

The Valuation and Characteristics of Stock

Learning Objectives

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|  1 Identify the basic characteristics of preferred stock. | Preferred Stock |
|  2 Value preferred stock. | Valuing Preferred Stock |
|  3 Identify the basic characteristics of common stock. | Common Stock |
|  4 Value common stock. | Valuing Common Stock |
|  5 Calculate a stock's expected rate of return. | The Expected Rate of Return of Stockholders |

In the entertainment industry, Netflix was a well-recognized success story. That is, it was a success until 2011 when it changed how it charged its customers who subscribed to its services. Previously, you could stream videos to your television or computer or order videos through the mail, all for about \$10. The firm's management changed the subscription plan so that you had to purchase the two plans separately, paying about \$8 for each. Thus, if you wanted to continue with what you had previously, the cost became almost \$16—a 60-percent increase in your cost. The price increase sparked 80,000 comments on the company's Facebook page. Netflix lost subscribers as well as stock market value in the wake of the controversial price increase.

To compound the problem, pay channel Starz, which controls the rights to movies from Sony Pictures and Walt Disney Pictures, announced it would not renew a deal allowing Netflix to stream those films. Some analysts considered the partnership with Starz to be worth as much as \$300 million.

Netflix's CEO responded with a letter, saying, "We hate making our subscribers upset with us, but we feel like we provide a fantastic service and we're working hard to further improve the quality and range of our streaming content."

Not only did Netflix lose customers, but the stockholders saw the value of their stock plummet. In one day, the price was down 17 percent. By year end, the stock price had declined from almost \$300 to slightly more than \$70, with the price still in the \$80 range in June 2012. Lazard Capital Markets analyst Barton Crockett called the news "a rare, large and surprising misstep" for the company.

How much value was destroyed for the firm's owners? The total value of Netflix's stock declined by some \$12 billion to slightly over \$4 billion! It could be that the large loss in stock value, which is tied to the loss in customers, has kept the Netflix management up late at night. After all, creating shareholder value, not

destroying it, is a basic goal for management. In this chapter, we will look closely at how stock is valued, which is vital for a manager to understand.

In Chapter 7, we developed a general concept about valuation, and economic value was defined as the present value of the expected future cash flows generated by an asset. We then applied that concept to valuing bonds.

We continue our study of valuation in this chapter, but we now give our attention to valuing stocks, both preferred stock and common stock. As already noted at the outset of our study of finance and on several occasions since, the financial manager's objective should be to maximize the value of the firm's common stock. Thus, we need to understand what determines stock value. Also, only with an understanding of valuation can we compute a firm's cost of capital, a concept essential to making effective capital investment decisions—an issue to be discussed in Chapter 9.



Preferred Stock

Preferred stock is often referred to as a *hybrid security* because it has *many characteristics of both common stock and bonds*. Preferred stock is similar to common stock in that (1) it has no fixed maturity date, (2) if the firm fails to pay dividends, it does not bring on bankruptcy, and (3) dividends are not deductible for tax purposes. On the other hand, preferred stock is similar to bonds in that dividends are fixed in amount.

The amount of the preferred stock dividend is generally fixed either as a dollar amount or as a percentage of the par value. For example, Georgia Pacific has preferred stock outstanding that pays an annual dividend of \$53, whereas AT&T has some $6\frac{3}{8}$ percent preferred stock outstanding. The AT&T preferred stock has a par value of \$25; hence, each share pays $6.375 \text{ percent} \times \25 , or \$1.59 in dividends annually.

To begin, we first discuss several features associated with almost all preferred stock. Then we take a brief look at methods of retiring preferred stock. We close by learning how to value preferred stock.

The Characteristics of Preferred Stock

Although each issue of preferred stock is unique, a number of characteristics are common to almost all issues. Some of these more frequent traits include

- ◆ Multiple series of preferred stock
- ◆ Preferred stock's claim on assets and income

1 Identify the basic characteristics of preferred stock.

preferred stock a hybrid security with characteristics of both common stock and bonds. Preferred stock is similar to common stock in that it has no fixed maturity date, the nonpayment of dividends does not bring on bankruptcy, and dividends are not deductible for tax purposes. Preferred stock is similar to bonds in that dividends are limited in amount.

Source: Ben Fritz, "Netflix Shares Tumble as Subscribers Leave After Price Increase," *Los Angeles Times*, September 11, 2011, <http://latimesblogs.latimes.com/entertainmentnewsbuzz/2011/09/netflix-shares-tumble-as-subscribers-leave-following-price-increase.html>, accessed May 26, 2012; "Netflix to Lose Starz, Its Most Valuable Source of New Movies," *Los Angeles Times*, September 1, 2011, <http://latimesblogs.latimes.com/entertainmentnewsbuzz/2011/09/netflix-to-lose-starz-its-most-valuable-source-of-new-movies.html>, accessed May 27, 2012; "Netflix Revenue and Guidance Disappoints Wall Street," *Los Angeles Times*, July 25, 2011, <http://latimesblogs.latimes.com/entertainmentnewsbuzz/2011/07/netflix-stock-drops-as-wall-street-disappointed-with-revenue-and-guidance.html>, accessed May 27, 2012; and "Netflix Misses on Revenue, Stock Plunges" by Matt Rosoff, from BUSINESS INSIDER, July 25, 2011."

- ◆ Cumulative dividends
- ◆ Protective provisions
- ◆ Convertibility
- ◆ Retirement provisions

All these features are presented in the discussion that follows.

Multiple Series If a company desires, it can issue more than one series of preferred stock, and each series can have different characteristics. In fact, it is quite common for firms that issue preferred stock to issue more than one series. These issues can be differentiated in that some are convertible into common stock and others are not, and they have varying protective provisions in the event of bankruptcy. For instance, the Xerox Corporation has a Series B and Series C preferred stock.

Claim on Assets and Income Preferred stock has priority over common stock with regard to claims on assets in the case of bankruptcy. The preferred stock claim is honored after that of bonds and before that of common stock. Multiple issues of preferred stock may be given an order of priority. Preferred stock also has a claim on income before common stock. That is, the firm must pay its preferred stock dividends before it pays common stock dividends. Thus, in terms of risk, preferred stock is safer than common stock because it has a prior claim on assets and income. However, it is riskier than long-term debt because its claims on assets and income come after those of debt, such as bonds.

cumulative feature a requirement that all past, unpaid preferred stock dividends be paid before any common stock dividends are declared.

protective provisions provisions for preferred stock that protect the investor's interest. The provisions generally allow for voting in the event of nonpayment of dividends, or they restrict the payment of common stock dividends if sinking-fund payments are not met or if the firm is in financial difficulty.

convertible preferred stock preferred shares that can be converted into a predetermined number of shares of common stock, if investors so choose.

call provision a provision that entitles the corporation to repurchase its preferred stock from investors at stated prices over specified periods.

Cumulative Dividends Most preferred stocks carry a **cumulative feature** that *requires all past, unpaid preferred stock dividends be paid before any common stock dividends are declared*. The purpose is to provide some degree of protection for the preferred shareholder.

Protective Provisions In addition to the cumulative feature, protective provisions are common to preferred stock. These **protective provisions** generally *allow for voting rights in the event of nonpayment of dividends, or they restrict the payment of common stock dividends if the preferred stock payments are not met or if the firm is in financial difficulty*. For example, consider the stocks of Tenneco Corporation and Reynolds Metals. Tenneco preferred stock has a protective provision that provides preferred stockholders with voting rights whenever six quarterly dividends are in arrears. At that point, the preferred shareholders are given the power to elect a majority of the board of director's. Reynolds Metals preferred stock includes a protective provision that precludes the payment of common stock dividends during any period in which the preferred stock payments are in default. Both provisions offer preferred stockholders protection beyond that provided by the cumulative provision and further reduce their risk. Because of these protective provisions, preferred stockholders do not require as high a rate of return. That is, they will accept a lower dividend payment.

Convertibility Much of the preferred stock that is issued today is **convertible preferred stock**; that is, *at the discretion of the holder, the stock can be converted into a predetermined number of shares of common stock*. In fact, today about one-third of all preferred stock issued has a convertibility feature. The convertibility feature is, of course, desirable to the investor and, thus, reduces the cost of the preferred stock to the issuer.

Retirement Provisions Although preferred stock does not have a set maturity date associated with it, issuing firms generally provide for some method of retiring the stock, usually in the form of a call provision or a sinking fund. A **call provision** *entitles a company to repurchase its preferred stock from holders at stated prices over a given time period*. In fact, the Securities and Exchange Commission discourages firms from issuing preferred stock without some call provision. For example,



REMEMBER YOUR PRINCIPLES

Principle Valuing preferred stock relies on three of our principles presented in Chapter 1, namely:

Principle 1: Cash Flow Is What Matters.

Principle 2: Money Has a Time Value.

Principle 3: Risk Requires a Reward.

Determining the economic worth, or value, of an asset always relies on these three principles. Without them, we would have no basis for explaining value. With them, we can know that the amount and timing of cash, not earnings, drives value. Also, we must be rewarded for taking risk; otherwise, we will not invest.

