stock Price Using} &= 2011 \text{ EPS Est.} \times \text{Average P/E} \\ \text{Average Multiple} &= \$4.58 \quad \times \quad 15.75x \\ &= \$72.13 \end{aligned}$$

If Abbott's stock can regain its average multiple of 15.75x, the stock would trade at \$72. With the stock currently at \$46.95, there is 53% upside to \$72. For downside risk, we have no historical P/Es to guide us. In this situation, we make the assumption that the stock has 10% downside risk. From \$46.95, 10% downside would be \$42.25. With the current annualized dividend of \$1.82, and the assumed \$42.25 price, that would produce a yield of 4.3%, a compelling level for a company with Abbott's cash flow and growth prospects. Using the average multiple (rather than the peak multiple) and the 10% downside assumption, (rather than the trough multiple), the upside/downside ratio would be 5:1 (53% upside divided by 10% downside), which is very attractive (particularly when combined with the 3.7% yield). Even if we assumed the stock had 20% downside to \$37.56 (producing a very compelling 4.8% dividend yield) the upside/downside ratio would still be favorable at 2.7:1.

In *You Can Be A Stock Market Genius*, well-known hedge fund manager Joel Greenblatt notes, "When it comes to analyzing the risks of individual stocks, most professionals and academics get it wrong. Risk by their definition is the possibility that a stock [price] may fluctuate widely. The possibility of capital loss is not a consideration in their calculation. Using this definition, a stock that has fallen from \$30 to \$10 is considered riskier than a stock that has fallen from \$12 to \$10 in the same period. Although both stocks can now be purchased for \$10, the stock which has fallen the farthest, and the one that is now priced at the biggest discount to its recent high price, is still considered the 'riskier' of the two. However, it could be that most of the stock's downside risk has been eliminated by the huge price drop" (Greenblatt, Joel. *You Can Be A Stock Market Genius: Uncover the Secret Hiding Places of Stock Market Profits*. New York: Fireside [Published

by Simon and Schuster], 1997.) Based on the analysis above, most of the downside risk of owning Abbott shares appears to have been eliminated.

EV/EBITDA

Next, we will look at the EV/EBITDA multiple for Abbott Labs at the end of 2010. As noted in Chapter 18, EV/EBITDA allows us to compare operating earnings of different companies without concern for differences in depreciations techniques used, tax rates, or interest costs since it compares the value of a company, free of debt, to earnings before depreciation, interest, and taxes. Also, EBITDA is usually positive, even for companies with negative earnings (which would render the P/E ratio useless). Using the income statement in Figure 19.7, we see that Abbott Labs reported earnings before interest, taxes, depreciation, and amortization (EBITDA) of \$10,276M in 2010.

Depreciation and amortization expense (D & A) is not included as a separate line item on the Figure 19.7 income statement. This probably means that D&A is embedded in cost of goods sold (COGS) and S,G&A expense. D&A, however, is explicitly stated on the cash flow statement in Figure 19.9. Because D&A is a “non-cash expense,” it must be added back to arrive at EBITDA. So D&A expense of \$2,237M (from Figure 19.9) is added to EBIT of \$8,039 to arrive at EBITDA of \$10,276M.

<u>Calculate EBITDA</u>	<i>(\$Millions)</i>
Sales	\$35,167
Minus: COGS	\$14,008
Minus: SG&A Expense	\$9,642
Minus: R&D Expense	\$3,478
Equals: EBIT	\$8,039
<u>Plus: Depr & Amort</u>	<u>\$2,237</u>
Equals: EBITDA	\$10,276

Since EBITDA is a measure of operating earnings available to both debt and equity holders it should be related to a measure total company value; that is why EBITDA is compared to enterprise value rather than market cap.

Using the balance sheet data from Figure 19.8, we can calculate the company's enterprise value as follows:

<u>Calculate Enterprise Value</u>	<i>(\$Millions)</i>
Market Val of Common Stock	\$74,116
Plus: Total Debt*	\$18,919
Plus: Preferred Equity	\$0
Plus: Minority Interest	\$85
<u>Minus: Cash & Equivalents</u>	<u>\$7,324</u>
Enterprise Value	\$85,796

At the end of 2010, Abbott Labs had an enterprise value of \$85,796M. Thus, the company's EV/EBITDA is 8.3x.

$$\text{EV/EBITDA} = \frac{\$85,796}{\$10,276} = 8.3$$

** Total debt is the sum of long-term debt, short-term debt, and the current portion of long-term debt.*

At the end of 2010, Abbott Labs had an enterprise value of \$85,796M. Thus, the company's EV/EBITDA is 8.3x.

$$\text{EV/EBITDA} = \frac{\$85,796}{\$10,276} = 8.3$$

Like P/E, EV/EBITDA is a relative value measure that can be used to compare similar companies or to analyze a single company's ratios over time. Abbott's EV/EBITDA multiple for the past four years is provided in Figure 19.13. When comparing EV/EBITDA multiples, all else equal, the lower the ratio the cheaper the stock. Abbott Lab's EV/EBITDA is the lowest it's been in the past four years.

EV/EBITDA can be expressed as a multiple (i.e., 8.3x) or as a yield by inverting the formula to EBITDA/EV. As with the dividend yield, the higher the number the better. Abbott's current EBITDA yield is 12%, which is notably higher than the 4-year average of 9.8%. Since Abbott Labs is yielding more than it has in the past, the stock appears cheap (at least relative to where it has traded in the past).

Figure 19.13 Historical EV/EBITDA

	2007	2008	2009	2010**	4Y Avg
EV/EBITDA	13.0x	10.7x	9.8x	8.3x	10.5x
EBITDA/EV	7.7%	9.3%	10.2%	12.0%	9.8%

*** These figures reflect the multiples and yields on December 31 of each year.*

It can also be insightful to compare the company's EV/EBITDA multiple to the peer group. The current EV/EBITDA ratio for Abbott Labs and its peer group are provided in Figure 19.14. The EV/EBITDA multiples for the companies being evaluated range from 6.2x – 11.6x. Abbott Labs' EV/EBITDA multiple is modestly below the average for the peer group of 8.7x. In Chapter 18, we learned that companies with the lowest EV/EBITDA multiple often times have the highest operating margins in the group. From the financial statement analysis section, we learned that Abbott has a lower operating margin than “pure play” pharmaceutical companies like Bristol-Myers Squibb because of Abbott's diversified product base (i.e., lesser percentage of sales from pharmaceuticals). By “pure play,” we simply mean companies that sell only pharmaceuticals. Abbott Labs' products include pharmaceuticals, medical devices, and nutritional.

Figure 19.14 Comparables Analysis Using EV/EBITDA

Company	EBITDA	Enterprise Value	Enterprise Value / EBITDA
Abbott Laboratories	\$10,276	\$85,796	8.3x
Bristol-Myers Squibb	\$6,756	\$43,236	6.4x
Johnson & Johnson	\$19,758	\$159,250	8.1x
Merck & Co Inc	\$10,770	\$121,057	11.2x
Novartis AG ADS	\$13,304	\$153,931	11.6x
Pfizer Inc.	\$26,377	\$162,481	6.2x
<i>Average</i>	\$14,279	\$127,992	8.7x
<i>Median</i>	\$19,098	\$153,931	8.1x

Source: FactSet

Price/Cash Flow Ratio

Figure 19.15 below includes a similar analysis using price/cash flow per share. Cash flow is often used as part of the valuation framework because it is usually positive, it is more difficult to manipulate than EPS, and it tends to be more stable than earnings. “Cash flow” in this context is typically defined as cash flow from operations.*

For instance, we see in Figure 19.9 that cash flow from operations in 2010 was \$8.6 billion. That figure can be divided into current market cap (\$74.1 billion) to arrive at the Price/Cash Flow ratio of 8.6x in 2010.

Alternatively, we could divide the current operating cash flow per share by the price per share.

** Price/Cash flow could also be calculated using Free Cash Flow to Equity (FCFE). While FCFE is theoretically the best alternative, it tends to fluctuate widely from year to year given the “lumpy” nature of capital expenditure and net debt, and therefore, is difficult to use in practice.*

Figure 19.15 Historical Price/Cash Flow

	2007	2008	2009	2010*	4Y Avg
P/CF	14.5x	11.4x	11.4x	8.6x	11.5x
Cash Flow Yield	6.9%	8.8%	8.8%	11.6%	9.0%

** These figures reflect the multiples and yields on December 31 of each year.*

The Price/cash flow ratio is lower than the P/E ratio (currently 10.3x) because depreciation is deducted in arriving at net income which is used to calculate P/E. But since depreciation is a non-cash expense, it is added back in the calculation of operating cash flow.

We could also say that “the stock currently offers a cash flow yield of 11.6%,” which is calculated by dividing the operating cash flow of \$8.6 billion by the \$74.1 billion market cap. The current cash flow yield is well above the 4-year average of 9%. Like EV/EBITDA, Price/Cash Flow indicates that the stock is cheap—at least relative to where it has traded in the past—and is potentially an attractive investment opportunity.

For comparison, the Price/Cash Flow ratio for the other companies in the peer group are provided in Figure 19.16 below. As you can see, Abbott’s Price/Cash Flow ratio is the lowest in the group and noticeably lower than the peer group average of 10.9x.

Figure 19.16 Comparables Analysis Using Price/Cash Flow

Company	Price/ Cash Flow
Abbott Laboratories	8.6x
Bristol-Myers Squibb	10.2x
Johnson & Johnson	10.5x
Merck & Co Inc	10.4x
Novartis AG ADS	NM
Pfizer Inc.	12.3x
<i>Average</i>	10.9x
<i>Median</i>	10.5x

Source: FactSet

ASSESSING MANAGEMENT QUALITY

As part of a thorough analysis, investors will need to make a qualitative assessment of the management team. After all, shareholders don't manage the day-to-day operations; that responsibility falls on the shoulders of management, who are hired by the board of directors. Assessing management is a very subjective matter, and investors often know, only in retrospect, that a given management team or CEO was especially good or bad. As Chris Argyrople notes in *Securities Analysis*, "When times are tough, bad management will never turn a company around (only economic or industry conditions will bail them out), but strong management can often

respond and build a more competitive firm than it was before the trouble spot” (Argyrole, Chris. *Securities Analysis: Fundamental Equity Analysis*. Sept 2000.)

