ch8

Student: _____

1. As diversification increases, the total variance of a portfolio approaches _____.

   A. 0
   B. 1
   C. the variance of the market portfolio
   D. infinity
   E. none of the above

2. As diversification increases, the standard deviation of a portfolio approaches _____.

   A. 0
   B. 1
   C. infinity
   D. the standard deviation of the market portfolio
   E. none of the above

3. As diversification increases, the firm-specific risk of a portfolio approaches _____.

   A. 0
   B. 1
   C. infinity
   D. n-1 * n
   E. none of the above

4. As diversification increases, the unsystematic risk of a portfolio approaches _____.

   A. 1
   B. 0
   C. infinity
   D. n-1 * n
   E. none of the above

5. As diversification increases, the unique risk of a portfolio approaches _____.

   A. 1
   B. 0
   C. infinity
   D. n-1 * n
   E. none of the above

6. The index model was first suggested by _____.

   A. Graham
   B. Markowitz
   C. Miller
   D. Sharpe
   E. none of the above

7. A single-index model uses _____ as a proxy for the systematic risk factor.

   A. a market index, such as the S&P 500
   B. the current account deficit
   C. the growth rate in GNP
   D. the unemployment rate
   E. none of the above

8. The Security Risk Evaluation book published by Merrill Lynch relies on the _____ most recent monthly observations to calculate regression parameters.

   A. 12
   B. 36
   C. 60
   D. 120
   E. none of the above

9. The Security Risk Evaluation book published by Merrill Lynch uses the _____ as a proxy for the market portfolio.

   A. Dow Jones Industrial Average
   B. Dow Jones Transportation Average
   C. S&P 500 Index
   D. Wilshire 5000
   E. none of the above

10. According to the index model, covariances among security pairs are

    A. due to the influence of a single common factor represented by the market index return
    B. extremely difficult to calculate
    C. related to industry-specific events
    D. usually positive
    E. A and D

11. The intercept calculated by Merrill Lynch in the regression equations is equal to

    A. α in the CAPM
    B. $\alpha + r_f(1 + \beta)$
    C. $\alpha + r_f(1 - \beta)$
    D. $1 - \alpha$
    E. none of the above

12. Analysts may use regression analysis to estimate the index model for a stock. When doing so, the slope of the regression line is an estimate of _____.

    A. the α of the asset
    B. the β of the asset
    C. the σ of the asset
    D. the δ of the asset
    E. none of the above

13. Analysts may use regression analysis to estimate the index model for a stock. When doing so, the intercept of the regression line is an estimate of _____.

A. the α of the asset
B. the β of the asset
C. the σ of the asset
D. the δ of the asset
E. none of the above

14. In a factor model, the return on a stock in a particular period will be related to _____.

A. firm-specific events
B. macroeconomic events
C. the error term
D. both A and B
E. neither A nor B

15. Rosenberg and Guy found that _____ helped to predict a firm's beta.

A. the firm's financial characteristics
B. the firm's industry group
C. firm size
D. both A and B
E. A**,** B and C all helped to predict betas.

16. If the index model is valid, _____ would be helpful in determining the covariance between assets GM and GE.

A. β_{GM}
B. β_{GE}
C. σ_M
D. all of the above
E. none of the above

17. If the index model is valid, _____ would be helpful in determining the covariance between assets HPQ and KMP.

A. β_{HPQ}
B. β_{KMP}
C. σ_M
D. all of the above
E. none of the above

18. If the index model is valid, _____ would be helpful in determining the covariance between assets K and L.

    A. β_k
    B. β_L
    C. σ_M
    D. all of the above
    E. none of the above

19. Rosenberg and Guy found that _____ helped to predict firms' betas.

    A. debt/asset ratios
    B. market capitalization
    C. variance of earnings
    D. all of the above
    E. none of the above

20. If a firm's beta was calculated as 0.6 in a regression equation, Merrill Lynch would state the adjusted beta at a number

    A. less than 0.6 but greater than zero.
    B. between 0.6 and 1.0.
    C. between 1.0 and 1.6.
    D. greater than 1.6.
    E. zero or less.

21. If a firm's beta was calculated as 0.8 in a regression equation, Merrill Lynch would state the adjusted beta at a number

    A. less than 0.8 but greater than zero.
    B. between 1.0 and 1.8.
    C. between 0.8 and 1.0.
    D. greater than 1.8.
    E. zero or less.

22. If a firm's beta was calculated as 1.3 in a regression equation, Merrill Lynch would state the adjusted beta at a number

    A. less than 1.0 but greater than zero.
    B. between 0.3 and 0.9.
    C. between 1.0 and 1.3.
    D. greater than 1.3.
    E. zero or less.

23. The beta of Exxon stock has been estimated as 1.6 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of Exxon stock would be _____.

    A. 1.20
    B. 1.32
    C. 1.13
    D. 1.40
    E. none of the above

24. The beta of Apple stock has been estimated as 2.3 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of Exxon stock would be _____.

    A. 2.20
    B. 1.87
    C. 2.13
    D. 1.66
    E. none of the above

25. The beta of JCP stock has been estimated as 1.2 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of Exxon stock would be _____.

    A. 1.20
    B. 1.32
    C. 1.13
    D. 1.0
    E. none of the above

26. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 150 stocks in order to construct a mean-variance efficient portfolio constrained by 150 investments. They will need to calculate _____ expected returns and _____ variances of returns.

    A. 150, 150
    B. 150, 22500
    C. 22500, 150
    D. 22500, 22500
    E. none of the above

27. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 100 stocks in order to construct a mean-variance efficient portfolio constrained by 100 investments. They will need to calculate _____ expected returns and _____ variances of returns.

    A. 100, 100
    B. 100, 4950
    C. 4950, 100
    D. 4950, 4950
    E. none of the above

28. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 150 stocks in order to construct a mean-variance efficient portfolio constrained by 150 investments. They will need to calculate _____ covariances.

    A. 12
    B. 150
    C. 22,500
    D. 11,750
    E. none of the above

29. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 125 stocks in order to construct a mean-variance efficient portfolio constrained by 125 investments. They will need to calculate _____ covariances.

A. 125
B. 7,750
C. 15,625
D. 11,750
E. none of the above

30. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 100 stocks in order to construct a mean-variance efficient portfolio constrained by 100 investments. They will need to calculate _____ covariances.

A. 45
B. 100
C. 4,950
D. 10,000
E. none of the above

31. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 200 stocks in order to construct a mean-variance efficient portfolio constrained by 175 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 175; 15,225
B. 175; 175
C. 15,225; 175
D. 15,225; 15,225
E. none of the above

32. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 200 stocks in order to construct a mean-variance efficient portfolio constrained by 125 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 125; 15,225
B. 15,625; 125
C. 7,750; 125
D. 125; 125
E. none of the above

33. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 200 stocks in order to construct a mean-variance efficient portfolio constrained by 200 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 200; 19,900
B. 200; 200
C. 19,900; 200
D. 19,900; 19.900
E. none of the above

34. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 500 stocks in order to construct a mean-variance efficient portfolio constrained by 500 investments. They will need to calculate _____ estimates of firm-specific variances and _____ estimates for the variance of the macroeconomic factor.

A. 500; 1
B. 500; 500
C. 124,750; 1
D. 124,750; 500
E. 250,000; 500

35. Consider the single-index model. The alpha of a stock is 0%. The return on the market index is 16%. The risk-free rate of return is 5%. The stock earns a return that exceeds the risk-free rate by 11% and there are no firm-specific events affecting the stock performance. The β of the stock is _____.