Apartment Investment and Management Company, a real estate investment trust that engages in acquiring and managing apartment properties, published the following news release:

Denver, January 26, 2012 (BUSINESS WIRE)—Apartment Investment and Management Company (“Aimco”) announced it will redeem all outstanding shares of its Cumulative Preferred Stock.... Redemptions will occur on July 26, 2012, at \$25.00 per share plus an amount equal to accumulated and unpaid dividends of \$0.0646 per share. The total redemption payments of \$25.0646 per share is payable only in cash. After the redemption date, the Preferred Stock no longer will be outstanding and holders of Preferred Stock will have only the right to receive payment of the redemption price in exchange for their Preferred Stock certificates.

The call feature on preferred stock usually requires buyers to pay an initial premium of approximately 10 percent above the par value or issuing price of the preferred stock. Then, over time, the call premium generally decreases. By setting the initial call price above the initial issue price and allowing it to decline slowly over time, the firm protects the investor from an early call that carries no premium. A call provision also allows the issuing firm to plan the retirement of its preferred stock at predetermined prices.

A **sinking-fund provision** requires the firm to periodically set aside an amount of money for the retirement of its preferred stock. This money is then used to purchase the preferred stock in the open market or to call the stock, whichever method is cheaper. For instance, the Xerox Corporation has two preferred stock issues, one that has a 7-year sinking-fund provision and another with a 17-year sinking-fund provision.

sinking-fund provision a protective provision that requires the firm periodically to set aside an amount of money for the retirement of its preferred stock. This money is then used to purchase the preferred stock in the open market or through the use of the call provision, whichever method is cheaper.

Valuing Preferred Stock

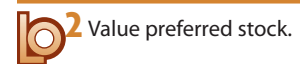
As already explained, the owner of preferred stock generally receives a constant dividend from the investment in each period. In addition, most preferred stocks are perpetuities (nonmaturing). In this instance, finding the value (present value) of preferred stock, (V_{ps}), with a level cash-flow stream continuing indefinitely, may best be explained by an example.

Consider Pacific & Gas Electric’s preferred stock issue. In similar fashion to valuing bonds in Chapter 7, we use a three-step valuation procedure.

- STEP 1** Estimate the amount and timing of the receipt of the future cash flows the preferred stock is expected to provide. PG&E’s preferred stock pays an annual dividend of \$1.25. The shares do not have a maturity date; that is, they are a perpetuity.
- STEP 2** Evaluate the riskiness of the preferred stock’s future dividends and determine the investor’s required rate of return. The investor’s required rate of return is assumed to equal 5 percent for the preferred stock.¹
- STEP 3** Calculate the economic, or intrinsic, value of the PG&E share of preferred stock, which is the present value of the expected dividends discounted at the investor’s required rate of return. The valuation model for a share of preferred stock, V_{ps} , is therefore defined as follows:

$$\begin{aligned}
 \text{Preferred Stock Value} &= \frac{\text{dividend in year 1}}{(1 + \text{required rate of return})^1} \\
 &+ \frac{\text{dividend in year 2}}{(1 + \text{required rate of return})^2} \\
 &+ \cdots + \frac{\text{dividend in infinity}}{(1 + \text{required rate of return})^\infty} \\
 &= \frac{D_1}{(1 + r_{ps})^1} + \frac{D_2}{(1 + r_{ps})^2} + \cdots + \frac{D_\infty}{(1 + r_{ps})^\infty}
 \end{aligned} \tag{8-1}$$

¹In Chapter 6, we learned about measuring an investor’s required rate of return.



FINANCE AT WORK

READING A STOCK QUOTE IN THE WALL STREET JOURNAL

If you want to check on a stock, you can look in the hard copy of the *Wall Street Journal* to find the ticker symbol, the closing prices of the stock on the previous day, and the percentage change in the price from the day before. However, the list only includes the 1,000 largest companies. If you would like to have more information for all publicly traded stock, you will need to go to the online version of the *Wall Street Journal* (<http://online.wsj.com>), choose *markets*, and select *stocks*. You can then select from a number of options for finding stock quotes. For instance, if you want to look at all the stocks traded on the New York Stock Exchange, you would choose the link for *markets*, then the *market data* link, and then the link for *U.S. stocks*. At that point, you will see a list of different exchanges. Choose the *NYSE stocks* link. You will then see all the stocks listed on the New York Exchange.

At this link, you will find more complete information about a stock, including:

- The stock's ticker symbol
- The opening, high, low, and closing price for the day, as well as the high and low prices for the past 52 weeks
- The dollar and percentage change in the price of the stock from the prior day
- The percentage change in the stock price from a year ago
- The number of shares that were traded during the day
- The stock's dividend per share, dividend yield (dividend per share ÷ stock price), and the price/earnings ratio (stock price ÷ earnings per share)

To illustrate, on July 5, 2012, the following information was provided for General Electric:

PRICES FOR JULY 5, 2012						
SYMBOL	OPEN	HIGH	LOW	CLOSE	NET CHG	% CHG
GE	20.34	20.48	20.29	20.33	−0.1	−0.049

VOLUME OF SHARES TRADED	52 WEEK HIGH	52 WEEK LOW	DIVIDEND PER SHARE	DIVIDEND YIELD	PRICE TO EARNINGS	YTD % CHG
28,622,062	21.00	14.02	0.68	3.34	16.51	13.51

Notice that equation (8-1) is a restatement in a slightly different form of equation (7-1) in Chapter 7. Recall that equation (7-1) states that the value of an asset is the present value of future cash flows to be received by the investor.

Because the dividends in each period are equal for preferred stock, equation (8-1) can be reduced to the following relationship:²

$$\text{Preferred stock value} = \frac{\text{annual dividend}}{\text{required rate of return}} = \frac{D}{r_{ps}} \quad (8-2)$$

²To verify this result, we begin with equation (8-1):

$$V_{ps} = \frac{D_1}{(1 + r_{ps})^1} + \frac{D_2}{(1 + r_{ps})^2} + \cdots + \frac{D_n}{(1 + r_{ps})^n}$$

If we multiply both sides of this equation by $(1 + r_{ps})$, we have

$$V_{ps} (1 + r_{ps}) = D_1 + \frac{D_2}{(1 + r_{ps})} + \cdots + \frac{D_n}{(1 + r_{ps})^{n-1}} \quad (8-1i)$$

Subtracting (8-1) from (8-1i) yields

$$V_{ps} (1 + r_{ps} - 1) = D_1 - \frac{D_n}{(1 + r_{ps})^n} \quad (8-1ii)$$

As n approaches infinity, $D_n/(1 + r_{ps})^n$ approaches zero. Consequently,

$$V_{ps} r_{ps} = D_1 \text{ and } V_{ps} = \frac{D_1}{r_{ps}} \quad (8-1iii)$$

Because $D_1 = D_2 = \cdots = D_n$, we need not designate the year. Therefore,

$$V_{ps} = \frac{D}{r_{ps}} \quad (8-2)$$

Equation (8-2) represents the present value of an infinite stream of cash flows, when the cash flows are the same each year.

We can now determine the value of the PG&E preferred stock, as described on page 253, as follows:

$$V_{PS} = \frac{D}{r_p} = \frac{\$1.25}{0.05} = \$25$$

In summary, the value of a preferred stock is the present value of all future dividends. But because most preferred stocks are nonmaturing—the dividends continue to infinity—we rely on a shortcut for finding value as represented by equation (8-2).

EXAMPLE 8.1

Solving for the value of a preferred stock

Deutsche Bank has several preferred stock issues outstanding. One issue, a 7.35 percent preferred stock, was sold at its par value of \$25. The stock pays an annual dividend of \$1.84. The firm has the right to redeem the stock at 10 percent above par.

1. If investors have a 6 percent required rate of return today, in order to be interested in buying the stock, what value would they assign to the stock?
2. How would your answer change if their required return was only 4 percent? What if it increased to 9 percent?
3. How do you feel about the stock being redeemable?

STEP 1: FORMULATE A SOLUTION STRATEGY

The basic framework for valuing preferred stock is provided by equation (8-1), which is shown as follows:

$$\begin{aligned} \text{Preferred stock value} &= \frac{\text{dividend in year 1}}{(1 + \text{required rate of return})^1} \\ &+ \frac{\text{dividend in year 2}}{(1 + \text{required rate of return})^2} \\ &+ \cdots + \frac{\text{dividend in infinity}}{(1 + \text{required rate of return})^\infty} \\ &= \frac{D_1}{(1 + r_{ps})^1} + \frac{D_2}{(1 + r_{ps})^2} + \cdots + \frac{D_\infty}{(1 + r_{ps})^\infty} \end{aligned}$$

While equation (8-1) conveys the fundamental concept that the value of a preferred stock is equal to the present value of all dividends continuing in perpetuity, it does not allow us to solve the problem. Instead, equation (8-2) reduces equation (8-1) to a workable solution, as long as the dividends are constant each year and the security does not mature.

$$\text{Preferred stock value} = \frac{\text{annual dividend}}{\text{required rate of return}} = \frac{D}{r_{ps}} \quad (8-2)$$

STEP 2: CRUNCH THE NUMBERS

Values of the Deutsche Bank preferred stock for the different required rates of return are as follows:

REQUIRED RATE OF RETURN	SOLUTION	ANSWER
6%	$\frac{\$1.84}{0.06}$	= \$30.67
4%	$\frac{\$1.84}{0.04}$	= \$46.00
9%	$\frac{\$1.84}{0.09}$	= \$20.44

STEP 3: ANALYZE YOUR RESULTS

When the Deutsche Bank preferred stock was sold at the \$25 par value, the investors’ required rate of return was equal to the coupon dividend rate of 7.35 percent. However, there is an inverse relationship between value and rates of return. As an investor’s required rate of return increases (decreases) the security value decreases (increases).

