***Financial Markets and Institutions, 7e* (Saunders)**

**Chapter 3 Interest Rates and Security Valuation**

1) If interest rates increase, the value of a fixed income contract decreases and vice versa.

2) At equilibrium a security's required rate of return will be less than its expected rate of return.

3) If a security's realized return is negative, it must have been true that the expected return was greater than the required return.

4) Suppose two bonds of equivalent risk and maturity have different prices such that one is a premium bond and one is a discount bond. The premium bond must have a greater expected return than the discount bond.

5) A bond with an 11 percent coupon and a 9 percent required return will sell at a premium to par.

6) A fairly priced bond with a coupon less than the expected return must sell at a discount from par.

7) All else equal, the holder of a fairly priced premium bond must expect a capital loss over the holding period.

8) The duration of a four-year maturity 10 percent coupon bond is less than four years.

9) The longer the time to maturity, the lower the security's price sensitivity to an interest rate change, *ceteris paribus*.

10) The greater a security's coupon, the lower the security's price sensitivity to an interest rate change, *ceteris paribus*.

11) For a given interest rate change, a 20-year bond's price change will be twice that of a 10-year bond's price change.

12) Any security that returns a greater percentage of the price sooner is less price-volatile.

13) A zero coupon bond has a duration equal to its maturity and a convexity equal to zero.

14) The lower the level of interest rates, the greater a bond's price sensitivity to interest rate changes.

15) The higher a bond's coupon, the lower the bond's price volatility.

16) Higher interest rates lead to lower bond convexity, *ceteris paribus*.

17) A 10-year maturity zero coupon bond will have lower price volatility than a 10-year bond with a 10 percent coupon.

18) Ignoring default risk, if a bond's expected return is greater than its required return, then the bond's market price must be greater than the present value of the bond's cash flows.

19) The coupon rate represents the most accurate measure of the bondholder's required return.

20) The higher the interest rate is the higher the duration, all else being equal.

21) The required rate of return on a bond is

A) the interest rate that equates the current market price of the bond with the present value of all future cash flows received.

B) equivalent to the current yield for nonpar bonds.

C) less than the E(r) for discount bonds and greater than the E(r) for premium bonds.

D) inversely related to a bond's risk and coupon.

E) None of these choices are correct.

22) Duration is

A) the elasticity of a security's value to small coupon changes.

B) the weighted average time to maturity of the bond's cash flows.

C) the time until the investor recovers the price of the bond in today's dollars.

D) greater than maturity for deep discount bonds and less than maturity for premium bonds.

E) the second derivative of the bond price formula with respect to the YTM.

23) Which of the following bond terms are generally positively related to bond price volatility?

I. Coupon rate

II. Maturity

III. YTM

IV.  Payment frequency

A) II and IV only

B) I and III only

C) II and III only

D) II only

E) II, III, and IV only

24) The interest rate used to find the present value of a financial security is the

A) expected rate of return.

B) required rate of return.

C) realized rate of return.

D) realized yield to maturity.

E) current yield.

25) A security has an expected return less than its required return. This security is

A) selling at a premium to par.

B) selling at a discount to par.

C) selling for more than its PV.

D) selling for less than its PV.

E) a zero coupon bond.

26) A bond that you held to maturity had a realized return of 8 percent, but when you bought it, it had an expected return of 6 percent. If no default occurred, which one of the following must be true?

A) The bond was purchased at a premium to par.

B) The coupon rate was 8 percent.

C) The required return was greater than 6 percent.

D) The coupons were reinvested at a higher rate than expected.

E) The bond must have been a zero coupon bond.

27) You would want to purchase a security if P \_\_\_\_\_\_\_\_ PV or E(r) \_\_\_\_\_\_\_\_ r.

A) ≥; ≤

B) ≥; ≥

C) ≤; ≥

D) ≤; ≤

28) A 10-year annual payment corporate bond has a market price of $1,050. It pays annual interest of $100 and its required rate of return is 9 percent. By how much is the bond mispriced?

