

price. The opening price is the first trade of the day. We see the bid and ask prices of \$64.65 and \$64.69, respectively, along with the market "depth," which is the number of shares sought at the bid price and offered at the ask price. The "1y Target Est" is the average estimated stock price one year ahead based on estimates from security analysts who follow the stock.

Moving to the second column, we have the range of prices for this day, followed by the range over the previous 52 weeks. Volume is the number of shares traded today, followed by average daily volume over the last three months. Market cap is the number of shares outstanding (from the most recent quarterly financial statements) multiplied by the current price per share. P/E is the PE ratio discussed earlier in this chapter. The earnings per share (EPS) used in the calculation is "ttm," meaning "trailing twelve months." Finally, we have the dividend on the stock, which is actually the most recent quarterly dividend multiplied by 4, and the dividend yield. The yield is just the reported dividend divided by the stock price: $\$.58/\$64.68 = .009 = .9\%$.

Summary and Conclusions

This chapter has covered the basics of stocks and stock valuations. The key points include:

1. A stock can be valued by discounting its dividends. We mention three types of situations:
 - a. The case of zero growth of dividends.
 - b. The case of constant growth of dividends.
 - c. The case of differential growth.

2. An estimate of the growth rate of dividends is needed for the dividend discount model. A useful estimate of the growth rate is:

$$g = \text{Retention ratio} \times \text{Return on retained earnings (ROE)}$$

As long as the firm holds its ratio of dividends to earnings constant, g represents the growth rate of both dividends and earnings.

3. The price of a share of stock can be viewed as the sum of its price (under the assumption that the firm is a "cash cow") plus the per-share value of the firm's growth opportunities. A company is termed a cash cow if it pays out all of its earnings as dividends.

We write the value of a share as:

$$\frac{\text{EPS}}{R} + \text{NPVGO}$$

4. Negative NPV projects lower the value of the firm. That is, projects with rates of return below the discount rate lower firm value. Nevertheless, both the earnings and dividends of a firm will grow as long as the firm's projects have positive rates of return.
5. From accounting, we know that earnings are divided into two parts: Dividends and retained earnings. Most firms continually retain earnings in order to create future dividends. One should not discount earnings to obtain price per share since part of earnings must be reinvested. Only dividends reach the stockholders and only they should be discounted to obtain share price.
6. We suggest that a firm's price-earnings ratio is a function of three factors:
 - a. The per-share amount of the firm's valuable growth opportunities.
 - b. The risk of the stock.
 - c. The type of accounting method used by the firm.
7. The two biggest stock markets in the United States are the NYSE and the NASDAQ. We discussed the organization and operation of these two markets, and we saw how stock price information is reported.

Concept Questions

1. **Stock Valuation** Why does the value of a share of stock depend on dividends?
2. **Stock Valuation** A substantial percentage of the companies listed on the NYSE and the NASDAQ don't pay dividends, but investors are nonetheless willing to buy shares in them. How is this possible given your answer to the previous question?
3. **Dividend Policy** Referring to the previous questions, under what circumstances might a company choose not to pay dividends?
4. **Dividend Growth Model** Under what two assumptions can we use the dividend growth model presented in the chapter to determine the value of a share of stock? Comment on the reasonableness of these assumptions.
5. **Common versus Preferred Stock** Suppose a company has a preferred stock issue and a common stock issue. Both have just paid a \$2 dividend. Which do you think will have a higher price, a share of the preferred or a share of the common?
6. **Dividend Growth Model** Based on the dividend growth model, what are the two components of the total return on a share of stock? Which do you think is typically larger?
7. **Growth Rate** In the context of the dividend growth model, is it true that the growth rate in dividends and the growth rate in the price of the stock are identical?
8. **Price-Earnings Ratio** What are the three factors that determine a company's price-earnings ratio?
9. **Corporate Ethics** Is it unfair or unethical for corporations to create classes of stock with unequal voting rights?
10. **Stock Valuation** Evaluate the following statement: Managers should not focus on the current stock value because doing so will lead to an overemphasis on short-term profits at the expense of long-term profits.