You would prefer that the stock not be redeemable. The firm will recall the stock only if it is in its best interest, not yours. For instance if with time the firm could issue preferred stock with a lower dividend rate, it would be inclined to do so, and at the same time you might not be able to find a comparable stock with the same return. Thus, an investor should require a slightly higher required rate of return if a stock is redeemable.

In conclusion, we can understand the process for valuing preferred stock as well as the method for valuing preferred stock by using the following two financial tools:

FINANCIAL DECISION TOOLS		
Name of Tool	Formula	What It Tells You
Preferred stock valuation equation	$\begin{aligned} \text{Preferred stock value} &= \frac{\text{dividend in year 1}}{(1 + \text{required rate of return})^1} \\ &+ \frac{\text{dividend in year 2}}{(1 + \text{required rate of return})^2} \\ &+ \cdots + \frac{\text{dividend in infinity}}{(1 + \text{required rate of return})^\infty} \\ &= \frac{D_1}{(1 + r_{ps})^1} + \frac{D_2}{(1 + r_{ps})^2} + \cdots + \frac{D_\infty}{(1 + r_{ps})^\infty} \end{aligned}$	The value of a preferred stock is equal to the present value of all future dividends in perpetuity.
Preferred stock valuation with constant dividend	$V_{ps} = \frac{\text{annual dividend}}{\text{required rate of return}} = \frac{D}{r_{ps}}$	The value of a preferred stock where all dividends are equal in perpetuity.

Concept Check

- 1. What features of preferred stock are different from bonds?
- 2. What provisions are available to protect a preferred stockholder?
- 3. What cash flows associated with preferred stock are included in the valuation model equation (8-1)? Why is the valuation model simplified in equation (8-2)?

CAN YOU DO IT?
VALUING PREFERRED STOCK

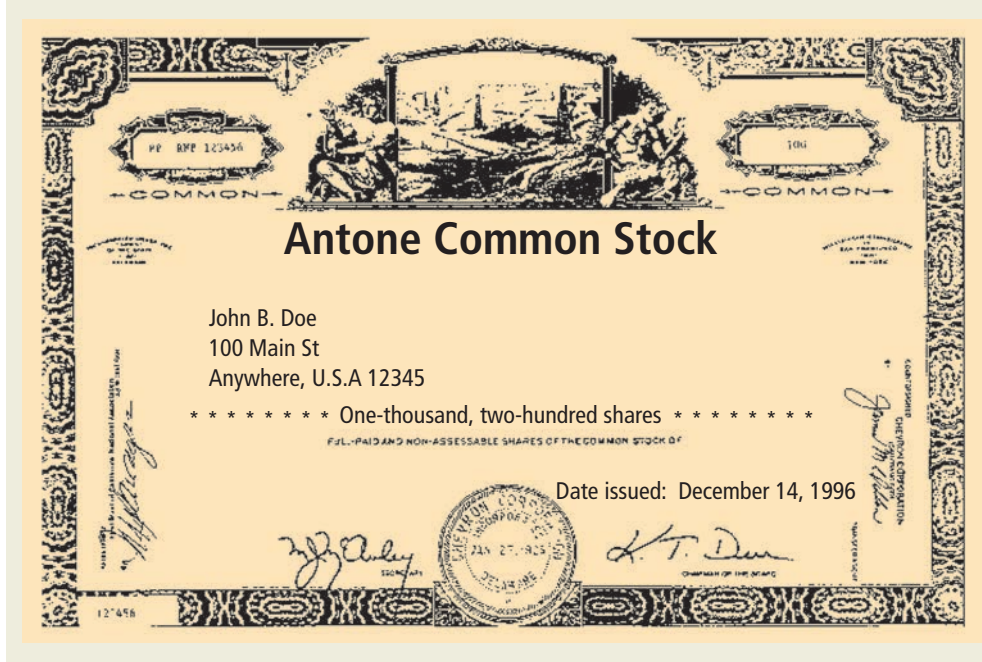
If a preferred stock pays 4 percent on its par, or stated, value of \$100, and your required rate of return is 7 percent, what is the stock worth to you?
(The solution can be found on page 257.)

3 Identify the basic characteristics of common stock.

common stock shares that represent the ownership in a corporation.

Common Stock

Common stock is a certificate that indicates ownership in a corporation. (An example of a stock certificate is shown in Figure 8-1.) In effect, bondholders and preferred stockholders can be viewed as creditors, whereas the common stockholders are the true owners of the firm. Common stock does not have a maturity date but exists as long as the firm does. Common stock also does not have an upper limit on its dividend payments. Dividend payments must be declared each period (usually quarterly) by the firm’s board of directors. In the event of bankruptcy, the common stockholders, as owners of the corporation, will not receive any payment until the firm’s creditors, including the bondholders and preferred shareholders, have been paid. Next we look at several characteristics of common stock. Then we focus on valuing common stock.

FIGURE 8-1 Sample Stock

The Characteristics of Common Stock

We now examine common stock's claim on income and assets, its limited liability feature, and holders' voting and preemptive rights.

Claim on Income As the owners, the common shareholders have the right to the residual income after creditors and preferred stockholders have been paid. This income may be paid directly to the shareholders in the form of dividends or retained within the firm and reinvested in the business. Although it is obvious the shareholder benefits immediately from the distribution of income in the form of dividends, the reinvestment of earnings also benefits the shareholder. Plowing back earnings into the firm should result in an increase in the value of the firm, its earning power, future dividends, and, ultimately, an increase in the value of the stock. In effect, residual income is distributed directly to shareholders in the form of dividends or indirectly in the form of capital gains (value increases) on their common stock.

The right to residual income has advantages and disadvantages for the common stockholder. The advantage is that the potential return is limitless. Once the claims of the senior securities, such as bonds and preferred stock, have been satisfied, the remaining income flows to the common stockholders in the form of dividends or capital gains. The disadvantage is that if the bond and preferred stock claims on income totally absorb earnings, common shareholders receive nothing. In years when earnings fall, it is the common shareholders who suffer first.

DID YOU GET IT?

VALUING PREFERRED STOCK

The value of the preferred stock would be \$57.14:

$$\text{Value} = \frac{\text{dividend}}{\text{required rate return}} = \frac{0.04 \times \$100}{0.07} = \frac{\$4}{0.07} = \$57.14$$

In other words, a preferred stock, or any security for that matter, that pays a constant \$4 annually in perpetuity because it has no maturity date is valued by dividing the annual payment by the investor's required rate of return. With this simple computation, you are finding the present value of the future cash-flow stream.

limited liability a protective provision whereby the investor is not liable for more than the amount he or she has invested in the firm.

proxy a means of voting in which a designated party is provided with the temporary power of attorney to vote for the signee at the corporation's annual meeting.

proxy fight a battle between rival groups for proxy votes in order to control the decisions made in a stockholders' meeting.

majority voting voting in which each share of stock allows the shareholder one vote and each position on the board of directors is voted on separately. As a result, a majority of shares has the power to elect the entire board of directors.

cumulative voting voting in which each share of stock allows the shareholder a number of votes equal to the number of directors being elected. The shareholder can then cast all of his or her votes for a single candidate or split them among the various candidates.

preemptive right the right entitling the common shareholder to maintain his or her proportionate share of ownership in the firm.

right a certificate issued to common stockholders giving them an option to purchase a stated number of new shares at a specified price during a 2- to 10-week period.

Claim on Assets Just as common stock has a residual claim on income, it also has a residual claim on assets in the case of liquidation. Unfortunately, when bankruptcy does occur, the claims of the common shareholders generally go unsatisfied because debt holders and preferred stockholders have first and second claims on the assets. This residual claim on assets adds to the risk of common stock. Thus, although common stocks have historically provided a large return, averaging 10 percent annually since the late 1920s, there is also a higher risk associated with common stock.

Limited Liability Although the common shareholders are the actual owners of the corporation, their *liability in the case of bankruptcy is limited to the amount of their investment*. The advantage is that investors who might not otherwise invest their funds in the firm become willing to do so. This **limited liability** feature aids the firm in raising funds.

Voting Rights The common stock shareholders are entitled to elect the board of directors and are, in general, the only security holders given a vote. Common shareholders have the right not only to elect the board of directors but also to approve any change in the corporate charter. A typical change might involve the authorization to issue new stock or to accept a merger proposal. Voting for directors and charter changes occurs at the corporation's annual meeting. Although shareholders can vote in person, the majority generally vote by proxy. A **proxy** gives a designated party the temporary power of attorney to vote for the signee at the corporation's annual meeting. The firm's management generally solicits proxy votes, and, if the shareholders are satisfied with the firm's performance, has little problem securing them. However, in times of financial distress or when managerial takeovers are threatened, **proxy fights**—battles between rival groups for proxy votes—occur.

Although each share of common stock carries the same number of votes, the voting procedure is not always the same from company to company. The two procedures commonly used are majority and cumulative voting. Under **majority voting**, *each share of stock allows the shareholder one vote and each position on the board of directors is voted on separately*. Because each member of the board of directors is elected by a simple majority, a majority of shares has the power to elect the entire board of directors.

With **cumulative voting**, *each share of stock allows the stockholder a number of votes equal to the number of directors being elected*. The shareholder can then cast all of his or her votes for a single candidate or split them among the various candidates. The advantage of a cumulative voting procedure is that it gives minority shareholders the power to elect a director.