A) $0.00

B) Overpriced by $14.18

C) Underpriced by $14.18

D) Overpriced by $9.32

E) Underpriced by $9.32

29) A 12-year annual payment corporate bond has a market price of $925. It pays annual interest of $60 and its required rate of return is 7 percent. By how much is the bond mispriced?

A) $0.00

B) Overpriced by $7.29

C) Underpriced by $7.29

D) Overpriced by $4.43

E) Underpriced by $4.43

30) An eight-year corporate bond has a 7 percent coupon rate. What should be the bond's price if the required return is 6 percent and the bond pays interest semiannually?

A) $1,062.81

B) $1,062.10

C) $1,053.45

D) $1,052.99

E) $1,049.49

31) A 15-year corporate bond pays $40 interest every six months. What is the bond's price if the bond's promised YTM is 5.5 percent?

A) $1,261.32

B) $1,253.12

C) $1,250.94

D) $1,263.45

E) $1,264.79

32) A corporate bond has a coupon rate of 10 percent and a required return of 10 percent. This bond's price is

A) $924.18.

B) $1,000.00.

C) $879.68.

D) $1,124.83.

E) not possible to determine from the information given.

33) A 10-year annual payment corporate coupon bond has an expected return of 11 percent and a required return of 10 percent. The bond's market price is

A) greater than its PV.

B) less than par.

C) less than its E(r).

D) less than its PV.

E) $1,000.00.

34) An eight-year annual payment 7 percent coupon Treasury bond has a price of $1,075. The bond's annual E(r) must be

A) 13.49 percent.

B) 5.80 percent.

C) 7.00 percent.

D) 1.69 percent.

E) 4.25 percent.

35) A six-year annual payment corporate bond has a required return of 9.5 percent and an 8 percent coupon. Its market value is $20 over its PV. What is the bond's E(r)?

A) 8.00 percent

B) 10.21 percent

C) 9.98 percent

D) 9.03 percent

E) 3.53 percent

36) Corporate Bond A returns 5 percent of its cost in PV terms in each of the first five years and 75 percent of its value in the sixth year. Corporate Bond B returns 8 percent of its cost in PV terms in each of the first five years and 60 percent of its cost in the sixth year. If A and B have the same required return, which of the following is/are true?

I. Bond A has a bigger coupon than Bond B.

II. Bond A has a longer duration than Bond B.

III. Bond A is less price-volatile than Bond B.

IV.  Bond B has a higher PV than Bond A.

A) III only

B) I, III, and IV only

C) I, II, and IV only

D) II and IV only

E) I, II, III, and IV

37) A corporate bond returns 12 percent of its cost (in PV terms) in the first year, 11 percent in the second year, 10 percent in the third year and the remainder in the fourth year. What is the bond's duration in years?

A) 3.68 years

B) 2.50 years

C) 4.00 years

D) 3.75 years

E) 3.32 years

38) A semiannual payment bond with a $1,000 par has a 7 percent quoted coupon rate, a 7 percent promised YTM, and 10 years to maturity. What is the bond's duration?

A) 10.00 years

B) 8.39 years

C) 6.45 years

D) 5.20 years

E) 7.35 years

39) An annual payment bond with a $1,000 par has a 5 percent quoted coupon rate, a 6 percent promised YTM, and six years to maturity. What is the bond's duration?

A) 5.31 years

B) 5.25 years

C) 4.76 years

D) 4.16 years

E) 3.19 years

40) If an N year security recovered the same percentage of its cost in PV terms each year, the duration would be

A) N.

B) 0.

C) sum of the years/N.

D) N!/N2.

E) None of these choices are correct.

41) The \_\_\_\_\_\_\_\_ the coupon and the \_\_\_\_\_\_\_\_ the maturity; the \_\_\_\_\_\_\_\_ the duration of a bond, *ceteris paribus*.

A) larger; longer; longer

B) larger; longer; shorter

C) smaller; shorter; longer

D) smaller; shorter; shorter

E) None of these choices are correct.

42) A four-year maturity 0 percent coupon corporate bond with a required rate of return of 12 percent has an annual duration of \_\_\_\_\_\_\_\_ years.