Questions and Problems connect

BASIC
(Questions 1-9)

1. **Stock Values** The Starr Co. just paid a dividend of \$1.90 per share on its stock. The dividends are expected to grow at a constant rate of 5 percent per year, indefinitely. If investors require a 12 percent return on the stock, what is the current price? What will the price be in three years? In 15 years?
2. **Stock Values** The next dividend payment by ECY, Inc., will be \$2.85 per share. The dividends are anticipated to maintain a 6 percent growth rate, forever. If ECY stock currently sells for \$58 per share, what is the required return?
3. **Stock Values** For the company in the previous problem, what is the dividend yield? What is the expected capital gains yield?
4. **Stock Values** White Wedding Corporation will pay a \$3.05 per share dividend next year. The company pledges to increase its dividend by 5.25 percent per year, indefinitely. If you require an 11 percent return on your investment, how much will you pay for the company's stock today?
5. **Stock Valuation** Siblings, Inc., is expected to maintain a constant 5.8 percent growth rate in its dividends, indefinitely. If the company has a dividend yield of 4.7 percent, what is the required return on the company's stock?
6. **Stock Valuation** Suppose you know that a company's stock currently sells for \$64 per share and the required return on the stock is 13 percent. You also know that the total return on the stock is evenly divided between a capital gains yield and a dividend yield. If it's the company's policy to always maintain a constant growth rate in its dividends, what is the current dividend per share?
7. **Stock Valuation** Gruber Corp. pays a constant \$11 dividend on its stock. The company will maintain this dividend for the next nine years and will then cease paying dividends forever. If the required return on this stock is 10 percent, what is the current share price?

8. **Valuing Preferred Stock** Ayden, Inc., has an issue of preferred stock outstanding that pays a \$6.40 dividend every year, in perpetuity. If this issue currently sells for \$103 per share, what is the required return?
9. **Growth Rate** The newspaper reported last week that Bennington Enterprises earned \$28 million this year. The report also stated that the firm's return on equity is 15 percent. Bennington retains 70 percent of its earnings. What is the firm's earnings growth rate? What will next year's earnings be?
10. **Stock Valuation** Universal Laser, Inc., just paid a dividend of \$2.75 on its stock. The growth rate in dividends is expected to be a constant 6 percent per year, indefinitely. Investors require a 16 percent return on the stock for the first three years, a 14 percent return for the next three years, and then an 11 percent return thereafter. What is the current share price for the stock?
11. **Nonconstant Growth** Metallica Bearings, Inc., is a young start-up company. No dividends will be paid on the stock over the next nine years, because the firm needs to plow back its earnings to fuel growth. The company will pay a \$9 per share dividend in 10 years and will increase the dividend by 5.5 percent per year thereafter. If the required return on this stock is 13 percent, what is the current share price?
12. **Nonconstant Dividends** Bucksnot, Inc., has an odd dividend policy. The company has just paid a dividend of \$10 per share and has announced that it will increase the dividend by \$3 per share for each of the next five years, and then never pay another dividend. If you require an 11 percent return on the company's stock, how much will you pay for a share today?
13. **Nonconstant Dividends** North Side Corporation is expected to pay the following dividends over the next four years: \$9, \$7, \$5, and \$2.50. Afterwards, the company pledges to maintain a constant 5 percent growth rate in dividends forever. If the required return on the stock is 13 percent, what is the current share price?
14. **Differential Growth** Hughes Co. is growing quickly. Dividends are expected to grow at a 25 percent rate for the next three years, with the growth rate falling off to a constant 7 percent thereafter. If the required return is 12 percent and the company just paid a \$2.40 dividend, what is the current share price?
15. **Differential Growth** Janicek Corp. is experiencing rapid growth. Dividends are expected to grow at 30 percent per year during the next three years, 18 percent over the following year, and then 8 percent per year indefinitely. The required return on this stock is 13 percent, and the stock currently sells for \$65 per share. What is the projected dividend for the coming year?
16. **Negative Growth** Antiques R Us is a mature manufacturing firm. The company just paid a \$12 dividend, but management expects to reduce the payout by 6 percent per year, indefinitely. If you require an 11 percent return on this stock, what will you pay for a share today?
17. **Finding the Dividend** Mau Corporation stock currently sells for \$49.80 per share. The market requires an 11 percent return on the firm's stock. If the company maintains a constant 5 percent growth rate in dividends, what was the most recent dividend per share paid on the stock?
18. **Valuing Preferred Stock** Fifth National Bank just issued some new preferred stock. The issue will pay a \$7 annual dividend in perpetuity, beginning five years from now. If the market requires a 6 percent return on this investment, how much does a share of preferred stock cost today?
19. **Using Stock Quotes** You have found the following stock quote for RJW Enterprises, Inc., in the financial pages of today's newspaper. What is the annual dividend? What was the closing price for this stock that appeared in *yesterday's* paper? If the company currently has 25 million shares of stock outstanding, what was net income for the most recent four quarters?

