FINM2063 Introduction to Finance

Chapter 7 Exercises

Solutions

1. a. The dividend-growth model is

V = D0(1 + g).

r ‑ g

Stock A: Current Price

V = $1(1 + .07) = $15.29 $23

.14 ‑ .07

Stock B:

V = $3(1 + .02) = $25.50 $47

.14 ‑ .02

Stock C:

V = $7.50(1 + (-.01)) = $49.50 $60

.14 ‑ (-.01)

According to the dividend‑growth model, all three stocks are currently over‑valued and should not be bought.

b. The implied rate of return is the sum of the growth

rate and the dividend yield:

$1(1 + .07) + .07 = 11.65%

$23

This is essentially the same information derived in the previous part. The implied return is less than the required return. The investor should not buy the stock.

c. P/E ratios are an alternative means to value stock

(at least by financial and securities analysis).

The maximum price of each stock is

A: 12 x $2 = 24

B: 12 x $3.20 = 38.4

C: 12 x $7.00 = 84

If the maximum P/E should be 7.0, the maximum value of

each stock is

A: 7 x $2.00 = $14.00

B: 7 x $3.20 = $22.40

C: 7 x $7.00 = $49.00

The P/E of each stock exceeds the maximum allowed P/E, and the valuation of each stock based on the desired P/E is less than the market price. This indicates that each stock is overvalued and should be avoided. (Point out that even though the dividend-growth model and use of P/E ratios may lead to the same conclusion concerning the value of a stock, such consistency may not apply. Also point out that the dividend-growth model is theoretically superior but may be more difficult to make operational.)

d. The negative growth rate of C means that the firm is

contracting. However, it may still be an attractive

investment depending on its valuation and current price.

Many investments contract (e.g., oil fields and gold mines eventually are depleted) but investors do purchase shares in such operations.

1. a. Required return = rf + (rm - rf)beta

= .02 + (.08 - 0.02)1.2 = 9.2%

b. V = D0(1 + g) = $4.50(1.04) = $90

r ‑ g .092 - .04

c. The stock is overvalued ($100 > $90) and should not be purchased. (Should consider selling it short.)

d. Required return = rf + (rm - rf)beta

= .02 + (.08 - 0.02)1.0 = 8%

V = D0(1 + g) = $4.50(1.04) = $117

r ‑ g .08 - .04

e. The stock is undervalued ($100 < $117) and should be purchased.

1. The first step is to solve for g, the unknown variable, in the constant growth equation.

Solving for g, we find the growth rate to be 5 percent:

$4.32 – $36g = $2.40 + $2.40g

$38.4g = $1.92

g = 0.05 = 5%.

The next step is to use the growth rate to project the stock price five years hence:

*Alternative solution:* Because the company will grow at a constant 5 percent, its stock value will increase at this same rate. As a result, we have

Therefore, Ewald Company’s expected stock price five years from now, , is $45.95.

1. a. Year Dividend

1 $2.100 = $2.000(1.05)

2 2.205 = $2.100(1.05)

3 2.315 = $2.205(1.05)

You will also receive the market price of the stick when you sell it in Year 3. The market price of the stock in Year 3 will be:

b.

1. Calculate the dividend stream, and place them on a cash flow time line. Also, calculate the price of the stock at the end of the supernormal growth period, and include it, along with Year 5 dividend.

D0 = D1 = D2 = 0

D3 = 1.00

D4 = 1.00(1.5) = 1.50

D5 = 1.00(1.5)2 = 2.25

D6 = 2.25(1.08) = 2.43

…

g1 = 50% g2 = 50% gnorm = 8%

0.6575 1.00 1.50 2.25

0.8576 + 34.7143 = 2.43/(0.15 – 0.08)

18.3778 = 36.9643

19.8929

rs = 15%

0 1 2 3 4 5 6