Institutional investors typically have opportunities to meet with management at conferences and other venues. Individual investors don't have the same level of access, so what can they do? Start by asking around. What do customers, competitors, analysts, and other investor's have to say about management? Refer to internet blogs, newsletters, and whatever else you can get your hands on. Does management have a successful track record? For a company like Abbott Labs, pipeline success is often a good gauge, as is the success of capital deployment decisions.* Are they making the right investments and strategic partnerships? Are they returns-oriented? To get an idea, refer back to the ROA and ROE calculations in the financial statement analysis section. Is management's compensation linked to these metrics? Do they have skin in the game? By “skin in the game,” we mean do they own stock in the company? The number of shares directors and top executives own is public data.

* *Morningstar includes a stewardship rating for the companies it covers. The rating is an assessment of management's use of shareholder capital.*

As noted in the company profile, Miles White has been CEO since 1998 and Thomas Freyman has been CFO since 2004. Under their management, the company has successfully completed several acquisitions inside and outside the United States, including Knoll and Kos (where they acquired blockbusters HUMIRA and Niaspan, an extended-release niacin pill that contributed \$927 million to sales in 2010), Guidant (from which they developed XIENCE), and Piramal (which should increase the company's exposure to the high-growth emerging markets). The stock has generated a total return—price appreciation and dividends—more than double that of the S&P 500 over White's tenure.

It is instructive to look at what the management team is doing with the company's stock. Officers and directors are required to file Form 4 with the SEC in advance of purchasing or selling company stock. Insiders can sell stock for a variety of reasons, including funding a child's education or as part of divorce proceedings, but insiders only buy company stock for one reason: they think it is likely to appreciate in value. Since insiders have access to internal company data and knowledge of future plans, insider buying activity is scrutinized by investors. A review of recent insider

transactions* revealed five insider buys totaling \$5.2 million during the past quarter from a combination of 1 director and 3 officers (*Source: FactNet*).

** Insiders are loosely defined as company directors, executives, and others who have access to internal company data and knowledge of future plans. Insider activity in a company's stock is disclosed publicly through Form 4, which is submitted to the Security and Exchange Commission (SEC).*

Compensation for White, Freyman, and the other C-level execs at the company is balanced between equity and cash, which is consistent with other companies in the industry.

FORMULATING AN INVESTMENT DECISION

The time has come to make a decision. Do we take a position in Abbott Labs or look for a better investment opportunity? The answer is never easy. We have looked at industry and company fundamentals, valuation, and other factors. All give indications, but ultimately the buy/sell decision is a judgment call where the investor brings together his or her current analysis, accumulated investment experience, and intuition. Before making our decision, let's recap what we've learned through our analysis:

Investment Thesis

- **Abbott Labs is a unique company in the pharmaceuticals industry with an impressive long-term growth profile (+10% estimated EPS growth vs. +4-5% for the pharmaceuticals industry) and diversified product mix (57% Pharmaceuticals, 16% Nutritionals, 11% Diagnostics, 9% Vascular, 8% Other).**
- **Sales growth and margin expansion are being driven by HUMIRA, XIENCE, and recent acquisitions.**

æ *HUMIRA*—Management expects double digit sales growth for HUMIRA for the next 3-4 years. On the 4Q10 call, management expressed confidence that the product will continue to be

successful for a long time. Management's outlook appears much more optimistic than what is implied in consensus estimates, which could prove to be conservative.

æ *XIENCE*—This drug eluting stent (DES) has grown rapidly and is expected to continue to contribute to sales and EBIT growth through follow-on products and market share gains in the US, EU, and Japan where it was recently launched.

æ *Acquisitions*—The Solvay acquisition closed in February 2010 and the acquisition of Piramal's drug business was added in September 2010; both are expected to be accretive to earnings. Piramal provides exposure to the high growth emerging markets, while Solvay offers the potential for margin leverage.

• Valuation

æ The stock has underperformed the market by nearly 33% over the past year and is currently trading near the low end of its 52 week range (+5% from low and -15% from high). Underperformance has been driven by industry rotation and competitive concerns.

æ Based on the historical P/E analysis, the current price implies an upside/downside ratio of 5:1.

æ Abbott currently trades at 10.3x the current year EPS estimate, which is in line with the peer group. Given the company's above-average growth rate (10.1% vs. 4.4% for the peer group), the company's P/E multiple appears attractive relative to its peer group based on the PEG ratio (1.0 for Abbott Labs vs. 2.3 for the group).

æ Both EV/EBITDA and Price/Cash Flow ratios indicate that the stock is cheap relative to where it has traded over the past four years. The company's EV/EBITDA of 8.3x is well below the 4-year average of 10.5x. The company's cash flow yield has steadily increased over the past 5 years. Abbott now offers a cash flow yield of 11.6% (vs. 4-year average of 9%).

• Capital Deployment

æ Abbott generates \$7.5 billion in annual free cash flow, and the company has a long history of using free cash flow to make value-enhancing acquisitions and partnerships while steadily increasing the dividend. There is no reason to believe this disciplined approach will change in the future.

- **Catalysts**

- æ Quarterly performance updates (notably HUMIRA's performance)
- æ The launch of XIENCE in Japan
- æ Updates on the accretion/dilution from the recent acquisitions
- æ Potential for unlocking value through asset sales, spin-offs, or split-offs
- æ Pipeline developments

- **Risks**

- æ Generic competition stemming from patent expirations. Tricor, a cholesterol drug that generated sales in excess of \$1.5 billion in 2010, is expected to lose patent protection in 2012. The company has been working to blunt the impact of the patent expiration by switching patients to its new drug, Trilipix.
- æ Integration issues associated with the Solvay (synergies expected from duplicative administrative divisions may not be realized) and Piramal (traction in India may not materialize) acquisitions.
- æ Continued political headwinds (all pharmaceutical companies face this risk).
- æ Pipeline setbacks (another industry risk). This risk is not as high as it has been historically given that the pharmaceutical companies have been using free cash flow for strategic partnership rather than R&D recently.

With a combination of solid fundamentals, attractive valuation, and identifiable catalysts, Abbott Labs' stock looks like a compelling investment opportunity. The market seems to under-appreciate 1) the company's lack of a patent cliff (Tricor is the only blockbuster going off patent near term), 2)

future contribution of HUMIRA and XIENCE to both revenue growth and margin expansion, and 3) the potential to unlock value through assets sales, spin-offs, or split-offs.

Checklists

To help standardize the investment decision making process, some investors use a checklist when making an investment decision, whether it be to buy the stock for the first time or to evaluate a current holding over time. We have included a sample checklist for Abbott Labs in Figure 19.17. This particular checklist has 9 items, but it could easily be more or less depending on the investment process used. A “buy” might be a stock with a score of 7 or 8 out of 9 (there is no hard and fast rule). Again, Abbott Labs looks like an attractive investment opportunity based on our checklist.

Figure 19.17 Sample Checklist

<i>Score</i>	<i>Investment Characteristic</i>
0	Favorable industry dynamics
1	Strong top line growth driven by price, volume, and/or mix
1	Margin expansion opportunities
1	Disciplined capital allocation strategy
1	Low or manageable debt levels
1	Capable management teams with stock ownership
1	Reasonable value relative to growth prospects
1	Identifiable catalyst(s)
8/9	Total

The checklist can be monitored and updated with each successive earnings call and other company updates, as well as with industry developments and news from competitors. If the score should fall, a thorough review of the fundamentals similar to what we’ve done in the preceding pages of this chapter may be warranted.

In this case, there seems to be a very compelling argument to buy Abbott Lab’s stock. Let’s assume for a moment that the analysis isn’t so compelling. In that case, some investors believe that they have put too much time into the

analysis to just walk away. Instead, they take a position in the company thinking that they will “live with it” for a while and decide whether to increase or decrease their bet at some point in the future. This isn’t an approach we would advocate for unless there is a near term catalyst that is binary (i.e., could go either way) in nature. For a company like Abbott, that might include Phase 3 data about to be released on a promising pipeline drug. A favorable aspect of the market is that it offers up new opportunities every day, so if you don’t feel comfortable investing in the stock, perhaps you should move on. Stocks can (and will) move against you. The only way to stick with a stock that is “bleeding” is to have conviction in your analysis, and thereby, in your investment decision. If you aren’t convinced that Abbott is a worthy investment, go back to the financial statement and comparable company analyses. Was there a competitor that looked particularly attractive? If so, many of the insights you’ve developed about the industry can then be used as part of a more detailed analysis of the competitor.