INTERMEDIATE
(Questions 10-29)

YTD %Chg	Stock	SYM	YLD	PE	Last	Net Chg
-1.1	RJW Enterp.	RJW	1.6	19	19.47	-.12

20. **Taxes and Stock Price** You own \$100,000 worth of Smart Money stock. One year from now, you will receive a dividend of \$1.50 per share. You will receive a \$2.25 dividend two years from now. You will sell the stock for \$60 per share three years from now. Dividends are taxed at the rate of 28 percent. Assume there is no capital gains tax. The required rate of return is 15 percent. How many shares of stock do you own?
21. **Nonconstant Growth and Quarterly Dividends** Pasqually Mineral Water, Inc., will pay a quarterly dividend per share of \$.75 at the end of each of the next 12 quarters. Thereafter, the dividend will grow at a quarterly rate of 1 percent, forever. The appropriate rate of return on the stock is 10 percent, compounded quarterly. What is the current stock price?
22. **Finding the Dividend** Briley, Inc., is expected to pay equal dividends at the end of each of the next two years. Thereafter, the dividend will grow at a constant annual rate of 5 percent, forever. The current stock price is \$38. What is next year's dividend payment if the required rate of return is 11 percent?
23. **Finding the Required Return** Juggernaut Satellite Corporation earned \$10 million for the fiscal year ending yesterday. The firm also paid out 20 percent of its earnings as dividends yesterday. The firm will continue to pay out 20 percent of its earnings as annual, end-of-year dividends. The remaining 80 percent of earnings is retained by the company for use in projects. The company has 2 million shares of common stock outstanding. The current stock price is \$85. The historical return on equity (ROE) of 16 percent is expected to continue in the future. What is the required rate of return on the stock?
24. **Dividend Growth** Four years ago, Bling Diamond, Inc., paid a dividend of \$1.20 per share. Bling paid a dividend of \$1.93 per share yesterday. Dividends will grow over the next five years at the same rate they grew over the last four years. Thereafter, dividends will grow at 7 percent per year. What will Bling Diamond's cash dividend be in seven years?
25. **Price-Earnings Ratio** Consider Pacific Energy Company and U.S. Bluechips, Inc., both of which reported earnings of \$750,000. Without new projects, both firms will continue to generate earnings of \$750,000 in perpetuity. Assume that all earnings are paid as dividends and that both firms require a 14 percent rate of return.
- What is the current PE ratio for each company?
 - Pacific Energy Company has a new project that will generate additional earnings of \$100,000 each year in perpetuity. Calculate the new PE ratio of the company.
 - U.S. Bluechips has a new project that will increase earnings by \$200,000 in perpetuity. Calculate the new PE ratio of the firm.
26. **Growth Opportunities** The Stambaugh Corporation currently has earnings per share of \$8.25. The company has no growth and pays out all earnings as dividends. It has a new project which will require an investment of \$1.60 per share in one year. The project is only a two-year project, and it will increase earnings in the two years following the investment by \$2.10 and \$2.45, respectively. Investors require a 12 percent return on Stambaugh stock.
- What is the value per share of the company's stock assuming the firm does not undertake the investment opportunity?
 - If the company does undertake the investment, what is the value per share now?
 - Again, assume the company undertakes the investment. What will the price per share be four years from today?