In theory, the shareholders pick the corporate board of directors, generally through proxy voting, and the board of directors, in turn, picks the management. In reality, shareholders are offered a slate of nominees selected by management from which to choose. The end result is that management effectively selects the directors, who then may have more allegiance to the managers than to the shareholders. This sets up the potential for agency problems in which a divergence of interests between managers and shareholders is allowed to exist, with the board of directors not monitoring the managers on behalf of the shareholders as they should.

Preemptive Rights The **preemptive right** entitles the common shareholder to maintain a proportionate share of ownership in the firm. When new shares are issued, common shareholders have the first right of refusal. If a shareholder owns 25 percent of the corporation's stock, then he or she is entitled to purchase 25 percent of the new shares. *Certificates issued to the shareholders giving them an option to purchase a stated number of new shares of stock at a specified price during a 2- to 10-week period* are called **rights**. These rights can be exercised (generally at a price set by management below the common stock's current market price), allowed to expire, or sold in the open market.

Valuing Common Stock

Like bonds and preferred stock, a common stock's value is equal to the present value of all future cash flows—dividends in this case—expected to be received by the stockholder. However, in contrast to preferred stock dividends, common stock does not provide the

investor with a predetermined, constant dividend. For common stock, the dividend is based on the profitability of the firm and its decision to pay dividends or to retain the profits for reinvestment. As a consequence, dividend streams tend to increase with the growth in corporate earnings. Thus, the growth of future dividends is a prime distinguishing feature of common stock.

The Growth Factor in Valuing Common Stock What is meant by the term *growth* when used in the context of valuing common stock? A company can grow in a variety of ways. It can become larger by borrowing money to invest in new projects. Likewise, it can issue new stock for expansion. Managers can also acquire another company to merge with the existing firm, which would increase the firm's assets. Although it can accurately be said that the firm has grown, the original stockholders may or may not participate in this growth. Growth is realized through the infusion of new capital. The firm size clearly increases, but unless the original investors increase their investment in the firm, they will own a smaller portion of the expanded business.

Another means of growing is **internal growth**, which requires that *managers retain some or all of the firm's profits for reinvestment in the firm*, resulting in the growth of future earnings and, hopefully, the value of the common stock. This process underlies the essence of potential growth for the firm's current stockholders and is the only relevant growth for our purposes of valuing a firm's common shares.³

To illustrate the nature of internal growth, assume that the return on equity for PepsiCo is 16 percent.⁴ If PepsiCo decides to pay all the profits out in dividends to its stockholders, the firm will experience no growth internally. It might become larger by borrowing more money or issuing new stock, but internal growth will come only through the retention of profits. If, on the other hand, PepsiCo retains all of the profits, the stockholders' investment in the firm would grow by the amount of profits retained, or by 16 percent. If, however, PepsiCo keeps only 50 percent of the profits for reinvestment, the common shareholders' investment would increase only by half of the 16 percent return on equity, or by 8 percent. We can express this relationship by the following equation:

$$g = ROE \times pr \quad (8-3)$$

where g = the growth rate of future earnings and the growth in the common stockholders' investment in the firm

ROE = the return on equity (net income/common book value)

pr = the company's percentage of profits retained, called the **profit-retention rate**⁵

Therefore, if only 25 percent of the profits were retained by PepsiCo, we would expect the common stockholders' investment in the firm and the value of the stock price to increase, or grow, by 4 percent; that is,

$$g = 16\% \times 0.25 = 4\%$$

In summary, common stockholders frequently rely on an increase in the stock price as a source of return. If the company is retaining a portion of its earnings for reinvestment, future profits and dividends should grow. This growth should be reflected by an increase in the market price of the common stock in future periods. Therefore, both types of return (dividends and price appreciation) must be recognized in valuing common stock.

internal growth a firm's growth rate resulting from reinvesting the company's profits rather than distributing them as dividends. The growth rate is a function of the amount retained and the return earned on the retained funds.

profit-retention rate the company's percentage of profits retained.

³We are not arguing that the existing common stockholders never benefit from the use of external financing; however, such benefit is nominal if capital markets are efficient.

⁴The return on equity is the accounting rate of return on the common shareholders' investment in the company and is computed as follows:

$$\text{Return on equity} = \frac{\text{net income}}{\text{common stock} + \text{retained earnings}}$$

⁵The retention rate is also equal to $(1 - \text{the percentage of profits paid out in dividends})$. The *percentage of profits paid out in dividends* is often called the **dividend-payout ratio**.

dividend-payout ratio dividends as a percentage of earnings.

Dividend Valuation Model The value of a common stock when defining value as the present value of future dividends relies on the same basic equation that we used with preferred stock [equation (8-1)], with the exception that we are using the required rate of return of common stockholders, r_{cs} . That is,

$$V_{cs} = \frac{D_1}{(1 + r_{cs})^1} + \frac{D_2}{(1 + r_{cs})^2} + \cdots + \frac{D_n}{(1 + r_{cs})^n} + \cdots + \frac{D_\infty}{(1 + r_{cs})^\infty} \quad (8-4)$$

If you turn back to Chapter 7 and compare equation (7-1) with equation (8-4), you will notice that equation (8-4) is merely a restatement of equation (7-1). Recall that equation (7-1), which is the basis for our work in valuing securities, states that the value of an asset is the present value of future cash flows to be received by the investor. Equation (8-4) simply applies equation (7-1) to valuing common stock.

Equation (8-4) indicates that we are discounting the dividend at the end of the first year, D_1 , back 1 year; the dividend in the second year, D_2 , back 2 years; the dividend in the n th year back n years; and the dividend in infinity back an infinite number of years. The required rate of return is r_{cs} . In using equation (8-4), note that the value of the stock is established at the beginning of the year, say January 1, 2013. The most recent past dividend, D_0 , would have been paid the previous day, December 31, 2012. Thus, if we purchased the stock on January 1, the first dividend would be received in 12 months, on December 31, 2013, which is represented by D_1 .

Fortunately, equation (8-4) can be reduced to a much more manageable form if dividends grow each year at a constant rate, g . The constant-growth, common-stock valuation equation can be presented as follows:⁶

$$\begin{aligned} \text{Common stock value} &= \frac{\text{dividend in year 1}}{\text{required rate of return} - \text{growth rate}} \\ V_{cs} &= \frac{D_1}{r_{cs} - g} \end{aligned} \quad (8-5)$$

In other words, the intrinsic value (present value) of a share of common stock whose dividends grow at a constant annual rate can be calculated using equation (8-5). Although the interpretation of this equation might not be intuitively obvious, simply remember that it solves for the present value of the future dividend stream growing at a rate, g , to infinity, assuming that r_{cs} is greater than g .

To illustrate the process of valuing a common stock, consider the valuation of a share of common stock that paid a \$2 dividend at the end of last year and is expected to pay a cash

⁶When common stock dividends grow at a constant rate of g every year, we can express the dividend in any year in terms of the dividend paid at the end of the previous year, D_0 . For example, the expected dividend year 1 hence is simply $D_0(1 + g)$. Likewise, the dividend at the end of t years is $D_0(1 + g)^t$. Using this notation, the common stock valuation equation in (8-4) can be rewritten as follows:

$$V_{cs} = \frac{D_0(1 + r_{cs})^1}{(1 + g)^1} + \frac{D_0(1 + g)^2}{(1 + r_{cs})^2} + \cdots + \frac{D_0(1 + g)^n}{(1 + r_{cs})^n} + \cdots + \frac{D_0(1 + g)^\infty}{(1 + r_{cs})^\infty} \quad (8-4i)$$

If both sides of equation (8-4i) are multiplied by $(1 + r_{cs})/(1 + g)$ and then equation (8-5) is subtracted from the product, the result is

$$\frac{V_{cs}(1 + r_{cs})}{1 + g} - V_{cs} = D_0 - \frac{D_0(1 + g)^\infty}{(1 + r_{cs})^\infty} \quad (8-4ii)$$

If $r_{cs} > g$, which normally should hold, $[D_0(1 + g)/(1 + r_{cs})^\infty]$ approaches zero. As a result,

$$\begin{aligned} \frac{V_{cs}(1 + r_{cs})}{1 + g} - V_{cs} &= D_0 \\ V_{cs} \left(\frac{1 + r_{cs}}{1 + g} \right) - V_{cs} \left(\frac{1 + g}{1 + g} \right) &= D_0 \\ V_{cs} \left[\frac{(1 + r_{cs}) - (1 + g)}{1 + g} \right] &= D_0 \\ V_{cs}(r_{cs} - g) &= D_0(1 + g) \\ V_{cs} &= \frac{D_1}{r_{cs} - g} \end{aligned} \quad (8-4iii)$$

CAN YOU DO IT?

MEASURING JOHNSON & JOHNSON'S GROWTH RATE

In 2012, Johnson & Johnson had a return on equity of 19.47 percent, as computed to the right. The firm's earnings per share was \$4.63 and it paid \$1.87 in dividends per share. If these relationships hold in the future, what will be the firm's internal growth rate?

