**CHAPTER 6**

**BOND AND STOCK VALUATION**

13. PB = $65[PVIFA(6%, 30 periods)] + $1,000[PVIF(6%, 30 periods)]

 = $65[13.7648] + $1000[.1741]

 = $1,068.81

14. YTM = [$\frac{\$1,000}{\$625}$]1/10 – 1 = .0481 or 4.81%

15.

 a. For the bond to be issued at par, the coupon rate and the discount rate must be the same, 15%.

 b. PB = $100[PVIFA(15%, 10 periods)] + $1,000[PVIF(15%, 10 periods)]

 = $100[5.0188] + $1,000[.2472]

 = $749.08

16. To solve for the yield to maturity, we set the price of the bond equal to the present value of the future cash flows and find the interest rate that makes the two equal.

 776 = $90[PVIFA(r%, 20 years)] + $1,000[PVIF(r%, 20 years)

After some trial and error, we find the yield to maturity to be about 12 percent.

17. $900 = $42.50[PVIFA(r%, 10 periods)] + $1,000[PVIF(r%, 10 periods)]

Using trial and error, we find r = 5.58% periodic rate. The effective annual rate or yield to maturity (YTM) is (1.0558)2 – 1 = 11.16%

18. PS = $\frac{D}{r}$ = $\frac{\$5}{.15}$ = $33.33

19.

 a. PS = $\frac{D1}{r – g}$ = $\frac{\$1.75}{.22 - .15}$ = $25

 b. D6 = D1(1 + g)5 = $1.75(1.15)5 = $3.52

 PS,5 = $\frac{D6}{r – g}$ = $\frac{\$3.52}{.22 - .15}$ = $50.28

20. P = $\frac{D\left(1+g\right)}{r-g}$

 solving for D gives us

D = $\frac{P\left(r-g\right)}{1 + g}$ = $\frac{\$45\left(.11 - .03\right)}{1+ .03}$ = $3.50

and D1 = $3.50(1.03) = $3.61

21. r = $\frac{D}{P}$ = $\frac{\$4}{\$50}$ = .08 or 8%

22. DY = $\frac{D}{P}$ = $\frac{\$6.25}{\$72}$ = .087 or 8.7%

23. P = $100

 D0 = $6

 r = 10%

PS = $\frac{D\left(1+g\right)}{r – g}$

solving for g gives us

g = $\frac{P\left(r\right)- D}{P + D} $= $\frac{\$100\left(.10\right)- \$6}{\$100 + \$6}$ = .0377 or 3.77%

24. r = $\frac{D\left(1 + g\right)}{P}$ + g = $\frac{\$5\left(1.06\right)}{132.50}$ + .06 = .10 or 10%

25.

a. P0 = 1.20(1.08)/(.11 - .08)

Based on the constant dividend growth model, the stock is undervalued.

b. D1992 = $1.20(1.12) = $1.34

 D1993 = $1.20(1.12)2 = $1.50

 D1994 = $1.20(1.12)3 = $1.69

 D1995 = $1.20(1.12)3(1.08) = $1.82

 P1994 = $\frac{1.82}{0.11-0.08}$ = 60.67

 PS,0 = $\frac{1.34}{0.11}$ + $\frac{1.50}{(0.11)\^2}$ + $\frac{1.69+60.67}{(0.11)\^3}$ = $48.02

26.

a. r = $\frac{D\_{1}}{P}$ + g = $\frac{\$.60}{\$20}$ + 0.08 = 0.11 or 11%

b. In order to use the constant growth dividend model, we need to assume the following three things. First, that rate of dividend growth does not change. Second that the required return is constant. Finally, that the required return is greater than the rate of dividend growth.

27.

880 = 120[PVIFA(r%, 10)] + 1,000[PVIF(r%, 10)]

Using trial and error or Lotus, we get 14.33%

To calculate the YTM for this problem, we need to assume that the par value of the bond is $1000. We also need to make an assumption about how often interest payments are made. In this case, we assume that interest is paid annually.