A. 0.67
B. 0.75
C. 1.0
D. 1.33
E. 1.50

36. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.20 and σ_M was 0.16, the β of the portfolio would be approximately _____.

A. 0.64
B. 0.80
C. 1.25
D. 1.56
E. none of the above

37. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.22 and σ_M was 0.19, the β of the portfolio would be approximately _____.

A. 1.34
B. 1.16
C. 1.25
D. 1.56
E. none of the above

38. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.18 and σ_M was 0.24, the β of the portfolio would be approximately _____.

A. 0.75
B. 0.56
C. 0.07
D. 1.03
E. none of the above

39. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.25 + 0.75\beta_{t-1}$

If a stock had a β of 0.6 last year, you would forecast the β to be _____ in the coming year.

A. 0.45
B. 0.60
C. 0.70
D. 0.75
E. none of the above

40. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.31 + 0.82\beta_{t-1}$

If a stock had a β of 0.88 last year, you would forecast the β to be _____ in the coming year.

A. 0.88
B. 0.82
C. 0.31
D. 1.03
E. none of the above

41. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.18 + 0.63\beta_{t-1}$

If a stock had a β of 1.09 last year, you would forecast the β to be _____ in the coming year.

A. 0.87
B. 0.18
C. 0.63
D. 0.81
E. none of the above

42. Merrill Lynch estimates the index model for a stock using regression analysis involving total returns. They estimated the intercept in the regression equation at 6% and the β at 0.5. The risk-free rate of return is 12%. The true β of the stock is _____.

A. 0%
B. 3%
C. 6%
D. 9%
E. none of the above

43. The index model for stock A has been estimated with the following result:
$R_A = 0.01 + 0.9R_M + e_A$

If $\sigma_M = 0.25$ and $R^2_A = 0.25$, the standard deviation of return of stock A is _____.

A. 0.2025
B. 0.2500
C. 0.4500
D. 0.8100
E. none of the above

44. The index model for stock B has been estimated with the following result:
$R_B = 0.01 + 1.1R_M + e_B$

If $\sigma_M = 0.20$ and $R^2_B = 0.50$, the standard deviation of the return on stock B is _____.

A. 0.1111
B. 0.2111
C. 0.3111
D. 0.4111
E. none of the above

45. Suppose you forecast that the market index will earn a return of 15% in the coming year. Treasury bills are yielding 6%. The unadjusted β of Mobil stock is 1.30. A reasonable forecast of the return on Mobil stock for the coming year is _____ if you use Merrill Lynch adjusted betas.

A. 15.0%
B. 15.5%
C. 16.0%
D. 16.8%
E. none of the above

46. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.01 + 0.5R_M + e_A$

$R_B = 0.02 + 1.3R_M + e_B$

$\sigma_M = 0.25$ $\sigma(e_A) = 0.20$ $\sigma(e_B) = 0.10$
The covariance between the returns on stocks A and B is _____.

A. 0.0384
B. 0.0406
C. 0.1920
D. 0.0050
E. 0.4000

47. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.01 + 0.8R_M + e_A$

$R_B = 0.02 + 1.2R_M + e_B$

$\sigma_M = 0.20$ $\sigma(e_A) = 0.20$ $\sigma(e_B) = 0.10$
The standard deviation for stock A is _____.

A. 0.0656
B. 0.0676
C. 0.2561
D. 0.2600
E. none of the above

48. The index model has been estimated for stock A with the following results:
$R_A = 0.01 + 0.8R_M + e_A$

$\sigma_M = 0.20$ $\sigma(e_A) = 0.10$
The standard deviation of the return for stock A is _____.

A. 0.0356
B. 0.1886
C. 0.1600
D. 0.6400
E. none of the above

49. Security returns

A. are based on both macro events and firm-specific events.
B. are based on firm-specific events only.
C. are usually positively correlated with each other.
D. A and B.
E. A and C.

50. The single-index model

A. greatly reduces the number of required calculations, relative to those required by the Markowitz model.
B. enhances the understanding of systematic versus nonsystematic risk.
C. greatly increases the number of required calculations, relative to those required by the Markowitz model.
D. A and B.
E. B and C.

51. The Security Characteristic Line (SCL)

A. plots the excess return on a security as a function of the excess return on the market.
B. allows one to estimate the beta of the security.
C. allows one to estimate the alpha of the security.
D. all of the above.
E. none of the above.

52. The **expected** impact of unanticipated macroeconomic events on a security's return during the period is

A. included in the security's expected return.
B. zero.
C. equal to the risk free rate.
D. proportional to the firm's beta.
E. infinite.

53. Covariances between security returns tend to be

A. positive because of SEC regulations.
B. positive because of Exchange regulations.
C. positive because of economic forces that affect many firms.
D. negative because of SEC regulations
E. negative because of economic forces that affect many firms.

54. In the single-index model represented by the equation $r_i = E(r_i) + \beta_i F + e_i$, the term e_i represents

A. the impact of unanticipated macroeconomic events on security i's return.
B. the impact of unanticipated firm-specific events on security i's return.
C. the impact of anticipated macroeconomic events on security i's return.
D. the impact of anticipated firm-specific events on security i's return.
E. the impact of changes in the market on security i's return.

55. Suppose you are doing a portfolio analysis that includes all of the stocks on the NYSE. Using a single-index model rather than the Markowitz model _____ the number of inputs needed from _____ to _____.

A. increases, about 1,400, more than 1.4 million
B. increases, about 10,000, more than 125,000
C. reduces, more than 125,000, about 10,000
D. reduces, more than 4 million, about 9,000
E. increases, about 150, more than 1,500

56. One "cost" of the single-index model is that it

A. is virtually impossible to apply.
B. prohibits specialization of efforts within the security analysis industry.
C. requires forecasts of the money supply.
D. is legally prohibited by the SEC.
E. allows for only two kinds of risk - macro risk and micro risk.

57. The Security Characteristic Line (SCL) associated with the single-index model is a plot of

A. the security's returns on the vertical axis and the market index's returns on the horizontal axis.
B. the market index's returns on the vertical axis and the security's returns on the horizontal axis.
C. the security's excess returns on the vertical axis and the market index's excess returns on the horizontal axis.
D. the market index's excess returns on the vertical axis and the security's excess returns on the horizontal axis.
E. the security's returns on the vertical axis and Beta on the horizontal axis.

58. The idea that there is a limit to the reduction of portfolio risk due to diversification is

A. contradicted by both the CAPM and the single-index model.
B. contradicted by the CAPM.
C. contradicted by the single-index model.
D. supported in theory, but not supported empirically.
E. supported both in theory and by empirical evidence.

59. In their study about predicting beta coefficients, which of the following did Rosenberg and Guy find to be factors that influence beta?
I) industry group
II) variance of cash flow
III) dividend yield
IV) growth in earnings per share

A. I and II
B. I and III
C. I, II, and III
D. I, II, and IV
E. I, II, III, and IV

60. If a firm's beta was calculated as 1.6 in a regression equation, Merrill Lynch would state the adjusted beta at a number

A. less than 0.6 but greater than zero.
B. between 0.6 and 1.0.
C. between 1.0 and 1.6.
D. greater than 1.6.
E. zero or less.

61. The beta of a stock has been estimated as 1.8 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of the stock would be _____.

