ch7

Student: _____

1. Market risk is also referred to as

   A. systematic risk, diversifiable risk.
   B. systematic risk, nondiversifiable risk.
   C. unique risk, nondiversifiable risk.
   D. unique risk, diversifiable risk.
   E. none of the above.

2. Systematic risk is also referred to as

   A. market risk, nondiversifiable risk.
   B. market risk, diversifiable risk.
   C. unique risk, nondiversifiable risk.
   D. unique risk, diversifiable risk.
   E. none of the above.

3. Nondiversifiable risk is also referred to as

   A. systematic risk, unique risk.
   B. systematic risk, market risk.
   C. unique risk, market risk.
   D. unique risk, firm-specific risk.
   E. none of the above.

4. Diversifiable risk is also referred to as

   A. systematic risk, unique risk.
   B. systematic risk, market risk.
   C. unique risk, market risk.
   D. unique risk, firm-specific risk.
   E. none of the above.

5. Unique risk is also referred to as

   A. systematic risk, diversifiable risk.
   B. systematic risk, market risk.
   C. diversifiable risk, market risk.
   D. diversifiable risk, firm-specific risk.
   E. none of the above.

6. Firm-specific risk is also referred to as

   A. systematic risk, diversifiable risk.
   B. systematic risk, market risk.
   C. diversifiable risk, market risk.
   D. diversifiable risk, unique risk.
   E. none of the above.

7. Non-systematic risk is also referred to as

A. market risk, diversifiable risk.
B. firm-specific risk, market risk.
C. diversifiable risk, market risk.
D. diversifiable risk, unique risk.
E. none of the above.

8. The risk that can be diversified away is

A. firm specific risk.
B. beta.
C. systematic risk.
D. market risk.
E. none of the above.

9. The risk that cannot be diversified away is

A. firm-specific risk.
B. unique.
C. non-systematic risk.
D. market risk.
E. none of the above.

10. The variance of a portfolio of risky securities

A. is a weighted sum of the securities' variances.
B. is the sum of the securities' variances.
C. is the weighted sum of the securities' variances and covariances.
D. is the sum of the securities' covariances.
E. none of the above.

11. The standard deviation of a portfolio of risky securities

A. the square root of the weighted sum of the securities' variances.
B. the square root of the sum of the securities' variances.
C. the square root of the weighted sum of the securities' variances and covariances.
D. the square root of the sum of the securities' covariances.
E. none of the above.

12. The expected return of a portfolio of risky securities

A. is a weighted average of the securities' returns.
B. is the sum of the securities' returns.
C. is the weighted sum of the securities' variances and covariances.
D. A and C.
E. none of the above.

13. Other things equal, diversification is most effective when

A. securities' returns are uncorrelated.
B. securities' returns are positively correlated.
C. securities' returns are high.
D. securities' returns are negatively correlated.
E. B and C.

14. The efficient frontier of risky assets is

A. the portion of the investment opportunity set that lies above the global minimum variance portfolio.
B. the portion of the investment opportunity set that represents the highest standard deviations.
C. the portion of the investment opportunity set which includes the portfolios with the lowest standard deviation.
D. the set of portfolios that have zero standard deviation.
E. both A and B are true.

15. The Capital Allocation Line provided by a risk-free security and N risky securities is

A. the line that connects the risk-free rate and the global minimum-variance portfolio of the risky securities.
B the line that connects the risk-free rate and the portfolio of the risky securities that has the highest
. expected return on the efficient frontier.
C. the line tangent to the efficient frontier of risky securities drawn from the risk-free rate.
D. the horizontal line drawn from the risk-free rate.
E. none of the above.

16. Consider an investment opportunity set formed with two securities that are perfectly negatively correlated. The global minimum variance portfolio has a standard deviation that is always

A. greater than zero.
B. equal to zero.
C. equal to the sum of the securities' standard deviations.
D. equal to -1.
E. none of the above.

17. Which of the following statements is (are) **true** regarding the variance of a portfolio of two risky securities?

A. The higher the coefficient of correlation between securities, the greater the reduction in the portfolio variance.
B. There is a linear relationship between the securities' coefficient of correlation and the portfolio variance.
C. The degree to which the portfolio variance is reduced depends on the degree of correlation between securities.
D. A and B.
E. A and C.

18. Which of the following statements is (are) **false** regarding the variance of a portfolio of two risky securities?

A. The higher the coefficient of correlation between securities, the greater the reduction in the portfolio variance.
B. There is a linear relationship between the securities' coefficient of correlation and the portfolio variance.
C. The degree to which the portfolio variance is reduced depends on the degree of correlation between securities.
D. A and B.
E. A and C.

19. Efficient portfolios of N risky securities are portfolios that

A. are formed with the securities that have the highest rates of return regardless of their standard deviations.
B. have the highest rates of return for a given level of risk.
C. are selected from those securities with the lowest standard deviations regardless of their returns.
D. have the highest risk and rates of return and the highest standard deviations.
E. have the lowest standard deviations and the lowest rates of return.

20. Which of the following statement(s) is (are) **true** regarding the selection of a portfolio from those that lie on the Capital Allocation Line?

A Less risk-averse investors will invest more in the risk-free security and less in the optimal risky portfolio . than more risk-averse investors.
B More risk-averse investors will invest less in the optimal risky portfolio and more in the risk-free security . than less risk-averse investors.
C. Investors choose the portfolio that maximizes their expected utility.
D. A and C.
E. B and C.

21. Which of the following statement(s) is (are) **false** regarding the selection of a portfolio from those that lie on the Capital Allocation Line?

A Less risk-averse investors will invest more in the risk-free security and less in the optimal risky portfolio . than more risk-averse investors.
B More risk-averse investors will invest less in the optimal risky portfolio and more in the risk-free security . than less risk-averse investors.
C. Investors choose the portfolio that maximizes their expected utility.
D. A and B.
E. A and C.

