Financial Management

FINA 2010, Semester II, 2020-2021

Assignment 7 (Solution)

8 March, 2021

1. Questions from Chapter 8 of the text book (Page 264, Concepts Review and Critical Thinking Questions)

Q3: In general, companies that need the cash will often forgo dividends since dividends are a cash expense. Young, growing companies with profitable investment opportunities are one example; another example is a company in financial distress. This question is examined in depth in a later chapter.

Q11: Presumably, the current stock value reflects the risk, timing and magnitude of all future cash flows, both short-term and long-term. If this is correct, then the statement is false.

Q13: In a declassified board, every board seat is up for election every year. This structure allows investors to vote out a director (and even the entire board) much more quickly if investors are dissatisfied. However, this structure also makes it more difficult to fight off a hostile takeover bid. In contrast, a classified board can more effectively negotiate on behalf of stockholders, perhaps securing better terms in a deal. Classified boards are also important for institutional memory. If an entire board were voted out in a single year, there would be no board members available to evaluate the company's direction with regards to previous decisions.

2. Questions from Chapter 8 of the text book (Page 265, Questions and Problems)

Q16: The price of a stock is the PV of the future dividends. This stock is paying five dividends, so the price of the stock is the PV of these dividends using the required return. The price of the stock is:

$P_0 = \$7.25/1.11 + \$11.75/1.11^2 + \$16.25/1.11^3 + \$20.75/1.11^4 + \$25.25/1.11^5$

$P_0 = \$56.60$

Q25: We can use the two-stage dividend growth model for this problem, which is:

$P_0 = [D_0(1 + g_1)/(R - g_1)]\{1 - [(1 + g_1)/(1 + R)]^t\} + [(1 + g_1)/(1 + R)]^t[D_0(1 + g_2)/(R - g_2)]$

$P_0 = [\$1.94(1.18)/(.10 - .18)][1 - (1.18/1.10)^{11}] + [(1.18)/(1.10)]^{11}[\$1.94(1.04)/(.10 - .04)]$

$P_0 = \$106.11$

Q26:

a. Using the equation to calculate the price of a share of stock with the PE ratio:

P = Benchmark PE ratio × EPS

So, with a PE ratio of 21, we find:

P = 21($3.76)

P = $78.96

b. First, we need to find the earnings per share next year, which will be:

$EPS_1 = EPS_0(1 + g)$

EPS_1 = $3.76(1 + .051)

EPS_1 = $3.95

Using the equation to calculate the price of a share of stock with the PE ratio:

P_1 = Benchmark PE ratio × EPS_1

P_1 = 21($3.95)

P_1 = $82.99

c. To find the implied return over the next year, we calculate the return as:

$R = (P_1 - P_0)/P_0$

R = ($82.99 – 78.96)/$78.96

R = .051, or 5.1%

Notice that the return is the same as the growth rate in earnings. Assuming a stock pays no dividends and the PE ratio is constant, this will always be true when using price ratios to evaluate the price of a share of stock.

Q30: We need to begin by finding the dividend for each year over the next five years, so:

D_1 = $1.36(1 + .13) = $1.54

D_2 = $1.36(1 + .13)$^2^ = $1.74

D_3 = $1.36(1 + .13)$^3^ = $1.96

D_4 = $1.36(1 + .13)$^4^ = $2.22

D_5 = $1.36(1 + .13)$^5^ = $2.51

To find the EPS in Year 5, we can use the dividends and payout ratio, which gives us:

$EPS_5 = D_5$/Payout ratio

EPS_5 = $2.51/.40

EPS_5 = $6.26

So, the terminal stock price in Year 5 will be:

P_5 = Benchmark PE ratio × EPS_5

P_5 = 19($6.26)

P_5 = $119.02

The stock price today is the present value of the dividends for the next five years, plus the present value of the terminal stock price, discounted at the required return, or:

P_0 = $1.54/1.11 + $1.74/$1.11^2$ + $1.96/$1.11^3$ + $2.22/$1.11^4$ + ($2.51 + 119.02)/$1.11^5$

P_0 = $77.81

Q36: Even though the question concerns a stock with a constant growth rate, we need to begin with the equation for two-stage growth given in the chapter, which is:

$$P_0 = \frac{D_0(1 + g_1)}{R - g_1}\left[1 - \left(\frac{1 + g_1}{1 + R}\right)^t\right] + \frac{P_t}{(1 + R)^t}$$

