CHAPTER 9

Valuing Stocks

Chapter Synopsis

9.1 The Dividend-Discount Model

A stock generates cash flow by either paying dividends or by being sold at a gain. An investor considering holding the stock for one year would be willing to pay:

$$P_0 = \frac{\mathrm{Div}_1 + P_1}{1 + r_E}.$$

where Div_1 is the dividend paid in one year, P_1 is the stock price in one year, and r_E is the **equity cost of capital**, which is the expected rate of return available in the market on other investments with equivalent risk to the firm's shares. If the price was lower, it would be a positive-NPV investment and investors would buy it, driving up the stock's price. If the price was greater than this amount, investors would sell, and the price would fall.

Based on the one-year valuation equation, the equity cost of capital can be written as:

$$r_E = \frac{\mathrm{Div}_1 + P_1}{P_0} - 1 = \underbrace{\overbrace{\frac{\mathrm{Div}_1}{P_0}}^{\text{Dividend Yield}} + \overbrace{\frac{P_1 - P_0}{P_0}}^{\text{Capital Gain Rate}}}_{\text{Total Return}}.$$

The stock's **dividend yield** is the percentage return the investor expects to earn from the dividend paid by the stock. The **capital gain rate** is the return the investor will earn based on the sale price minus the purchase price for the stock. The sum of the dividend yield and the capital gain rate is the total return of the stock.

All investors (with the same beliefs) will attach the same value to a stock, independent of their investment horizons because they can sell the stock at any date for the present value of the remaining dividends. Thus, how long they intend to hold the stock, and whether they
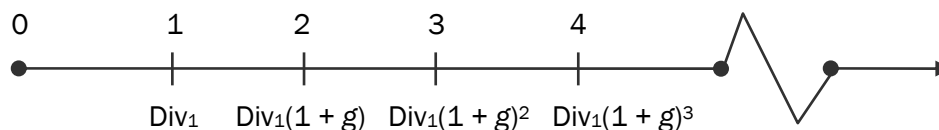
collect their return in the form of dividends or capital gains, is irrelevant. Thus, the value of a stock is:

$$P_0 = \frac{Div_1}{1+r_E} + \frac{Div_2}{(1+r_E)^2} + \frac{Div_3}{(1+r_E)^3} + \cdots + \frac{Div_N + P_N}{(1+r_E)^N} = \sum_{n=1}^{\infty} \frac{Div_N}{(1+r_E)^N},$$

which is referred to as the **dividend-discount model**.

9.2 Applying the Dividend-Discount Model

The simplest forecast for the firm's future dividends is that they will grow at a constant rate, *g*, forever:

Because the expected dividends are a growing perpetuity, the value of this dividend stream can be determined as:

$$P_0 = \frac{Div_1}{r_E - g}, \text{ and } r_E \text{ can be written as } r_E = \frac{Div_1}{P_0} + g.$$

The dividend growth rate can be estimated by using the expected earnings growth rate if a firm is expected to pay out a constant fraction of earnings in the future.

Firms that have non-constant dividend growth currently may be expected to eventually have constant growth and can be valued using the constant long-term growth dividend-discount model:

$$P_0 = \frac{Div_1}{1+r_E} + \frac{Div_2}{(1+r_E)^2} + \frac{Div_3}{(1+r_E)^3} + \cdots + \frac{Div_N}{(1+r_E)^N} + \frac{\left(\dfrac{Div_{N+1}}{r_E - g}\right)}{(1+r_E)^N}.$$

Due to the high degree of uncertainty associated with forecasting of a firm's future dividends, the dividend discount model has limitations and is best applied to firms that have predictable dividend growth rates, such as public utility companies.

9.3 Total Payout and Free Cash Flow Valuation Models

The **discounted free cash flow model** determines a firm's **enterprise value**, which is the total value of the firm to all investors, including both equity and debt holders. Enterprise value can be defined as:

Enterprise Value = Market Value of Equity + Total Debt – Excess Cash.

A firm's enterprise value can be estimated as the present value of the free cash flows (FCFs) that the firm has available to pay all investors. FCF is usually calculated as:

Free Cash Flow $= EBIT \times (1 - \tau) +$ Depreciation $-$ Capital Expenditures $-$ Increase in NWC.