Consider the following probability distribution for stocks A and B:

State	Probability	Return on Stock A	Return on Stock B
1	0.10	10%	8%
2	0.20	13%	7%
3	0.20	12%	6%
4	0.30	14%	9%
5	0.20	15%	8%

22. The expected rates of return of stocks A and B are _____ and _____ , respectively.

    A. 13.2%; 9%
    B. 14%; 10%
    C. 13.2%; 7.7%
    D. 7.7%; 13.2%
    E. none of the above

23. The standard deviations of stocks A and B are _____ and _____, respectively.

    A. 1.5%; 1.9%
    B. 2.5%; 1.1%
    C. 3.2%; 2.0%
    D. 1.5%; 1.1%
    E. none of the above

24. The variances of stocks A and B are _____ and _____, respectively.

    A. 1.5%; 1.9%
    B. 2.3%; 1.2%
    C. 3.2%; 2.0%
    D. 1.5%; 1.1%
    E. none of the above

25. The coefficient of correlation between A and B is

    A. 0.47.
    B. 0.60.
    C. 0.58
    D. 1.20.
    E. none of the above.

26. If you invest 40% of your money in A and 60% in B, what would be your portfolio's expected rate of return and standard deviation?

    A. 9.9%; 3%
    B. 9.9%; 1.1%
    C. 11%; 1.1%
    D. 11%; 3%
    E. none of the above

27. Let G be the global minimum variance portfolio. The weights of A and B in G are _____ and _____, respectively.

    A. 0.40; 0.60
    B. 0.66; 0.34
    C. 0.34; 0.66
    D. 0.76; 0.24
    E. 0.24; 0.76

28. The expected rate of return and standard deviation of the global minimum variance portfolio, G, are _____ and _____, respectively.

A. 10.07%; 1.05%
B. 9.04%; 2.03%
C. 10.07%; 3.01%
D. 9.04%; 1.05%
E. none of the above

29. Which of the following portfolio(s) is (are) on the efficient frontier?

A. The portfolio with 20 percent in A and 80 percent in B.
B. The portfolio with 15 percent in A and 85 percent in B.
C. The portfolio with 26 percent in A and 74 percent in B.
D. The portfolio with 10 percent in A and 90 percent in B.
E. A and B are both on the efficient frontier.

Consider two perfectly negatively correlated risky securities A and B. A has an expected rate of return of 10% and a standard deviation of 16%. B has an expected rate of return of 8% and a standard deviation of 12%.

30. The weights of A and B in the global minimum variance portfolio are _____ and _____, respectively.

A. 0.24; 0.76
B. 0.50; 0.50
C. 0.57; 0.43
D. 0.43; 0.57
E. 0.76; 0.24

31. The risk-free portfolio that can be formed with the two securities will earn _____ rate of return.

A. 8.5%
B. 9.0%
C. 8.9%
D. 9.9%
E. none of the above

32. Which of the following portfolio(s) is (are) most efficient?

A. 45 percent in A and 55 percent in B.
B. 65 percent in A and 35 percent in B.
C. 35 percent in A and 65 percent in B.
D. A and B are both efficient.
E. A and C are both efficient.

33. An investor who wishes to form a portfolio that lies to the right of the optimal risky portfolio on the Capital Allocation Line must:

A. lend some of her money at the risk-free rate and invest the remainder in the optimal risky portfolio.
B. borrow some money at the risk-free rate and invest in the optimal risky portfolio.
C. invest only in risky securities.
D. such a portfolio cannot be formed.
E. B and C

34. Which one of the following portfolios **cannot lie** on the efficient frontier as described by Markowitz?

Portfolio	Expected Return	Standard Deviation
W	9%	21%
X	5%	7%
Y	15%	36%
Z	12%	15%

A. Only portfolio W cannot lie on the efficient frontier.
B. Only portfolio X cannot lie on the efficient frontier.
C. Only portfolio Y cannot lie on the efficient frontier.
D. Only portfolio Z cannot lie on the efficient frontier.
E. Cannot tell from the information given.

35. Which one of the following portfolios **cannot lie** on the efficient frontier as described by Markowitz?

Portfolio	Expected Return	Standard Deviation
A	10%	12%
B	5%	7%
C	15%	20%
D	12%	25%

A. Only portfolio A cannot lie on the efficient frontier.
B. Only portfolio B cannot lie on the efficient frontier.
C. Only portfolio C cannot lie on the efficient frontier.
D. Only portfolio D cannot lie on the efficient frontier.
E. Cannot tell from the information given.

36. Portfolio theory as described by Markowitz is most concerned with:

A. the elimination of systematic risk.
B. the effect of diversification on portfolio risk.
C. the identification of unsystematic risk.
D. active portfolio management to enhance returns.
E. none of the above.

37. The measure of risk in a Markowitz efficient frontier is:

A. specific risk.
B. standard deviation of returns.
C. reinvestment risk.
D. beta.
E. none of the above.

38. A statistic that measures how the returns of two risky assets move together is:

A. variance.
B. standard deviation.
C. covariance.
D. correlation.
E. C and D.

39. The unsystematic risk of a specific security

A. is likely to be higher in an increasing market.
B. results from factors unique to the firm.
C. depends on market volatility.
D. cannot be diversified away.
E. none of the above.

40. Which statement about portfolio diversification is correct?

A. Proper diversification can reduce or eliminate systematic risk.
B. The risk-reducing benefits of diversification do not occur meaningfully until at least 50-60 individual securities have been purchased.
C. Because diversification reduces a portfolio's total risk, it necessarily reduces the portfolio's expected return.
D. Typically, as more securities are added to a portfolio, total risk would be expected to decrease at a decreasing rate.
E. None of the above statements are correct.

41. The individual investor's optimal portfolio is designated by:

A. The point of tangency with the indifference curve and the capital allocation line.
B. The point of highest reward to variability ratio in the opportunity set.
C. The point of tangency with the opportunity set and the capital allocation line.
D. The point of the highest reward to variability ratio in the indifference curve.
E. None of the above.

42. For a two-stock portfolio, what would be the preferred correlation coefficient between the two stocks?

A. +1.00.
B. +0.50.
C. 0.00.
D. -1.00.
E. none of the above.

43. In a two-security minimum variance portfolio where the correlation between securities is greater than -1.0

A. the security with the higher standard deviation will be weighted more heavily.
B. the security with the higher standard deviation will be weighted less heavily.
C. the two securities will be equally weighted.
D. the risk will be zero.
E. the return will be zero.