EVERY DAY IS A NEW DAY

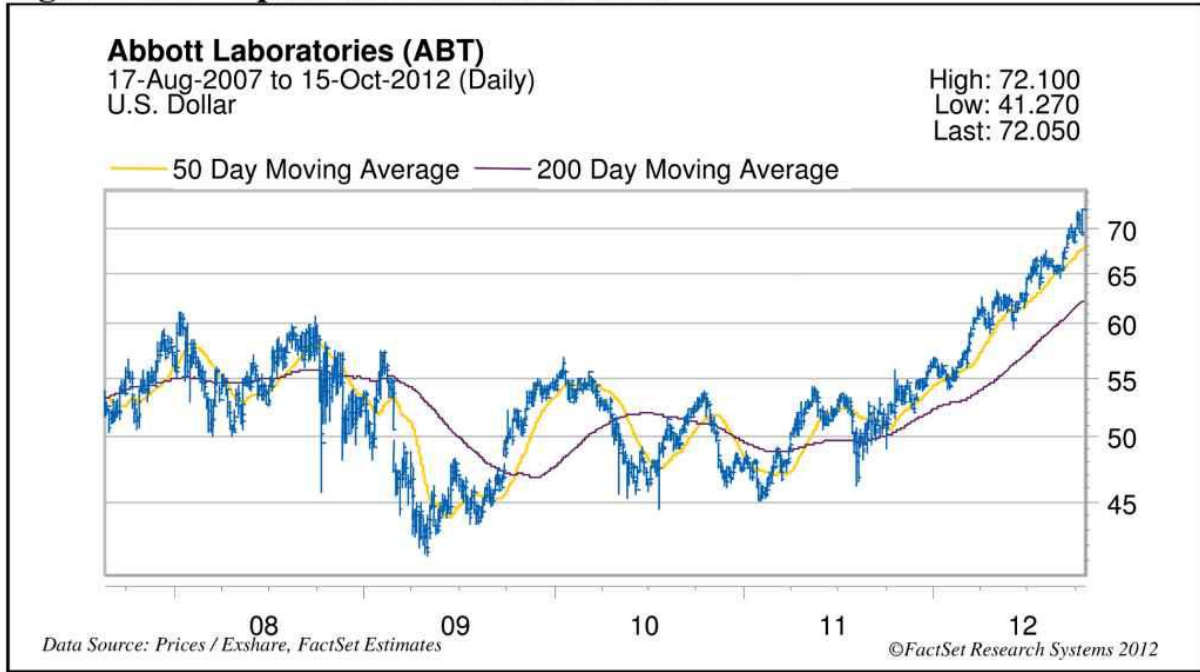
Performance Update

Let’s now fast forward to October 15, 2012. In 2011, the stock surged +17% while the S&P 500 was down -2%. Taking dividends into consideration, the stock outperformed the market by nearly 21%. The strong performance has continued in 2012. As of October 15, the stock has appreciated another +28% YTD. Thus, an investor purchasing shares of Abbott Labs in January 2011 has generated a return of +55% (45% better than the return on the S&P 500 over the same time period!); see Figure 19.18. Abbott’s outperformance has been driven by 1) a re-rating* of, or rotation back into the Pharma industry, 2) continued double digit earnings growth driven by strength of HUMIRA and emerging markets, 3) the announced split of the company into two separate entities (the split has not occurred at this writing), and 4) a promising new hepatitis C drug, which is in Phase 2 development. As a result, the stock currently trades +40% from its 52-week low and made a new 52-week high today.

** By “re-rating,” we simply mean that the P/E multiple for the pharmaceuticals industry has expanded as investors bid up the stocks in the*

group, which is another way of saying rotation back into the group. Re-rating and rotation are terms commonly used by investors.

Figure 19.18 Updated Price Performance



Source: Interactive Data Corp via FactSet

Abbott Labs (ABT)

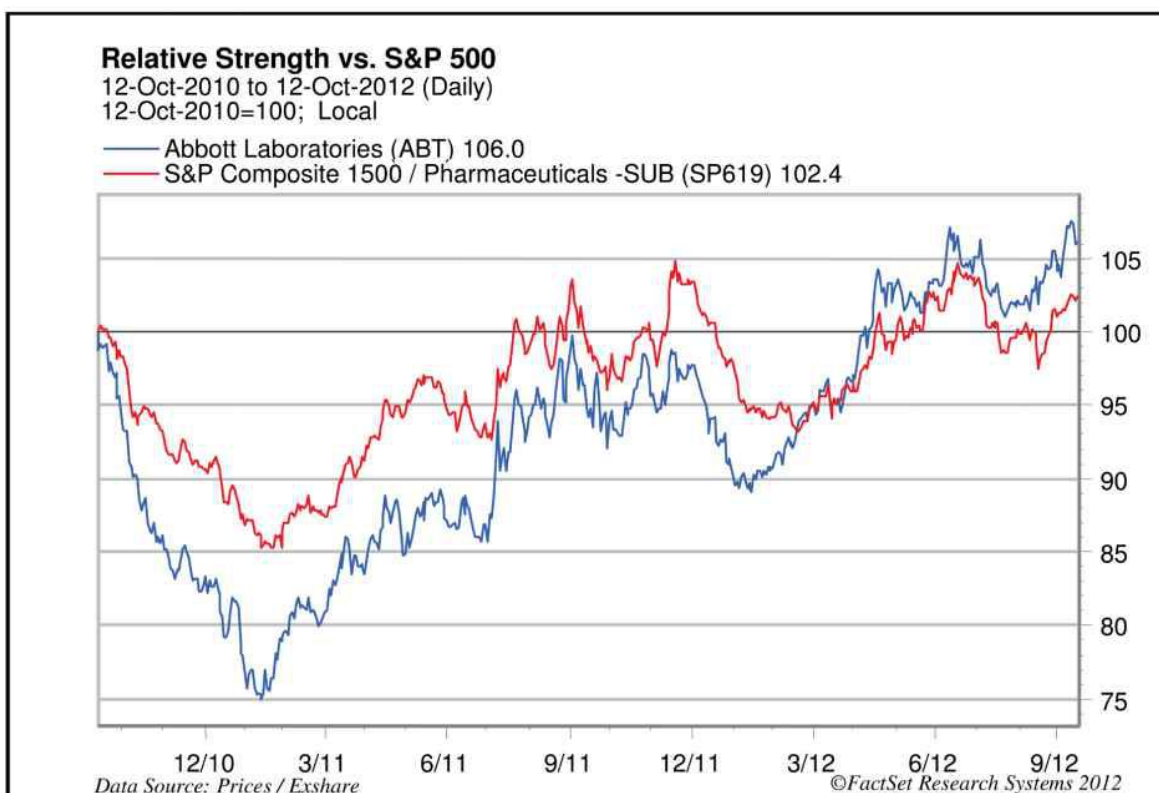
	Jan. 26, 2011	Oct. 15, 2012
Closing price	\$45.49	\$72.05
% Change from Jan. 26, 2011 to Oct. 15, 2012		
ABT		+55.3
S&P 500		+11.8
Abbott Labs' relative outperformance		+44.5

Source: Interactive Data Corp via FactSet

Figure 19.19 below is an updated relative strength chart, displaying the price performance of Abbott Labs and the S&P 500 Pharmaceutical Industry relative to the S&P 500 Index. As you can see, Abbott (blue line) now trades at a premium to the market; it traded at a sizable discount in January 2011.

Also, while the industry (red line) has strengthened relative to the market, the spreads have reversed and Abbott is now trading at a premium to the peer group as well. But as they say in the industry, “everyday is a new day.” So, what now? Our choices are to continue to hold the shares bought in January 2011, buy more, sell a portion of our position, or eliminate the position all together. To answer this question, we must review the company’s fundamentals and valuation, just as we did in early 2011 when we made the decision to invest in the company’s stock.

Figure 19.19 Updated Relative Strength Chart



Source: Interactive Data Corp via FactSet

Valuation Update

Abbott’s stock currently trades at 14.2x the 2012 EPS estimates. As noted above, the higher multiple for the company has been driven, in part, by a re-rating of the pharmaceutical industry. The P/E multiple for the

pharmaceuticals industry has expanded as the companies put the 2011/2012 patent cliffs in the rearview mirror, announced plans to unlock value through asset sales and spin-offs, and had some—albeit moderate—pipeline success. By “put patent cliffs in the rearview mirror” we mean that many products lost patent protection in 2011 and 2012. While the loss of patent protection results in increased competition, and therefore, lower sales and margins, it also means that when calculating future growth rates, we are working off a lower base. And since value is linked to *future earnings growth*, higher growth has a positive effect on stock prices.

Many companies in the industry also announced plans to reduce their asset base through sales and spin offs. Pfizer was the most aggressive in this regard. They announced plans to sell off their Nutritional business (which they later sold to Nestle for \$11.9 billion) and to sell a portion of their Animal Health business through an Initial Public Offering (IPO). Both transactions will reduce the size of the company, so future pipeline success will have a greater impact on the P&L; in the industry, we would say that by reducing the size of the company, future product introductions have the potential to be “needle movers.” In addition, the cash raised through these transactions can be deployed in a number of ways to increase shareholder value. Pfizer’s management team has noted that “buy backs are the case to beat,” meaning that for the money to be used for a purpose other than buybacks it must generate an expected return greater than that of buy backs.*

Abbott’s performance has been even better than the pharmaceutical industry. Earnings growth has been driven by HUMIRA, which continues to post impressive sales growth and positively impact operating margins. In 2011, HUMIRA grew 21% Y/Y and is estimated to grow another ~14% Y/Y in 2012. Along with strong operating performance, management announced their intention to split the company into two entities (the announcement was made during the 3Q11 earnings call in October 2011): a research-based pharmaceutical company to be named AbbVie, which will retain HUMIRA and the company’s branded pharmaceutical pipeline and 2) a diversified medical products company that will retain the Abbott Labs name and the current management team (CEO and CFO). The second company will be focused on medical devices, diagnostics, and branded generics.** The transaction will take the form of a spin off. That is, shareholders of the pre-split Abbott Labs will be given shares of AbbVie,*** which they will own

along with their old Abbott shares. The transaction is expected to be completed in early 2013.