A) 3.05

B) 2.97

C) 3.22

D) 3.71

E) 4.00

43) A decrease in interest rates will

A) decrease the bond's PV.

B) increase the bond's duration.

C) lower the bond's coupon rate.

D) change the bond's payment frequency.

E) not affect the bond's duration.

44) A 10-year maturity coupon bond has a six-year duration. An equivalent 20-year bond with the same coupon has a duration

A) equal to 12 years.

B) less than six years.

C) less than 12 years.

D) equal to six years.

E) greater than 20 years.

45) A six-year maturity bond has a five-year duration. Over the next year maturity will decline by one year and duration will decline by

A) less than one year.

B) more than one year.

C) one year.

D) N years.

E) N/(N − 1) years.

46) An annual payment bond has a 9 percent required return. Interest rates are projected to fall 25 basis points. The bond's duration is 12 years. What is the predicted price change?

A) −2.75 percent

B) 33.33 percent

C) 1.95 percent

D) −1.95 percent

E) 2.75 percent

47) A bond that pays interest annually has a 6 percent promised yield and a price of $1,025. Annual interest rates are now projected to fall 50 basis points. The bond's duration is six years. What is the predicted new bond price after the interest rate change? (Watch your rounding.)

A) $1,042.33

B) $995.99

C) $1,054.01

D) $987.44

E) None of these choices are correct.

48) A bond that pays interest semiannually has a 6 percent promised yield and a price of $1,045. Annual interest rates are now projected to increase 50 basis points. The bond's duration is five years. What is the predicted new bond price after the interest rate change? (Watch your rounding.)

A) $1,020.35

B) $1,069.65

C) $1,070.36

D) $1,019.64

E) None of these choices are correct.

49) Convexity arises because

A) bonds pay interest semiannually.

B) coupon changes are the opposite sign of interest rate changes.

C) duration is an increasing function of maturity.

D) present values are a nonlinear function of interest rates.

E) duration increases at higher interest rates.

50) The duration of a 180-day T-Bill is (in years)

A) 0.493.

B) 0.246.

C) 1.

D) 0.

E) indeterminate.

51) The duration of a 91-day T-Bill is (in years).

A) 0.325

B) 0.249

C) 0.715

D) 0

E) Indeterminate

52) For large interest rate increases, duration \_\_\_\_\_\_\_\_ the fall in security prices, and for large interest rate decreases, duration \_\_\_\_\_\_\_\_ the rise in security prices.

A) overpredicts; overpredicts

B) overpredicts; underpredicts

C) underpredicts; overpredicts

D) underpredicts; underpredicts

E) None of these choices are correct.

53) Suppose you owned stock in a company for the last three years. You originally bought the stock three years ago for $30 and just sold it for $56. The stock paid an annual dividend of $1.35 on the last day of each of the past three years. What is your realized return on this investment?

A) 15.36 percent

B) 36.14 percent

C) 26.85 percent

D) 37.58 percent

E) None of these choices are correct.

54) You are considering the purchase of a certain stock. You expect to own the stock for the next four years. The current market price of the stock is $24.50 and you expect to sell it for $55 in four years. You also expect the stock to pay an annual dividend of $1.25 at the end of year 1, $1.35 at the end of year 2, $1.45 at the end of year 3 and $1.55 at the end of year 4. What is your expected return from this investment?

A) 21.78 percent

B) 18.36 percent

C) 26.68 percent

D) 32.85 percent

E) None of these choices are correct.

55) A preferred stock is expected to pay a constant quarterly dividend of $1.25 per quarter into the future. The required rate of return, *Rs*, on the preferred stock is 13.5 percent. What is the fair value (or price) of this stock?

A) $37.04

B) $24.36

C) $52.36

D) $18.65

E) None of these choices are correct.

56) You are evaluating a company's stock. The stock just paid a dividend of $1.75. Dividends are expected to grow at a constant rate of 5 for long time into the future. The required rate of return (*Rs*) on the stock is 12 percent. What is the fair present value?