44. Which of the following is **not** a source of systematic risk?

A. the business cycle.
B. interest rates.
C. personnel changes
D. the inflation rate.
E. exchange rates.

45. The global minimum variance portfolio formed from two risky securities will be riskless when the correlation coefficient between the two securities is

    A. 0.0
    B. 1.0
    C. 0.5
    D. -1.0
    E. negative

46. Security X has expected return of 12% and standard deviation of 20%. Security Y has expected return of 15% and standard deviation of 27%. If the two securities have a correlation coefficient of 0.7, what is their covariance?

    A. 0.038
    B. 0.070
    C. 0.018
    D. 0.013
    E. 0.054

47. When two risky securities that are positively correlated but not perfectly correlated are held in a portfolio,

    A. the portfolio standard deviation will be greater than the weighted average of the individual security standard deviations.
    B. the portfolio standard deviation will be less than the weighted average of the individual security standard deviations.
    C. the portfolio standard deviation will be equal to the weighted average of the individual security standard deviations.
    D. the portfolio standard deviation will always be equal to the securities' covariance.
    E. none of the above are true.

48. The line representing all combinations of portfolio expected returns and standard deviations that can be constructed from two available assets is called the

    A. risk/reward tradeoff line
    B. Capital Allocation Line
    C. efficient frontier
    D. portfolio opportunity set
    E. Security Market Line

49. Given an optimal risky portfolio with expected return of 14% and standard deviation of 22% and a risk free rate of 6%, what is the slope of the best feasible CAL?

    A. 0.64
    B. 0.14
    C. 0.08
    D. 0.33
    E. 0.36

50. Given an optimal risky portfolio with expected return of 18% and standard deviation of 21% and a risk free rate of 5%, what is the slope of the best feasible CAL?

A. 0.64
B. 0.14
C. 0.62
D. 0.33
E. 0.36

51. The risk that can be diversified away in a portfolio is referred to as _____.
I) diversifiable risk
II) unique risk
III) systematic risk
IV) firm-specific risk

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

52. As the number of securities in a portfolio is increased, what happens to the average portfolio standard deviation?

A. It increases at an increasing rate.
B. It increases at a decreasing rate.
C. It decreases at an increasing rate.
D. It decreases at a decreasing rate.
E. It first decreases, then starts to increase as more securities are added.

53. In words, the covariance considers the probability of each scenario happening and the interaction between

A. securities' returns relative to their variances.
B. securities' returns relative to their mean returns.
C. securities' returns relative to other securities' returns.
D. the level of return a security has in that scenario and the overall portfolio return.
E. the variance of the security's return in that scenario and the overall portfolio variance.

54. The standard deviation of a two-asset portfolio is a linear function of the assets' weights when

A. the assets have a correlation coefficient less than zero.
B. the assets have a correlation coefficient equal to zero.
C. the assets have a correlation coefficient greater than zero.
D. the assets have a correlation coefficient equal to one.
E. the assets have a correlation coefficient less than one.

55. A two-asset portfolio with a standard deviation of zero can be formed when

A. the assets have a correlation coefficient less than zero.
B. the assets have a correlation coefficient equal to zero.
C. the assets have a correlation coefficient greater than zero.
D. the assets have a correlation coefficient equal to one.
E. the assets have a correlation coefficient equal to negative one.

56. When borrowing and lending at a risk-free rate are allowed, which Capital Allocation Line (CAL) should the investor choose to combine with the efficient frontier?
I) with the highest reward-to-variability ratio.
II) that will maximize his utility.
III) with the steepest slope.
IV) with the lowest slope.

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

57. Which Excel tool can be used to find the points along an efficient frontier?

A. Regression
B. Solver
C. Scenarios
D. Goal Seek
E. Data Analysis

58. The separation property refers to the conclusion that

A. the determination of the best risky portfolio is objective and the choice of the best complete portfolio is subjective.
B. the choice of the best complete portfolio is objective and the determination of the best risky portfolio is objective.
C. the choice of inputs to be used to determine the efficient frontier is objective and the choice of the best CAL is subjective.
D. the determination of the best CAL is objective and the choice of the inputs to be used to determine the efficient frontier is subjective.
E. investors are separate beings and will therefore have different preferences regarding the risk-return tradeoff.

Consider the following probability distribution for stocks A and B:

State	Probability	Return on Stock A	Return on Stock B
1	0.15	8%	8%
2	0.20	13%	7%
3	0.15	12%	6%
4	0.30	14%	9%
5	0.20	16%	11%

59. The expected rates of return of stocks A and B are _____ and _____, respectively.

A. 13.2%; 9%.
B. 13%; 8.4%
C. 13.2%; 7.7%
D. 7.7%; 13.2%
E. none of the above

60. The standard deviations of stocks A and B are _____ and _____, respectively.

A. 1.56%; 1.99%
B. 2.45%; 1.68%
C. 3.22%; 2.01%
D. 1.54%; 1.11%
E. none of the above

61. The coefficient of correlation between A and B is

A. 0.474.
B. 0.612.
C. 0.583.
D. 1.206.
E. none of the above.

62. If you invest 35% of your money in A and 65% in B, what would be your portfolio's expected rate of return and standard deviation?

A. 9.9%; 3%
B. 9.9%; 1.1%
C. 10%; 1.7%
D. 10%; 3%
E. none of the above

Consider two perfectly negatively correlated risky securities A and B. A has an expected rate of return of 12% and a standard deviation of 17%. B has an expected rate of return of 9% and a standard deviation of 14%.

63. The weights of A and B in the global minimum variance portfolio are _____ and _____, respectively.

A. 0.24; 0.76
B. 0.50; 0.50
C. 0.57; 0.43
D. 0.45; 0.55
E. 0.76; 0.24

64. The risk-free portfolio that can be formed with the two securities will earn _____ rate of return.

A. 9.5%
B. 10.4%
C. 10.9%
D. 9.9%
E. none of the above

65. Security X has expected return of 14% and standard deviation of 22%. Security Y has expected return of 16% and standard deviation of 28%. If the two securities have a correlation coefficient of 0.8, what is their covariance?

