

Chapter 13

The Stock Market

■ Answers to End-of-Chapter Questions

1. The firm's value should reflect the present value of its future cash flows. Because earnings are a primary component of corporate cash flows, many investors use forecasted earnings to determine whether a firm's stock is over- or undervalued. Holding all else constant, the value of a stock or a stock's movement is determined to a great extent by the economic growth of a market; economic growth indirectly contributes to earnings growth. For example, as experienced during the global financial crisis of 2007, economic depression can lead to a bear market.
2. There are two cash flows from stock, periodic dividends, and a future sales price. Dividends are frequently changed when firm earnings either rise or fall. The future sales price is also difficult to estimate, since it depends on the dividends that will be paid at some date even farther in the future. Bond cash flows also consist of two parts, periodic interest payments and a final maturity payment. These payments are established in writing at the time the bonds are issued and cannot be changed without the firm defaulting and being subject to bankruptcy. Stock prices tend to be more volatile, since their cash flows are more subject to change.
3. The dividend discount valuation model measures the value of a firm as the present value of future expected dividends to be received by the investor. The model can account for uncertainty by allowing dividends to be revised in response to revised expectations about a firm's cash flows, or by allowing the required rate of return to be revised in response to changes in the required rate of return by investors.
The dividend discount model may result in an inaccurate valuation of a firm because of potential errors in determining the dividend to be paid over the next year, or the growth rate, or the required rate of return by investors. The limitations of this model are more pronounced when valuing firms that retain most of their earnings rather than distribute them as dividends, because the model relies on the dividend as the base for applying the growth rate. For example, many Internet-related stocks retain any earnings to support growth and thus are not expected to pay any dividends.
4. Stocks in emerging markets are more exposed to major government turnover and other forms of political risk. They also expose investors to a high degree of exchange rate risk because their local currencies are typically very volatile.

5. A share of common stock in a firm represents an ownership interest in that firm. Common stockholders vote, receive dividends, and hope that the price of their stock will rise. There are various classes of common stock, usually denoted by type A, type B and so on. The differences among the types usually involve either the distribution of dividends or voting rights. Preferred stock is a form of equity from a legal and tax standpoint. However, it differs from common stocks in several important ways. First, because preferred stockholders receive a fixed dividend that never changes, a share of preferred stock is as much like a bond as it is like a common stock. Second, because the dividend does not change, the price of the preferred stock is relatively stable. Third, preferred stockholders do not usually vote unless the firm has failed to pay the promised dividend. Finally, preferred stockholders hold a claim on assets that has priority over the claims of common stockholders but after that of creditors such as bondholders.
6. Investors have come to realize that some risk can be eliminated by diversifying across different countries. This is in essence the diversification of a portfolio. When one country is suffering from a recession, others may be booming. If inflationary concerns in the United States cause stock prices to drop, falling inflation in Japan may cause Japanese stocks to rise.

■ Quantitative Problems

Ebay, Inc. went public in September of 1998. The following information on shares outstanding was listed in the final prospectus filed with the SEC¹.

In the IPO, the Ebay issued 3,500,000 new shares. The initial price to the public was \$18.00 per share. The final first-day closing price was \$44.88.

1. If the investment bankers retained \$1.26 per share as fees, what was the net proceeds to Ebay? What was the market capitalization of new shares of Ebay?

Solution: Net Proceeds to Ebay = $(18.00 - 1.26) \times 3,500,000 = \$58,590,000.00$
 Market Cap = $44.88 \times 3,500,000 = \$157,080,000$

2. Two common statistics in IPOs are *underpricing* and *money left on the table*. Underpricing is defined as percentage change between the offering price and the first day closing price. Money left on the table is the difference between the first day closing price and the offering price, multiplied by the number of shares offered. Calculate the underpricing and money left on the table for Ebay. What does this suggest about the efficiency of the IPO process?

Solution: Underpricing = $((44.88 - 18.00)/18.00) = 149.33\%$
 MLOT = $(44.88 - 18.00) \times 3,500,000 = \$94,080,000$

3. The shares of Misheak, Inc. are expected to generate the following possible returns over the next 12 months:

¹ This information is summarized from <http://www.sec.gov/Archives/edgar/data/1065088/0001012870-98-002475.txt>

Return	Probability
-5%	0.10
5%	0.25
10%	0.30
15%	0.25
25%	0.10

If the stock is currently trading at \$25/share, what is the expected price in one year. Assume that the stock pays no dividends.

Solution: The expected return over the next 12 months is calculated as:

$$-0.05 \times 0.10 + 0.05 \times 0.25 + 0.10 \times 0.30 + 0.15 \times 0.25 + 0.25 \times 0.10 = 0.10$$

This suggests that the expected price is $\$25 \times (1.10) = \27.50

4. Sime Darby's stock price is currently \$20.00. It is expected to pay a dividend of \$0.80 a share in the current year. Stock analysts predict its price one year from now to be \$24.50. Calculate the expected return.

Solution:

$$\text{Expected return} = \frac{P_1 + D_1 - P_0}{P_0}$$

$$\text{Expected return} = \frac{24.50 + 0.80 - 20}{20}$$

$$\text{Expected return} = 0.265 \approx 26.5\%$$

5. Suppose Microsoft, Inc. was trading at \$27.29 per share. At that time, it pays an annual dividend of \$0.32 per share, and analysts have set a 1-year target price around \$33.30 per share. What is the expected return on this stock?

Solution:

$$\text{Expected return} = \frac{33.30 + 0.32 - 27.29}{27.29} = 0.2319 = 23.2\%$$

6. LaserAce is selling at \$22.00 per share. The most recent annual dividend paid was \$0.80. Using the Gordon Growth model, if the market requires a return of 11%, what is the expected dividend growth rate for LaserAcer?