** Source: Pfizer's 2Q12 Earnings Conference Call Transcript (July 31, 2012). To estimate the return on buy backs, management teams typically take the inverse of the P/E ratio, which is known as the earnings yield. So, if a company has a P/E of 8x, then the return would be estimated to be 12.5% (1 divided by 8).*

*** Branded generics are new formulations of drugs that have lost patent protection. For example, a company (other than the originator) might develop a long-lasting dose of a drug that has lost patent protection on the regular dose version. The generic company could then sell the long lasting version at a higher price than the generic version of the original drug.*

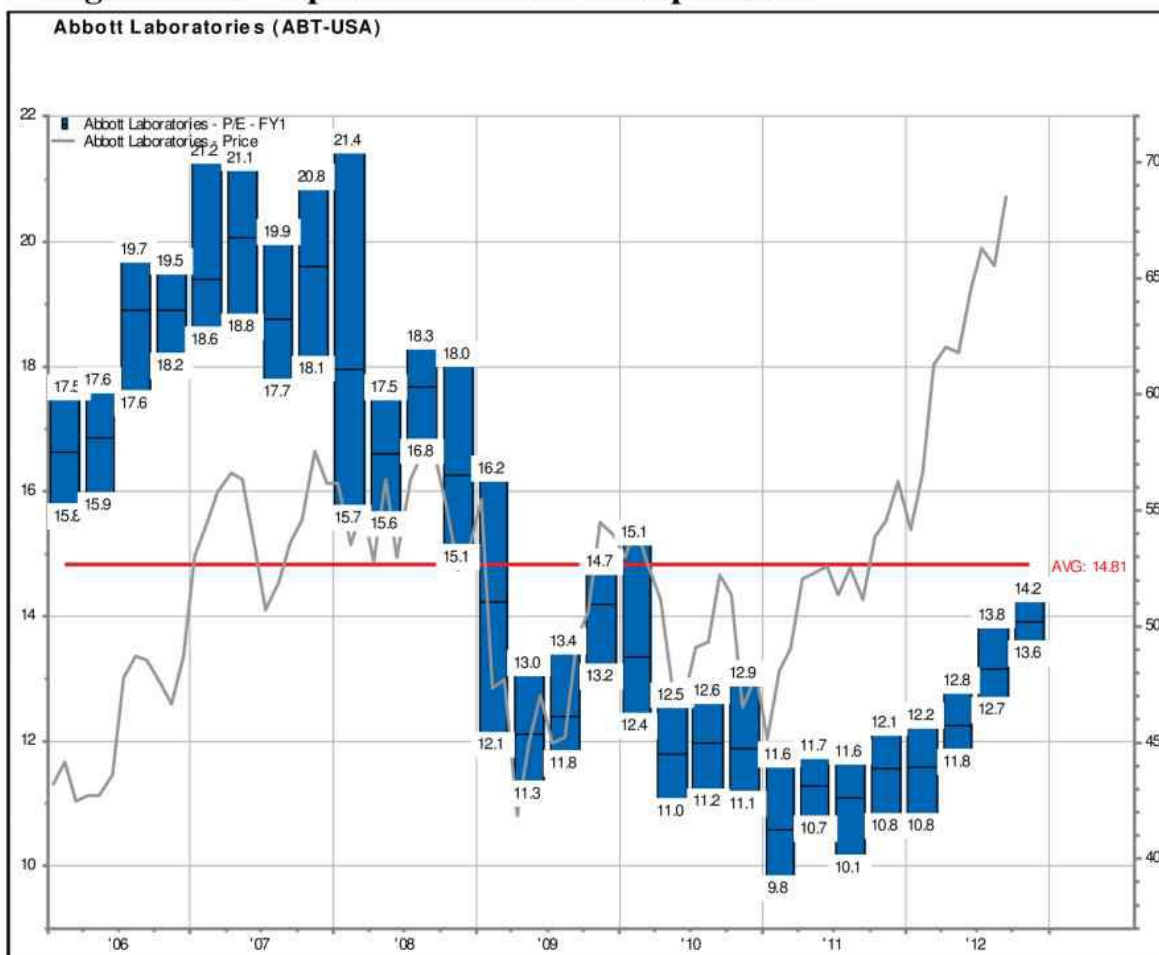
**** At the moment of the split, the old Abbott Labs shares will drop in price reflecting the loss of the pharmaceutical business, and AbbVie shares will start trading at a price presumably reflecting its value as a stand-alone company. The value of the two companies together should approximate the value of the pre-split Abbott. Abbott's directors and management (and shareholders, of course) hope that the value of the two companies separately will add up to more than the value of the old Abbott, as investors see the strengths and financial statements of each company alone.*

Now, however, we must continue to analyze Abbott as it is on October 15, 2012. In terms of the pharmaceutical pipeline, Abbott has a promising hepatitis C (HCV) regimen in Phase 2 development. Treatment for HCV has been a focal point for biotech and pharmaceutical companies in 2012 as evidenced by recent acquisitions. The M&A activity began in November 2011 when Gilead Sciences (symbol: GILD), a large cap biotech company specializing in HIV therapies, announced plans to acquire Pharmasset for \$11 billion cash (the price represented an 89% premium above what Pharmasset stock was selling at before the announcement of the Gilead offer.). Gilead's rationale for the deal was to diversify away from HIV and into hepatitis C (HCV), which could be a \$16 billion market with a high unmet medical need.(Krauskopf, Lewis and Anand Basu. "Gilead Bets \$11 billion on Hepatitis in Pharmasset Deal." *Reuters*, 21 Nov. 2012.) Pharmasset's lead drug, PSI-7977, was viewed by Gilead management as the most promising drug in development for HCV. Then, in January 2012,

Bristol Myers Squibb (symbol: BMY) announced their intention to acquire Inhibitex for \$2.5 billion (a 180% premium!). Inhibitex, too, had a promising Phase 2 HCV drug in development that unfortunately later raised serious safety concerns.* As a result, Gilead and Abbott now have the two most interesting HCV treatment regimens in Phase 2 development *in our opinion*. As a result of these positive developments, or perhaps in anticipation of these developments, Abbott's P/E multiple has expanded to 14.2x 2012 EPS of \$5.06, which is a premium to both the market and the pharmaceutical industry; see Figures 19.19 and 19.20.

* In August 2012, Bristol-Myers Squibb announced that they were suspending trials for their HCV nucleotide due to serious cardiac concerns, which caused the stock to fall 8.5%. Gilead Sciences (+6.8% that day) and Abbott Labs (+0.36%) both traded higher on the news. The S&P 500 Healthcare Sector was off nearly 1%.

Figure 19.20 Updated Historical Multiple Chart



Source: FactSet Estimates and Interactive Data Corp via FactSet

As you can see from Figure 19.20, the current year P/E multiple has expanded from 10.1x in January 2011 to 14.2x today. The higher multiple has been driven by the strong stock performance, which is illustrated by the gray line. The current multiple (14.2x) is roughly in line with the 5-year average of 14.81x (red line). The peak multiple is still 21.4x, but the trough multiple is now 9.8x (from 1Q11), which is modestly below the 10.1x we used to calculate the upside/downside ratio originally. (Note: At the time of the original analysis in January 2011, the trough multiple was 10.1x. The multiple contracted further in the first quarter of 2011 to a low of 9.8x, which is now the trough multiple.) With the stock currently trading at \$72.05 (see Figure 19.18), the peak multiple implies upside of \$36 or +50%. On the other hand, the trough multiple implies downside risk of -\$22 or -31%. Thus the upside/downside ratio is less than 2:1; while is still favorable, it is far less compelling than in January 2011. The calculations are provided below.

$$\begin{aligned}
 \text{Expected Stock Price Using} &= \text{2012 EPS Est.} \times \text{Peak P/E} \\
 \text{Peak Multiple.} & \\
 &= \$5.06 \times 21.4x \\
 &= \$108.28
 \end{aligned}$$

$$\begin{aligned}
 \text{Expected Stock Price Using} &= \text{2012 EPS Est.} \times \text{Trough P/E} \\
 \text{Trough Multiple} & \\
 &= \$5.06 \times 9.8x \\
 &= \$49.59
 \end{aligned}$$

Note that we used historical P/E highs and lows in this valuation study. There is nothing sacred about historic highs and lows. The P/E could very well go higher than the prior high, or lower than the prior low, or may not reach the historic extremes in the foreseeable future. But as long as the recent highs and lows seem reasonable they are useful to give us a valuation framework.

As noted above, Abbott's stock currently trades at a P/E of 14.2x 2012 estimates, which is a premium to the pharmaceuticals industry (group average of 10.3x). The consensus long-term growth rate for the company has

fallen from 10.1% in January 2011 to 8.7%, but is still higher than the average for the pharmaceutical industry of 4.4%. The price/earnings-to-growth (PEG) ratio for the stock and the group are now 1.6 and 2.3, respectively.

$$\text{PEG}_{\text{Abbott Labs}} = \frac{\text{P/E ratio}}{\text{EPS Growth Rate}} = \frac{14.2}{8.7} = 1.6$$

$$\text{PEG}_{\text{Industry}} = \frac{\text{Average P/E}}{\text{Average Growth Rate}} = \frac{10.3}{4.4} = 2.3$$

The spread between Abbott's PEG ratio and that of the group has narrowed, but it still indicates that Abbott's P/E multiple is reasonable relative to the group when the respective growth rates are brought into the equation.

The other valuation multiples also indicate that, while not over-extended, there is no longer a strong valuation argument for owning the stock. The EV/EBITDA is now 9.7x, which while higher than the 7.9x in January 2011 is in line with the 5-year average of 10.0x. Similarly, the cash flow yield is currently 9.1%, which is trending toward the 5-year average of 8.5%. The valuation metrics are summarized in Figure 19.21, which provides a perspective on how the company's valuation today compares to January 2011 when we did the original analysis. Since we walked through the calculation of each valuation metric earlier in the chapter, we provide them here without calculation.

Figure 19.21 Valuation Metrics Comparison

	<i>January 2011</i>	<i>Now (October 2012)</i>
<i>Past 52 week performance</i>	-14%	+35%
<i>52 week range</i>	+5% above 52 week low, -15% below the 52-week high	+40% above 52-week low, at the 52-week high; since January 2011, the stock has outperformed the market by 43%)
<i>Relative Strength</i>	Stock was <u>underperforming</u> both the market and peer group driven by (1) rotation out of pharma and (2) competitive implications of Pfizer's Tofa on HUMIRA	Spread has reversed. Stock is now <u>outperforming</u> the market and the peer group, driven by (1) a re-rating of pharma post patent cliff, (2) the pending split, and (3) a promising hep C regimen
<i>Upside/downside based on 5 year P/E range</i>	At least 5:1 (much higher if using historical peaks and troughs)	Less than 2:1 using historical peaks and troughs
<i>Comps</i>	P/E of 10.1x FY1 EPS, which is in line with the peer group. PEG = 1.0 given strong secular growth rate vs. a PEG of 2.3 for the group	P/E of 14.2x FY1 EPS, which is now a premium to the group. PEG = 1.6, roughly in line with peers (2.3)
<i>EV/EBITDA</i>	The EV/EBITDA multiple of 8.5x, which is the lowest it's been in 5 years	The EV/EBITDA is now 9.7x which while higher than the 8.5x in January 2011 is still below the 5-year average (10x)
<i>Cash Flow Yield</i>	Stock offers cash flow yield of nearly 10%, which is above the 5 year average of 7.8%.	Cash flow yield of 9.1%, trending toward the 5-year average of 8.5%.