A. 0.038
B. 0.049
C. 0.018
D. 0.013
E. 0.054

66. Security X has expected return of 9% and standard deviation of 18%. Security Y has expected return of 12% and standard deviation of 21%. If the two securities have a correlation coefficient of -0.4, what is their covariance?

A. 0.0388
B. 0.0706
C. 0.0184
D. -0.0133
E. -0.1512

67. Given an optimal risky portfolio with expected return of 16% and standard deviation of 20% and a risk free rate of 4%, what is the slope of the best feasible CAL?

A. 0.60
B. 0.14
C. 0.08
D. 0.36
E. 0.31

68. Given an optimal risky portfolio with expected return of 12% and standard deviation of 26% and a risk free rate of 3%, what is the slope of the best feasible CAL?

A. 0.64
B. 0.14
C. 0.08
D. 0.35
E. 0.36

Consider the following probability distribution for stocks C and D:

State	Probability	Return on Stock C	Return on Stock D
1	0.30	7%	-9%
2	0.50	11%	14%
3	0.20	-16%	26%

69. The expected rates of return of stocks C and D are _____ and _____, respectively.

A. 4.4%; 9.5%.
B. 9.5%; 4.4%
C. 6.3%; 8.7%
D. 8.7%; 6.2%
E. none of the above

70. The standard deviations of stocks C and D are _____ and _____, respectively.

A. 7.62%; 11.24%
B. 11.24%; 7.62%
C. 9.34%; 12.93%
D. 12.93%; 9.34%
E. none of the above

71. The coefficient of correlation between C and D is

A. 0.665.
B. 0.554.
C. -0.554.
D. -0.665.
E. none of the above.

72. If you invest 25% of your money in C and 75% in D, what would be your portfolio's expected rate of return and standard deviation?

A. 9.891%; 8.63%
B. 9.945%; 11.12%
C. 10.425%; 8.63%
D. 10.275%; 11.12%
E. none of the above

Consider two perfectly negatively correlated risky securities K and L. K has an expected rate of return of 13% and a standard deviation of 19%. L has an expected rate of return of 10% and a standard deviation of 16%.

73. The weights of K and L in the global minimum variance portfolio are _____ and _____, respectively.

A. 0.24; 0.76
B. 0.50; 0.50
C. 0.54; 0.46
D. 0.45; 0.55
E. 0.76; 0.24

74. The risk-free portfolio that can be formed with the two securities will earn _____ rate of return.

A. 9.5%
B. 10.4%
C. 10.9%
D. 9.9%
E. none of the above

75. Security M has expected return of 17% and standard deviation of 32%. Security S has expected return of 13% and standard deviation of 19%. If the two securities have a correlation coefficient of 0.78, what is their covariance?

A. 0.038
B. 0.049
C. 0.047
D. 0.045
E. 0.054

76. Security X has expected return of 7% and standard deviation of 12%. Security Y has expected return of 11% and standard deviation of 20%. If the two securities have a correlation coefficient of -0.45, what is their covariance?

    A. 0.0388
    B. -0.0108
    C. 0.0184
    D. -0.0133
    E. -0.1512

77. Given an optimal risky portfolio with expected return of 13% and standard deviation of 26% and a risk free rate of 5%, what is the slope of the best feasible CAL?

    A. 0.60
    B. 0.14
    C. 0.08
    D. 0.36
    E. 0.31

78. Given an optimal risky portfolio with expected return of 12% and standard deviation of 23% and a risk free rate of 3%, what is the slope of the best feasible CAL?

    A. 0.64
    B. 0.39
    C. 0.08
    D. 0.35
    E. 0.36

79. Theoretically, the standard deviation of a portfolio can be reduced to what level? Explain. Realistically, is it possible to reduce the standard deviation to this level? Explain.

80. Discuss how the investor can use the separation theorem and utility theory to produce an efficient portfolio suitable for the investor's level of risk tolerance.

81. State Markowitz's mean-variance criterion. Give some numerical examples of how the criterion would be applied.

82. Draw a graph of a typical efficient frontier. Explain why the efficient frontier is shaped the way it is.

ch7 Key

1. Market risk is also referred to as

A. systematic risk, diversifiable risk.
B. systematic risk, nondiversifiable risk.
C. unique risk, nondiversifiable risk.
D. unique risk, diversifiable risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #1
Difficulty: Easy

2. Systematic risk is also referred to as

A. market risk, nondiversifiable risk.
B. market risk, diversifiable risk.
C. unique risk, nondiversifiable risk.
D. unique risk, diversifiable risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #2
Difficulty: Easy

3. Nondiversifiable risk is also referred to as

A. systematic risk, unique risk.
B. systematic risk, market risk.
C. unique risk, market risk.
D. unique risk, firm-specific risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #3
Difficulty: Easy

4. Diversifiable risk is also referred to as

A. systematic risk, unique risk.
B. systematic risk, market risk.
C. unique risk, market risk.
D. unique risk, firm-specific risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #4
Difficulty: Easy

5. Unique risk is also referred to as

A. systematic risk, diversifiable risk.
B. systematic risk, market risk.
C. diversifiable risk, market risk.
D. diversifiable risk, firm-specific risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #5
Difficulty: Easy

6. Firm-specific risk is also referred to as

A. systematic risk, diversifiable risk.
B. systematic risk, market risk.
C. diversifiable risk, market risk.
D. diversifiable risk, unique risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #6
Difficulty: Easy

7. Non-systematic risk is also referred to as

A. market risk, diversifiable risk.
B. firm-specific risk, market risk.
C. diversifiable risk, market risk.
D. diversifiable risk, unique risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #7
Difficulty: Easy

8. The risk that can be diversified away is

A. firm specific risk.
B. beta.
C. systematic risk.
D. market risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #8
Difficulty: Easy

9. The risk that cannot be diversified away is

A. firm-specific risk.
B. unique.
C. non-systematic risk.
D. market risk.
E. none of the above.

Market, systematic, and nondiversifiable risk are synonyms referring to the risk that cannot be eliminated from the portfolio. Diversifiable, unique, nonsystematic, and firm-specific risks are synonyms referring to the risk that can be eliminated from the portfolio by diversification.