A. 1.20
B. 1.53
C. 1.13
D. 1.0
E. none of the above

62. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 40 stocks in order to construct a mean-variance efficient portfolio constrained by 40 investments. They will need to calculate _____ expected returns and _____ variances of returns.

A. 100, 100
B. 40, 40
C. 4950, 100
D. 4950, 4950
E. none of the above

63. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 40 stocks in order to construct a mean-variance efficient portfolio constrained by 40 investments. They will need to calculate _____ covariances.

A. 45
B. 780
C. 4,950
D. 10,000
E. none of the above

64. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 60 stocks in order to construct a mean-variance efficient portfolio constrained by 60 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 200; 19,900
B. 200; 200
C. 60; 60
D. 19,900; 19.900
E. none of the above

65. Consider the single-index model. The alpha of a stock is 0%. The return on the market index is 10%. The risk-free rate of return is 3%. The stock earns a return that exceeds the risk-free rate by 11% and there are no firm-specific events affecting the stock performance. The β of the stock is _____.

A. 0.64
B. 0.75
C. 1.17
D. 1.33
E. 1.50

66. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.25 and σ_M was 0.21, the β of the portfolio would be approximately _____.

A. 0.64
B. 1.19
C. 1.25
D. 1.56
E. none of the above

67. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.18 and σ_M was 0.22, the β of the portfolio would be approximately _____.

A. 0.64
B. 1.19
C. 0.82
D. 1.56
E. none of the above

68. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.4 + 0.6\beta_{t-1}$

If a stock had a β of 0.9 last year, you would forecast the β to be _____ in the coming year.

A. 0.45
B. 0.60
C. 0.70
D. 0.94
E. none of the above

69. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.3 + 0.2\beta_{t-1}$

If a stock had a β of 0.8 last year, you would forecast the β to be _____ in the coming year.

A. 0.46
B. 0.60
C. 0.70
D. 0.94
E. none of the above

70. The index model for stock A has been estimated with the following result:
$R_A = 0.01 + 0.94R_M + e_A$

If $\sigma_M = 0.30$ and $R^2_A = 0.28$, the standard deviation of return of stock A is _____.

A. 0.2025
B. 0.2500
C. 0.4500
D. 0.5329
E. none of the above

71. Suppose you forecast that the market index will earn a return of 12% in the coming year. Treasury bills are yielding 4%. The unadjusted β of Mobil stock is 1.30. A reasonable forecast of the return on Mobil stock for the coming year is _____ if you use Merrill Lynch adjusted betas.

A. 15.0%
B. 15.5%
C. 16.0%
D. 14.6%
E. none of the above

72. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.01 + 0.8R_M + e_A$

$R_B = 0.02 + 1.1R_M + e_B$

$\sigma_M = 0.30$ $\sigma(e_A) = 0.20$ $\sigma(e_B) = 0.10$
The covariance between the returns on stocks A and B is _____.

A. 0.0384
B. 0.0406
C. 0.1920
D. 0.0050
E. 0.0792

73. If a firm's beta was calculated as 1.35 in a regression equation, Merrill Lynch would state the adjusted beta at a number

A. less than 1.35
B. between 0.0 and 1.0.
C. between 1.0 and 1.35.
D. greater than 1.35.
E. zero or less.

74. The beta of a stock has been estimated as 1.4 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of the stock would be _____.

A. 1.27
B. 1.32
C. 1.13
D. 1.0
E. none of the above

75. The beta of a stock has been estimated as 0.85 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of the stock would be _____.

A. 1.01
B. 0.95
C. 1.13
D. 0.90
E. none of the above

76. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 125 stocks in order to construct a mean-variance efficient portfolio constrained by 125 investments. They will need to calculate _____ expected returns and _____ variances of returns.

A. 125, 125
B. 125, 15,625
C. 15,625, 125
D. 15,625, 15,625
E. none of the above

77. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 132 stocks in order to construct a mean-variance efficient portfolio constrained by 132 investments. They will need to calculate _____ covariances.

A. 100
B. 132
C. 4,950
D. 8,646
E. none of the above

78. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 217 stocks in order to construct a mean-variance efficient portfolio constrained by 217 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 217; 47,089
B. 217; 217
C. 47,089; 217
D. 47,089; 47,089
E. none of the above

79. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 500 stocks in order to construct a mean-variance efficient portfolio constrained by 750 investments. They will need to calculate _____ estimates of firm-specific variances and _____ estimates for the variance of the macroeconomic factor.

A. 750; 1
B. 750; 750
C. 124,750; 1
D. 124,750; 750
E. 562,500; 750

80. Consider the single-index model. The alpha of a stock is 0%. The return on the market index is 10%. The risk-free rate of return is 5%. The stock earns a return that exceeds the risk-free rate by 5% and there are no firm-specific events affecting the stock performance. The β of the stock is _____.

A. 0.67
B. 0.75
C. 1.0
D. 1.33
E. 1.50

81. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.24 and σ_M was 0.18, the β of the portfolio would be approximately _____.

A. 0.64
B. 1.33
C. 1.25
D. 1.56
E. none of the above

82. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.14 and σ_M was 0.19, the β of the portfolio would be approximately _____.

A. 0.74
B. 0.80
C. 1.25
D. 1.56
E. none of the above

83. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.30 + 0.70\beta_{t-1}$

If a stock had a β of 0.82 last year, you would forecast the β to be _____ in the coming year.

A. 0.91
B. 0.77
C. 0.63
D. 0.87
E. none of the above

84. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.03 + 0.7R_M + e_A$

$R_B = 0.01 + 0.9R_M + e_B$

$\sigma_M = 0.35$ $\sigma(e_A) = 0.20$ $\sigma(e_B) = 0.10$
The covariance between the returns on stocks A and B is _____.

A. 0.0384
B. 0.0406
C. 0.1920
D. 0.0772
E. 0.4000

85. Discuss the advantages of the **single-index model** over the **Markowitz model** in terms of **numbers of variable estimates required** and in terms of **understanding risk relationships**.

86. Discuss the **security characteristic line (SCL)**.

87. Discuss the **"adjusted betas"** published by Merrill Lynch in Security Risk Evaluation.

ch8 Key

1. As diversification increases, the total variance of a portfolio approaches _____.

A. 0
B. 1
C. the variance of the market portfolio
D. infinity
E. none of the above

As more and more securities are added to the portfolio, unsystematic risk decreases and most of the remaining risk is systematic, as measured by the variance of the market portfolio.

Bodie - Chapter 08 #1
Difficulty: Easy

2. As diversification increases, the standard deviation of a portfolio approaches _____.

A. 0
B. 1
C. infinity
D. the standard deviation of the market portfolio
E. none of the above

As more and more securities are added to the portfolio, unsystematic risk decreases and most of the remaining risk is systematic, as measured by the variance (or standard deviation) of the market portfolio.

Bodie - Chapter 08 #2
Difficulty: Easy

3. As diversification increases, the firm-specific risk of a portfolio approaches _____.

A. 0
B. 1
C. infinity
D. n-1 * n
E. none of the above

As more and more securities are added to the portfolio, unsystematic risk decreases and most of the remaining risk is systematic, as measured by the variance (or standard deviation) of the market portfolio.

Bodie - Chapter 08 #3
Difficulty: Easy

4. As diversification increases, the unsystematic risk of a portfolio approaches _____.

A. 1
B. 0
C. infinity
D. n-1 * n
E. none of the above

As more and more securities are added to the portfolio, unsystematic risk decreases and most of the remaining risk is systematic, as measured by the variance (or standard deviation) of the market portfolio.