27. **Growth Opportunities** Rite Bite Enterprises sells toothpicks. Gross revenues last year were \$6 million, and total costs were \$3.1 million. Rite Bite has 1 million shares of common stock outstanding. Gross revenues and costs are expected to grow at 5 percent per year. Rite Bite pays no income taxes. All earnings are paid out as dividends.
- If the appropriate discount rate is 15 percent and all cash flows are received at year's end, what is the price per share of Rite Bite stock?
 - Rite Bite has decided to produce toothbrushes. The project requires an immediate outlay of \$22 million. In one year, another outlay of \$8 million will be needed. The year after that, earnings will increase by \$7 million. That profit level will be maintained in perpetuity. What effect will undertaking this project have on the price per share of the stock?
28. **Growth Opportunities** California Real Estate, Inc., expects to earn \$85 million per year in perpetuity if it does not undertake any new projects. The firm has an opportunity to invest \$18 million today and \$7 million in one year in real estate. The new investment will generate annual earnings of \$11 million in perpetuity, beginning two years from today. The firm has 20 million shares of common stock outstanding, and the required rate of return on the stock is 12 percent. Land investments are not depreciable. Ignore taxes.
- What is the price of a share of stock if the firm does not undertake the new investment?
 - What is the value of the investment?
 - What is the per-share stock price if the firm undertakes the investment?
29. **Growth Opportunities** The annual earnings of Avalanche Skis, Inc., will be \$7 per share in perpetuity if the firm makes no new investments. Under such a situation, the firm would pay out all of its earnings as dividends. Assume the first dividend will be received exactly one year from now.
- Alternatively, assume that three years from now, and in every subsequent year in perpetuity, the company can invest 30 percent of its earnings in new projects. Each project will earn 20 percent at year-end in perpetuity. The firm's discount rate is 11 percent.
- What is the price per share of Avalanche Skis, Inc., stock today without the company making the new investment?
 - If Avalanche announces that the new investment will be made, what will the per-share stock price be today?
30. **Capital Gains versus Income** Consider four different stocks, all of which have a required return of 20 percent and a most recent dividend of \$4.50 per share. Stocks W, X, and Y are expected to maintain constant growth rates in dividends for the foreseeable future of 10 percent, 0 percent, and -5 percent per year, respectively. Stock Z is a growth stock that will increase its dividend by 30 percent for the next two years and then maintain a constant 8 percent growth rate thereafter. What is the dividend yield for each of these four stocks? What is the expected capital gains yield? Discuss the relationship among the various returns that you find for each of these stocks.
31. **Stock Valuation** Most corporations pay quarterly dividends on their common stock rather than annual dividends. Barring any unusual circumstances during the year, the board raises, lowers, or maintains the current dividend once a year and then pays this dividend out in equal quarterly installments to its shareholders.
- Suppose a company currently pays a \$3.60 annual dividend on its common stock in a single annual installment, and management plans on raising this dividend by 5 percent per year indefinitely. If the required return on this stock is 14 percent, what is the current share price?
 - Now suppose that the company in (a) actually pays its annual dividend in equal quarterly installments; thus, this company has just paid a \$.90 dividend per share, as

CHALLENGE
(Questions 30-35)

it has for the previous three quarters. What is your value for the current share price now? (*Hint:* Find the equivalent annual end-of-year dividend for each year.) Comment on whether or not you think that this model of stock valuation is appropriate.

32. **Growth Opportunities** Lewin Skis, Inc., (today) expects to earn \$6.25 per share for each of the future operating periods (beginning at time 1) if the firm makes no new investments and returns the earnings as dividends to the shareholders. However Clint Williams, president and CEO, has discovered an opportunity to retain and invest 20 percent of the earnings beginning three years from today. This opportunity to invest will continue for each period indefinitely. He expects to earn 11 percent on this new equity investment, the return beginning one year after each investment is made. The firm's equity discount rate is 13 percent throughout.
- What is the price per share of Lewin Skis, Inc., stock without making the new investment?
 - If the new investment is expected to be made, per the preceding information, what would the price of the stock be now?
 - Suppose the company could increase the investment in the project by whatever amount it chose. What would the retention ratio need to be to make this project attractive?
33. **Nonconstant Growth** Storico Co. just paid a dividend of \$4.20 per share. The company will increase its dividend by 20 percent next year and will then reduce its dividend growth rate by 5 percentage points per year until it reaches the industry average of 5 percent dividend growth, after which the company will keep a constant growth rate forever. If the required return on Storico stock is 12 percent, what will a share of stock sell for today?
34. **Nonconstant Growth** This one's a little harder. Suppose the current share price for the firm in the previous problem is \$98.65 and all the dividend information remains the same. What required return must investors be demanding on Storico stock? (*Hint:* Set up the valuation formula with all the relevant cash flows, and use trial and error to find the unknown rate of return.)
35. **Growth Opportunities** Burklin, Inc., has earnings of \$15 million and is projected to grow at a constant rate of 5 percent forever because of the benefits gained from the learning curve. Currently, all earnings are paid out as dividends. The company plans to launch a new project two years from now which would be completely internally funded and require 30 percent of the earnings that year. The project would start generating revenues one year after the launch of the project and the earnings from the new project in any year are estimated to be constant at \$6.5 million. The company has 10 million shares of stock outstanding. Estimate the value of the stock. The discount rate is 10 percent.
- www.mhhe.com/edumarketinsight
- Dividend Discount Model** Enter the ticker symbol "WMT" for Wal-Mart. Using the most recent balance sheet and income statement under the "Excel Analytics" link, calculate the sustainable growth rate for Wal-Mart. Now download the "Mthly. Adj. Prices" and find the closing stock price for the same month as the balance sheet and income statement you used. What is the implied required return on Wal-Mart according to the dividend growth model? Does this number make sense? Why or why not?
 - Growth Opportunities** Assume that investors require an 11 percent return on Harley-Davidson (HOG) stock. Under the "Excel Analytics" link find the "Mthly. Adj. Prices" and find the closing price for the month of the most recent fiscal year-end for HOG. Using this stock price and the EPS for the most recent year, calculate the NPVGO for Harley-Davidson. What is the appropriate PE ratio for Harley-Davidson using these calculations?