Based on these comparisons, Abbott's stock now looks "fairly priced" or perhaps "modestly undervalued," but the stock no longer looks compellingly cheap. Of course, this conclusion is based on the assumptions we've made here. Another investor might reach a different conclusion.

Fundamentals Update

Actual revenue and earnings growth in 2011 were modestly higher than originally forecast; revenues grew 10.5% driven primarily by HUMIRA, margins expanded (again, from HUMIRA), and EPS grew nearly 12% to \$4.67 (vs. the initial consensus estimate of \$4.58). Off a higher base, the Street expects revenues to grow 2.3% and EPS to rise ~8% to \$5.06 in 2012. The slower growth is due to the loss of patent protection for Tricor (cholesterol drug) and lower sales of XIENCE (due to new competition from Medtronic's RESOLUTE stent). The Street now has a long-term growth rate estimate of 8.7% (*Source: FactSet Estimates*).

Figure 19.22 Updated Ratio Analysis

	<i>5Y Avg</i> <i>(2007-11)</i>	<i>2011A</i>	<i>2012E</i>
<i>Growth</i>			
Revenue Growth	+11.6%	+10.5%	+2.3%
EPS Growth	+13.1%	+11.9%	+8.4%
<i>Profitability</i>			
Return on Equity (ROE)	28%	30%	29%
Return on Assets (ROA)	12%	12%	12%
<i>Leverage</i>			
Total Debt Ratio	29%	26%	27%
<i>Liquidity</i>			
Current Ratio	1.5x	1.5x	1.7x
Quick Ratio	1.3x	1.3x	1.5x

Source: FactSet

Abbott continues to generate strong returns. The Return on Equity for 2012 should be ~27%, in line with the 5-year average of 28%. Likewise, the

Return on Assets for 2012 will be approximately 12%, same as in 2011, and just above the 5-year average of 11%.

The company’s leverage—as measured by the total debt ratio of 24% has ticked down as the company paid down debt associated with recent acquisitions. This has helped support the earnings growth described above (i.e., less interest expense). The company’s liquidity position remains strong as evidenced by the current and quick ratios of 1.8 and 1.6, respectively.

Catalysts/Risks Update

Figure 19.23 is a catalyst calendar for Abbott Labs as of October 15, 2012.

Figure 19.23 Catalyst Calendar (Upcoming Significant Events)

<i>Estimated Date</i>	<i>Catalyst</i>
Sept. 1 – Dec. 31	Information distributed to investors related to the proposed split
Oct. 17	3Q12 operating performance
Oct. 22 – 26	The Transcatheter Cardiovascular Therapeutics (TCT) Conference - A large cardio conference which could have competitive implications for ABT’s Vascular segment.
Nov. 9 – 13	American Association for the Study of Liver Disease (AASLD) Meeting – Abbott Labs and competitor, Gilead Sciences, are scheduled to provide detailed information on their hepatitis C regimens.
Nov. 21	Regulatory decision on Pfizer’s tofa (oral RA drug), which could potentially compete with HUMIRA if approved. There are three possible outcomes <i>in our opinion</i> : 1) positive if tofa is rejected or delayed; 2) neutral if tofa appears to have limited applications; and 3) negative if tofa is approved for second line use with a broad label.

Risks to the company include the following:

- (1) A step down in HUMIRA’s sales growth
- (2) Potential delays or negative developments on the proposed split

(3) Clinical setbacks for the Co's hepatitis C regimen, Bardoxolone (an oncology drug), or other pipeline assets

(4) Political headwinds and the impact of the Affordable Healthcare Act (i.e., Obamacare)

(5) Macroeconomic uncertainty (particularly European austerity measures and the impact of high unemployment on utilization trends in the US)

Investment Decision

In many cases, investors need to distinguish between a “good company” and a “good stock.” At this point, with a reward/risk ratio that is positive but not compelling, the investment decision will likely be dictated by the investor's outlook for 1) HUMIRA growth, 2) the pending spin-off, and 3) the hep C franchise. Given the run in Abbott's stock over the past 20 months and its significant outperformance relative to the S&P 500 Index, our bias is to take profits by selling all or a portion of the position and wait for the further clarity on the aforementioned issues. In the investment business, this would be referred to as “selling on strength.” While Abbott's fundamentals remain strong, the valuation just isn't as attractive as it was previously *based on our assumptions*. In addition, there is a moderate-to-high level of uncertainty around the proposed split and the future of the company's hepatitis C regimen (recall the stock impact from the rejection of Xinlay in 2005 illustrated in Figure 19.10).

Before making an investment decision it is important to ask “Where could we be wrong?” When considering this question, it is helpful to look at the list of catalysts and risks. Near-term, two potentially positive catalysts should be highlighted. The stock price could rise if the detailed management disclosures about the margin profiles, dividends, etc. of the two entities, AbbVie and Abbott, post-split exceed the market's expectations. That information could come as early as the 3Q12 earnings call later this month. In addition, positive developments in the company's hepatitis C franchise would lift the stock given the size of the hepatitis market. The next likely data point for hep C information will be the presentations at the American Association for the Study of Liver Diseases (AASLD) Meeting being held November 9-13. Earlier today (October 15), the AASLD released the results of Abbott's AVIATOR* study, and the data (notably patient survival rates)

looked better than expected. As a result, the stock is trading up on the news. If the full data set, which will be presented at the meeting in November, is also positive, the stock could continue to move higher as investors build higher sales figures for Abbott's all-oral hepatitis C regimen into their models.

** Drug studies are commonly given names or acronyms since multiple studies of a single drug may be conducted simultaneously.*

Despite these upside catalysts, the “balance of factors”—especially the less compelling valuation based on our assumptions (see Figure 19.19)—still points to reducing the position.

Concluding Comments

The stock market is comprised of buyers and sellers, who analyze public information on a company in an effort to make an informed decision on a stock. Is this the right call on Abbott? Only time will tell. If management's outlook for margins, the tax rate, and dividends post the AbbVie/Abbott split exceed the market's expectations, the stock will continue to grind higher. Likewise, if Abbott's data presented at AASLD is comparatively better than that provided on Gilead Sciences' Hep C program, the stock will "gap up" and our decision to sell will look like a bad trade (at least in the short term). That said, it's unlikely that we—or any investor—will buy at the low or sell at the high but you don't have to catch the lows and highs to be a successful investor. What is important is that by thoroughly analyzing the prospects for the company's stock, and comparing the risk/reward ratio for the stock to that of other investment opportunities, you should be able to make consistently better investment decisions, and thereby improve your investment performance. With that in mind, we hope that you have found this application of the concepts covered throughout the book helpful as you analyze stocks for your own portfolio. While the analysis here is focused on a healthcare company, the principles can be applied to stocks across sectors and geographies. We encourage you to refer back to this study as you evaluate companies for investment (better yet, we hope you improve upon it). There really is no substitute for real-world experience.

APPENDIX

SHORT SELLING

When you buy stock in a company, you are *long the stock*. This simply means that you own it. If the stock goes up and you sell it at a higher price, you make a profit. If the stock price falls below your purchase price and you sell it, you will incur a loss. Thus, you only *go long* (i.e., buy a stock) if you expect it to go up. This is why you hear investors say to “buy low and sell high.”

While the focus of this book has been identifying stocks that are likely to rise, you can also make money on stocks that fall. If, through your fundamental analysis, you decide that a stock is likely to fall, you can make money by *selling short* (or *shorting*) the stock. Short selling means selling stock that you do not own, with the intention of buying it back in the future at a lower price, thereby capturing a profit. To do this, you first borrow the stock from your broker, and then sell it at the current price. At some point in the future, you will buy those shares back (ideally at a lower price) to replace the shares you initially borrowed and sold. Assuming the stock went down, you will keep the difference between the purchase pricing and selling price as the profit on the trade.

Let's look at an example. Suppose Desktop Computer Inc. (DCI) is selling at \$30 per share. You do not own the stock, but you are confident that the secular trends in personal computing (notably the movement toward tablet computing) will negatively impact DCI's earnings and stock price. So you log in to your brokerage account and place an order to *sell short* 10 shares of DCI. This means you want to sell 10 shares of DCI even though you do not own them. In order to sell shares you don't own, you must first borrow them. Typically, your brokerage firm will lend you the shares you want to sell. With the borrowed shares in your account, you can now sell them. Let's assume you sold the 10 shares short at \$30 per share, for a total of \$300. You cannot withdraw the \$300 from your account. Since you

borrowed the 10 shares from your broker, the \$300 raised on the sale will be held by your broker as collateral against the loan. Now, assume you were right and the stock declines to \$20 per share over the next four months. At this point, you decide to *cover your position* or *cover your short*. To do so, you place an order to buy 10 shares of DCI at the current market price of \$20, and use those 10 shares to replace the 10 shares you initially borrowed. With DCI now selling at \$20 a share, you can buy 10 shares for \$200. Since your broker is holding the \$300 that was received when you initially sold short the 10 shares, your broker uses \$200 to buy the 10 shares and the remaining \$100 profit is released to your account. The brokerage firm, of course, also keeps the 10 shares you just bought as replacement for those it loaned to you earlier.

When selling short, you are betting that the stock is going down. The risk, of course, is that you are wrong and the stock goes up. Suppose you shorted the same 10 shares of DCI at \$30 per share. However, instead of declining, the stock goes to \$45 per share. You are still obligated to replace the 10 shares you borrowed, but now it will cost you \$450 to buy back the 10 shares (10 shares x \$45 per share). Thus, if you cover your short now, you will lose \$150 on the trade; you sold the stock for \$300 and bought it back for \$450. If the stock moves to, say \$50, it would cost even more to buy back the shares and your loss would be even bigger. In short selling there is theoretically no limit to how much you can lose. Conversely, when you buy a stock, the most you can lose is what you paid for it, assuming it goes to \$0.