Bodie - Chapter 08 #4
Difficulty: Easy

5. As diversification increases, the unique risk of a portfolio approaches _____.

A. 1
B. 0
C. infinity
D. n-1 * n
E. none of the above

As more and more securities are added to the portfolio, unsystematic risk decreases and most of the remaining risk is systematic, as measured by the variance (or standard deviation) of the market portfolio.

Bodie - Chapter 08 #5
Difficulty: Easy

6. The index model was first suggested by _____.

A. Graham
B. Markowitz
C. Miller
D. Sharpe
E. none of the above

William Sharpe, building on the work of Harry Markowitz, developed the index model.

Bodie - Chapter 08 #6
Difficulty: Easy

7. A single-index model uses _____ as a proxy for the systematic risk factor.

A. a market index, such as the S&P 500
B. the current account deficit
C. the growth rate in GNP
D. the unemployment rate
E. none of the above

The single-index model uses a market index, such as the S&P 500, as a proxy for the market, and thus for systematic risk.

Bodie - Chapter 08 #7
Difficulty: Easy

8. The Security Risk Evaluation book published by Merrill Lynch relies on the _____ most recent monthly observations to calculate regression parameters.

A. 12
B. 36
C. 60
D. 120
E. none of the above

Most published betas and other regression parameters, including those published by Merrill Lynch, are based on five years of monthly return data.

Bodie - Chapter 08 #8
Difficulty: Easy

9. The Security Risk Evaluation book published by Merrill Lynch uses the _____ as a proxy for the market portfolio.

A. Dow Jones Industrial Average
B. Dow Jones Transportation Average
C. S&P 500 Index
D. Wilshire 5000
E. none of the above

The Merrill Lynch data (and much of the other published data sets) are based on the S&P 500 index as a market proxy.

Bodie - Chapter 08 #9
Difficulty: Easy

10. According to the index model, covariances among security pairs are

A. due to the influence of a single common factor represented by the market index return
B. extremely difficult to calculate
C. related to industry-specific events
D. usually positive
E. A and D

Most securities move together most of the time, and move with a market index, or market proxy.

Bodie - Chapter 08 #10
Difficulty: Easy

11. The intercept calculated by Merrill Lynch in the regression equations is equal to

A. α in the CAPM
B. $\alpha + r_f(1 + \beta)$
C. $\alpha + r_f(1 - \beta)$
D. $1 - \alpha$
E. none of the above

The intercept that Merrill Lynch calls alpha is really, using the parameters of the CAPM, an estimate of a + rf (1 - b). The apparent justification for this procedure is that, on a monthly basis, rf(1 - b) is small and is apt to be swamped by the volatility of actual stock returns.

Bodie - Chapter 08 #11
Difficulty: Moderate

12. Analysts may use regression analysis to estimate the index model for a stock. When doing so, the slope of the regression line is an estimate of _____.

A. the α of the asset
B. the β of the asset
C. the σ of the asset
D. the δ of the asset
E. none of the above

The slope of the regression line, b, measures the volatility of the stock versus the volatility of the market.

Bodie - Chapter 08 #12
Difficulty: Moderate

13. Analysts may use regression analysis to estimate the index model for a stock. When doing so, the intercept of the regression line is an estimate of _____.

A. the α of the asset
B. the β of the asset
C. the σ of the asset
D. the δ of the asset
E. none of the above

The slope of the regression line, β, estimates the volatility of the stock versus the volatility of the market and the α estimates the intercept.

Bodie - Chapter 08 #13
Difficulty: Moderate

14. In a factor model, the return on a stock in a particular period will be related to _____.

A. firm-specific events
B. macroeconomic events
C. the error term
D. both A and B
E. neither A nor B

The return on a stock is related to both firm-specific and macroeconomic events.

Bodie - Chapter 08 #14
Difficulty: Moderate

15. Rosenberg and Guy found that _____ helped to predict a firm's beta.

A. the firm's financial characteristics
B. the firm's industry group
C. firm size
D. both A and B
E. A, B and C all helped to predict betas.

Rosenberg and Guy found that after controlling for the firm's financial characteristics, the firm's industry group was a significant predictor of the firm's beta.

Bodie - Chapter 08 #15
Difficulty: Moderate

16. If the index model is valid, _____ would be helpful in determining the covariance between assets GM and GE.

A. β_{GM}
B. β_{GE}
C. σ_M
D. all of the above
E. none of the above

If the index model is valid A, B, and C are determinants of the covariance between GE and GM.

Bodie - Chapter 08 #16
Difficulty: Moderate

17. If the index model is valid, _____ would be helpful in determining the covariance between assets HPQ and KMP.

A. β_{HPQ}
B. β_{KMP}
C. σ_M
D. all of the above
E. none of the above

If the index model is valid A, B, and C are determinants of the covariance between HPQ and KMP.

Bodie - Chapter 08 #17
Difficulty: Moderate

18. If the index model is valid, _____ would be helpful in determining the covariance between assets K and L.

A. β_k
B. β_L
C. σ_M
D. all of the above
E. none of the above

If the index model is valid A, B, and C are determinants of the covariance between K and L.

Bodie - Chapter 08 #18
Difficulty: Moderate

19. Rosenberg and Guy found that _____ helped to predict firms' betas.

A. debt/asset ratios
B. market capitalization
C. variance of earnings
D. all of the above
E. none of the above

Rosenberg and Guy found that A, B, and C were determinants of firms' betas.

Bodie - Chapter 08 #19
Difficulty: Moderate

20. If a firm's beta was calculated as 0.6 in a regression equation, Merrill Lynch would state the adjusted beta at a number

A. less than 0.6 but greater than zero.
B. between 0.6 and 1.0.
C. between 1.0 and 1.6.
D. greater than 1.6.
E. zero or less.

Betas, on average, equal one; thus, betas over time regress toward the mean, or 1. Therefore, if historic betas are less than 1, adjusted betas are between 1 and the calculated beta.

Bodie - Chapter 08 #20
Difficulty: Moderate

21. If a firm's beta was calculated as 0.8 in a regression equation, Merrill Lynch would state the adjusted beta at a number

A. less than 0.8 but greater than zero.
B. between 1.0 and 1.8.
C. between 0.8 and 1.0.
D. greater than 1.8.
E. zero or less.

Betas, on average, equal one; thus, betas over time regress toward the mean, or 1. Therefore, if historic betas are less than 1, adjusted betas are between 1 and the calculated beta.

Bodie - Chapter 08 #21
Difficulty: Moderate

22. If a firm's beta was calculated as 1.3 in a regression equation, Merrill Lynch would state the adjusted beta at a number

A. less than 1.0 but greater than zero.
B. between 0.3 and 0.9.
C. between 1.0 and 1.3.
D. greater than 1.3.
E. zero or less.

Betas, on average, equal one; thus, betas over time regress toward the mean, or 1. Therefore, if historic betas are less than 1, adjusted betas are between 1 and the calculated beta.

Bodie - Chapter 08 #22
Difficulty: Moderate

23. The beta of Exxon stock has been estimated as 1.6 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of Exxon stock would be _____.

A. 1.20
B. 1.32
C. 1.13
D. 1.40
E. none of the above

Adjusted beta = 2/3 sample beta + 1/3(1); = 2/3(1.6) + 1/3 = 1.40.