A) $26.25

B) $22.50

C) $35.26

D) $50.25

E) None of these choices are correct.

57) A common stock paid a dividend at the end of last year of $3.50. Dividends have grown at a constant rate of 6 percent per year over the last 20 years, and this constant growth rate is expected to continue into the future. The stock is currently selling at a price of $35 per share. What is the expected rate of return on this stock?

A) 18.7 percent

B) 22.5 percent

C) 16.6 percent

D) 8.4 percent

E) None of these choices are correct.

58) A stock you are evaluating is expected to experience supernormal growth in dividends of 12 percent over the next three years. Following this period, dividends are expected to grow at a constant rate of 4 percent. The stock paid a dividend of $1.50 last year and the required rate of return on the stock is 11 percent. Calculate the stock's fair present value.

A) $16.24

B) $21.56

C) $24.25

D) $27.46

E) None of these choices are correct.

59) The basic principle of valuation states that the value of any asset is

A) the present value of all future cash flows generated by the asset.

B) the sum of all future cash flows generated by the asset.

C) the present value of next year's cash flow only.

D) the degree of cash flow riskiness is not a relevant factor in valuation.

E) None of these choices are correct.

60) Is the realized rate of return related to the expected return? the required return? Explain.

61) You bought a stock three years ago and paid $45 per share. You collected a $2 dividend per share each year you held the stock and then you sold the stock for $47 per share. What was your annual compound rate of return?

A) 8.89 percent

B) 8.51 percent

C) 5.84 percent

D) 4.44 percent

E) 2.96 percent

62) Conceptually, why does a bond's price fall when required returns rise on an existing fixed income security?

63) A 15-year, 7 percent coupon annual payment corporate bond has a PV of $1,055.62. However, you pay $1,024.32 for the bond. By how many basis points is your E(*r*) different from your *r*?

64) What is convexity? How does convexity affect duration-based predicted price changes for interest rates changes?

65) An investor owned a 9 percent annual payment coupon bond for six years that was originally purchased at a 9 percent required return. She did not reinvest any coupons (she kept the money under her mattress). She redeemed the bond at par. What was her annual realized rate of return? What if she did reinvest the coupons but only earned 5 percent on each coupon? Why are your answers not equal to 9 percent?

66) Explain the effects of coupon and maturity on volatility.

67) Which would have a longer duration: (a) a five-year fully amortized installment loan with semiannual payments or (b) a five-year semiannual payment bond, *ceteris paribus*. Why?

68) How does an increase in interest rates affect a security's duration?

69) An investor is considering purchasing a Treasury bond with a 16-year maturity, a 6 percent coupon and a 7 percent required rate of return. The bond pays interest semiannually.

a. What is the bond's modified duration?

b. If annual promised yields decrease 30 basis points immediately after the purchase, what is the predicted price change in dollars based on the bond's duration?

70) You have five years until you need to take your money out of your investments to make a planned expenditure. Right now bonds are promising an 8 percent return. You buy a five-year duration bond. After you buy the bond, interest rates fall to 6 percent and stay there for the full five years. You reinvest the coupons and earn 6 percent. Will your realized return be more or less than the originally promised 8 percent? Explain.

71) A nine-year maturity AAA-rated corporate bond has a 6 percent coupon rate. The bond's promised yield is currently 5.75 percent and the bond sells for its FPV. The bond pays interest semiannually and has an annual duration of 7.1023 years.

a. What is the bond's convexity?

b. If promised yields decrease to 5.45 percent, what is the bond's predicted new price, including convexity?

c. Based on your result in b, would you prefer to have a bond with more or less convexity? Explain.

72) The preferred stock of ACE pays a constant $1.00 per share dividend. The common stock of ACME just paid a $1.00 dividend per share, but its dividend is expected to grow at 4 percent per year forever. ABLE common stock also just paid a dividend of $1.00 per share, but its dividend is expected to grow at 10 percent per year for five years and then grow at 4 percent per year forever. All three stocks have a 12 percent required return. How much should you be willing to pay for a share of each stock? Which stock will give you the best return? Explain.