Given the risk of a stock moving higher, short selling requires that you have a margin account. Specifically, federal regulations require that you keep a certain amount of cash (or cash and securities) in your brokerage account to ensure that you have the funds needed to repurchase the shares you borrowed from your broker for sell short sale; this is referred to as a *margin requirement*. If the stock price increases, it will cost more to buy back the shares than the proceeds raised on the sale. When the cost to buy the stock needed to replace the borrowed shares exceeds a specified ratio of the cash and securities in your account, you will receive a *margin call*, which will obligate you to add more cash or securities to your account to bring it back into compliance with the margin requirement. You can meet the requirement by adding more cash or by depositing additional securities into your account. If you cannot meet this margin call (by depositing

sufficient cash and/or securities into your account), the brokerage firm can, at its discretion, *buy you in*. This means the broker will execute a purchase order in your account to buy the shares initially borrowed. To pay for the shares, the broker will use the cash in your account (including the proceeds from the original sale). In addition, the broker may sell securities in your account to raise the necessary funds to pay for the shares. If the cost of the *buy in* is greater than the value of cash and securities in your account, you will be liable for the difference.

A metric that is closely followed by investors is short interest. *Short interest* refers to the number of shares of a company that are sold short at any point in time, as a percentage of a company's total shares outstanding. When there is a large short position in a company's stock, investors may view this as bullish or bearish. The bearish interpretation is that the large short position suggests that many investors—most likely sophisticated investors—see trouble ahead. The bullish interpretation is that all those shares that have been sold short will eventually need to be repurchased, helping to bid up the stock. This is particularly true when the company reports good news. In this case, short sellers may be in a hurry to cover their short position before the stock moves higher. This rush to buy (cover their short) is called a *short squeeze* and can cause the stock to spike.

To review: Short selling provides investors with an opportunity to profit from stocks that fall. Specifically, if you anticipate some bad news about a company that is not generally known or well understood that, when it becomes known, will likely cause that company's stock to decline, you may want to short that stock. For example, you may think that the earnings of a desktop computer manufacturing such as DCI are going to come in below the consensus estimates because of recent trends in PC unit sales. Thus, DCI would be a good candidate to short. Another reason to short a stock might be that you anticipate a broad market decline. In such declines, most stocks (particularly those with high P/E multiples) go down. Shorting high P/E stocks can be a good strategy for investors expecting the market to *pull back*. An investor could also "short the market" by shorting an exchange traded fund such as the SPDR S&P 500 (symbol: SPY), which corresponds to the price performance of the S&P 500 Index. A third reason to short is as part of a hedging strategy. This use of shorting, however, often

involves the use of derivative instruments such as options. This is beyond the scope of this book.

Short selling is a very risky strategy. The authors recommend investors not short until they have many years of experience in investing, and have read far more about shorting than we can cover here.

GLOSSARY

A

Accelerated depreciation. A method whereby an asset is depreciated more in its early years and less in its later years.

Acceleration. The process of making an entire loan due for redemption immediately.

Accretion. The gradual increase in value of a bond which was issued at a discount, as it approaches its face value.

Accounts payable. Money that a company owes, typically to suppliers of raw materials and services.

Accounts receivable. Money that is owned to a company.

Accounts receivable-to-sales ratio. Accounts receivable divided by sales.

Accounts receivable turnover. Sales divided by Accounts Receivable.

Accumulated depreciation. The total amount by which all the assets in the Gross plant and equipment account have been depreciated down through the years; or the total amount by which a single asset has been depreciated down through the years.

Acid test ratio. Current assets, less inventories, divided by current liabilities.

Additional paid-in capital. Paid-in capital minus the dollar amount in common stock at par value.

Adjustable Rate Preferred Stock. Preferred stock where the dividend is adjusted up or down depending on the yield of some other security, usually a U.S. Treasury Note. Similar to Variable Rate Notes.

After market. Any trade of stock made between members of the public after an investment banker or underwriter has completed an offering. Most commonly used to refer to the trading activity in the first hours or days immediately after the offering is completed.

Amortization. The deferred expensing of a cost incurred in an earlier year.

Anti-dilutive issue. A convertible issue that causes an increase in EPS as a result of the conversion process.

ARP. *See Adjustable Rate Preferreds.*

Arrearage. Money owed to preferred stockholders representing dividends that were due on that preferred stock, but were not paid.

Assets. A balance sheet category reflecting anything of value that a company owns or has claim to.

Authorized stock. The total number of shares of stock a company has been permitted by its shareholders to issue, whether or not it has all been issued.

B

Baby bonds. Bonds with a face value of less than \$1,000.

Back-end load. A fee that is paid when an investor leaves a mutual fund.

Balance sheet. A financial statement that reflects the financial condition of the company *at a point in time*, showing what assets are held, what liabilities are owed, what money (or capital) was initially put into the company, and how much was earned by the company.

Balloon payment. A large payment to complete the repayment of a long term loan, e.g., the repayment of remaining outstanding bonds at final maturity.

Basic earnings per share. Actual net earnings divided by the number of common shares outstanding at the end of the year, without giving any consideration to convertible issues.

Basis point. One one-hundredth of a percentage point, as used in the measurement of bond interest rates and yields.

Bearer bond. A bond belonging to the person who possesses it.

Bid. The price a market maker is willing to pay to buy a stock.

Bond. A contract between a company that is borrowing money and the people and institutions who are lending the money.

Bond certificate. A document that says the bondholder is the lender and has the right to be paid back by the issuer on a certain date or dates, and to receive interest from the issuer on certain dates.

Bond ratings. Judgments made by rating agencies about the safety of bonds.

Bondholder. A lender to a company through the purchase of its bonds.

Book value. Total assets less total liabilities less liquidating value of preferred stock, if any.

Book value per common share. Book value divided by the number of common shares outstanding.

Bullet. A bond issue that has no sinking-fund payment and is completely redeemed at final maturity.

C

Call date. The date on or after which a company may redeem its bonds earlier than maturity.

Call feature. *See call provision.*

Call premium. Extra money paid to bondholders to compensate them when bonds are called by a company ahead of final or sinking fund maturity.

Call price. The price the company must pay to bondholders when redeeming their bonds early under a call provision. The call price often includes a call premium in addition to face value.

Call protection. Any of a number of restrictions on the callability of a bond.

Call provision. The section of the bond indenture that states when and at what prices a company may call (redeem) its bonds ahead of maturity.

Callable bond. A bond that can be redeemed early by the issuer, at the issuer's option.

Capex. Abbreviation for Capital Expenditures.

Capital. Can refer to funds used in the company (*see Long-term capital and Working capital*), or can refer to the goods (usually fixed assets) used to make other goods.

Capital intensive companies. Companies for whom capital costs are a significant part of their total costs.

Capital securities. *Similar to trust preferred securities.*

Capital spending. A company's purchases of new plant and/or equipment.

Capitalization. On the balance sheet, the combination of long-term debt and stockholders' equity and possibly other long-term liabilities. Also refers to the P/E ratio investors are willing to pay for a stock. Also, the value of all of a company's stock.

Capitalizing an asset. Putting an asset's cost on the balance sheet under Fixed Assets (or some similar title); the asset will usually then be depreciated or amortized over an appropriate number of years.

Cash flow. The flow of money into and out of a company.

Cash flow from financing. The amount of cash a company generates from issuing stock or bonds, or from borrowing, less cash used to pay dividends, repay debt, or repurchase the company's stock.

Cash flow from investing. The amount of cash a company uses to buy new plant and equipment, or to buy stock of other companies, offset by cash generated selling off old plant and equipment. Cash flow from investing is usually a net outflow.

Cash flow from operations. The amount of cash a company generates from making and selling its products or services.

Cash ratio. Cash plus marketable securities divided by current liabilities.

Certificate (bond). A document that says the bondholder is the lender and has the right to be paid back by the issuer on a certain date or dates, and to receive interest from the issuer on certain dates.

Combined offering. A sale of stock where some of the offered shares are primary shares being offered by the company, and some are secondary shares being offered by existing shareholders.

Common stock. A certificate that represents partial ownership in a company, and gives its owner the right to vote at stockholders' meetings.

Common stock equivalents. Convertible bonds, or convertible preferreds or other securities, that are deemed likely to be converted into common stock at some time.

Conversion rate. The number of shares of common stock a convertible bond or convertible preferred converts into.

Converted value. A convertible bond or convertible preferred's value if it were converted to common stock. Obtained by multiplying the price of the common stock times the number of shares of common stock that the bond or preferred converts into.

Convertible bonds. Bonds that can be converted into stock.

Cost of goods sold. The dollar cost of goods that have been sold. This may include materials costs, labor costs, and other costs.

Cost. Incurred by a company when it pays for something or becomes obligated to pay for something; may or may not also be an expense.

Coupon. The interest payment required by a bond.

Coupon rate. *Same as coupon yield.*

Coupon yield. A bond's coupon divided by its face amount.

Covenants. Agreements a bond issuer makes as safeguards to its bondholders.

Creditors. People or institutions that are owed money. Bondholders, for example, are among a company's creditors, as are the persons owed the money in Accounts payable.

Cumulative preferred stock. A preferred stock specifying that if the preferred dividend has been omitted for one or more quarters, no common dividend can be paid until all of the omitted preferred dividends (arrearages) from the past are paid.

Current assets. Cash and items that are expected to be converted into cash within one year.

Current cost. Most recent cost.

Current liabilities. Debts due within one year.

Current ratio. Current assets divided by current liabilities.

Current yield. A bond's dollar coupon divided by the bond's current price in the secondary market.

Currently callable bond. A bond that has reached its call date. It can be called by the company at any time.

D

Days sales in receivables. 365 days divided by Receivables turnover.

Debenture. A loan that is very much like a bond except it is not backed by any specific assets.

Debt to total capitalization ratio. Long-term debt divided by total capitalization.

Default. The failure of a company to make an interest payment, sinking fund payment, or final maturity payment when it is due, or a company's violating a covenant in a bond indenture.

Depreciation. An expense reflecting the wearing out of fixed assets.

Diluted earnings per share. The earnings per share figure that would result if all of a company's convertible issues, warrants, and stock options were converted to stock.