Bodie - Chapter 08 #23
Difficulty: Moderate

24. The beta of Apple stock has been estimated as 2.3 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of Exxon stock would be _____.

A. 2.20
B. 1.87
C. 2.13
D. 1.66
E. none of the above

Adjusted beta = 2/3 sample beta + 1/3(1); = 2/3(2.3) + 1/3 = 1.867.

Bodie - Chapter 08 #24
Difficulty: Moderate

25. The beta of JCP stock has been estimated as 1.2 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of Exxon stock would be _____.

A. 1.20
B. 1.32
C. 1.13
D. 1.0
E. none of the above

Adjusted beta = 2/3 sample beta + 1/3(1); = 2/3(1.2) + 1/3 = 1.13.

Bodie - Chapter 08 #25
Difficulty: Moderate

26. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 150 stocks in order to construct a mean-variance efficient portfolio constrained by 150 investments. They will need to calculate _____ expected returns and _____ variances of returns.

A. 150, 150
B. 150, 22500
C. 22500, 150
D. 22500, 22500
E. none of the above

The expected returns of each of the 150 securities must be calculated. In addition, the 150 variances around these returns must be calculated.

Bodie - Chapter 08 #26
Difficulty: Moderate

27. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 100 stocks in order to construct a mean-variance efficient portfolio constrained by 100 investments. They will need to calculate _____ expected returns and _____ variances of returns.

A. 100, 100
B. 100, 4950
C. 4950, 100
D. 4950, 4950
E. none of the above

The expected returns of each of the 100 securities must be calculated. In addition, the 100 variances around these returns must be calculated.

Bodie - Chapter 08 #27
Difficulty: Moderate

28. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 150 stocks in order to construct a mean-variance efficient portfolio constrained by 150 investments. They will need to calculate _____ covariances.

A. 12
B. 150
C. 22,500
D. 11,750
E. none of the above

$(n^2 - n)/2$ = (22,500 - 150)/2 = 11,175 covariances must be calculated.

Bodie - Chapter 08 #28
Difficulty: Moderate

29. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 125 stocks in order to construct a mean-variance efficient portfolio constrained by 125 investments. They will need to calculate _____ covariances.

A. 125
B. 7,750
C. 15,625
D. 11,750
E. none of the above

$(n^2 - n)/2$ = (15,625 - 125)/2 = 7,750 covariances must be calculated.

Bodie - Chapter 08 #29
Difficulty: Moderate

30. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 100 stocks in order to construct a mean-variance efficient portfolio constrained by 100 investments. They will need to calculate _____ covariances.

A. 45
B. 100
C. 4,950
D. 10,000
E. none of the above

$(n^2 - n)/2$ = (10,000 - 100)/2 = 4,950 covariances must be calculated.

Bodie - Chapter 08 #30
Difficulty: Moderate

31. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 200 stocks in order to construct a mean-variance efficient portfolio constrained by 175 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 175; 15,225
B. 175; 175
C. 15,225; 175
D. 15,225; 15,225
E. none of the above

For a single-index model, n(175), expected returns and n(175) sensitivity coefficients to the macroeconomic factor must be estimated.

Bodie - Chapter 08 #31
Difficulty: Moderate

32. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 200 stocks in order to construct a mean-variance efficient portfolio constrained by 125 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 125; 15,225
B. 15,625; 125
C. 7,750; 125
D. 125; 125
E. none of the above

For a single-index model, n(125), expected returns and n(125) sensitivity coefficients to the macroeconomic factor must be estimated.

Bodie - Chapter 08 #32
Difficulty: Moderate

33. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 200 stocks in order to construct a mean-variance efficient portfolio constrained by 200 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 200; 19,900
B. 200; 200
C. 19,900; 200
D. 19,900; 19.900
E. none of the above

For a single-index model, n(200), expected returns and n(200) sensitivity coefficients to the macroeconomic factor must be estimated.

Bodie - Chapter 08 #33
Difficulty: Moderate

34. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 500 stocks in order to construct a mean-variance efficient portfolio constrained by 500 investments. They will need to calculate _____ estimates of firm-specific variances and _____ estimates for the variance of the macroeconomic factor.

A. 500; 1
B. 500; 500
C. 124,750; 1
D. 124,750; 500
E. 250,000; 500

For the single-index model, n(500) estimates of firm-specific variances must be calculated and 1 estimate for the variance of the common macroeconomic factor.

Bodie - Chapter 08 #34
Difficulty: Moderate

35. Consider the single-index model. The alpha of a stock is 0%. The return on the market index is 16%. The risk-free rate of return is 5%. The stock earns a return that exceeds the risk-free rate by 11% and there are no firm-specific events affecting the stock performance. The β of the stock is _____.

A. 0.67
B. 0.75
C. 1.0
D. 1.33
E. 1.50

11% = 0% + b(11%); b = 1.0.

Bodie - Chapter 08 #35
Difficulty: Moderate

36. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.20 and σ_M was 0.16, the β of the portfolio would be approximately _____.

A. 0.64
B. 0.80
C. 1.25
D. 1.56
E. none of the above

$s^2p / s^2m = b^2$; $(0.2)^2/(0.16)^2 = 1.56$; b = 1.25.

Bodie - Chapter 08 #36
Difficulty: Difficult

37. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.22 and σ_M was 0.19, the β of the portfolio would be approximately _____.

A. 1.34
B. 1.16
C. 1.25
D. 1.56
E. none of the above

$s^2p / s^2m = b^2$; $(0.22)^2/(0.19)^2 = 1.34$; b = 1.16.

Bodie - Chapter 08 #37
Difficulty: Difficult

38. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.18 and σ_M was 0.24, the β of the portfolio would be approximately _____.

A. 0.75
B. 0.56
C. 0.07
D. 1.03
E. none of the above

$s^2p / s^2m = b^2$; $(0.18)^2/(0.24)^2 = 0.5625$; b = 0.75.

Bodie - Chapter 08 #38
Difficulty: Difficult

39. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.25 + 0.75\beta_{t-1}$

If a stock had a β of 0.6 last year, you would forecast the β to be _____ in the coming year.

A. 0.45
B. 0.60
C. 0.70
D. 0.75
E. none of the above

0.25 + 0.75(0.6) = 0.70.

Bodie - Chapter 08 #39
Difficulty: Easy

40. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.31 + 0.82\beta_{t-1}$

If a stock had a β of 0.88 last year, you would forecast the β to be _____ in the coming year.

A. 0.88
B. 0.82
C. 0.31
D. 1.03
E. none of the above

0.31 + 0.82(0.88) = 1.0316.

Bodie - Chapter 08 #40
Difficulty: Easy

41. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.18 + 0.63\beta_{t-1}$

If a stock had a β of 1.09 last year, you would forecast the β to be _____ in the coming year.

A. 0.87
B. 0.18
C. 0.63
D. 0.81
E. none of the above

0.18 + 0.63(1.09) = 0.8667.

Bodie - Chapter 08 #41
Difficulty: Easy

42. Merrill Lynch estimates the index model for a stock using regression analysis involving total returns. They estimated the intercept in the regression equation at 6% and the β at 0.5. The risk-free rate of return is 12%. The true β of the stock is _____.

A. 0%
B. 3%
C. 6%
D. 9%
E. none of the above

6% = a + 12% (1 - 0.5); a = 0%.