(The solution can be found on page 262.)

$$\begin{aligned}\text{Return on equity (ROE)} &= \frac{\text{net income}}{\text{common stock} + \text{retained earnings}} \\ &= \frac{\$12,849}{\$66,499} \\ &= 0.1932 = 19.32\%\end{aligned}$$

dividend every year from now to infinity. Each year the dividends are expected to grow at a rate of 4 percent. Based on an assessment of the riskiness of the common stock, the investor's required rate of return is 14 percent. Using this information, we would compute the value of the common stock as follows:

1. Because the \$2 dividend was paid last year, we must compute the next dividend to be received, that is, D_1 , where

$$\begin{aligned}D_1 &= D_0 (1 + g) \\ &= \$2(1 + 0.04) \\ &= \$2.08\end{aligned}$$

2. Now, using equation (8-5),

$$\begin{aligned}V_{cs} &= \frac{D_1}{r_{cs} - g} \\ &= \frac{\$2.08}{0.14 - 0.04} \\ &= \$20.80\end{aligned}$$

We have argued that the value of a common stock is equal to the present value of all future dividends, which is without question a fundamental premise of finance. In practice, however, managers, along with many security analysts, often talk about the relationship between stock value and earnings, rather than dividends. We would encourage you to be very cautious in using earnings to value a stock. Even though it may be a popular practice, significant available evidence suggests that investors look to the cash flows generated by the firm, not the earnings, for value. A firm's value truly is the present value of the cash flows it produces.

EXAMPLE 8.2 Solving for the value of a common stock

During 2012, Starbucks Coffee's common stock had been selling for between \$30 and \$60. Its most recent earnings per share was \$1.73, and the firm was expected to pay a dividend of \$0.68. The company's return on equity (net income ÷ total common equity) has been 25 percent. You are planning on investing in 100 shares of the stock, but you want a 17 percent return on your investment. Given the limited information, what growth rate would you estimate for Starbucks? What price would be required for you to earn your required return?

STEP 1: FORMULATE A SOLUTION STRATEGY

Solving for the value of the Starbucks stock requires you to estimate a future growth rate, which we have suggested you do by multiplying the firm's return on equity times the percentage of its earnings being retained to be reinvested in the company. The equation (8-3) is as follows:

$$g = ROE \times pr$$

We then solve for the stock value, using equation (8-5):

$$\text{Common stock value} = \frac{\text{dividend in year 1}}{\text{required rate of return} - \text{growth rate}}$$

$$V_{cs} = \frac{D_1}{r_{cs} - g}$$

STEP 2: CRUNCH THE NUMBERS

Starbucks pays out 39 percent of its earnings to the shareholders (39% = \$0.68 dividends per share ÷ \$1.73 earnings per share). Thus, it is retaining 61 percent (61% = 100% – 39%).

Given the firm's return on equity of 25 percent, we could expect the company to grow at 15.25 percent:

$$\text{Growth rate} = 25\% \text{ return on equity} \times 61\% \text{ earnings retention} = 15.25\%$$

Then solving for the stock value that would satisfy a 17 percent required rate of return:

$$\begin{aligned} \text{Value} &= \frac{\text{dividend}}{\text{required rate of return} - \text{growth rate}} \\ &= \frac{\$0.68}{0.17 - 0.1525} \\ &= \$38.86 \end{aligned}$$

STEP 3: ANALYZE YOUR RESULTS

While Starbucks was selling for about \$50 when this problem was written, you should not be willing to pay the \$50 market price; otherwise, if our assumptions are reasonable you would not earn your required rate of return. Besides, Starbucks was experiencing growth problems in 2012, actually closing some stores.

DID YOU GET IT?

MEASURING JOHNSON & JOHNSON'S GROWTH RATE

To compute Johnson & Johnson's internal growth rate, we must know (1) the firm's return on equity, and (2) what percentage of the earnings are being retained and reinvested in the business—that is, used to grow the business.

The return on equity was computed to be 19.47 percent. We then calculate the percentage of the profits that is being retained as follows:

$$\begin{aligned} \text{Percentage of profits retained} &= 1 - \frac{\text{dividends per share}}{\text{earnings per share}} \\ &= 1 - \frac{\$1.87}{\$4.63} \\ &= 1 - 0.404 \\ &= 0.596 = 59.6\% \end{aligned}$$

Thus, Johnson & Johnson is paying out 40.4 percent of its earnings, which means it is retaining 59.6 percent.

Then we compute the internal growth rate as follows:

$$\begin{aligned} \text{Internal growth rate} &= \text{return on equity} \times \text{percentage of earnings retained} \\ &= 19.47\% \times 59.6\% \\ &= 11.6\% \end{aligned}$$

The ability of a firm to grow is critical to its future, but only if the firm has attractive opportunities in which to invest. Also, there must be a way to finance the growth, which can occur by borrowing more, issuing stock, or not distributing the profits to the owners (not paying dividends). The last option is called internal growth. Johnson & Johnson was able to grow internally by almost 12 percent by earning 19.47 percent on the equity's investment and retaining about 60 percent of the profits in the business.

CAN YOU DO IT?

CALCULATING COMMON STOCK VALUE

The Abraham Corporation paid \$1.32 in dividends per share *last year*. The firm's projected growth rate is 6 percent for the foreseeable future. If the investor's required rate of return for a firm with Abraham's level of risk is 10 percent, what is the value of the stock? (The solution can be found on page 264.)

We now have the financial decision tools to value common stock assuming that dividends grow at a constant rate in perpetuity, which are shown as follows:

FINANCIAL DECISION TOOLS		
Name of Tool	Formula	What It Tells You
Dividend growth rate	Growth = return on equity $\times$ percentage of profits retained	Estimation of a company's growth rate to be used in valuing the stock.
Common stock valuation	$V_{cs} = \frac{D_1}{(1 + r_{cs})^1} + \frac{D_2}{(1 + r_{cs})^2} + \cdots + \frac{D_n}{(1 + r_{cs})^n} + \cdots + \frac{D_\infty}{(1 + r_{cs})^\infty}$	The value of a common stock is the present value of all future dividends in perpetuity.
Common stock valuation assuming constant dividend growth	Common stock value = $\frac{\text{dividend in year 1}}{\text{required rate of return} - \text{growth rate}}$ $V_{cs} = \frac{D_1}{r_{cs} - g}$	The value of common stock assuming that dividends are growing at a constant growth rate in perpetuity.

Concept Check

1. What features of common stock indicate ownership in the corporation versus preferred stock or bonds?
2. In what two ways does a shareholder benefit from ownership?
3. How does internal growth versus the infusion of new capital affect the original shareholders?
4. Describe the process for common stock valuation.



REMEMBER YOUR PRINCIPLES

Valuing common stock is no different from valuing preferred stock; only the pattern of the cash flows changes. Thus, the valuation of common stock relies on the same three principles developed in Chapter 1 that were used in valuing preferred stock:

Principle 1: Cash Flow Is What Matters.

Principle 2: Money Has a Time Value.

Principle 3: Risk Requires a Reward.

Determining the economic worth, or value, of an asset always relies on these three principles. Without them, we would have no basis for explaining value. With them, we can know that the amount and timing of cash, not earnings, drives value. Also, we must be rewarded for taking risk; otherwise, we will not invest.

The Expected Rate of Return of Stockholders

As stated in Chapter 7, the expected rate of return, or yield to maturity, on a bond is the return the bondholder expects to receive on the investment by paying the existing market price for the security. This rate of return is of interest to the financial manager because it tells the manager about investors' expectations. The same can be said for the financial manager needing to know the expected rate of return of the firm's stockholders, which is the topic of this section.



Calculate a stock's expected rate of return.

DID YOU GET IT?

CALCULATING COMMON STOCK VALUE

Abraham's stock value would be \$35:

$$\begin{aligned}\text{Value} &= \frac{\text{dividend year 1}}{\text{required rate of return} - \text{growth rate}} \\ &= \frac{\$1.32 \times (1 + .06)}{0.10 - 0.06} = \frac{\$1.40}{0.04} = \$35\end{aligned}$$

So the value of a common stock, much like preferred stock, is the present value of all future dividends. However, unlike preferred stock, common stock dividends are assumed to increase as the firm's profits increase. So the dividend is growing over time. And with a bit of calculus—keep the faith, baby—we can find the stock value by taking the dividend that is expected to be received at the end of the coming year and dividing it by the investor's required rate of return less the assumed constant growth rate. When we do, we have the present value of the dividends, which is the value of the stock.

The Expected Rate of Return of Preferred Stockholders

To compute the expected rate of return of preferred stockholders, we use the valuation equation for preferred stock. Earlier, equation (8-2) specified the value of a preferred stock, V_{ps} , as

$$\text{Preferred stock value } (V_{ps}) = \frac{\text{annual dividend}}{\text{required rate of return}} = \frac{D}{r_{ps}}$$

Solving equation (8-2) for r_{ps} , we have

$$\text{Required rate of return } (r_{ps}) = \frac{\text{annual dividend}}{\text{preferred stock value}} = \frac{D}{V_{ps}} \quad (8-6)$$

Thus, the *required* rate of return of preferred stockholders simply equals the stock's annual dividend divided by the stock's intrinsic value. We can also use this equation to solve for a preferred stock's *expected* rate of return, $\bar{r}_{ps}$, as follows:⁷

$$\text{Expected rate of return } (\bar{r}_{ps}) = \frac{\text{annual dividend}}{\text{preferred stock market price}} = \frac{D}{P_{ps}} \quad (8-7)$$

Note that we have merely substituted the current market price, P_{ps} , for the intrinsic value, V_{ps} . The expected rate of return, $\bar{r}_{ps}$, therefore, equals the annual dividend relative to the price the stock is currently selling for, P_{ps} . Thus, the **expected rate of return**, $\bar{r}_{ps}$, is *the rate of return the investor can expect to earn from the investment if it is bought at the current market price*.