28.

Pb = $100[PVIFA(8%, 4) + $1000[PVIF(8%, 4)]

=$100[3.3121] + $1000[0.7350]

= $1,066.21

29.

P$ = $Ɏ$20,000 / $Ɏ$110 / $ = $181.82

30.

a. P = $\frac{\$5(1.10)}{.15-.10}$ = $110

b.

 D1 = $5.00(1.10) = $5.50

 D2 = $5.00(1.10)2 = $6.05

 D3 = $5.00(1.10)3 = $6.66

 D4 = $5.00(1.10)4 = $7.32

 D5 = $5.00(1.10)5 = $8.05

PVD = $\frac{\$5.50}{(1.15)}$ + $\frac{\$6.05}{(1.15)\^2}$ + $\frac{\$6.66}{(1.15)\^3}$ + $\frac{\$7.32}{(1.15)\^4}$ + $\frac{\$8.05}{(1.15)\^5}$ = 21.91

% Dividend = $\frac{\$21.91}{\$110}$ = .1992 or 19.92%

31.

If they invest 60 million ponts in the U.S. at an exchange rate of 4 ponts per dollar, they will be investing in $15 million of T-bills.

Proceeds$ = $15 mill \* 1.071 = $16.065 mill

If they invest in Lumbaria T-bills they will have

Proceeds$ = $60 mill \* 1.146 = 68.76 mill ponts

To compare the two investments, we need to convert the ponts to $. Because the pont is expected to decline 5% relative to the dollar it now takes 4.20 ponts to buy $1 [4(1.05) = 4.20].

Proceeds$ = $\frac{68.76 ponts}{4.20 ponts / \$}$ = $16.37

So investing in Lumbaria T-bills is the better deal.

32.

ΔER = $\frac{1+R\_{FC}}{1+R\_{US}}$ – 1

ΔERVen = $\frac{1+0.2584}{1+0.2573}$ – 1 = +0.087%

ΔERIre = $\frac{1+0.1417}{1+0.1961}$ – 1 = -4.55%

ΔERDen = $\frac{1+0.0252}{1+0.1413}$ – 1 = -10.17%

ΔERPort = $\frac{1+(-.1182)}{1+(-0.0545)}$ – 1 = -6.74%

ΔERPhil = $\frac{1+(-.1167)}{1+(-.1714)}$ – 1 = 6.60%

33.

RUS = $\frac{1+ R\_{FC}}{1+ ∆ER}$ – 1

RUS = $\frac{1.105}{.814}$ – 1 = 35.7%

RUS = $\frac{1.051}{1.123}$ – 1 = -6.41%

RUS = $\frac{.8748}{1.143}$ – 1 = -23.5%

RUS = $\frac{.872}{0.955}$ – 1 = 8.69%

34.

RUS = $\frac{1+ R\_{FC}}{1+ ∆ER}$ – 1

a.

RUS = $\frac{1+0.08}{1+ 0.05}$ – 1 = 2.86%

b.

RUS = $\frac{1+.12}{1+(-0.03)}$ – 1 = 15.46%

c.

RUS = $\frac{1+.02 }{1+(-0.07)}$ – 1 = 9.68%

d.

RUS = $\frac{1+.15}{1+0.06}$ – 1 = 8.49%

35. 

36. 

37. a. Payout ratio = 40%

 b. E = $12; k = 20%; r = 15%; b = 60%; payout ratio = 40%

 c. 

 d. growth = g = kb = (.2)(.6) = .12 or 12%

 e. $7.55

38.

39. Value of bond = $749.06
 Value of stock = $240.00
You would therefore not exchange your bond, as the bond is worth more than the value of the stock.

40. a. YTM = 14.41%

 b. Price of bonds = $1079.85

41. 

42. 



43. 5.74%

44. 