Bodie - Chapter 08 #42
Difficulty: Difficult

43. The index model for stock A has been estimated with the following result:
$R_A = 0.01 + 0.9R_M + e_A$

If $\sigma_M = 0.25$ and $R^2_A = 0.25$, the standard deviation of return of stock A is _____.

A. 0.2025
B. 0.2500
C. 0.4500
D. 0.8100
E. none of the above

$R^2 = b^2s^2M / s^2$; $0.25 = [(0.81)(0.25)^2]/s^2$; s = 0.4500.

Bodie - Chapter 08 #43
Difficulty: Difficult

44. The index model for stock B has been estimated with the following result:
$R_B = 0.01 + 1.1R_M + e_B$

If $\sigma_M = 0.20$ and $R^2_B = 0.50$, the standard deviation of the return on stock B is _____.

A. 0.1111
B. 0.2111
C. 0.3111
D. 0.4111
E. none of the above

$R^2 = b^2s^2M / s^2$; $0.5 = [(1.1)^2(0.2)^2]/s^2$; s = 0.3111.

Bodie - Chapter 08 #44
Difficulty: Difficult

45. Suppose you forecast that the market index will earn a return of 15% in the coming year. Treasury bills are yielding 6%. The unadjusted β of Mobil stock is 1.30. A reasonable forecast of the return on Mobil stock for the coming year is _____ if you use Merrill Lynch adjusted betas.

A. 15.0%
B. 15.5%
C. 16.0%
D. 16.8%
E. none of the above

Adjusted beta = 2/3(1.3) + 1/3 = 1.20; E(rM) = 6% + 1.20(9%) = 16.8%.

Bodie - Chapter 08 #45
Difficulty: Difficult

46. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.01 + 0.5R_M + e_A$

$R_B = 0.02 + 1.3R_M + e_B$

$\sigma_M = 0.25$ $\sigma(e_A) = 0.20$ $\sigma(e_B) = 0.10$
The covariance between the returns on stocks A and B is _____.

A. 0.0384
B. 0.0406
C. 0.1920
D. 0.0050
E. 0.4000

Cov(RA,RB) = bAbBs^{2}M = 0.5(1.3)(0.25)^2 = 0.0406.

Bodie - Chapter 08 #46
Difficulty: Difficult

47. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.01 + 0.8R_M + e_A$

$R_B = 0.02 + 1.2R_M + e_B$

$\sigma_M = 0.20$ $\sigma(e_A) = 0.20$ σ $(e_B) = 0.10$
The standard deviation for stock A is _____.

A. 0.0656
B. 0.0676
C. 0.2561
D. 0.2600
E. none of the above

$\sigma A = [(0.8)^2(0.2)^2 + (0.2)^2]^{1/2} = 0.2561$.

Bodie - Chapter 08 #47
Difficulty: Difficult

48. The index model has been estimated for stock A with the following results:
$R_A = 0.01 + 0.8R_M + e_A$

$\sigma_M = 0.20$ $\sigma(e_A) = 0.10$
The standard deviation of the return for stock A is _____.

A. 0.0356
B. 0.1886
C. 0.1600
D. 0.6400
E. none of the above

$\sigma B = [(.8)^2(0.2)^2 + (0.1)^2]^{1/2} = 0.1886$.

Bodie - Chapter 08 #48
Difficulty: Difficult

49. Security returns

A. are based on both macro events and firm-specific events.
B. are based on firm-specific events only.
C. are usually positively correlated with each other.
D. A and B.
E. A and C.

Stock returns are usually highly positively correlated with each other. Stock returns are affected by both macro economic events and firm-specific events.

Bodie - Chapter 08 #49
Difficulty: Easy

50. The single-index model

A. greatly reduces the number of required calculations, relative to those required by the Markowitz model.
B. enhances the understanding of systematic versus nonsystematic risk.
C. greatly increases the number of required calculations, relative to those required by the Markowitz model.
D. A and B.
E. B and C.

The single index model both greatly reduces the number of calculations and enhances the understanding of the relationship between systematic and unsystematic risk on security returns.

Bodie - Chapter 08 #50
Difficulty: Easy

51. The Security Characteristic Line (SCL)

A. plots the excess return on a security as a function of the excess return on the market.
B. allows one to estimate the beta of the security.
C. allows one to estimate the alpha of the security.
D. all of the above.
E. none of the above.

The security characteristic line, which plots the excess return of the security as a function of the excess return of the market allows one to estimate both the alpha and the beta of the security.

Bodie - Chapter 08 #51
Difficulty: Easy

52. The **expected** impact of unanticipated macroeconomic events on a security's return during the period is

A. included in the security's expected return.
B. zero.
C. equal to the risk free rate.
D. proportional to the firm's beta.
E. infinite.

The expected value of unanticipated macroeconomic events is zero, because by definition it must average to zero or it would be incorporated into the expected return.

Bodie - Chapter 08 #52
Difficulty: Moderate

53. Covariances between security returns tend to be

A. positive because of SEC regulations.
B. positive because of Exchange regulations.
C. positive because of economic forces that affect many firms.
D. negative because of SEC regulations
E. negative because of economic forces that affect many firms.

Economic forces such as business cycles, interest rates, and technological changes tend to have similar impacts on many firms.

Bodie - Chapter 08 #53
Difficulty: Moderate

54. In the single-index model represented by the equation $r_i = E(r_i) + \beta_i F + e_i$, the term e_i represents

A. the impact of unanticipated macroeconomic events on security i's return.
B. the impact of unanticipated firm-specific events on security i's return.
C. the impact of anticipated macroeconomic events on security i's return.
D. the impact of anticipated firm-specific events on security i's return.
E. the impact of changes in the market on security i's return.

The textbook discusses a model in which macroeconomic events are used as a single index for security returns. The e_i term represents the impact of unanticipated firm-specific events. The e_i term has an expected value of zero. Only unanticipated events would affect the return.

Bodie - Chapter 08 #54
Difficulty: Moderate

55. Suppose you are doing a portfolio analysis that includes all of the stocks on the NYSE. Using a single-index model rather than the Markowitz model _____ the number of inputs needed from _____ to _____.

A. increases, about 1,400, more than 1.4 million
B. increases, about 10,000, more than 125,000
C. reduces, more than 125,000, about 10,000
D. reduces, more than 4 million, about 9,000
E. increases, about 150, more than 1,500

This example is discussed in the textbook. The main point for the students to remember is that the single-index model drastically reduces the number of inputs required.

Bodie - Chapter 08 #55
Difficulty: Moderate

56. One "cost" of the single-index model is that it

A. is virtually impossible to apply.
B. prohibits specialization of efforts within the security analysis industry.
C. requires forecasts of the money supply.
D. is legally prohibited by the SEC.
E. allows for only two kinds of risk - macro risk and micro risk.

The single-index model discussed in chapter 10 broke risk into macro and micro portions. In this model other factors such as industry effects.

Bodie - Chapter 08 #56
Difficulty: Moderate

57. The Security Characteristic Line (SCL) associated with the single-index model is a plot of

A. the security's returns on the vertical axis and the market index's returns on the horizontal axis.
B. the market index's returns on the vertical axis and the security's returns on the horizontal axis.
C. the security's excess returns on the vertical axis and the market index's excess returns on the horizontal axis.
D. the market index's excess returns on the vertical axis and the security's excess returns on the horizontal axis.
E. the security's returns on the vertical axis and Beta on the horizontal axis.

The student needs to remember that it is the excess returns that are plotted and that the security's returns are plotted as a dependent variable.