Solution:

$$P_0 = \frac{D_0(1+g)}{k_e - g}, \text{ or } 22.00 = \frac{0.80(1+g)}{0.11 - g}. \text{ Solving, } g = 7.1\%$$

7. Huskie Motor's just paid an annual dividend of \$1.00 per share. Management has promised shareholders to increase dividends a constant rate of 5%. If the required return is 12%, what is the

current price per share?

Solution:

$$P_0 = \frac{D_0(1+g)}{k_e - g} = \frac{1.00(1+0.05)}{0.12 - 0.05} = \$15.00$$

8. Langkasuka Holdings expects to pay an annual dividend of \$1.50 per share and stock analysts expect the dividend to grow by 7% indefinitely. If Langkasuka Holdings current share price is \$25, what would be the required rate of return?

Solution:

$$P_0 = \frac{D_0(1+g)}{k_e - g}$$

$$25 = \frac{1.50}{k_e - 0.07}$$

$$25k_e - 1.75 = 1.50$$

$$25k_e = 1.50 + 1.75$$

$$k_e = \frac{3.25}{25} = 0.13$$

9. Gordon & Co.'s stock has just paid its annual dividend \$1.10 per share. Analysts believe that Gordon will maintain its historic dividend growth rate of 3%. If the required return is 8%, what is the expected price of the stock next year?

Solution:

$$P_1 = \frac{D_1(1+g)}{k_e - g} = \frac{1.133(1.03)}{0.08 - 0.03} = \$23.34$$

10. Patimas Computers is currently paying dividends of \$0.50 a share. These dividends are expected to grow at a rate of 20% for the next two years and at a constant growth rate of 3% thereafter. What would be the current price of Patimas Computers shares given a required return of 15%?

Solution:

$$P_0 = \frac{D_0(1+g)}{1+k_e} + \frac{D_1(1+g)}{(1+k_e)^2} + \frac{\frac{D_2(1+g)}{(k_e - g)}}{(1+k_e)^2}$$

$$P_0 = \frac{0.5(1+0.20)}{1+0.15} + \frac{0.6(1+0.20)}{(1+0.15)^2} + \frac{\frac{0.72(1+0.03)}{(0.15-0.03)}}{(1+0.15)^2}$$

$$P_0 = 0.5217391304 + 0.5444234405 + 4.672967864 = \$5.74$$

11. Nat-T-Cat Industries just went public. As a growing firm, it is not expected to pay a dividend for the first five years. After that, investors expect Nat-T-Cat to pay an annual dividend \$1.00 per share (i.e., $D_6 = 1.00$), with no growth. If the required return is 10%, what is the current stock price?

Solution:

$$P_5 = \frac{D_6(1+g)}{k_e - g} = \frac{1.00(1.00)}{0.10 - 0.00} = \$10.00$$

so,

$$P_0 = P_5 / (1.10)^5 = \$6.21$$

12. A start-up technology company has projected earnings per share of \$4.50. If the average technology industry PE ratio is 30, what would the company's projected stock price?

Solution:

$$P_0 = \frac{P}{E} \times E$$

$$P_0 = 30 \times \$4.50 = \$135$$

13. Suppose Microsoft, Inc. reported earnings per share around \$0.75. If Microsoft is in an industry with a ratio ranging from 30 to 40, what is a reasonable price range for Microsoft?

Solution: Microsoft's price should be between $\$0.75 \times 30$ to $\$0.75 \times 40$, or \$22.50 to \$30.00.

14. Consider the following security information for four securities making up an index:

Security	Price		Shares Outstanding
	time = 0	time = 1	
1	8	13	20 million
2	22	25	50 million
3	35	30	120 million
4	50	55	75 million

What is the change in the value of the index from time = 0 to time = 1 if the index is calculated using a value-weighted arithmetic mean?

Solution: For a value-weighted arithmetic mean, the change is calculated as follows:

First, the market value at time = 0 is calculated as:

Security	Price		Shares Outstanding	Market Value
	time = 0	time = 1		
1	8	13	20 million	\$ 160
2	22	25	50 million	\$1,100
3	35	30	120 million	\$4,200
4	50	55	75 million	\$3,750
				\$9,210

The change is then calculated as:

$$\left[\frac{13-8}{8} \times \frac{160}{9210} + \frac{25-22}{22} \times \frac{1100}{9210} + \frac{30-35}{35} \times \frac{4200}{9210} + \frac{55-50}{50} \times \frac{3750}{9210} \right] = 0.0027$$

$$\text{Index}_1 = \text{Index}_0 \times 1.0027$$

15. An index had an average (geometric) mean return over 20 years of 3.8861%. If the beginning index value was 100, what was the final index value after 20 years?

Solution:

The actual return over the 20 years is $(1.038861)^{20} = 2.143625$
So, the final index value is 214.3625

16. Compute the price of a share of stock that pays a \$1 per year dividend and that you expect to be able to sell in one year for \$20, assuming you require a 15% return.

Solution:

$$\$1/(1 + 0.15) + \$20/(1 + 0.15) = \$18.26$$

17. The projected earnings per share for Risky Ventures, Inc. is \$3.50. The average *PE* ratio for the industry composed of Risky Ventures closest competitors is 21. After careful analysis, you decide that Risky Ventures is a little more risky than average, so you decide a *PE* ratio of 23 better reflects the market's perception of the firm. Estimate the current price of the firm's stock.

Solution:

$$23 \times \$3.5 = \$80.50$$