Valuation Problems: Stocks, Bonds, and Other Investments

1. What are the values of the three investments:

   a. Stock in which you expect a dividend of $300 a year indefinitely. You feel you should obtain a 10% return based on the risk you are taking.

   \[ PV = \frac{D}{r} = \frac{300}{0.10} = 3000 \]

   b. Painting that you expect to sell for $300,000 in 5 years. You feel you should obtain a 20% return.

   \[ \text{PV} = x \]
   \[ N = 5 \]
   \[ I = 20 \]
   \[ FV = 300,000 \]

   c. A parking lot that generated $40,000 in cash flow last year (time period 0). The cash flows are expected to grow at 4% per year. The required return is 11 percent.

   \[ \text{Value} = \frac{44,000}{0.11 - 0.04} \text{Annual growth} + \text{4\% growth in } c + 5 \]

2. Cemex, a large cement provider, issued a 10 percent coupon interest rate, 10-year bond with a $1,000 par value. The market rate for a bond like this (risk level of company and maturity rate) is 11 percent. The company is selling 100,000 of these bonds. How much should these bonds sell for in the marketplace? Excluding transaction costs, how much will Cemex collect?

3. You decide to buy IBM bonds that are selling in the open market for $950. The coupon rate is 8 percent. The bonds mature in 10 years. What is the Yield-to-Maturity of these bonds?
4. You just bought IBM bonds that mature in twenty years. You paid $1,000 (par value). The bonds have a coupon rate of 8 percent. If interest rates fall and the required return on your bond is now 6 percent, what is the value of your bond?

5. You also own an IBM bond that matures in two years. Let's assume it is selling for $1,000 on the open market and has a coupon rate of 8 percent. If interest rates fall and the required return on your bond is now 6 percent, what is the value of your bond (in reality, 4 and 5 would not occur at the same time)?

6. Look at the new value of the bonds in problems 4 and 5. The same change in interest rates occurred. Did the value of the bonds change the same amount? Can you make sense of this?

7. Using the Gordon Model, calculate the value of the following stock. The required return is 9.5%. The dividend growth rate = 7%. The dividend one period out is $2.76.

8. Assume in the above problem that the company has just landed a major account in Asia. Assume the risk level of the company hasn't changed but the expected growth in dividends is expected to grow at 9 percent. Dividends one period out = $2.81. What is the value of the stock using the Gordon Growth Model?

9. What are the limitations of the Gordon Growth Model?
10. Using the above problems, explain how taking on a new project (e.g., Asia) can increase or decrease the value of a stock.

11. Alligators R Us is contemplating expansion through the issuance of debt/bonds. Your broker calls you and suggests that you buy 10 bonds—price $1,150 for each bond, 11 percent coupon rate, $1,000 par value, interest paid annually. The bonds mature in 12 years. Calculate the Yield-to-Maturity (YTM). Are the bonds selling at a discount or premium?

12. The average PE ratio for semiconductor stocks is 20. Triquint Semiconductor (TQNT) has average risk and growth prospects compared to the rest of the industry. If the company has Earnings Per Share of $2.00, what would be a fair stock price? If the company has 140,000,000 shares outstanding, what would be a fair market capitalization (aka market cap) for TQNT. What was Triquint's Net Income?
Solutions

1a. Solution: $3,000

1b. Solution: $120,563

1c. Solution: $628,571

2. Solution: $941.92 Market Value; $94,192,000 collected

3. Solution: $950, n = 10, pmt = $80, FV = $1,000, CPT = I/Y

4. Solution: $1,229

5. Solution: $1,037

7. Solution: $110.40 – $2.76/(.095-.07)

8. Solution: $562,000

11. Solution: 8.91%, premium; premium > $1,000, discount < $1,000

12. Solution: $40 per share; $5.6 billion market cap; $280,000,000 Net Income