**S&P
Problems**

**STANDARD
& POOR'S**

STOCK VALUATION AT RAGAN ENGINES

Larissa has been talking with the company's directors about the future of East Coast Yachts. To this point, the company has used outside suppliers for various key components of the company's yachts, including engines. Larissa has decided that East Coast Yachts should consider the purchase of an engine manufacturer to allow East Coast Yachts to better integrate its supply chain and get more control over engine features. After investigating several possible companies, Larissa feels that the purchase of Ragan Engines, Inc., is a possibility. She has asked Dan Ervin to analyze Ragan's value.

Ragan Engines, Inc., was founded nine years ago by a brother and sister—Carrington and Genevieve Ragan—and has remained a privately owned company. The company manufactures marine engines for a variety of applications. Ragan has experienced rapid growth because of a proprietary technology that increases the fuel efficiency of its engines with very little sacrifice in performance. The company is equally owned by Carrington and Genevieve. The original agreement between the siblings gave each 150,000 shares of stock.

Larissa has asked Dan to determine a value per share of Ragan stock. To accomplish this, Dan has gathered the following information about some of Ragan's competitors that are publicly traded:

	EPS	DPS	Stock Price	ROE	R
Blue Ribband Motors Corp.	\$1.09	\$.16	\$15.19	11.00%	14.00%
Bon Voyage Marine Inc.	1.16	.52	12.49	14.00	19.00
Nautilus Marine Engines	<u>(.32)</u>	<u>.54</u>	<u>23.05</u>	<u>N/A</u>	<u>18.00</u>
Industry average	\$.64	\$.41	\$16.91	13.00%	17.00%

Nautilus Marine Engines's negative earnings per share (EPS) were the result of an accounting write-off last year. Without the write-off, EPS for the company would have been \$1.97. Last year, Ragan had an EPS of \$5.08 and paid a dividend to Carrington and Genevieve of \$320,000 each. The company also had a return on equity of 25 percent. Larissa tells Dan that a required return for Ragan of 20 percent is appropriate.

1. Assuming the company continues its current growth rate, what is the value per share of the company's stock?
2. Dan has examined the company's financial statements, as well as examining those of its competitors. Although Ragan currently has a technological advantage, Dan's research indicates that Ragan's competitors are investigating other methods to improve efficiency. Given this, Dan believes that Ragan's technological advantage will last only for the next five years. After that period, the company's growth will likely slow to the industry average. Additionally, Dan believes that the required return the company uses is too high. He believes the industry average required return is more appropriate. Under Dan's assumptions, what is the estimated stock price?
3. What is the industry average price-earnings ratio? What is Ragan's price-earnings ratio? Comment on any differences and explain why they may exist.
4. Assume the company's growth rate declines to the industry average after five years. What percentage of the stock's value is attributable to growth opportunities?
5. Assume the company's growth rate slows to the industry average in five years. What future return on equity does this imply?

6. Carrington and Genevieve are not sure if they should sell the company. If they do not sell the company outright to East Coast Yachts, they would like to try and increase the value of the company's stock. In this case, they want to retain control of the company and do not want to sell stock to outside investors. They also feel that the company's debt is at a manageable level and do not want to borrow more money. What steps can they take to try and increase the price of the stock? Are there any conditions under which this strategy would *not* increase the stock price?