Enterprise value, V_0, can thus be expressed as:

$$V_0 = \text{PV(FCFs)} = \frac{\text{FCF}_1}{1 + r_{\text{wacc}}} + \frac{\text{FCF}_2}{\left(1 + r_{\text{wacc}}\right)^2} + \frac{\text{FCF}_3}{\left(1 + r_{\text{wacc}}\right)^3} + \cdots + \frac{\text{FCF}_N}{\left(1 + r_{\text{wacc}}\right)^N} + \frac{V_N}{\left(1 + r_{\text{wacc}}\right)^N}$$

where V_N (the terminal value) is often estimated as a growing perpetuity, $\left[\dfrac{\text{FCF}_N(1+g)}{\left(r_{\text{wacc}} - g\right)}\right]$.

The share price can then be calculated as:

$$P_0 = \frac{\text{Market Value of Equity}}{\text{Shares Outstanding}} = \frac{V_0 - \text{Total Debt} + \text{Excess cash}}{\text{Shares Outstanding}}$$

Since this method discounts the free cash flow that will be paid to both debt and equity holders, the discount rate is the firm's **weighted average cost of capital** (WACC or r_{wacc}). For now, the WACC can be interpreted as the expected return the firm must pay to investors to compensate them for the risk of holding the firm's debt and equity together. Using and estimating the WACC is discussed in detail in parts IV and V of the text.

Firms can pay cash to shareholders by repurchasing shares instead of paying dividends. The **total payout model** discounts the total payouts that the firm makes to shareholders, which equals the total amount spent on both dividends and share repurchases, and then divides by the current number of shares outstanding to determine the share price. While this method is more reliable when the firm's future share repurchases can be forecasted, this is often difficult to do.

9.4 Valuation Based on Comparable Firms

Stocks can also be valued by using valuation multiples of comparable firms. For example, by observing the price-earnings (P/E) ratio of firm C, which is in the same industry as the firm being valued, firm X, firm X's stock price can be estimated as:

$$\frac{\text{Price}_C}{\text{EPS}_C} \times \text{EPS}_X = \text{Price}_X.$$

Other valuation multiples use enterprise value in the numerator and EBIT, EBITDA (earnings before interest, taxes, depreciation, and amortization), and free cash flow in the denominator. Most practitioners rely on enterprise value to EBITDA multiples.

Many other valuation multiples are possible. For firms with substantial tangible assets, the ratio of price-to-book value of equity per share is sometimes used. Some multiples are specific to an industry; for example, in the cable TV industry it is useful to consider the multiple of enterprise value to number of subscribers.

If comparables firms were identical, the multiple used was always proportionately related to value; if comparable firms were always valued correctly, the comparable multiples approach would be accurate and reliable. However, this is not generally the case. Most importantly, firms are not identical, and the usefulness of a valuation multiple depends on the nature of the differences between firms and the sensitivity of the multiples to these differences. The differences in multiples for a sample of firms generally reflect differences in expected future growth rates and risk.

Furthermore, the comparable firm multiples approach does not take into account the important differences among firms. The fact that a firm has an exceptional management

team, has developed an efficient manufacturing process, or has just secured a patent on a new technology is ignored when a valuation multiple is used. Discounted cash flow methods have the advantage that they allow specific information about the firm's cost of capital or future growth to be incorporated. Thus, because the true driver of value for any firm is its ability to generate cash flows for its investors, the discounted cash flow methods have the potential to be more accurate than the use of valuation multiples.

9.5 Information, Competition, and Stock Prices

For a publicly traded firm, the stock price generally is thought to reflect the information of all investors regarding the true value of the shares. Therefore, a valuation model can be applied to learn something about the firm's future cash flows or cost of capital based on its current stock price. Only if you happen to have superior information that other investors lack regarding the firm's cash flows and cost of capital would it may make sense to second-guess the stock price.

The idea that competition among investors works to eliminate all positive-NPV trading opportunities is referred to as the **efficient markets hypothesis.** It implies that securities will be fairly priced given all information that is available to investors. There are two types of information.