Dilution. A reduction in percentage of ownership represented by a share of stock as a result of a company issuing more shares; or, a reduction in earnings per share as a result of a company issuing more shares.

Dilutive issue. A convertible issue that causes a reduction of EPS when converted.

Discount from par. A bond price that is lower than the bond's face value.

Discount rate. The interest rate the Federal Reserve charges when it lends money to banks.

Discount to conversion. A bond price that is lower than the bond's converted value. *See* **Converted value.**

Distribution. A regular, usually quarterly, payment to holders of trust preferred securities. It is like the interest on a bond, or the dividend on a preferred stock.

Dividend. The money a company may choose to pay to stockholders, usually from the profit it earns.

Dividend Payout Ratio. Dividend per share divided by Earnings per share.

Dividend Yield. Dividend received by the investor divided by the price of the stock. Usually expressed as an annual rate.

E

Earnings Coverage Ratio. See Interest Coverage Ratio.

Earnings per share. Net earnings for the year divided by the number of shares of common stock outstanding.

Earnings power. The highest projected earnings for a company if all goes well.

Effective tax rate. Actual tax paid divided by pretax profit.

Efficient market. A market where stock prices are believed to reflect all the information that investors can know about a company.

Equipment. The tools a company uses to help produce the goods that are to be sold.

Equipment Trust Certificate. A bond issued for a particular purpose, e.g, an airline borrowing money to buy an airplane.

Equity money. Money a company raises from the sale of stock, and/or money earned as profit.

Expense. Any and all dollar figures that are deducted from sales to reach net profit; always reflects a cost, although that cost may have been incurred in a different year.

Expensing. The process of deducting costs, or portions of costs, from sales to calculate earnings.

Expensing an asset. Broadly, the process of deducting all or some portion of the cost of an asset from sales to calculate earnings. Usually, however, refers to deducting an asset's entire cost from sales in the year in which the asset was purchased, as opposed to *capitalizing the asset*.

Extraordinary cost. A cost that does not occur regularly in the normal operations of the company.

F

Face value. The amount of money a company must pay back when a bond is redeemed.

Federal funds rate. The interest rate banks charge when they lend money for a day or two to other banks to help them meet reserve requirements.

FIFO inventory accounting. An inventory accounting method in which the first inventory that comes in is assumed to be the first that is sold.

Final maturity. The last date a borrower must pay back any bonds of a particular issue that are still outstanding.

Finished goods. The dollar cost of the goods that have been manufactured but not yet sold.

First-in, first-out. *See* **FIFO.**

Fixed Charge Coverage. Similar to Interest Coverage, but takes into account other fixed charges, such as fixed lease payments.

Fixed Cost Leverage. The resulting margin expansion when a company with fixed costs increases its sales.

Float. The number of shares that are publicly traded that are not owned by a company officer or director or by anyone who owns more than 10 percent of the company's total shares outstanding.

Floating rate notes. Notes with a coupon payment that varies with some other specified market interest rate.

Follow-on offering. Any offering of new stock by a company which is not the company's initial public offering.

Free cash flow. Cash flow from operations, less debt repayment requirements, less preferred dividends, less the maintenance level of capital spending.

Fully diluted earnings per share. *Same as* **diluted earnings per share.**

G

Goodwill. An intangible asset that reflects the difference between what a company paid to acquire another company (or perhaps a patent or mailing list, etc.) and the fair market value of the acquired company (or asset).

Gross plant and equipment. The initial cost of the plant and equipment.

Gross Profit. Sales less Cost of Goods Sold.

Gross Margin. Gross Profit divided by Sales.

Guaranteed Redemption Date. The date when all outstanding shares of a preferred stock issue or a preferred securities issue must be redeemed. After this date, the preferreds lose their right to receive dividends or distributions.

H

Historical cost. The oldest cost. Hybrid preferred. *See preferred securities.*

Hybrid security. A security with features typical of more than one type of security.

I

In arrears. Refers to a preferred stock that has omitted (not paid) its dividend for one or more quarters.

Income statement. A financial statement that shows the revenue that the company has made, the expenses that have been incurred to make those sales, and the profit or loss derived therefrom.

Indenture. The complete detailed agreement between bondholders and an issuer.

Independent Directors. Members of the Board of Directors who are not part of company management.

Initial public offering. The first time that any stock of a company is being sold to the public.

Insider. One who has access to information about a company that the general public does not have.

Intangible asset. A non-physical asset, such as a patent, brand name, or copyright.

Interest coverage ratio. Money available to pay interest (the earnings before interest and taxes) divided by total interest.

Inventory. Material or materials that will be used and will become part of the products that will ultimately be sold by a company.

Inventory-to-sales ratio. Inventory divided by sales.

Inventory turnover ratio. Sales divided by inventory.

Inventory turnover in days. 365 days divided by Inventory Turnover.

Investment bank. A firm that helps businesses raise money by selling new stock or bonds either to the public or as private placements.

Investment management fee. A fee taken by mutual fund management firms as a percentage of the assets in the funds they manage.

Issued stock. The number of shares of stock that have been sold (or given away) by a company. The issued shares may still be outstanding, or may have been repurchased by the company.

Issuer (of a bond). A company that borrows money by selling bonds. expenses that have been incurred to make those sales, and the profit or loss derived therefrom.

L

Labor intensive companies. Companies for whom labor costs are a significant part of their total costs.

Last-in, first-out. See LIFO.

Legend. A statement stamped on a stock certificate explaining that the stock has not been registered and may not be resold unless a registration statement (or an exemption from registration) is in effect.

Leverage. Term used by investors referring to debt.

Liabilities. A balance sheet category reflecting the debts a company owes.

LIFO inventory accounting. An inventory accounting method in which the last inventory that comes in is assumed to be the first that is sold.

Limit order. An order from an investor authorizing purchase of a stock only at or below a certain price, or sale of a stock at or above a certain price.

Liquidating amount. The amount of money each preferred security receives when a company is liquidated.

Liquidating preference. *Same as liquidating value.*

Liquidating value. The amount of money each preferred share receives when a company is liquidated.

Liquidation. Terminating a company by selling all its assets and paying its liabilities.

Liquidity. The ability to buy or sell shares of stock without causing the market to move up or down.

Long-term assets. Assets a company expects to retain for more than one year, such as tools, buildings, and vehicles.

Long-term capital. Refers to the long-term debt and equity capital used, for the most part, to buy long-term assets.

Long-term debt. Loans that must be repaid after one year.

Long-term liabilities. Debts due after one year.

Lottery. A random selection procedure a company uses to select bonds to redeem in order to make a required sinking fund redemption.

Lower-of-cost-or-market. An accounting policy which requires that companies reduce the value of their inventory on the balance sheet to the value for which it can be sold, if that value is lower than the cost.

M

Mandatory Redemption Date. *See guaranteed redemption date.*

Market capitalization. The value of all of a company's stock.

Market size. The number of shares a market-making firm will buy or sell at its posted bid and offered prices.

Market value of the float. The number of shares in the float multiplied by the current stock price.

Maturity. The date a bond must be paid back by the issuer.

Mortgage bonds. A bond in which one or more specific pieces of property are "pledged" to the bondholders.

N

Net plant and equipment. Gross plant and equipment less Accumulated depreciation. May also be referred to as the book value of the plant and equipment.

Net profit margin ratio. After-tax profit divided by total sales.

New issue. Any offering of shares of stock or bonds by a company that are newly created. A new issue may be a private placement or a public offering. A new issue is a primary offering. It may be an initial public offering of the company's stock, or it may be a follow on public offering, or it may be a private placement.

Noncallable (NC) bond. A bond that cannot be called by a company at the present time.

Non-cash expense. Any expense which does not reflect a cash-outflow in the year it is deducted from sales when calculating profit. Depreciation and amortization are examples of non-cash expenses.

Noncumulative preferred stock. Does not require payment of arrearages in order to resume the common stock dividend once payment of the preferred dividend is resumed after an omission.

Nonrecurring costs. Costs that do not occur regularly in the normal operations of the company.

Note. A loan of typically less than 10 years.

O

O.I.D. Original Issue Discount. A bond initially issued at a price below its face or maturity value is referred to as a O.I.D.

Omission. The non-payment of a dividend.

Operating Profit. Usually Sales less Cost of Goods Sold, less Selling, General, and Admin. expense.

Operating Profit Margin. Operating Profit divided by Sales.

Optional Redemption. A company's right to redeem preferred stock at any time permitted under the company's Articles of Incorporation.

Outside Directors. See **Independent Directors.**

Outstanding stock. Stock that has been issued and not repurchased by the company.

Overhead costs. Costs a company incurs that are not attributed directly to making goods.

Overpriced stock. A stock that an investor thinks is too high and is likely to come down. This may be because the investor thinks the price/earnings ratio is too high, or because he thinks the company's earnings are likely to fall unexpectedly.

Ownership equity. A balance sheet category reflecting the combination of the amount of money put into a company by the owners plus the total amount of profit the company has earned through the years, less any dividends the company has paid through the years.

P

Paid-in capital. The amount of money paid into the company by stockholders for stock.

Par value of stock. An arbitrary figure set by a company that distinguishes one of the two components of paid-in capital.

Par value of bonds. *Same as face value.*

Participating preferred stock. A preferred stock specifying that the dividend moves up or down with the company's earnings or with the common stock dividend.

P/E ratio. *See price-to-earnings ratio.*

Period expense. An expense regularly deducted from sales in the period the cost is incurred, independent of whether any finished goods have been sold.

Perpetual preferred stock. A preferred stock that may be outstanding forever unless the company buys it back on the secondary market and retires it.

Preferred Securities. Securities that are similar to preferred stock, in that they are treated as equity, but also are like bonds in that the payment to shareholders is deducted as an expense before taxes.

Preferred stock. A stock with priority over common stock in both the right to receive dividends and in the division of assets in the event of a liquidation.

Premium to conversion. A convertible bond or convertible preferred's price that is higher than its converted value.

Premium to par. A bond price that is higher than the bond's face value.

Pretax profit margin ratio. Pretax profit divided by total sales.

Price-to-cash-flow ratio. Stock price per share divided by cash flow per share.