We can expand the equation (see Problem 37 for more detail) to the following:

$$P_0 = \frac{D_0(1 + g_1)}{R - g_1}\left[1 - \left(\frac{1 + g_1}{1 + R}\right)^t\right] + \left(\frac{1 + g_1}{1 + R}\right)^t \frac{D_0(1 + g_2)}{R - g_2}$$

Since the growth rate is constant, $g_1 = g_2$, so:

$$P_0 = \frac{D_0(1 + g)}{R - g}\left[1 - \left(\frac{1 + g}{1 + R}\right)^t\right] + \left(\frac{1 + g}{1 + R}\right)^t \frac{D_0(1 + g)}{R - g}$$

Since we want the first t dividends to constitute one-half of the stock price, we can set the two terms on the right hand side of the equation equal to each other, which gives us:

$$\frac{D_0(1+g)}{R - g}\left[1 - \left(\frac{1 + g}{1 + R}\right)^t\right] = \left(\frac{1 + g}{1 + R}\right)^t \frac{D_0(1 + g)}{R - g}$$

Since $\frac{D_0(1+g)}{R - g}$ appears on both sides of the equation, we can eliminate this, which leaves:

$$1 - \left(\frac{1+g}{1+R}\right)^t = \left(\frac{1 + g}{1 + R}\right)^t$$

Solving this equation, we get:

$$1 = \left(\frac{1+g}{1+R}\right)^t + \left(\frac{1 + g}{1 + R}\right)^t$$

$$1 = 2\left(\frac{1+g}{1+R}\right)^t$$

$$1/2 = \left(\frac{1+g}{1+R}\right)^t$$

$$t \ln\left(\frac{1+g}{1+R}\right) = \ln(.5)$$

$$t = \frac{\ln(.5)}{\ln\left(\frac{1+g}{1+R}\right)}$$

This expression will tell you the number of dividends that constitute one-half of the current stock price.

3. Which one of following is the rate at which a stock's price is expected to appreciate?
A. current yield
B. total return
C. dividend yield
D. capital gains yield
E. coupon rate

4. A company has two open seats, Seat A and Seat B, on its board of directors. There are 6 candidates vying for these 2 positions. There will be a single election to determine the winner of both open seats. As the owner of 100 shares of stock, you will receive one vote per share for each open seat. You decide to cast all 200 of your votes for a single candidate. What is this type of voting called?
A. democratic
B. cumulative
C. straight
D. deferred
E. proxy

5. You cannot attend the shareholder's meeting for Alpha United so you authorize another shareholder to vote on your behalf. What is the granting of this authority called?
A. altering
B. cumulative voting
C. straight voting
D. indenture agreement
E. voting by proxy

6. Callander Enterprises stock is listed on NASDAQ. The firm is planning to issue some new equity shares for sale to the general public. This sale will occur in which one of the following markets?
A. private
B. auction
C. exchange floor
D. secondary
E. primary

7. An agent who arranges a transaction between a buyer and a seller of equity securities is called a:
A. broker.
B. floor trader.
C. capitalist.
D. principal.
E. dealer.

8. A floor broker on the NYSE does which one of the following?
A. supervises the commission brokers for a financial firm
B. trades for his or her personal inventory
C. executes orders on behalf of a commission broker
D. maintains an inventory and takes the role of a specialist
E. is charged with maintaining a liquid, orderly market

9. An ECN is best described as:
A. an electronic network which transmits orders directly to the floor of the NYSE.
B. the network used in the primary market for selling newly issued shares.
C. the international trading network of the NYSE.
D. a website that allows individual investors to trade directly with one another.
E. a computerized network used by independent brokers.