Bodie - Chapter 07 #9
Difficulty: Easy

10. The variance of a portfolio of risky securities

A. is a weighted sum of the securities' variances.
B. is the sum of the securities' variances.
C. is the weighted sum of the securities' variances and covariances.
D. is the sum of the securities' covariances.
E. none of the above.

The variance of a portfolio of risky securities is a weighted sum taking into account both the variance of the individual securities and the covariances between securities.

Bodie - Chapter 07 #10
Difficulty: Moderate

11. The standard deviation of a portfolio of risky securities

A. the square root of the weighted sum of the securities' variances.
B. the square root of the sum of the securities' variances.
C. the square root of the weighted sum of the securities' variances and covariances.
D. the square root of the sum of the securities' covariances.
E. none of the above.

The standard deviation is the square root of the variance which is is a weighted sum of the variance of the individual securities and the covariances between securities.

Bodie - Chapter 07 #11
Difficulty: Moderate

12. The expected return of a portfolio of risky securities

A. is a weighted average of the securities' returns.
B. is the sum of the securities' returns.
C. is the weighted sum of the securities' variances and covariances.
D. A and C.
E. none of the above.

The expected return of a portfolio of risky securities is a weighted average of the securities' returns.

Bodie - Chapter 07 #12
Difficulty: Easy

13. Other things equal, diversification is most effective when

A. securities' returns are uncorrelated.
B. securities' returns are positively correlated.
C. securities' returns are high.
D. securities' returns are negatively correlated.
E. B and C.

Negative correlation among securities results in the greatest reduction of portfolio risk, which is the goal of diversification.

Bodie - Chapter 07 #13
Difficulty: Moderate

14. The efficient frontier of risky assets is

A. the portion of the investment opportunity set that lies above the global minimum variance portfolio.
B. the portion of the investment opportunity set that represents the highest standard deviations.
C. the portion of the investment opportunity set which includes the portfolios with the lowest standard deviation.
D. the set of portfolios that have zero standard deviation.
E. both A and B are true.

Portfolios on the efficient frontier are those providing the greatest expected return for a given amount of risk. Only those portfolios above the global minimum variance portfolio meet this criterion.

Bodie - Chapter 07 #14
Difficulty: Moderate

15. The Capital Allocation Line provided by a risk-free security and N risky securities is

A. the line that connects the risk-free rate and the global minimum-variance portfolio of the risky securities.
B. the line that connects the risk-free rate and the portfolio of the risky securities that has the highest expected return on the efficient frontier.
C. the line tangent to the efficient frontier of risky securities drawn from the risk-free rate.
D. the horizontal line drawn from the risk-free rate.
E. none of the above.

The Capital Allocation Line represents the most efficient combinations of the risk-free asset and risky securities. Only C meets that definition.

Bodie - Chapter 07 #15
Difficulty: Moderate

16. Consider an investment opportunity set formed with two securities that are perfectly negatively correlated. The global minimum variance portfolio has a standard deviation that is always

A. greater than zero.
B. equal to zero.
C. equal to the sum of the securities' standard deviations.
D. equal to -1.
E. none of the above.

If two securities were perfectly negatively correlated, the weights for the minimum variance portfolio for those securities could be calculated, and the standard deviation of the resulting portfolio would be zero.

Bodie - Chapter 07 #16
Difficulty: Difficult

17. Which of the following statements is (are) **true** regarding the variance of a portfolio of two risky securities?

A. The higher the coefficient of correlation between securities, the greater the reduction in the portfolio variance.
B. There is a linear relationship between the securities' coefficient of correlation and the portfolio variance.
C. The degree to which the portfolio variance is reduced depends on the degree of correlation between securities.
D. A and B.
E. A and C.

The lower the correlation between the returns of the securities, the more portfolio risk is reduced.

Bodie - Chapter 07 #17
Difficulty: Moderate

18. Which of the following statements is (are) **false** regarding the variance of a portfolio of two risky securities?

A. The higher the coefficient of correlation between securities, the greater the reduction in the portfolio variance.
B. There is a linear relationship between the securities' coefficient of correlation and the portfolio variance.
C. The degree to which the portfolio variance is reduced depends on the degree of correlation between securities.
D. A and B.
E. A and C.

The lower the correlation between the returns of the securities, the more portfolio risk is reduced.

Bodie - Chapter 07 #18
Difficulty: Moderate

19. Efficient portfolios of N risky securities are portfolios that

A. are formed with the securities that have the highest rates of return regardless of their standard deviations.
B. have the highest rates of return for a given level of risk.
C. are selected from those securities with the lowest standard deviations regardless of their returns.
D. have the highest risk and rates of return and the highest standard deviations.
E. have the lowest standard deviations and the lowest rates of return.

Portfolios that are efficient are those that provide the highest expected return for a given level of risk.

Bodie - Chapter 07 #19
Difficulty: Moderate

20. Which of the following statement(s) is (are) **true** regarding the selection of a portfolio from those that lie on the Capital Allocation Line?

A. Less risk-averse investors will invest more in the risk-free security and less in the optimal risky portfolio than more risk-averse investors.
B. More risk-averse investors will invest less in the optimal risky portfolio and more in the risk-free security than less risk-averse investors.
C. Investors choose the portfolio that maximizes their expected utility.
D. A and C.
E. B and C.

All rational investors select the portfolio that maximizes their expected utility; for investors who are relatively more risk-averse, doing so means investing less in the optimal risky portfolio and more in the risk-free asset.

Bodie - Chapter 07 #20
Difficulty: Moderate

21. Which of the following statement(s) is (are) **false** regarding the selection of a portfolio from those that lie on the Capital Allocation Line?