Bodie - Chapter 08 #57
Difficulty: Moderate

58. The idea that there is a limit to the reduction of portfolio risk due to diversification is

A. contradicted by both the CAPM and the single-index model.
B. contradicted by the CAPM.
C. contradicted by the single-index model.
D. supported in theory, but not supported empirically.
E. supported both in theory and by empirical evidence.

The benefits of diversification are limited to the level of systematic risk. Figure 8.1 shows this concept graphically.

Bodie - Chapter 08 #58
Difficulty: Moderate

59. In their study about predicting beta coefficients, which of the following did Rosenberg and Guy find to be factors that influence beta?
I) industry group
II) variance of cash flow
III) dividend yield
IV) growth in earnings per share

A. I and II
B. I and III
C. I, II, and III
D. I, II, and IV
E. I, II, III, and IV

All of the factors mentioned, as well as variance of earnings, firm size, and debt-to-asset ratio, were found to help predict betas.

Bodie - Chapter 08 #59
Difficulty: Moderate

60. If a firm's beta was calculated as 1.6 in a regression equation, Merrill Lynch would state the adjusted beta at a number

A. less than 0.6 but greater than zero.
B. between 0.6 and 1.0.
C. between 1.0 and 1.6.
D. greater than 1.6.
E. zero or less.

Betas, on average, equal one; thus, betas over time regress toward the mean, or 1. Therefore, if historic betas are more than 1, adjusted betas are between 1 and the calculated beta.

Bodie - Chapter 08 #60
Difficulty: Moderate

61. The beta of a stock has been estimated as 1.8 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of the stock would be _____.

A. 1.20
B. 1.53
C. 1.13
D. 1.0
E. none of the above

Adjusted beta = 2/3 sample beta + 1/3(1); = 2/3(1.8) + 1/3 = 1.53.

Bodie - Chapter 08 #61
Difficulty: Moderate

62. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 40 stocks in order to construct a mean-variance efficient portfolio constrained by 40 investments. They will need to calculate _____ expected returns and _____ variances of returns.

A. 100, 100
B. 40, 40
C. 4950, 100
D. 4950, 4950
E. none of the above

The expected returns of each of the 40 securities must be calculated. In addition, the 40 variances around these returns must be calculated.

Bodie - Chapter 08 #62
Difficulty: Moderate

63. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 40 stocks in order to construct a mean-variance efficient portfolio constrained by 40 investments. They will need to calculate _____ covariances.

A. 45
B. 780
C. 4,950
D. 10,000
E. none of the above

$(n^2 - n)/2 = (1,600 - 40)/2 = 780$ covariances must be calculated.

Bodie - Chapter 08 #63
Difficulty: Moderate

64. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 60 stocks in order to construct a mean-variance efficient portfolio constrained by 60 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 200; 19,900
B. 200; 200
C. 60; 60
D. 19,900; 19.900
E. none of the above

For a single-index model, n(60), expected returns and n(60) sensitivity coefficients to the macroeconomic factor must be estimated.

Bodie - Chapter 08 #64
Difficulty: Moderate

65. Consider the single-index model. The alpha of a stock is 0%. The return on the market index is 10%. The risk-free rate of return is 3%. The stock earns a return that exceeds the risk-free rate by 11% and there are no firm-specific events affecting the stock performance. The β of the stock is _____.

A. 0.64
B. 0.75
C. 1.17
D. 1.33
E. 1.50

7% = 0% + b(11%); b = 0.636.

Bodie - Chapter 08 #65
Difficulty: Moderate

66. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.25 and σ_M was 0.21, the β of the portfolio would be approximately _____.

A. 0.64
B. 1.19
C. 1.25
D. 1.56
E. none of the above

$s^2p / s^2m = b^2$; $(0.25)^2/(0.21)^2 = 1.417$; $b = 1.19$.

Bodie - Chapter 08 #66
Difficulty: Difficult

67. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.18 and σ_M was 0.22, the β of the portfolio would be approximately _____.

A. 0.64
B. 1.19
C. 0.82
D. 1.56
E. none of the above

$s^2p / s^2m = b^2$; $(0.18)^2/(0.22)^2 = 0.669$; $b = 0.82$.

Bodie - Chapter 08 #67
Difficulty: Difficult

68. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.4 + 0.6\beta_{t-1}$

If a stock had a β of 0.9 last year, you would forecast the β to be _____ in the coming year.

A. 0.45
B. 0.60
C. 0.70
D. 0.94
E. none of the above

$0.4 + 0.6(0.9) = 0.94$.

Bodie - Chapter 08 #68
Difficulty: Easy

69. Suppose the following equation best describes the evolution of β over time:
$\beta_t = 0.3 + 0.2\beta_{t-1}$

If a stock had a β of 0.8 last year, you would forecast the β to be _____ in the coming year.

A. 0.46
B. 0.60
C. 0.70
D. 0.94
E. none of the above

0.3 + 0.2(0.8) = 0.46.

Bodie - Chapter 08 #69
Difficulty: Easy

70. The index model for stock A has been estimated with the following result:
$R_A = 0.01 + 0.94R_M + e_A$

If $\sigma_M = 0.30$ and $R^2_A = 0.28$, the standard deviation of return of stock A is _____.

A. 0.2025
B. 0.2500
C. 0.4500
D. 0.5329
E. none of the above

$R^2 = b^2s^2M / s^2$; $0.28 = [(0.94)^2(0.30)^2] / .28$; s = 0.5329.

Bodie - Chapter 08 #70
Difficulty: Difficult

71. Suppose you forecast that the market index will earn a return of 12% in the coming year. Treasury bills are yielding 4%. The unadjusted β of Mobil stock is 1.30. A reasonable forecast of the return on Mobil stock for the coming year is _____ if you use Merrill Lynch adjusted betas.

A. 15.0%
B. 15.5%
C. 16.0%
D. 14.6%
E. none of the above

Adjusted beta = 2/3(1.5) + 1/3 = 1.33; E(rM) = 4% + 1.33(8%) = 14.6%.

Bodie - Chapter 08 #71
Difficulty: Difficult

72. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.01 + 0.8R_M + e_A$

$R_B = 0.02 + 1.1R_M + e_B$

$\sigma_M = 0.30$ $\sigma(e_A) = 0.20$ $\sigma(e_B) = 0.10$
The covariance between the returns on stocks A and B is _____.

A. 0.0384
B. 0.0406
C. 0.1920
D. 0.0050
E. 0.0792

Cov(RA,RB) = bAbBs^{2}M = 0.8(1.1)(0.30)^2 = 0.0792.

Bodie - Chapter 08 #72
Difficulty: Difficult

73. If a firm's beta was calculated as 1.35 in a regression equation, Merrill Lynch would state the adjusted beta at a number

A. less than 1.35
B. between 0.0 and 1.0.
C. between 1.0 and 1.35.
D. greater than 1.35.
E. zero or less.

Betas, on average, equal one; thus, betas over time regress toward the mean, or 1. Therefore, if historic betas are less than 1, adjusted betas are between 1 and the calculated beta.

Bodie - Chapter 08 #73
Difficulty: Moderate

74. The beta of a stock has been estimated as 1.4 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of the stock would be _____.

A. 1.27
B. 1.32
C. 1.13
D. 1.0
E. none of the above

Adjusted beta = 2/3 sample beta + 1/3(1); = 2/3(1.4) + 1/3 = 1.27.