Price-to-earnings ratio. Stock price divided by earnings per share.

Primary offering. The creation and sale of new stock by a company. The company receives the money from the sale of the shares.

Prime rate. The interest rate that banks usually charge their safest business borrowers.

Priority of Claims. Refers to the order in which creditors get paid during a liquidation.

Private company. A company which has no stock registered with the SEC, or sold to the public. Usually has only a small number of investors and has no obligation to publish financial statements or report to the Securities and Exchange Commission.

Private placement. The sale of unregistered stock or bonds.

Profit margin. Profit, either before tax or after tax, divided by sales.

Prospectus. A summary of a company's most relevant financial and other information, compiled to help potential investors make an evaluation of the risks involved in buying a new issue of a company's stock or bonds. It is part of a company's registration statement filed with the SEC.

Proxy. An absentee ballot by which shareholders who do not attend a company's annual shareholder meeting can vote for directors and other matters.

Proxy fight. A battle between opposing groups of shareholders who are each trying to get other shareholders to vote their "proxies" for a particular group of candidates for company directors.

Public company. A company which has registered some or all of its stock with the SEC, and has sold at least some of the registered stock to the public.

Public offering. Broadly, any sale of registered stock or bonds, whether a primary or secondary offering, but usually refers to a company doing a

primary offering.

Q

Quick ratio. Current assets, less inventory, divided by current liabilities.

R

Ratably. An equal amount each year.

Rating agencies. Independent companies that analyze and issue judgments about the safety of bonds.

Redemption. Returning a bond certificate or a preferred stock certificate to the company or trustee in exchange for the amount of money due.

Redemption Date. A date at which a preferred stock or preferred security will be redeemed, or paid back, by the company that issued it. It can either be the *guaranteed redemption date*, or it can be an *optional redemption date*.

Refinancing. Issuing new stock or bonds to obtain the money necessary to repay old debt.

Refunding. The issuance of new bonds or preferred stock at a lower interest rate to pay back old bonds or preferred stock that have a higher interest rate.

Registered bond. A bond that belongs to the person in whose name it is registered; there is no risk if it is lost.

Registration statement. The filing a company must make with the SEC before it can have a public offering of stock or bonds.

Reorganization. For bankrupt companies, a process where a company and its creditors make a plan for partial repayment of debt and for issuance of new stock to creditors who were not paid back in full.

Reset bonds. Bonds that specify that the coupon rate will change for a specified reason or at a specified time.

Residual value. A small book value of an asset left over at the end of the asset's expected life, or after the asset is no longer being depreciated.

Restructuring cost. A write-off that sometimes occurs when a company either sells off or closes a division, or makes some other substantial change in the company.

Retained earnings. Total profits earned by a company for all years since its inception, less any losses in any years since inception, less all of the dividends paid since inception.

Retirement (of an asset). The disposal of an asset.

Retirement (of a bond). The withdrawal of a bond from circulation, either through redemption or because the issuing company buys the bond back in the secondary market.

Return. Can refer to a company's profit, or a shareholder's gain, either by dividend or by stock price appreciation.

Return on Assets. Net Income divided by Total Assets.

Return on capital ratio. Profit divided by total capitalization. Can be either before tax or after tax profit.

Return on sales ratio. Profit divided by sales. *Same as profit margin.*

Return on stockholders' equity ratio. Profit divided by stockholders' equity.

Rule 144. A rule which permits stockholders with unregistered stock to sell their stock to the public without registration in certain circumstances.

Rule 144A. A rule which permits companies to sell unregistered new shares of stock to large, sophisticated financial institutions.

S

Secondary offering. A sale of already outstanding stock from one investor to another; the investor who sells the stock receives the money from the sale of the shares. The term has also come to be used, incorrectly, to mean any primary offering of stock by a company other than the company's initial public offering. *See follow-on offering.*

Security Rate. The dividend on a preferred stock, or the distribution on a trust preferred security, divided by a fixed dollar value figure. The fixed figure may be the par value, stated value, liquidating value, or redemption value of the security.

Selling group. All the dealers, such as investment bankers and stockbrokers, participating in a stock offering.

Serial redemption. The retirement of certain numbered bonds in certain years, thereby constituting the sinking fund.

Shelf registration. A registration filing with the S.E.C. for a stock or bond offering which the company does not intend to issue immediately upon the registration statement being declared effective. Shelf Registration may remain effective for up to two years, with updated information.

Shareholder. A person who owns one or more shares of a company.

Short selling. Borrowing a stock you do not own in order to sell it. Usually done with the expectation of buying the stock back later at a lower price, to replace the borrowed stock, and keep the dollar difference as profit.

Short-term debt. Loans that must be repaid within one year.

Sinking fund. A required partial repayment on a long-term loan, e.g., an obligation to retire a certain amount of bonds on or before specified dates ahead of final maturity.

Sole proprietorship. A company that is owned by one person and is not yet incorporated.

Split rating. Different views of a bond's risk as judged by various rating agencies.

Statement of cash flow. A financial statement detailing the categories of cash flow into and out of a company.

Stock. See **common stock** and **preferred stock**.

Stock exchange. A place where investors can buy and sell stock in secondary transactions.

Stock options. The right to purchase a company's stock for the price stated on the option, any time within the period stated on the option. Companies sometimes give such options to employees as an incentive. Also, there are options on many companies' stock that any investor can purchase on the option exchanges. These latter options are sold from one investor to another and do not come from the company.

Stockholder. A person who owns one or more shares of a company.

Stockholders' equity. A balance sheet category reflecting the combination of the amount of money put into a company by the stockholders plus the total amount of profit the company has earned through the years, less any dividends the company has paid through the years. *Same as ownership equity.*

Straight-line depreciation. A method whereby an asset is depreciated evenly over the years of its estimated useful life.

Subsidiary. A company which is partially or wholly owned by another (parent) company. A subsidiary company is controlled by the parent. If a parent owns part of a company, but does not have control, then the parent just has an investment in the other company.

T

Tangible book value. Total assets less intangible assets less total liabilities less liquidating value of preferred stock.

Term bond. A bond issue that has no sinking-fund payment and is completely redeemed at final maturity.

Term loan. A loan of typically three to seven years.

Total Debt Ratio. Short Term Debt plus Long Term Debt divided by either Total Capitalization or Equity.

Trading stock. The sale of stock from one investor to another.

Treasury stock. Stock a company has bought back from shareholders; it no longer represents partial ownership of the company.

Trust Preferred Securities. A preferred security which is issued by a trust, where the trust is a subsidiary of the company wishing to raise money. *See Preferred Securities.*

U

Underpriced stock. A stock that an investor thinks is priced too low and is likely to go up, possibly because the investor thinks the price/earnings ratio should be higher, or because the investor thinks the company's earnings are likely to increase more than most other investors expect.

Underwriting. A guarantee by an investment bank to sell an issue of stock.

V

Variable rate notes. Notes with a coupon payment that varies with some other specified market interest rate.

W

Waive. To make an exception.

Widely held company or stock. A company whose stock is owned by a large number of investors.

Working capital. Money that is tied up in inventory, accounts receivable, and the like. Defined as total current assets, less total current liabilities.

Write off. Usually refers to the immediate and complete expensing of some cost, rather than expensing it gradually over a number of years through depreciation or amortization. More broadly, it may mean expensing any cost.

Writedown. In general, refers to reducing the value of some asset on the balance sheet, and also adding the amount of the reduction to an *expense* category. Depreciating an asset is *writing it down*. Specifically, it often refers to reducing the value of an asset by a large amount in response to an unexpected change in that asset's value. Obsolete inventory might be *written down* to a lower value at which it can be sold, or might be *written*

off completely (to \$0). Tools and equipment that are no longer being used might be *written down* to scrap value.

Y

Yield. Usually refers to the interest or dividend return to an investor expressed as a percentage of the price of the bond or stock.

Yield on a common stock. Dividend divided by the price of the stock.

Yield spread. The difference in yield between any two bonds or other securities being examined.

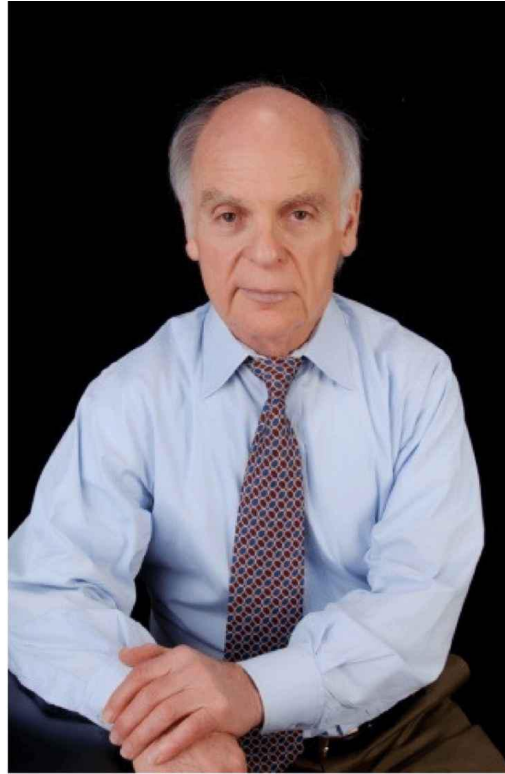
Yield to call. A bond yield similar to yield to maturity, except that it uses the bond's call price and call date rather than the bond's face value and final maturity date.

Yield to maturity. A bond yield that includes both the annual coupon and any capital gain or loss on the difference between what she paid for the bond and its face value at maturity.

Z

Zero coupon bond. A bond that is issued at a discount from its par value and pays no interest to bondholders; all of the return to bondholders comes at maturity when the bond is redeemed at par or face value.

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William Pike's background includes experience as both an equity and high yield bond portfolio manager at Fidelity Investments. He taught the introductory investment course sponsored by the Boston Security Analyst's Society for more than 20 years. The early editions of this book are the outgrowth of that course. He is a Chartered Financial Analyst with a degree from the Massachusetts Institute of Technology and an MBA from Columbia University. He has provided investment commentary on radio and television and has spoken to a variety of investment groups.



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