For example, if the present market price of the preferred stock is \$50, and it pays a \$3.64 annual dividend, the expected rate of return implicit in the present market price is

$$\bar{r}_{ps} = \frac{D}{P_{ps}} = \frac{\$3.64}{\$50} = 7.28\%$$

Therefore, investors (who pay \$50 per share for a preferred security that is paying \$3.64 in annual dividends) are expecting a 7.28 percent rate of return.

So we now have the decision tools for calculating a stockholder's required rate of return and the stock's expected rate of return shown as follows:

expected rate of return The rate of return investors expect to receive on an investment by paying the current market price of the security.

⁷We will use $\bar{r}$ to represent a security's *expected* rate of return versus r for investors' *required* rate of return.

FINANCIAL DECISION TOOLS

Name of Tool	Formula	What It Tells You
Preferred stockholder's <i>required</i> rate of return	$r_{ps} = \frac{\text{annual dividend}}{\text{preferred stock value}} = \frac{D}{V_{ps}}$	The required rate of return for a preferred stockholder, given the value the investor assigns to the stock.
Preferred stock <i>expected</i> rate of return	$\bar{r}_{ps} = \frac{\text{annual dividend}}{\text{preferred stock market price}} = \frac{D}{P_{ps}}$	Calculates the expected rate of return for a preferred stock, given the current market price of the stock.

EXAMPLE 8.3**Solving for the expected rate of return for a preferred stock**

In Example 8-1, we calculated the value of Deutsche Bank's preferred stock, where the stock had a par value of \$25 and a coupon dividend rate of 7.35 percent, which resulted in a \$1.84 dividend. In the earlier example, we computed the value of the stock given different required rates of returns. At the time, the stock was actually selling for \$26 in the market. What is the expected rate of return if you purchased the stock at the current market price?

STEP 1: FORMULATE A SOLUTION STRATEGY

To determine the expected rate of return for preferred stock. We need only compute the stock's dividend yield, as measured in equations (8-7), as follows:

$$\bar{r}_{ps} = \frac{\text{annual dividend}}{\text{preferred stock market price}} = \frac{D}{P_{ps}}$$

STEP 2: CRUNCH THE NUMBERS

$$\text{Expected rate of return} = \frac{\$1.84}{\$26} = 0.0708 = 7.08\%$$

STEP 3: ANALYZE YOUR RESULTS

The investors owning the Deutsche Bank stock are expecting to earn less than the coupon dividend rate of 7.35 percent. This outcome is the result of the investors being willing to pay above the par value of the stock.

The Expected Rate of Return of Common Stockholders

The valuation equation for common stock was defined earlier in equation (8-4) as

$$\begin{aligned} \text{Common stock value} &= \frac{\text{dividend in year 1}}{(1 + \text{required rate of return})^1} \\ &+ \frac{\text{dividend in year 2}}{(1 + \text{required rate of return})^2} \\ &+ \cdots + \frac{\text{dividend in year infinity}}{(1 + \text{required rate of return})^\infty} \\ V_{cs} &= \frac{D_1}{(1 + r_{cs})^1} + \frac{D_2}{(1 + r_{cs})^2} + \cdots + \frac{D_\infty}{(1 + r_{cs})^\infty} \end{aligned}$$

Owing to the difficulty of discounting to infinity, we made the key assumption that the dividends, D_t , increase at a constant annual compound growth rate of g . If this assumption is valid, equation (8-5) was shown to be equivalent to

$$\begin{aligned} \text{Common stock value} &= \frac{\text{dividend in year 1}}{\text{required rate of return} - \text{growth rate}} \\ V_{cs} &= \frac{D_1}{r_{cs} - g} \end{aligned}$$

Thus, V_{cs} represents the maximum value that investors having a required rate of return of r_{cs} would pay for a security having an anticipated dividend in year 1 of D_1 that is expected to grow in future years at rate g . Solving equation (8-5) for r_{cs} , we can compute the common stockholders' required rate of return as follows:⁸

$$r_{cs} = \frac{D_1}{V_{cs}} + g \quad (8-8)$$

Principle

REMEMBER YOUR PRINCIPLES

We have just learned that, on average, the expected return will be equal to the investor's required rate of return. This equilibrium condition is achieved by investors paying for an asset only the amount that will exactly satisfy their required rate of return. Thus, finding the expected rate of return based on the current market price for the security relies on two of the principles given in Chapter 1:

Principle 2: Money Has Time Value.

Principle 3: Risk Requires a Reward.

According to this equation, the required rate of return is equal to the dividend yield plus a growth factor. Although the growth rate, g , applies to the growth in the company's dividends, given our assumptions, the stock's value can also be expected to increase at the same rate. For this reason, g represents the annual percentage growth in the stock value. In other words, the required rate of return of investors is satisfied by their receiving dividends *and* capital gains, as reflected by the expected percentage growth rate in the stock price.

As was done for preferred stock earlier, we may revise equation (8-8) to measure a common stock's *expected* rate of return, $\bar{r}_{cs}$. Replacing the intrinsic value, V_{cs} , in equation (8-8) with the stock's current market price, P_{cs} , we may express the

stock's expected rate of return as follows:

$$\bar{r}_{cs} = \frac{\text{dividend in year 1}}{\text{market price}} + \text{growth rate} = \frac{D_1}{P_{cs}} + g \quad (8-9)$$

To illustrate, Pearson, Inc. will pay a dividend of \$2 this year. Management anticipates that the firm will grow at about 6 percent per year. You are interested in buying 100 shares of the stock, which is currently priced at \$45. Your required rate of return is 12 percent. Should you buy the stock?

$$\bar{r}_{cs} = \frac{\$2}{\$45} + 0.06 = 4.44\% + 6\% = 10.44\%$$

You would not want to buy the stock. The expected return is less than your required return.

Historically, most of the returns on stocks come from price appreciation, or capital gains, with a smaller part of the return coming from dividends, with 2008–2009 being the

EXAMPLE 8.4

Solving for the expected rate of return of a common stock

In Example 8-2, we valued Starbucks Coffee at \$38.86, given your required rate of return of 17 percent. This answer was based on an anticipated growth rate of 15.25 percent.

Also, the stock was expected to pay a \$0.68 dividend. The stock was actually selling for \$50 at the time. What would be the expected rate of return for investors purchasing the stock at the current price of \$50?

STEP 1: FORMULATE A SOLUTION STRATEGY

To estimate the expected rate of return on a common stock, we use the following equation:

⁸At times the expected dividend at year-end (D_1) is not given. Instead, we might only know the most recent dividend (paid yesterday), that is, D_0 . If so, equation (8-5) must be restated as follows:

$$V_{cs} = \frac{D_1}{(r_{cs} - g)} = \frac{D_0(1 + g)}{(r_{cs} - g)}$$

$$\bar{r}_{cs} = \frac{\text{dividend in year 1}}{\text{market price}} + \text{growth rate} = \frac{D_1}{P_{cs}} + g$$

STEP 2: CRUNCH THE NUMBERS

The expected rate of return for the Starbucks stock would be 16.61 percent.

$$\begin{aligned} \text{Expected rate of return} &= \frac{\text{dividend}}{\text{market price}} + \text{growth rate} \\ &= \frac{\$0.68}{\$50} + 0.1525 \\ &= 0.0136 + 0.1525 = 0.1661 = 16.61\% \end{aligned}$$

STEP 3: ANALYZE YOUR RESULTS

Of the expected rate of return at the \$50 market price, only a small portion is attributable to the dividend received by the investors. The investors are essentially relying on the firm to achieve a growth rate of about 15 percent per year into the future. Not an easy thing to do for many firms.

exception. The Standard & Poor's 500 Index, for example, returned a 10 percent annual return on average since 1926. But the dividend yield (dividend ÷ stock price) accounted for only about 2–3 percent of the return. The remaining 7–8 percent resulted from price appreciation.

CAN YOU DO IT?**COMPUTING THE EXPECTED RATE OF RETURN**

Calculate the expected rate of return for the two following stocks:

Preferred stock: The stock is selling for \$80 and pays a 5 percent dividend on its \$100 par or stated value.

Common stock: The stock paid a dividend of \$4 last year and is expected to increase each year at a 5 percent growth rate. The stock sells for \$75.

(The solution can be found below.)

DID YOU GET IT?**COMPUTING THE EXPECTED RATE OF RETURN**

Preferred stock:

$$\text{Expected return} = \frac{\text{dividend}}{\text{stock price}} = \frac{\$5}{\$80} = 0.0625, \text{ or } 6.25\%$$

Common stock:

$$\begin{aligned} \text{Expected return} &= \frac{\text{dividend in year 1}}{\text{stock price}} + \text{growth rate} \\ &= \frac{\$4 \times (1 + 0.05)}{\$75} + 5\% = \frac{\$4.20}{\$75} + 5\% \\ &= 5.6\% + 5\% = 10.6\% \end{aligned}$$

At this point, we are not concerned what the value of the stock is to us. Instead, we want to know what rate of return we could expect if we buy a common stock at the current market price. So the price is given, and we are finding the corresponding expected return based on the current market price. We can then ask ourselves if the expected rate of return is acceptable, given the amount of risk we would be assuming.