■ **Public, easy to interpret information.** Competition between investors should cause stock prices to react nearly instantaneously to information that is available to all investors, such as news reports, financials statements, and corporate press releases. A few investors might be able to trade a small quantity of shares before the price fully adjusts. Most investors, however, will find that the stock price already reflects the new information before they are able to trade on it. It is generally believed that the efficient markets hypothesis holds very well with respect to this type of information.

■ **Private, difficult to interpret information.** When private (non-public or difficult to determine) information is known by a single or small number of investors, it may be profitable to trade on the information. In this case, the efficient markets hypothesis does not hold. However, as these informed traders begin to trade, they will tend to move prices, so over time prices will begin to reflect their information as well. If the profit opportunities from having this type of information are large, other individuals will attempt to gain the expertise and devote the resources needed to acquire it. As more individuals become better informed, competition to exploit this information will increase. Thus, in the long run, we should expect that the degree of inefficiency in the market will be limited by the costs of obtaining the information.

If stocks are fairly valued as the efficient market hypothesis suggests, then the value of a firm is determined by the cash flows that it can pay to its investors. Therefore managers should do the following.

■ **Focus on NPV and free cash flow** and make investments that increase the NPV of the firm using the capital budgeting methods outlined in Chapter 7.

■ **Avoid accounting illusions.** The NPV of its FCFs, not the accounting consequences of a decision, determines the value of the firm, so accounting measures should not drive decision making.

■ **Use financial transactions to finance valuable investments.** Since buying or selling a security is a zero-NPV transaction, it is not a source of value for the firm. Financial policy should therefore be driven by the firm's real investment needs.

Selected Concepts and Key Terms

Capital Gain

The difference between the sale price and purchase price of the stock. The capital gain divided by the beginning of period stock price is the **capital gain rate.**

Constant Dividend Growth Model

A model in which the value of firm's stock equals the dividend paid in one year divided by the equity cost of capital minus the dividend growth rate. It is an application of the present value of a perpetuity equation.

Discounted Free Cash Flow Model

A model in which the value of a firm's debt and equity equals the present value of the future free cash flows (FCFs) it will generate. Annual FCF can generally be calculated as operating cash flow minus capital spending minus the increase in net working capital.

Dividend Yield

The percentage return earned from the dividend paid by the stock. It equals the dividends paid over a period divided by the stock price at the beginning of the period.

Dividend-Discount Model

A model in which the value of a firm's stock equals the present value of the future dividends it pays. All investors (with the same beliefs) will attach the same value to the stock, independent of their investment horizons because they can sell the stock at any date for the present value of the remaining dividends. Thus, how long they intend to hold the stock, and whether they collect their return in the form of dividends or capital gains, is irrelevant.

Efficient Markets Hypothesis

The idea that competition among investors works to eliminate all positive-NPV trading opportunities. It implies that securities will be fairly priced given all information that is available to investors.

Enterprise Value

The value of the firm's underlying business. It is generally calculated as the market value of equity plus the value of long-term debt minus excess cash.

Equity Cost of Capital

The expected return of other securities available in the market with equivalent risk to the firm's equity.

Comparable Firm Valuation Method

A method of estimating the value of the firm based on the value of comparable firms that are expected to generate similar cash flows in the future and have the same level of risk.

Total Payout Model

A model in which the value of a firm's stock equals the present value of the total payouts that the firm makes to shareholders, including the total amount spent on both dividends and share repurchases.

Valuation Multiple

A ratio of value to another variable. Firm valuation multiples generally use equity value or enterprise value in the numerator and net income, EBIT, EBITDA, or free cash flow in the denominator. While the most common valuation multiple is the price-earnings (P/E) ratio, most practitioners rely on enterprise value to EBITDA multiples.

Weighted Average Cost of Capital

The cost of capital that reflects the risk of the overall business, which is the combined risk of the firm's equity and debt. Using and estimating the WACC is discussed in detail in parts IV and V of the text.

Concept Check Questions and Answers

9.1.1. How do you calculate the total return of a stock?

The total return is the expected return that the investor will earn for a one-year investment in the stock and is computed as the sum of the dividend yield and the capital gain rate.