10. An increase in which of the following will increase the current value of a stock according to the dividend growth model?
I. dividend amount
II. number of future dividends, provided the current number is less than infinite
III. discount rate
IV. dividend growth rate
A. I and II only
B. III and IV only
C. I, II, and III only
D. I, II, and IV only
E. I, II, III, and IV

11. The dividend growth model:
I. assumes that dividends increase at a constant rate forever.
II. can be used to compute a stock price at any point in time.
III. can be used to value zero-growth stocks.
IV. requires the growth rate to be less than the required return.
A. I and III only
B. II and IV only
C. I, III, and IV only
D. I, II, and IV only
E. I, II, III, and IV

12. Answer this question based on the dividend growth model. If you expect the market rate of return to increase across the board on all equity securities, then you should also expect:
A. an increase in all stock values.
B. all stock values to remain constant.
C. a decrease in all stock values.
D. dividend-paying stocks to maintain a constant price while non-dividend paying stocks decrease in value.
E. dividend-paying stocks to increase in price while non-dividend paying stocks decrease in value.

13. Winston Co. has a dividend-paying stock with a total return for the year of -6.5 percent. Which one of the following must be true?
A. The dividend must be constant.
B. The stock has a negative capital gains yield.
C. The dividend yield must be zero.
D. The required rate of return for this stock increased over the year.
E. The firm is experiencing supernormal growth.

14. Jen owns 30 shares of stock in Delta Fashions and wants to win a seat on the board of directors. The firm has a total of 100 shares of stock outstanding. Each share receives one vote. Presently, the company is voting to elect three new directors. Which one of the following statements must be true given this information?
A. Regardless of the voting procedure, Jen does not own enough shares to gain a seat on the board.
B. If straight voting applies, Jen is assured a seat on the board.
C. If straight voting applies, Jen can control all of the open seats.
D. If cumulative voting applies, Jen is assured one seat on the board.
E. If cumulative voting applies, Jen can control all of the open seats.

15. Which one of the following statements related to corporate dividends is correct?
A. Dividends are nontaxable income to shareholders.
B. Dividends reduce the taxable income of the corporation.
C. The Chief Executive Officer of a corporation is responsible for declaring dividends.
D. The Chief Financial Officer of a corporation determines the amount of dividend to be paid.
E. Corporate shareholders may receive a tax break on a portion of their dividend income.

16. Which one of these statements related to preferred stock is correct?
A. Preferred shareholders normally receive one vote per share of stock owned.
B. Preferred shareholders determine the outcome of any election that involves a proxy fight.
C. Preferred shareholders are considered to be the residual owners of a corporation.
D. Preferred stock normally has a stated liquidating value of $1,000 per share.
E. Cumulative preferred shares are more valuable than comparable non-cumulative shares.

17. You own 600 shares of a NASDAQ listed stock that you wish to sell. Which of the following are options available to you for this purpose?
I. sell the shares to a dealer at the dealer's bid price
II. sell directly to another individual via an ECN
III. offer the shares yourself on NASDAQ via an ECN
IV. have a broker offer the shares for sale on the NYSE
A. I and II only
B. III and IV only
C. II and III only
D. I, II, and III only
E. II, III, and IV only

18. Miller Brothers Hardware paid an annual dividend of $1.15 per share last month. Today, the company announced that future dividends will be increasing by 2.6 percent annually. If you require a 12 percent rate of return, how much are you willing to pay to purchase one share of this stock today?

A. $12.23
B. $12.55
C. $12.67
D. $12.72
E. $12.88

19. Upper Crust Bakers just paid an annual dividend of $2.80 a share and is expected to increase that amount by 4 percent per year. If you are planning to buy 1,000 shares of this stock next year, how much should you expect to pay per share if the market rate of return for this type of security is 11.50 percent at the time of your purchase?
A. $37.33
B. $38.16
C. $38.83
D. $40.38
E. $42.00

$$P_1 = \frac{\$2.80 \times (1 + 0.04)^2}{0.115 - 0.04} = \$40.38$$

20. Show Boat Dinner Theatres has paid annual dividends of $0.32, $0.48, and $0.60 a share over the past three years, respectively. The company now predicts that it will maintain a constant dividend since its business has leveled off and sales are expected to remain relatively flat. Given the lack of future growth, you will only buy this stock if you can earn at least a 16 percent rate of return. What is the maximum amount you are willing to pay for one share of this stock today?
A. $3.43
B. $3.75
C. $4.43
D. $4.69
E. $4.82

$$P_0 = \frac{\$0.60}{0.16} = \$3.75$$

21. Northern Gas recently paid a $2.80 annual dividend on its common stock. This dividend increases at an average rate of 3.8 percent per year. The stock is currently selling for $26.91 a share. What is the market rate of return?
A. 13.88 percent
B. 14.03 percent
C. 14.21 percent
D. 14.37 percent
E. 14.60 percent

$$\$26.91 = \frac{\$2.80 \times (1 + 0.038)}{R - 0.038}; R = 14.60 \text{percent}$$