As a final note, we should understand that the *expected* rate of return implied by a given market price equals the *required* rate of return for investors at the margin. For these investors, the expected rate of return is just equal to their required rate of return and, therefore, they are willing to pay the current market price for the security. These investors’ required rate of return is of particular significance to the financial manager because it represents the cost of new financing to the firm.

In summary, we can use the following decision tools to estimate a common stockholder’s required rate of return and the stocks expected return:

FINANCIAL DECISION TOOLS		
Name of Tool	Formula	What It Tells You
Common stockholder's <i>required</i> rate of return	$r_{cs} = \frac{D_1}{V_{cs}} + g$ dividend yield annual growth rate	Calculates the required rate of return for a common stockholder, given the value the investor assigns to the stock.
Common stock <i>expected</i> rate of return	$\bar{r}_{cs} = \frac{\text{dividend in year 1}}{\text{market price}} + \text{growth rate} = \frac{D_1}{P_{cs}} + g$	Calculates the expected rate of return for a common stock, given the current market price of the stock and the projected growth rate in future dividends.

Concept Check

1. In computing the required rate of return for common stock, why should the growth factor be added to the dividend yield?
2. Explain the difference between a stockholder’s required and expected rates of return.
3. How does an efficient market affect the required and expected rates of return?

Chapter Summaries

Valuation is an important process in financial management. An understanding of valuation, both the concepts and procedures, supports the financial objective of creating shareholder value.



Identify the basic characteristics of preferred stock. (pgs. 251–253)

SUMMARY: Preferred stock has no fixed maturity date, and the dividends are fixed in amount. Some of the more common characteristics of preferred stock include the following:

- There are multiple classes of preferred stock.
- Preferred stock has a priority claim on assets and income over common stock.
- Any dividends, if not paid as promised, must be paid before any common stock dividends may be paid; that is, they are cumulative.
- Protective provisions are included in the contract with the shareholder to reduce the investor’s risk.
- Some preferred stocks are convertible into common stock shares.
- In addition, there are provisions frequently used to retire an issue of preferred stock, such as the ability of the firm to call its preferred stock or to use a sinking-fund provision.

KEY TERMS

Preferred stock, page 251 A hybrid security with characteristics of both common stock and bonds. Preferred stock is similar to common stock in that it has no fixed maturity date, the nonpayment of dividends does not bring on bankruptcy, and dividends are not deductible for tax purposes. Preferred stock is similar to bonds in that dividends are limited in amount.

Cumulative feature, page 252 A requirement that all past, unpaid preferred stock dividends be paid before any common stock dividends are declared.

Protective provisions, page 252 Provisions for preferred stock that protect the investor's interest. The provisions generally allow for voting in the event of nonpayment of dividends, or they restrict the payment of common stock dividends if sinking-fund

payments are not met or if the firm is in financial difficulty.

Convertible preferred stock, page 252 Preferred shares that can be converted into a predetermined number of shares of common stock, if investors so choose.

Call provision, page 252 A provision that entitles the corporation to repurchase its preferred stock from investors at stated prices over specified periods.

Sinking-fund provision, page 253 A protective provision that requires the firm periodically to set aside an amount of money for the retirement of its preferred stock. This money is then used to purchase the preferred stock in the open market or through the use of the call provision, whichever method is cheaper.

Value preferred stock. (pgs. 253–256)

SUMMARY: Value is the present value of future cash flows discounted at the investor's required rate of return. Although the valuation of any security entails the same basic principles, the procedures used in each situation vary. For example, we learned in Chapter 7 that valuing a bond involves calculating the present value of the future interest to be received plus the present value of the principal returned to the investor at the maturity of the bond. For securities with cash flows that are constant in each year but with no specified maturity, such as preferred stock, the present value equals the dollar amount of the annual dividend divided by the investor's required rate of return.

KEY EQUATION

$$\begin{aligned}\text{Preferred Stock Value } (V_{ps}) &= \frac{\text{dividend in year 1}}{(1 + \text{required rate of return})^1} \\ &+ \frac{\text{dividend in year 2}}{(1 + \text{required rate of return})^2} \\ &+ \cdots + \frac{\text{dividend in infinity}}{(1 + \text{required rate of return})^\infty} \\ &= \frac{D_1}{(1 + r_{ps})^1} + \frac{D_2}{(1 + r_{ps})^2} + \cdots + \frac{D_\infty}{(1 + r_{ps})^\infty} \\ \text{Preferred stock value } (V_{ps}) &= \frac{\text{annual dividend}}{\text{required rate of return}} = \frac{D}{r_{ps}}\end{aligned}$$

Identify the basic characteristics of common stock. (pgs. 256–258)

SUMMARY: Common stock involves ownership in the corporation. In effect, bondholders and preferred stockholders can be viewed as creditors, whereas common stockholders are the owners of the firm. Common stock does not have a maturity date but exists as long as the firm does. Nor does common stock have an upper limit on its dividend payments. Dividend payments must be declared by the firm's board of directors before they are issued. In the event of bankruptcy, the common stockholders, as owners of the corporation, cannot exercise claims on assets until the firm's creditors, including its bondholders and preferred shareholders, have been satisfied. However, common stockholders' liability is limited to the amount of their investment.

The common stockholders are entitled to elect the firm's board of directors and are, in general, the only security holders given a vote. Common shareholders also have the right to approve any change in the company's corporate charter. Although each share of stock carries the same number of votes, the voting procedure is not always the same from company to company.

The preemptive right entitles the common shareholder to maintain a proportionate share of ownership in the firm.

KEY TERMS

Common stock, page 256 Shares that represent the ownership in a corporation.

Limited liability, page 258 A protective provision whereby the investor is not liable for more than the amount he or she has invested in the firm.

Proxy, page 258 A means of voting in which a designated party is provided with the temporary power of attorney to vote for the signee at the corporation's annual meeting.

Proxy fight, page 258 A battle between rival groups for proxy votes in order to control the decisions made in a stockholders' meeting.

Majority voting, page 258 Voting in which each share of stock allows the shareholder one vote and each position on the board of directors is voted on separately. As a result, a

majority of shares has the power to elect the entire board of directors.

Cumulative voting, page 258 Voting in which each share of stock allows the shareholder a number of votes equal to the number of directors being elected. The shareholder can then cast all of his or her votes for a single candidate or split them among the various candidates.

Preemptive right, page 258 The right entitling the common shareholder to maintain his or her proportionate share of ownership in the firm.

Right, page 258 A certificate issued to common stockholders giving them an option to purchase a stated number of new shares at a specified price during a 2- to 10-week period.

4 Value common stock. (pgs 258–263)

SUMMARY: As with bonds and preferred stock, the value of a common stock is equal to the present value of future cash flows.

When using the dividend-growth model to value a stock, growth relates to internal growth only—growth achieved by retaining part of the firm's profits and reinvesting them in the firm—as opposed to growth achieved by issuing new stock or acquiring another firm.

Growth in and of itself does not mean that a firm is creating value for its stockholders. Only if profits are reinvested at a rate of return greater than the investor's required rate of return will growth result in increased stockholder value.

KEY TERMS

Internal growth, page 259 A firm's growth rate resulting from reinvesting the company's profits rather than distributing them as dividends. The growth rate is a function of the amount retained and the return earned on the retained funds.

Profit-retention rate, page 259 The company's percentage of profits retained.

Dividend-payout ratio, page 259 Dividends as a percentage of earnings.

KEY EQUATIONS

Growth = return on equity $\times$ percentage of profits retained in the firm

$$\text{Common stock value } (V_{cs}) = \frac{D_1}{(1 + r_{cs})^1} + \frac{D_2}{(1 + r_{cs})^2} + \cdots + \frac{D_n}{(1 + r_{cs})^n} + \cdots + \frac{D_{\infty}}{(1 + r_{cs})^{\infty}}$$

$$\text{Common stock value} = \frac{\text{dividend in year 1}}{\text{required rate of return} - \text{growth rate}}$$

$$V_{cs} = \frac{D_1}{r_{cs} - g}$$

5 Calculate a stock's expected rate of return. (pgs. 263–268)

SUMMARY: The expected rate of return on a security is the required rate of return of investors who are willing to pay the present market price for the security, but no more. This rate of return is important to the financial manager because it equals the required rate of return of the firm's investors.

KEY TERM

Expected rate of return, page 264 The rate of return investors expect to receive on an

investment by paying the current market price of the security.

KEY EQUATIONS

$$\text{Required rate of return } (r_{ps}) = \frac{\text{annual dividend}}{\text{preferred stock value}} = \frac{D}{V_{ps}}$$

$$\text{Expected rate of return } (\bar{r}_{ps}) = \frac{\text{annual dividend}}{\text{preferred stock market price}} = \frac{D}{P_{ps}}$$

$$r_{cs} = \frac{D_1}{V_{cs}} + g$$

dividend yield annual growth rate

$$\bar{r}_{cs} = \frac{\text{dividend in year 1}}{\text{market price}} + \text{growth rate} = \frac{D_1}{P_{cs}} + g$$

Review Questions

All Review Questions are available in [MyFinanceLab](#).

- 8-1.** Why is preferred stock referred to as a hybrid security? It is often said to combine the worst features of common stock and bonds. What is meant by this statement?
- 8-2.** Because preferred stock dividends in arrears must be paid before common stock dividends, should they be considered a liability and appear on the right-hand side of the balance sheet?
- 8-3.** Why would a preferred stockholder want the stock to have a cumulative dividend feature and protective provisions?
- 8-4.** Why is preferred stock frequently convertible? Why is it callable?
- 8-5.** Compare valuing preferred stock and common stock.
- 8-6.** Define investors' expected rate of return.
- 8-7.** State how investors' expected rate of return is computed.
- 8-8.** The common stockholders receive two types of return from their investment. What are they?