9.1.2. What discount rate do you use to discount the future cash flows of a stock?

The discount rate used to discount the future cash flows of a stock must be the equity cost of capital for the stock, which is the expected return of other investments available in the market with equivalent risk to the firm's shares.

9.1.3. Why will a short-term and long-term investor with the same beliefs be willing to pay the same price for a stock?

Because the value of the stock at any point in time is equal to the present value of the future dividends from that point on. Thus, the value of the stock to an investor who plans to hold on to the stock indefinitely, an investor who will collect dividends for *N* years and then sell the stock, or to a series of investors who hold the stock for shorter periods and then resell it are all the same. Thus, all investors (with the same beliefs) will attach the same value to the stock, independent of their investment horizons. How long they intend to hold the stock and whether they collect their return in the form of dividends or capital gains is irrelevant.

9.2.1. In what three ways can a firm increase its future dividend per share?

Since the dividend each year is the firm's earnings per share (EPS) multiplied by its dividend payout ratio, the firm can increase its dividend in three ways: (1) by increasing its earnings (net income); (2) by increasing its dividend payout rate; or (3) by decreasing its shares outstanding.

9.2.2. Under what circumstances can a firm increase its share price by cutting its dividend and investing more?

Cutting the firm's dividend to increase investment will raise the stock price if, and only if, the new investments have a positive NPV.

9.3.1. How does the growth rate used in the total payout model differ from the growth rate used in the dividend-discount model?

In the total payout model, we use the growth rate of earnings, rather than earnings per share, when forecasting the growth of the firm's total payouts.

9.3.2. What is the enterprise value of the firm?

It is the value of the firm's underlying business. It is generally calculated as the market value of equity plus the value of long-term debt minus excess cash.

9.3.3. How can you estimate a firm's stock price based on its projected free cash flows?

A firm's enterprise value (V_0) can be estimated as the present value of the free cash flows that the firm has available to pay all investors. Then, the equity value can be determined as:

$$P_0 = \frac{V_0 - \text{Total Debt} + \text{Excess cash}}{\text{Shares Outstanding}} = \frac{\text{Market Value of Equity}}{\text{Shares Outstanding}}.$$

9.4.1. What are some common valuation multiples?

Valuation multiples commonly used to value stocks include the price-earnings ratio, the ratio of enterprise value to EBIT, the ratio of enterprise value to EBITDA, the ratio of enterprise value to free cash flow, the ratio of enterprise value to sales, and the ratio of stock price to book value of equity per share.

9.4.2. What implicit assumptions are made when valuing a firm using multiples based on comparable firms?

Using valuation multiples based on comparable firms assumes that comparable firms have the same risk and future growth as the firm being valued.

9.5.1. State the efficient market hypothesis.

The efficient markets hypothesis states that competition eliminates all positive-NPV trades, which is equivalent to stating that securities with equivalent risk have the same expected returns.

9.5.2. What are the implications of the efficient market hypothesis for corporate managers?

To raise the stock price in an efficient market, corporate managers should 1) focus on NPV and free cash flow from the firm's investments; 2) avoid accounting illusion; and 3) use financial transactions to support investments.

# Examples with Step-by-Step Solutions

Solving Problems

Problems using the concepts in this chapter generally involve valuing stocks using the dividend discount model. The most difficult part of applying the model is correctly incorporating the present value of a perpetuity calculation that is typically part of the calculation. The examples below show how this is done. Other problems involve using the discounted free cash flow model, which applies the same model to free cash flows and determines enterprise value, not equity value. Problems may also involve applying an estimate of firm value based on comparable firm valuation multiples, such as price-to-earnings ratios, price-to-book ratios, enterprise value-to-sales ratios, and enterprise value-to-EBITDA ratios.

Examples

1. Ford stock is trading at $8.20. The firm paid dividends of $0.40 per share last year.

   [A]   Assuming you expect that Ford's dividends will grow by 3% per year in the future and you require a 12% APR return, do you think that Ford is overvalued based on the dividend discount model? (Assume the next annual dividend is in one year.)