22. Great Lakes Health Care common stock offers an expected total return of 9.2 percent. The last annual dividend was $2.10 a share. Dividends increase at a constant 2.6 percent per year. What is the dividend yield?
A. 3.75 percent
B. 4.20 percent
C. 4.55 percent
D. 5.25 percent
E. 6.60 percent

Dividend yield = 0.092 - 0.026 = 6.6 percent

23. Electronics, Inc. common stock returned a nifty 22.68 percent rate of return last year. The dividend amount was $0.25 a share which equated to a dividend yield of 0.84 percent. What was the rate of price appreciation for the year?
A. 21.84 percent
B. 22.38 percent
C. 22.60 percent
D. 22.87 percent
E. 23.52 percent

g = 0.2268 - 0.0084 = 21.84 percent

24. Yesteryear Productions pays no dividend at the present time. The company plans to start paying an annual dividend in the amount of $0.40 a share for two years commencing four years from today. After that time, the company plans on paying a constant $0.75 a share annual dividend indefinitely. How much are you willing to pay to buy a share of this stock today if your required return is 11.6 percent?
A. $3.78
B. $4.22
C. $4.37
D. $4.71
E. $4.98

$$P_5 = \frac{\$0.75}{0.116} = \$6.46552$$

$$P_0 = \frac{\$0.40}{(1 + 0.116)^4} + \frac{\$0.40 + \$6.46552}{(1 + 0.116)^5} = \$4.22$$

25. Bonnie's Ice Cream is expecting its ice cream sales to decline due to the increased interest in healthy eating. Thus, the company has announced that it will be reducing its annual dividend by 2 percent a year for the next five years. After that, it will maintain a constant dividend of $2 a share. Last year, the company paid $2.20 per share. What is this stock worth to you if you require a 9.5 percent rate of return?
A. $16.21
B. $17.48
C. $18.64
D. $19.09
E. $21.36

$$P_5 = \frac{\$2}{0.095} = \$21.0526$$

$$P_0 = [\$2.20 \times (1 - 0.02)]\left\{\frac{1 - \left[\frac{1 + (-0.02)}{1 + 0.095}\right]^5}{0.095 - (-0.02)}\right\} + \frac{\$21.0526}{(1 + 0.095)^5} = \$21.36$$

26. The Farmer's Market just paid an annual dividend of $5 on its stock. The growth rate in dividends is expected to be a constant 5 percent per year indefinitely. Investors require a 13 percent return on the stock for the first 3 years, a 9 percent return for the next 3 years, a 7 percent return thereafter. What is the current price per share?
A. $212.40
B. $220.54
C. $223.09
D. $226.84
E. $227.50

$$P_6 = \frac{\$5 \times (1 + 0.05)^7}{0.07 - 0.05} = \$351.78$$

$$P_3 = \frac{\$5 \times 1.05^4}{1.09} + \frac{\$5 \times 1.05^5}{1.09^2} + \frac{(\$5 \times 1.05^6) + \$351.78}{1.09^3} = \$287.76$$

$$P_0 = \frac{\$5 \times 1.05}{1.13} + \frac{\$5 \times 1.05^2}{1.13^2} + \frac{(\$5 \times 1.05^3) + \$287.76}{1.13^3} = \$212.40$$

27. Jefferson Mills just paid a dividend of $1.56 per share on its stock. The dividends are expected to grow at a constant rate of 8 percent per year, indefinitely. What will the price of this stock be in 7 years if investors require a 15 percent rate of return?

A. $28.18
B. $32.04
C. $37.46
D. $41.25
E. $43.33

$$P_7 = \frac{\$1.56 \times 1.08^8}{.15 - .08} = \$41.25$$