Study Problems

All Study Problems are available in [MyFinanceLab](#).

- 8-1. (Preferred stock valuation)** What is the value of a preferred stock when the dividend rate is 16 percent on a \$100 par value? The appropriate discount rate for a stock of this risk level is 12 percent.
- 8-2. (Preferred stock valuation)** The preferred stock of Armlo pays a \$2.75 dividend. What is the value of the stock if your required return is 9 percent?
- 8-3. (Preferred stock valuation)** What is the value of a preferred stock when the dividend rate is 14 percent on a \$100 par value? The appropriate discount rate for a stock of this risk level is 12 percent.
- 8-4. (Preferred stock valuation)** Pioneer preferred stock is selling for \$33 per share in the market and pays a \$3.60 annual dividend.
- What is the expected rate of return on the stock?
 - If an investor's required rate of return is 10 percent, what is the value of the stock for that investor?
 - Should the investor acquire the stock?
- 8-5. (Preferred stock valuation)** Calculate the value of a preferred stock that pays a dividend of \$6 per share if your required rate of return is 12 percent.
- 8-6. (Preferred stock valuation)** You are considering an investment in one of two preferred stocks, TCF Capital or TAYC Capital Trust. TCF Capital pays an annual dividend of \$2.69, while TAYC Capital pays an annual dividend of \$2.44. If your required return is 12 percent, what value would you assign to the stocks?
- 8-7. (Preferred stock valuation)** You are considering an investment in Double Eagle Petroleum's preferred stock. The preferred stock pays a dividend of \$2.31. Your required return is 12 percent. Value the stock.





8-8. (Common stock valuation) Crosby Corporation common stock paid \$1.32 in dividends last year and is expected to grow indefinitely at an annual 7 percent rate. What is the value of the stock if you require an 11 percent return?

8-9. (Measuring growth) The Fisayo Corporation wants to achieve a steady 7 percent growth rate. If it can achieve a 12 percent return on equity, what percentage of earnings must Fisayo retain for investment purposes?

8-10. (Common stock valuation) Dalton Inc. has an 11.5 percent return on equity and retains 55 percent of its earnings for reinvestment purposes. It recently paid a dividend of \$3.25 and the stock is currently selling for \$40.

- What is the growth rate for Dalton Inc.?
- What is the expected return for Dalton's stock?
- If you require a 13 percent return, should you invest in the firm?

8-11. (Common stock valuation) Bates Inc. pays a dividend of \$1 and is currently selling for \$32.50. If investors require a 12 percent return on their investment from buying Bates stock, what growth rate would Bates Inc. have to provide the investors?

8-12. (Common stock valuation) You intend to purchase Marigo common stock at \$50 per share, hold it 1 year, and then sell it after a dividend of \$6 is paid. How much will the stock price have to appreciate for you to satisfy your required rate of return of 15 percent?

8-13. (Common stock valuation) Header Motor Inc. paid a \$3.50 dividend last year. At a constant growth rate of 5 percent, what is the value of the common stock if the investors require a 20 percent rate of return?

8-14. (Measuring growth) Given that a firm's return on equity is 18 percent and management plans to retain 40 percent of earnings for investment purposes, what will be the firm's growth rate?

8-15. (Common stock valuation) Honeywag common stock is expected to pay \$1.85 in dividends next year, and the market price is projected to be \$42.50 per share by year-end. If investors require a rate of return of 11 percent, what is the current value of the stock?

8-16. (Common stock valuation) The common stock of NCP paid \$1.32 in dividends last year. Dividends are expected to grow at an 8 percent annual rate for an indefinite number of years.

- If NCP's current market price is \$23.50 per share, what is the stock's expected rate of return?
- If your required rate of return is 10.5 percent, what is the value of the stock for you?
- Should you make the investment?

8-17. (Measuring growth) Pepperdine Inc.'s return on equity is 16 percent, and the management plans to retain 60 percent of earnings for investment purposes. What will be the firm's growth rate?

8-18. (Common stock valuation) Abercrombie & Fitch's common stock pays a dividend of \$0.70. It is currently selling for \$34.14. If the firm's investors require a 10 percent return on their investment from buying Abercrombie & Fitch stock, what growth rate would Abercrombie & Fitch have to provide the investors?

8-19. (Common stock valuation) Schlumberger is selling for \$64.91 per share and paid a dividend of \$1.10 last year. The dividend is expected to grow at 4 percent indefinitely. What is the stock's expected rate of return?



8-20. (Preferred stockholder expected return) You own 250 shares of Dalton Resources preferred stock, which currently sells for \$38.50 per share and pays annual dividends of \$3.25 per share.

- What is your expected return?
- If you require an 8 percent return, given the current price, should you sell or buy more stock?

8-21. (Preferred stock expected return) You are planning to purchase 100 shares of preferred stock and must choose between Stock A and Stock B. Stock A pays an annual dividend of \$4.50 and is currently selling for \$35. Stock B pays an annual dividend of \$4.25 and is selling for \$36. If your required return is 12 percent, which stock should you choose?

8-22. (Preferred stockholder expected return) Solitron preferred stock is selling for \$42.16 per share and pays \$1.95 in dividends. What is your expected rate of return if you purchase the security at the market price?

8-23. (Preferred stockholder expected return) You own 200 shares of Somner Resources preferred stock, which currently sells for \$40 per share and pays annual dividends of \$3.40 per share.

- What is your expected return?
- If you require an 8 percent return, given the current price, should you sell or buy more stock?

8-24. (Preferred stock expected return) You are planning to purchase 100 shares of preferred stock and must choose between stock in Kristen Corporation and Titus Corporation. Your required rate of return is 9 percent. If the stock in Kristen pays a dividend of \$2 and is selling for \$23 and the stock in Titus pays a dividend of \$3.25 and is selling for \$31, which stock should you choose?

8-25. (Preferred stockholder expected return) You own 150 shares of James Corporation preferred stock at a market price of \$22 per share. James pays dividends of \$1.55. What is your expected rate of return? If you have a required rate of return of 9 percent, should you buy more stock?

8-26. (Preferred stock expected return) You are considering the purchase of 150 shares of preferred stock. Your required return is 11 percent. If the stock is currently selling for \$40 and pays a dividend of \$5.25, should you purchase the stock?

8-27. (Preferred stockholder expected return) You are considering the purchase of Davis stock at a market price of \$36.72 per share. Assume the stock pays an annual dividend of \$2.33. What would be your expected return? Should you purchase the stock if your required return is 8 percent?

8-28. (Common stockholder expected return) Blackburn & Smith common stock currently sells for \$23 per share. The company's executives anticipate a constant growth rate of 10.5 percent and an end-of-year dividend of \$2.50.

- What is your expected rate of return?
- If you require a 17 percent return, should you purchase the stock?

8-29. (Common stockholder expected return) Made-It common stock currently sells for \$22.50 per share. The company's executives anticipate a constant growth rate of 10 percent and an end-of-year dividend of \$2.

- What is your expected rate of return if you buy the stock for \$22.50?
- If you require a 17 percent return, should you purchase the stock?

8-30. (Common stockholder expected return) The common stock of Zaldi Co. is selling for \$32.84 per share. The stock recently paid dividends of \$2.94 per share and has a projected constant growth rate of 9.5 percent. If you purchase the stock at the market price, what is your expected rate of return?

8-31. (Common stockholder expected return) The market price for Hobart common stock is \$43 per share. The price at the end of 1 year is expected to be \$48, and dividends for next year should be \$2.84. What is the expected rate of return?

8-32. (Common stockholder expected return) If you purchased 125 shares of common stock that pays an end-of-year dividend of \$3, what is your expected rate of return if you purchased the stock for \$30 per share? Assume the stock is expected to have a constant growth rate of 7 percent.

8-33. (Common stockholder expected return) Daisy executives anticipate a growth rate of 12 percent for the company's common stock. The stock is currently selling for \$42.65 per share and pays an end-of-year dividend of \$1.45. What is your expected rate of return if you purchase the stock for its current market price of \$42.65?

Mini Case

This Mini Case is available in MyFinanceLab.

You have finally saved \$10,000 and are ready to make your first investment. You have the three following alternatives for investing that money:

- Bank of America bonds with a par value of \$1,000, that pays a 6.35 percent on its par value in interest, sells for \$1,020, and matures in 5 years.
- Southwest Bancorp preferred stock paying a dividend of \$2.63 and selling for \$26.25.
- Emerson Electric common stock selling for \$52, with a par value of \$5. The stock recently paid a \$1.60 dividend and the firm's earnings per share has increased from \$2.23 to \$3.30 in the past 5 years. The firm expects to grow at the same rate for the foreseeable future.

Your required rates of return for these investments are 5 percent for the bond, 8 percent for the preferred stock, and 12 percent for the common stock. Using this information, answer the following questions.

- Calculate the value of each investment based on your required rate of return.
- Which investment would you select? Why?
- Assume Emerson Electric's managers expect an earnings to grow at 1 percent above the historical growth rate. How does this affect your answers to parts (a) and (b)?
- What required rates of return would make you indifferent to all three options?