   [B]   If the market does require a 12% return, what rate of dividend growth would justify the current price based on the dividend discount model?

   [C]   If dividends do grow at 3%, what return will you get at the current market price based on the dividend discount model?

Step 1. Put the future dividends on a time line.
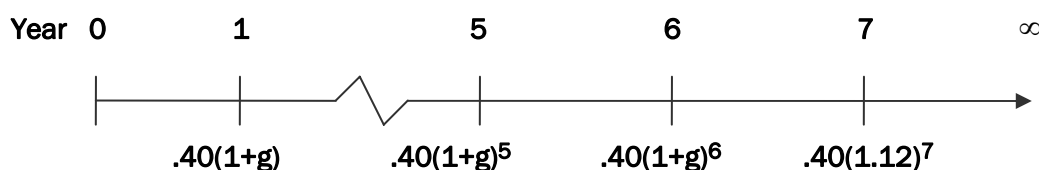
Step 2. To determine if Ford is overvalued, the value must be calculated.

The cash flow stream is a growing perpetuity with r = 12% and g = 3%, so

$$P = \frac{D_{\text{Last Year}}(1+g)}{r-g} = \frac{0.40(1.03)}{.12-.03} = \$4.58.$$

Thus, based on these assumptions, it is overvalued at $8.20.

Step 3. Now, set the present value of the dividends equal to the current price, $8.20, and solve for the constant growth rate assuming that r = 12%.

$$P = \frac{D_{\text{Last Year}}(1+g)}{r-g} = 8.20 = \frac{0.40(1+g)}{.12-g} \Rightarrow .12 - g(8.20) = .40 + .40g \Rightarrow .12 - g = .0488 + .0488g$$
$$\Rightarrow 1.0488g = .0712 \Rightarrow g = 6.8\%$$

Thus, if the dividends grow at exactly 6.8% every year, and you pay $8.20 for the stock today, your annually compounded rate of return will be 12%.

Step 4. Finally, set the present value of the dividends equal to the current price, $8.20, and solve for the discount rate assuming that g = 3%.

$$P = \frac{D_{\text{Last Year}}(1+g)}{r-g} = 8.20 = \frac{0.40(1.03)}{r-.03} \Rightarrow r - .03 = .05 \Rightarrow r = 8\%.$$

Thus, if the dividends grow at exactly 3% every year, and you pay $8.20 for the stock today, your annually compounded rate of return will be 8%.

2. Your broker is recommending a stock that is expected to pay its first dividend of $1.20 per share in exactly 1 year. The annual dividend is expected to be $1.44 the second year and $4.32 in the third year. In the fourth year, the dividend is expected to grow at 5% from then on.

   [A]   If you require a 20% return, how much would you pay for a share of the stock?

   [B]   Given the information in the problem, if you could buy the stock for $17, would you expect a higher or lower return than 20%?

[C] **If your expectations are correct, how much will the stock be worth in exactly two years (after the second dividend is paid)?**

Step 1. Put the dividends on a timeline.

Year 0   1   2   3   4   5   20   ∞

1.20   1.44   4.32   4.32(1.05)   4.32(1.05)^2 4.32(1.05)^{17}
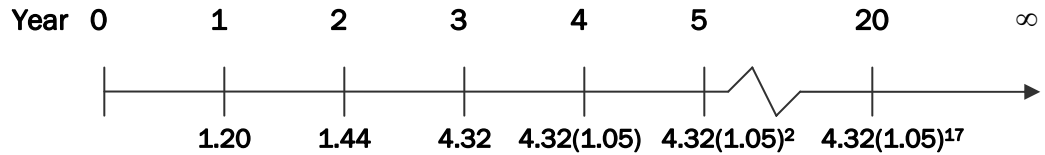
Step 2. The present value of the dividends can be calculated several ways:

One method is to find the present value of the first 3 years' dividends and then add on the time 3 terminal value, the present value of the dividends in years 4 through infinity valued at time 3.

$$P_0 = \frac{1.2}{1.2} + \frac{1.44}{1.2^2} + \frac{4.32}{1.2^3} + \frac{\left(\dfrac{4.32(1.05)}{.20-.05}\right)}{1.2^3} = 1 + 1 + 2.50 + 17.50 = \$22$$

Another method is to find the present value of the first 2 years' dividends and then add on the time 2 terminal value, the present value of the dividends in years 3 through infinity valued at time 2.