A. Less risk-averse investors will invest more in the risk-free security and less in the optimal risky portfolio than more risk-averse investors.
B. More risk-averse investors will invest less in the optimal risky portfolio and more in the risk-free security than less risk-averse investors.
C. Investors choose the portfolio that maximizes their expected utility.
D. A and B.
E. A and C.

All rational investors select the portfolio that maximizes their expected utility; for investors who are relatively more risk-averse, doing so means investing less in the optimal risky portfolio and more in the risk-free asset.

Bodie - Chapter 07 #21
Difficulty: Moderate

Consider the following probability distribution for stocks A and B:

State	Probability	Return on Stock A	Return on Stock B
1	0.10	10%	8%
2	0.20	13%	7%
3	0.20	12%	6%
4	0.30	14%	9%
5	0.20	15%	8%

Bodie - Chapter 07

22. The expected rates of return of stocks A and B are _____ and _____ , respectively.

A. 13.2%; 9%
B. 14%; 10%
C. 13.2%; 7.7%
D. 7.7%; 13.2%
E. none of the above

E(RA) = 0.1(10%) + 0.2(13%) + 0.2(12%) + 0.3(14%) + 0.2(15%) = 13.2%; E(RB) = 0.1(8%) + 0.2(7%) + 0.2(6%) + 0.3(9%) + 0.2(8%) = 7.7%.

Bodie - Chapter 07 #22
Difficulty: Easy

23. The standard deviations of stocks A and B are _____ and _____, respectively.

A. 1.5%; 1.9%
B. 2.5%; 1.1%
C. 3.2%; 2.0%
D. 1.5%; 1.1%
E. none of the above

$s_A = [0.1(10\% - 13.2\%)^2 + 0.2(13\% - 13.2\%)^2 + 0.2(12\% - 13.2\%)^2 + 0.3(14\% - 13.2\%)^2 + 0.2(15\% - 13.2\%)^2]^{1/2} = 1.5\%$; $s_B = [0.1(8\% - 7.7\%)^2 + 0.2(7\% - 7.7\%)^2 + 0.2(6\% - 7.7\%)^2 + 0.3(9\% - 7.7\%)^2 + 0.2(8\% - 7.7\%)^2 = 1.1\%$.

Bodie - Chapter 07 #23
Difficulty: Moderate

24. The variances of stocks A and B are _____ and _____, respectively.

A. 1.5%; 1.9%
B. 2.3%; 1.2%
C. 3.2%; 2.0%
D. 1.5%; 1.1%
E. none of the above

$s_A = [0.1(10\% - 13.2\%)^2 + 0.2(13\% - 13.2\%)^2 + 0.2(12\% - 13.2\%)^2 + 0.3(14\% - 13.2\%)^2 + 0.2(15\% - 13.2\%)^2] = 2.25\%$; $s_B = [0.1(8\% - 7.7\%)^2 + 0.2(7\% - 7.7\%)^2 + 0.2(6\% - 7.7\%)^2 + 0.3(9\% - 7.7\%)^2 + 0.2(8\% - 7.7\%)^2 = 1.21\%$.

Bodie - Chapter 07 #24
Difficulty: Moderate

25. The coefficient of correlation between A and B is

A. 0.47.
B. 0.60.
C. 0.58
D. 1.20.
E. none of the above.

covA,B = 0.1(10% - 13.2%)(8% - 7.7%) + 0.2(13% - 13.2%)(7% - 7.7%) + 0.2(12% - 13.2%)(6% - 7.7%) + 0.3(14% - 13.2%)(9% - 7.7%) + 0.2(15% - 13.2%)(8% - 7.7%) = 0.76; rA,B = 0.76/[(1.1)(1.5)] = 0.47.

Bodie - Chapter 07 #25
Difficulty: Difficult

26. If you invest 40% of your money in A and 60% in B, what would be your portfolio's expected rate of return and standard deviation?

A. 9.9%; 3%
B. 9.9%; 1.1%
C. 11%; 1.1%
D. 11%; 3%
E. none of the above

$E(R_P) = 0.4(13.2\%) + 0.6(7.7\%) = 9.9\%$; $s_P = [(0.4)^2(1.5)^2 + (0.6)^2(1.1)^2 + 2(0.4)(0.6)(1.5)(1.1)(0.46)]^{1/2} = 1.1\%$.

Bodie - Chapter 07 #26
Difficulty: Difficult

27. Let G be the global minimum variance portfolio. The weights of A and B in G are _____ and _____, respectively.

A. 0.40; 0.60
B. 0.66; 0.34
C. 0.34; 0.66
D. 0.76; 0.24
E. 0.24; 0.76

$w_A = [(1.1)^2 - (1.5)(1.1)(0.46)]/[(1.5)^2 + (1.1)^2 - (2)(1.5)(1.1)(0.46) = 0.23$; $w_B = 1 - 0.23 = 0.77$.Note that the above solution assumes the solutions obtained in question 13 and 14.

Bodie - Chapter 07 #27
Difficulty: Difficult

28. The expected rate of return and standard deviation of the global minimum variance portfolio, G, are _____ and _____, respectively.

A. 10.07%; 1.05%
B. 9.04%; 2.03%
C. 10.07%; 3.01%
D. 9.04%; 1.05%
E. none of the above

$E(R_G) = 0.23(13.2\%) + 0.77(7.7\%) = 8.97\%$. 9%; $s_G = [(0.23)^2(1.5)^2 + (0.77)^2(1.1)^2 + (2)(0.23)(0.77)(1.5)(1.1)(0.46)]^{1/2} = 1.05\%$.

Bodie - Chapter 07 #28
Difficulty: Moderate

29. Which of the following portfolio(s) is (are) on the efficient frontier?

A. The portfolio with 20 percent in A and 80 percent in B.
B. The portfolio with 15 percent in A and 85 percent in B.
C. The portfolio with 26 percent in A and 74 percent in B.
D. The portfolio with 10 percent in A and 90 percent in B.
E. A and B are both on the efficient frontier.