Bodie - Chapter 08 #74
Difficulty: Moderate

75. The beta of a stock has been estimated as 0.85 by Merrill Lynch using regression analysis on a sample of historical returns. The Merrill Lynch adjusted beta of the stock would be _____.

A. 1.01
B. 0.95
C. 1.13
D. 0.90
E. none of the above

Adjusted beta = 2/3 sample beta + 1/3(1); = 2/3(0.85) + 1/3 = 0.90.

Bodie - Chapter 08 #75
Difficulty: Moderate

76. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 125 stocks in order to construct a mean-variance efficient portfolio constrained by 125 investments. They will need to calculate _____ expected returns and _____ variances of returns.

A. 125, 125
B. 125, 15,625
C. 15,625, 125
D. 15,625, 15,625
E. none of the above

The expected returns of each of the 125 securities must be calculated. In addition, the 125 variances around these returns must be calculated.

Bodie - Chapter 08 #76
Difficulty: Moderate

77. Assume that stock market returns do not resemble a single-index structure. An investment fund analyzes 132 stocks in order to construct a mean-variance efficient portfolio constrained by 132 investments. They will need to calculate _____ covariances.

A. 100
B. 132
C. 4,950
D. 8,646
E. none of the above

$(n^2 - n)/2 = (17,424 - 132)/2 = 8,646$ covariances must be calculated.

Bodie - Chapter 08 #77
Difficulty: Moderate

78. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 217 stocks in order to construct a mean-variance efficient portfolio constrained by 217 investments. They will need to calculate _____ estimates of expected returns and _____ estimates of sensitivity coefficients to the macroeconomic factor.

A. 217; 47,089
B. 217; 217
C. 47,089; 217
D. 47,089; 47,089
E. none of the above

For a single-index model, n(217), expected returns and n(217) sensitivity coefficients to the macroeconomic factor must be estimated.

Bodie - Chapter 08 #78
Difficulty: Moderate

79. Assume that stock market returns do follow a single-index structure. An investment fund analyzes 500 stocks in order to construct a mean-variance efficient portfolio constrained by 750 investments. They will need to calculate _____ estimates of firm-specific variances and _____ estimates for the variance of the macroeconomic factor.

A. 750; 1
B. 750; 750
C. 124,750; 1
D. 124,750; 750
E. 562,500; 750

For the single-index model, n(750) estimates of firm-specific variances must be calculated and 1 estimate for the variance of the common macroeconomic factor.

Bodie - Chapter 08 #79
Difficulty: Moderate

80. Consider the single-index model. The alpha of a stock is 0%. The return on the market index is 10%. The risk-free rate of return is 5%. The stock earns a return that exceeds the risk-free rate by 5% and there are no firm-specific events affecting the stock performance. The β of the stock is _____.

A. 0.67
B. 0.75
C. 1.0
D. 1.33
E. 1.50

5% = 0% + b(5%); b = 1.0.

Bodie - Chapter 08 #80
Difficulty: Moderate

81. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.24 and σ_M was 0.18, the β of the portfolio would be approximately _____.

A. 0.64
B. 1.33
C. 1.25
D. 1.56
E. none of the above

$s^2p / s^2m = b^2$; $(0.24)^2/(0.18)^2 = 1.78$; $b = 1.33$.

Bodie - Chapter 08 #81
Difficulty: Difficult

82. Suppose you held a well-diversified portfolio with a very large number of securities, and that the single index model holds. If the σ of your portfolio was 0.14 and σ_M was 0.19, the β of the portfolio would be approximately _____.

A. 0.74
B. 0.80
C. 1.25
D. 1.56
E. none of the above

$s^2p / s^2m = b^2$; $(0.14)^2/(0.19)^2 = 0.54$; $b = 0.74$.

Bodie - Chapter 08 #82
Difficulty: Difficult

83. Suppose the following equation best describes the evolution of β over time:

$\beta_t = 0.30 + 0.70\beta_{t-1}$

If a stock had a β of 0.82 last year, you would forecast the β to be _____ in the coming year.

A. 0.91
B. 0.77
C. 0.63
D. 0.87
E. none of the above

$0.30 + 0.70(0.82) = 0.874$.

Bodie - Chapter 08 #83
Difficulty: Easy

84. The index model has been estimated for stocks A and B with the following results:
$R_A = 0.03 + 0.7R_M + e_A$

$R_B = 0.01 + 0.9R_M + e_B$

$\sigma_M = 0.35$ $\sigma(e_A) = 0.20$ $\sigma(e_B) = 0.10$
The covariance between the returns on stocks A and B is _____.

A. 0.0384
B. 0.0406
C. 0.1920
D. 0.0772
E. 0.4000

Cov(RA,RB) = bAbBs^{2}M = 0.7(0.9)(0.35)^2 = 0.0772.

Bodie - Chapter 08 #84
Difficulty: Difficult

85. Discuss the advantages of the **single-index model** over the **Markowitz model** in terms of **numbers of variable estimates required** and in terms of **understanding risk relationships**.

For a 50 security portfolio, the **Markowitz model** requires the following parameter estimates:
n = 50 estimates of expected returns;
n = 50 estimates of variances;
$(n^2 - n)/2$ = 1,225 estimates of covariances;
1,325 estimates.
For a 50 security portfolio, the **single-index model** requires the following parameter estimates:
n = 50 estimates of expected excess returns, E(R);

n = 50 estimates of sensitivity coefficients, β_i;

n = 50 estimates of the firm-specific variances, $\sigma^2(e_i)$;

1 estimate for the variance of the common macroeconomic factor, σ^2_M; or **(3n + 1)** estimates.
In addition, the single-index model provides further insight by recognizing that different firms have different sensitivities to macroeconomic events. The model also summarizes the distinction between macroeconomic and firm-specific risk factors.
Feedback: This question is designed to ascertain that the student understands the significant simplifications and improvements offered by the single-index model over the Markowitz model.

Bodie - Chapter 08 #85
Difficulty: Moderate

86. Discuss the **security characteristic line (SCL)**.

The **security characteristic line (SCL)** is the result of estimating the regression equation of the single-index model. The SCL is a plot of the typical excess returns on a security over the risk-free rate as a function of the excess return on the market. The slope of the SCL is the beta of the security, and they-intercept, alpha, is the excess return on the security when the excess market return is zero.
Feedback: This question is designed to ascertain that the student understands how the SCL is obtained, as this relationship is the one that is most frequently used by published information services for the estimation of the regression parameters, alpha and beta.

Bodie - Chapter 08 #86
Difficulty: Moderate

87. Discuss the **"adjusted betas"** published by Merrill Lynch in Security Risk Evaluation.

Over time, security betas move toward 1, as the average beta of all securities is 1 and variables regress toward the mean. Thus, if a historic beta has been greater than 1, the chances are that in the future, this beta will be less than the historic beta. The opposite relationship will be observed if the historic beta has been less than one. Merrill Lynch uses the following relationship to calculate **"adjusted betas"**.
Adjusted beta = 2/3 (sample beta) + 1/3 (1).
Feedback: This question is important, as many published sources quote an "adjusted beta" with no explanation as to how such a number was obtained. The regression toward the mean is a valid statistical concept and it is important that the student understands that this concept represents the theory behind the possibly undocumented "adjusted betas".

Bodie - Chapter 08 #87
Difficulty: Easy

ch8 Summary

Category	*# of Questions*
Bodie - Chapter 08	87
Difficulty: Difficult	18
Difficulty: Easy	20
Difficulty: Moderate	49