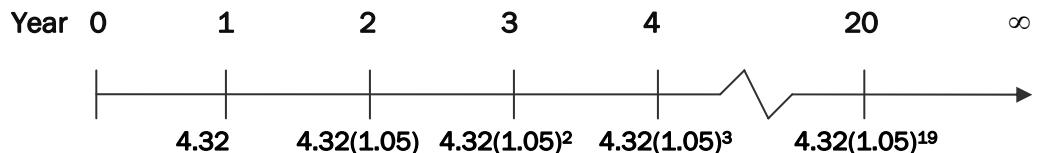$$P_0 = \frac{1.2}{1.2} + \frac{1.44}{1.2^2} + \frac{\left(\dfrac{4.32}{.20-.05}\right)}{1.2^2} = 1 + 1 + 20 = \$22$$

In any case, the stock is worth $22 given these assumptions, and you shouldn't pay more than that price.

Step 3. Determine if a $17 price would provide a higher return.

This requires no calculations. If a price of $22 provides a 20% return, given the forecasted dividends, then a lower price would provide a higher return. Finding the exact return requires solving the equation:

$$17 = \frac{1.2}{1+r} + \frac{1.44}{(1+r)^2} + \frac{\left(\dfrac{4.32}{r-.05}\right)}{(1+r)^2} \Rightarrow r = 23.7\%.$$

Step 4. Determine the time line in two years.

Year 0   1   2   3   4   20   ∞

4.32   4.32(1.05)   4.32(1.05)^2 4.32(1.05)^3 4.32(1.05)^{19}

Step 5. Once again, the present value of the dividends can be calculated several ways:

One method is to find the present value of the first years' dividend and then add on the present value of the dividends in years 2 through infinity valued at time 1.

$$P_0 = \frac{4.32}{1.2} + \frac{\left(\frac{4.32(1.05)}{.20-.05}\right)}{1.2} = 3.60 + 25.20 = \$28.80$$

Another method is to find the present value of the dividends in years 1 through infinity valued at time 0.

$$P_0 = \left(\frac{4.32}{.20-.05}\right) = \$28.80$$

Finally, you can verify that buying at $22, receiving the year 1 dividend and reinvesting it at 20%, and receiving the year two dividend and selling at $28.80 in two years represents a 20% annual return:

$$\text{Return} = \left(\frac{[28.80 + 1.20(1.20) + 1.44] - 22}{22}\right) = 0.44,$$

So, the annual return is $(1.44)^{1/2} - 1 = 0.20$, or 20%.

3. Last year, Microsoft had $44 billion in sales, $17 billion in free cash flow (FCF), and a stock market capitalization of $260 billion. The firm has no debt and $30 billion of excess cash.
   [A]   Is Microsoft overvalued based on the discounted free cash flow model if you expect FCF to grow by 5% per year forever and require a 15% return?
   [B]   Is Microsoft overvalued based on the enterprise value to sales ratio if comparable firms in the industry have an average enterprise value to sales ratio of 3.4?

Step 1. The discounted free cash flow model finds:

Enterprise value = market value of equity + total debt − excess cash

⇒ market value of equity = enterprise value − total debt + excess cash.

To determine the whether the equity value is above or below $260 billion based on the discounted free cash flow model, use the present value of a growing perpetuity equation to find the present value of the FCFs and add excess cash to find enterprise value:

$$\text{Value} = \left(\frac{\$17}{.12-.05}\right) = \$243\,\text{billion}$$

and add the value of the excess cash

$243 + \$30 = \$273\,\text{billion} > \$260\,\text{billion}$.

So based on your assumptions, the stock does not seem to be overvalued.