The Portfolio's E(Rp), sp, Reward/volatility ratios are 20A/80B: 8.8%, 1.05%, 8.38; 15A/85B: 8.53%, 1.06%, 8.07; 26A/74B: 9.13%, 1.05%, 8.70; 10A/90B: 8.25%, 1.07%, 7.73. The portfolio with 26% in A and 74% in B dominates all of the other portfolios by the mean-variance criterion.

Bodie - Chapter 07 #29
Difficulty: Difficult

Consider two perfectly negatively correlated risky securities A and B. A has an expected rate of return of 10% and a standard deviation of 16%. B has an expected rate of return of 8% and a standard deviation of 12%.

Bodie - Chapter 07

30. The weights of A and B in the global minimum variance portfolio are _____ and _____, respectively.

A. 0.24; 0.76
B. 0.50; 0.50
C. 0.57; 0.43
D. 0.43; 0.57
E. 0.76; 0.24

wA = 12 /(16 + 12) = 0.4286; wB = 1 - 0.4286 = 0.5714.

Bodie - Chapter 07 #30
Difficulty: Moderate

31. The risk-free portfolio that can be formed with the two securities will earn _____ rate of return.

A. 8.5%
B. 9.0%
C. 8.9%
D. 9.9%
E. none of the above

$E(R_P) = 0.43(10\%) + 0.57(8\%) = 8.86\%$.

Bodie - Chapter 07 #31
Difficulty: Difficult

32. Which of the following portfolio(s) is (are) most efficient?

A. 45 percent in A and 55 percent in B.
B. 65 percent in A and 35 percent in B.
C. 35 percent in A and 65 percent in B.
D. A and B are both efficient.
E. A and C are both efficient.

The Portfolio E(Rp), sp, and Reward/volatility ratios are 45A/55B: 8.9%, 0.6%, 14.83; 65A/35B: 9.3%, 6.2%, 1.5; 35A/65B: 8.7%, 2.2%, 3.95. Both A and B are efficient according to the mean-variance criterion. A has a much higher Reward/volatility ratio.

Bodie - Chapter 07 #32
Difficulty: Difficult

33. An investor who wishes to form a portfolio that lies to the right of the optimal risky portfolio on the Capital Allocation Line must:

A. lend some of her money at the risk-free rate and invest the remainder in the optimal risky portfolio.
B. borrow some money at the risk-free rate and invest in the optimal risky portfolio.
C. invest only in risky securities.
D. such a portfolio cannot be formed.
E. B and C

The only way that an investor can create portfolios to the right of the Capital Allocation Line is to create a borrowing portfolio (buy stocks on margin). In this case, the investor will not hold any of the risk-free security, but will hold only risky securities.

Bodie - Chapter 07 #33
Difficulty: Moderate

34. Which one of the following portfolios **cannot lie** on the efficient frontier as described by Markowitz?

Portfolio	Expected Return	Standard Deviation
W	9%	21%
X	5%	7%
Y	15%	36%
Z	12%	15%

A. Only portfolio W cannot lie on the efficient frontier.
B. Only portfolio X cannot lie on the efficient frontier.
C. Only portfolio Y cannot lie on the efficient frontier.
D. Only portfolio Z cannot lie on the efficient frontier.
E. Cannot tell from the information given.

When plotting the above portfolios, only W lies below the efficient frontier as described by Markowitz. It has a higher standard deviation than Z with a lower expected return.

Bodie - Chapter 07 #34
Difficulty: Moderate

35. Which one of the following portfolios **cannot lie** on the efficient frontier as described by Markowitz?

Portfolio	Expected Return	Standard Deviation
A	10%	12%
B	5%	7%
C	15%	20%
D	12%	25%

A. Only portfolio A cannot lie on the efficient frontier.
B. Only portfolio B cannot lie on the efficient frontier.
C. Only portfolio C cannot lie on the efficient frontier.
D. Only portfolio D cannot lie on the efficient frontier.
E. Cannot tell from the information given.

When plotting the above portfolios, only W lies below the efficient frontier as described by Markowitz. It has a higher standard deviation than Z with a lower expected return.

Bodie - Chapter 07 #35
Difficulty: Moderate

36. Portfolio theory as described by Markowitz is most concerned with:

A. the elimination of systematic risk.
B. the effect of diversification on portfolio risk.
C. the identification of unsystematic risk.
D. active portfolio management to enhance returns.
E. none of the above.

Markowitz was concerned with reducing portfolio risk by combining risky securities with differing return patterns.

Bodie - Chapter 07 #36
Difficulty: Moderate

37. The measure of risk in a Markowitz efficient frontier is:

A. specific risk.
B. standard deviation of returns.
C. reinvestment risk.
D. beta.
E. none of the above.

Markowitz was interested in eliminating diversifiable risk (and thus lessening total risk) and thus was interested in decreasing the standard deviation of the returns of the portfolio.

Bodie - Chapter 07 #37
Difficulty: Moderate

38. A statistic that measures how the returns of two risky assets move together is:

A. variance.
B. standard deviation.
C. covariance.
D. correlation.
E. C and D.

Covariance measures whether security returns move together or in opposition; however, only the sign, not the magnitude, of covariance may be interpreted. Correlation, which is covariance standardized by the product of the standard deviations of the two securities, may assume values only between +1 and -1; thus, both the sign and the magnitude may be interpreted regarding the movement of one security's return relative to that of another security.

Bodie - Chapter 07 #38
Difficulty: Moderate

39. The unsystematic risk of a specific security

A. is likely to be higher in an increasing market.
B. results from factors unique to the firm.
C. depends on market volatility.
D. cannot be diversified away.
E. none of the above.

Unsystematic (or diversifiable or firm-specific) risk refers to factors unique to the firm. Such risk may be diversified away; however, market risk will remain.

Bodie - Chapter 07 #39
Difficulty: Moderate

40. Which statement about portfolio diversification is correct?

A. Proper diversification can reduce or eliminate systematic risk.
B. The risk-reducing benefits of diversification do not occur meaningfully until at least 50-60 individual securities have been purchased.
C. Because diversification reduces a portfolio's total risk, it necessarily reduces the portfolio's expected return.
D. Typically, as more securities are added to a portfolio, total risk would be expected to decrease at a decreasing rate.
E. None of the above statements are correct.

