

(7-24)
Build a Model:
Dividend Growth
Valuation Model

Start with the partial model in the file *Ch07 P24 Build a Model.xlsx* on the textbook's Web site. Hamilton Landscaping's dividend growth rate is expected to be 30% in the next year, drop to 15% from Year 1 to Year 2, and drop to a constant 5% for Year 2 and all subsequent years. Hamilton has just paid a dividend of \$2.50, and its stock has a required return of 11%.

- What is Hamilton's estimated stock price today?
- If you bought the stock at Year 0, what are your expected dividend yield and capital gains for the upcoming year?
- What are your expected dividend yield and capital gains for the second year (from Year 1 to Year 2)? Why aren't these the same as for the first year?

MINI CASE

Your employer, a mid-sized human resources management company, is considering expansion into related fields, including the acquisition of Temp Force Company, an employment agency that supplies word processor operators and computer programmers to businesses with temporary heavy workloads. Your employer is also considering the purchase of Biggerstaff & McDonald (B&M), a privately held company owned by two friends, each with 5 million shares of stock. B&M currently has free cash flow of \$24 million, which is expected to grow at a constant rate of 5%. B&M's financial statements report short-term investments of \$100 million, debt of \$200 million, and preferred stock of \$50 million. B&M's weighted average cost of capital (WACC) is 11%. Answer the following questions.

- Describe briefly the legal rights and privileges of common stockholders.
- What is free cash flow (FCF)? What is the weighted average cost of capital? What is the free cash flow valuation model?
- Use a pie chart to illustrate the sources that comprise a hypothetical company's total value. Using another pie chart, show the claims on a company's value. How is equity a residual claim?
- Suppose the free cash flow at Time 1 is expected to grow at a constant rate of g_L forever. If $g_L < \text{WACC}$, what is a formula for the present value of expected free cash flows when discounted at the WACC? If the most recent free cash flow is expected to grow at a constant rate of g_L forever (and $g_L < \text{WACC}$), what is a formula for the present value of expected free cash flows when discounted at the WACC?
- Use B&M's data and the free cash flow valuation model to answer the following questions.
 - What is its estimated value of operations?
 - What is its estimated total corporate value? (This is the entity value.)
 - What is its estimated intrinsic value of equity?
 - What is its estimated intrinsic stock price per share?
- You have just learned that B&M has undertaken a major expansion that will change its expected free cash flows to -\$10 million in 1 year, \$20 million in 2 years, and \$35 million in 3 years. After 3 years, free cash flow will grow at a rate of 5%. No new debt or preferred stock was added; the investment was financed by equity from the owners. Assume the WACC is unchanged at 11% and that there are still 10 million shares of stock outstanding.
 - What is the company's horizon value (i.e., its value of operations at Year 3)? What is its current value of operations (i.e., at Time 0)?
 - What is its estimated intrinsic value of equity on a price-per-share basis?

- g. If B&M undertakes the expansion, what percent of B&M's value of operations at Year 0 is due to cash flows from Years 4 and beyond? (*Hint: Use the horizon value at $t = 3$ to help answer this question.*)
- h. Based on your answer to the previous question, what are two reasons why managers often emphasize short-term earnings?
- i. Your employer also is considering the acquisition of Hatfield Medical Supplies. You have gathered the following data regarding Hatfield, with all dollars reported in millions: (1) most recent sales of \$2,000; (2) most recent total net operating capital, $OpCap = \$1,120$; (3) most recent operating profitability ratio, $OP = NOPAT/Sales = 4.5\%$; and (4) most recent capital requirement ratio, $CR = OpCap/Sales = 56\%$. You estimate that the growth rate in sales from Year 0 to Year 1 will be 10%, from Year 1 to Year 2 will be 8%, from Year 2 to Year 3 will be 5%, and from Year 3 to Year 4 will be 5%. You also estimate that the long-term growth rate beyond Year 4 will be 5%. Assume the operating profitability and capital requirement ratios will not change. Use this information to forecast Hatfield's sales, net operating profit after taxes (NOPAT), $OpCap$, free cash flow, and return on invested capital (ROIC) for Years 1 through 4. Also estimate the annual growth in free cash flow for Years 2 through 4. The weighted average cost of capital (WACC) is 9%. How does the ROIC in Year 4 compare with the WACC?
- j. What is the horizon value at Year 4? What is the total net operating capital at Year 0? How does the value of operations compare with the current total net operating capital?
- k. What are value drivers? What happens to the ROIC and current value of operations if expected growth increases by 1 percentage point relative to the original growth rates (including the long-term growth rate)? What can explain this? (*Hint: Use Scenario Manager.*)
- l. Assume growth rates are at their original levels. What happens to the ROIC and current value of operations if the operating profitability ratio increases to 5.5%? Now assume growth rates and operating profitability ratios are at their original levels. What happens to the ROIC and current value of operations if the capital requirement ratio decreases to 51%? Assume growth rates are at their original levels. What is the impact of simultaneous improvements in operating profitability and capital requirements? What is the impact of simultaneous improvements in the growth rates, operating profitability, and capital requirements? (*Hint: Use Scenario Manager.*)
- m. What insight does the free cash flow valuation model provide regarding possible reasons for market volatility? (*Hint: Look at the value of operations for the combinations of ROIC and g_L in the previous questions.*)
- n. (1) Write out a formula that can be used to value any dividend-paying stock, regardless of its dividend pattern.
(2) What is a constant growth stock? How are constant growth stocks valued?
(3) What happens if a company has a constant g_L that exceeds its r_s ? Will many stocks have expected growth greater than the required rate of return in the short run (i.e., for the next few years)? In the long run (i.e., forever)?
- o. Assume that Temp Force has a beta coefficient of 1.2, that the risk-free rate (the yield on T-bonds) is 7.0%, and that the market risk premium is 5%. What is the required rate of return on the firm's stock?

SELECT

- p. Assume that Temp Force is a constant growth company whose last dividend (D_0 , which was paid yesterday) was \$2.00 and whose dividend is expected to grow indefinitely at a 6% rate.
- (1) What is the firm's current estimated intrinsic stock price?
 - (2) What is the stock's expected value 1 year from now?
 - (3) What are the expected dividend yield, the expected capital gains yield, and the expected total return during the first year?
- q. Now assume that the stock is currently selling at \$30.29. What is its expected rate of return?
- r. Now assume that Temp Force's dividend is expected to experience nonconstant growth of 30% from Year 0 to Year 1, 25% from Year 1 to Year 2, and 15% from Year 2 to Year 3. After Year 3, dividends will grow at a constant rate of 6%. What is the stock's intrinsic value under these conditions? What are the expected dividend yield and capital gains yield during the first year? What are the expected dividend yield and capital gains yield during the fourth year (from Year 3 to Year 4)?
- s. What is the market multiple method of valuation? What are its strengths and weaknesses?
- t. What are the advantages of the free cash flow valuation model relative to the dividend growth model?
- u. What is preferred stock? Suppose a share of preferred stock pays a dividend of \$2.10 and investors require a return of 7%. What is the estimated value of the preferred stock?

SELECTED ADDITIONAL CASES

The following cases from *Textchoice*, Cengage Learning's online library, cover many of the concepts discussed in this chapter and are available at <http://compose.cengage.com>.

Klein-Brigham Series:

Case 3, "Peachtree Securities, Inc. (B)"; Case 71, "Swan Davis"; Case 78, "Beatrice Peabody"; and Case 101, "TECO Energy."

Brigham-Buzzard Series:

Case 4, "Powerline Network Corporation (Stocks)."