Step 2. Next, calculate the implied value based on an enterprise value to sales ratio of 3.4.

$$\frac{\text{Enterprise Value}}{\text{Sales}} \times \text{Sales} = \text{Enterprise Value} = \text{Market Value of Equity} + \text{Total Debt} - \text{Excess Cash}$$

$$= 3.4 \times \$44 = \$150\,\text{billion} = \text{Market Value of Equity} + 0 - 30$$

$$\Rightarrow \text{Market Value of Equity} = \$180\,\text{billion}$$

So based on the comparison firms, the stock is overvalued by 44%.

Questions and Problems

1. General Electric stock is priced at $25 per share. The firm is expected to pay an annual dividend of $0.50 per share in one year. Analysts were predicting a five-year growth rate in earnings of 8% per year. If the market expects GE to keep its retention ratio (the fraction of earning paid out as dividends) constant, and this growth rate continues in perpetuity, what is the market's required return for an investment in GE stock?

2. Exxon-Mobil Corporation will pay an annual dividend of $1.35 one year from now. Analysts expect this dividend to grow at 20% per year each year until five years from now. After year 5, the growth will level off to 3% per year. According to the dividend discount model, what is the value of a share of Exxon-Mobil stock if the firm's required return is 8%?

3. Suppose Oracle pays no dividends but spent $2 billion on share repurchases last year. If Oracle's equity cost of capital is 15%, and if the amount spent on repurchases is expected to grow by 5% per year, estimate Oracle's market capitalization. If they have 2 billion shares outstanding, what stock value per share?

4. Gap had EPS of $1.08 last year and a book value of equity of $6 per share. Firms in the clothing retail industry have an average price-to-earnings ratio of 22 and an average market-to-book ratio of 2.3. Is Gap, currently trading at $16 per share, overvalued based on:
   [A]   The industry-average P/E multiple?
   [B]   The industry-average price-to-book multiple?

5. Boeing's share price is $75. Its dividend is going to be $1.20 next year, and you expect the firm to raise this dividend by 5% per year in perpetuity.
   [A]   If Boeing's equity cost of capital is 7%, what share price would you expect based on your estimate of the dividend growth rate?
   [B]   Given Boeing's current share price and equity cost of capital, what would you conclude about your assessment of Boeing's future dividend growth?

Solutions to Questions and Problems

1. The net present value of an investment in GE is:

$$NPV = -25 + \frac{0.50}{r - 0.08} = 0$$

Solving for *r* gives:

$$NPV = -25 + \frac{0.50}{r - 0.08} = 0 \Rightarrow r - .08 = \frac{0.50}{25} \Rightarrow r = 0.02 + 0.08 = .10$$

So, the implied market return is 10%.

2. The value of the first 5 dividend payments is:

$$PV_{1-5} = \frac{1.35}{(0.08 - 0.20)}\left(1 - \left(\frac{1.20}{1.08}\right)^5\right) = \left(-11.25\right) \times \left(-.6935\right) = \$7.80$$

The value on date 5 of the rest of the dividend payments is:

$$PV_5 = \frac{1.35\left(1.20\right)^4 1.02}{0.08 - 0.02} = 47.59$$

Discounting this value to the present gives

$$PV_0 = \frac{47.59}{(1.08)^5} = \$32.39.$$

So the value of Exxon-Mobil is: $P = PV_{1-5} + PV_0 = 7.80 + 32.39 = \$40.18$

3. Total payout next year = 2 billion × 1.05 = $2.10 billion

   Equity Value = 2.10/(15% – 5%) = $21 billion

   Share price = 21/2 = $10.50.

4. [A] $\dfrac{P}{EPS} \times EPS = P = 22 \times 1.08 = \$23.76 > \$16$

   So, Gap is undervalued based on a comparable price-to-earnings ratio valuation.

   [B] $\dfrac{P}{Book\ Value\ per\ Share} \times Book\ Value\ per\ Share = P = 6 \times 2.3 = \$13.80 < \$16$

   So, Gap is overvalued based on a comparable market-to-book ratio valuation.

5. [A] $P = 1.20 / (.07 - .05) = \$60$
   [B] Based on the market price, your growth forecast may be too high.
        A growth rate consistent with market price is $g = r_E$ – div yield = 7% – 1.20/75 = 5.4%.