Diversification can eliminate only nonsystematic risk; relatively few securities are required to reduce this risk, thus diminishing returns result quickly. Diversification does not necessarily reduce returns.

Bodie - Chapter 07 #40
Difficulty: Moderate

41. The individual investor's optimal portfolio is designated by:

A. The point of tangency with the indifference curve and the capital allocation line.
B. The point of highest reward to variability ratio in the opportunity set.
C. The point of tangency with the opportunity set and the capital allocation line.
D. The point of the highest reward to variability ratio in the indifference curve.
E. None of the above.

The indifference curve represents what is acceptable to the investor; the capital allocation line represents what is available in the market. The point of tangency represents where the investor can obtain the greatest utility from what is available.

Bodie - Chapter 07 #41
Difficulty: Moderate

42. For a two-stock portfolio, what would be the preferred correlation coefficient between the two stocks?

A. +1.00.
B. +0.50.
C. 0.00.
D. -1.00.
E. none of the above.

The correlation coefficient of -1.00 provides the greatest diversification benefits.

Bodie - Chapter 07 #42
Difficulty: Moderate

43. In a two-security minimum variance portfolio where the correlation between securities is greater than -1.0

A. the security with the higher standard deviation will be weighted more heavily.
B. the security with the higher standard deviation will be weighted less heavily.
C. the two securities will be equally weighted.
D. the risk will be zero.
E. the return will be zero.

The security with the higher standard deviation will be weighted less heavily to produce minimum variance. The return will not be zero; the risk will not be zero unless the correlation coefficient is -1.

Bodie - Chapter 07 #43
Difficulty: Difficult

44. Which of the following is **not** a source of systematic risk?

A. the business cycle.
B. interest rates.
C. personnel changes
D. the inflation rate.
E. exchange rates.

Personnel changes are a firm-specific event that is a component of non-systematic risk. The others are all sources of systematic risk.

Bodie - Chapter 07 #44
Difficulty: Easy

45. The global minimum variance portfolio formed from two risky securities will be riskless when the correlation coefficient between the two securities is

A. 0.0
B. 1.0
C. 0.5
D. -1.0
E. negative

The global minimum variance portfolio will have a standard deviation of zero whenever the two securities are perfectly negatively correlated.

Bodie - Chapter 07 #45
Difficulty: Moderate

46. Security X has expected return of 12% and standard deviation of 20%. Security Y has expected return of 15% and standard deviation of 27%. If the two securities have a correlation coefficient of 0.7, what is their covariance?

A. 0.038
B. 0.070
C. 0.018
D. 0.013
E. 0.054

$Cov(r_X, r_Y) = (.7)(.20)(.27) = .0378$

Bodie - Chapter 07 #46
Difficulty: Moderate

47. When two risky securities that are positively correlated but not perfectly correlated are held in a portfolio,

A. the portfolio standard deviation will be greater than the weighted average of the individual security standard deviations.
B. the portfolio standard deviation will be less than the weighted average of the individual security standard deviations.
C. the portfolio standard deviation will be equal to the weighted average of the individual security standard deviations.
D. the portfolio standard deviation will always be equal to the securities' covariance.
E. none of the above are true.

Whenever two securities are less than perfectly positively correlated, the standard deviation of the portfolio of the two assets will be less than the weighted average of the two securities' standard deviations. There is some benefit to diversification in this case.

Bodie - Chapter 07 #47
Difficulty: Moderate

48. The line representing all combinations of portfolio expected returns and standard deviations that can be constructed from two available assets is called the

A. risk/reward tradeoff line
B. Capital Allocation Line
C. efficient frontier
D. portfolio opportunity set
E. Security Market Line

The portfolio opportunity set is the line describing all combinations of expected returns and standard deviations that can be achieved by a portfolio of risky assets.

Bodie - Chapter 07 #48
Difficulty: Easy

49. Given an optimal risky portfolio with expected return of 14% and standard deviation of 22% and a risk free rate of 6%, what is the slope of the best feasible CAL?

A. 0.64
B. 0.14
C. 0.08
D. 0.33
E. 0.36

Slope = (14 - 6)/22 = .3636

Bodie - Chapter 07 #49
Difficulty: Moderate

50. Given an optimal risky portfolio with expected return of 18% and standard deviation of 21% and a risk free rate of 5%, what is the slope of the best feasible CAL?

A. 0.64
B. 0.14
C. 0.62
D. 0.33
E. 0.36

Slope = (18 - 5)/21 = .6190

Bodie - Chapter 07 #50
Difficulty: Moderate

51. The risk that can be diversified away in a portfolio is referred to as _____.
I) diversifiable risk
II) unique risk
III) systematic risk
IV) firm-specific risk

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

All of these terms are used interchangeably to refer to the risk that can be removed from a portfolio through diversification.

Bodie - Chapter 07 #51
Difficulty: Moderate

52. As the number of securities in a portfolio is increased, what happens to the average portfolio standard deviation?

A. It increases at an increasing rate.
B. It increases at a decreasing rate.
C. It decreases at an increasing rate.
D. It decreases at a decreasing rate.
E. It first decreases, then starts to increase as more securities are added.

Statman's study, showed that the risk of the portfolio would decrease as random stocks were added. At first the risk decreases quickly, but then the rate of decrease slows substantially, as shown in Figure 7.2. The minimum portfolio risk in the study was 19.2%.

Bodie - Chapter 07 #52
Difficulty: Moderate

53. In words, the covariance considers the probability of each scenario happening and the interaction between

A. securities' returns relative to their variances.
B. securities' returns relative to their mean returns.
C. securities' returns relative to other securities' returns.
D. the level of return a security has in that scenario and the overall portfolio return.
E. the variance of the security's return in that scenario and the overall portfolio variance.

As written in equation 7.4, the covariance of the returns between two securities is the sum over all scenarios of the product of three things. The first item is the probability that the scenario will happen. The second and third terms represent the deviations of the securities' returns in that scenario from their own expected returns.

Bodie - Chapter 07 #53
Difficulty: Difficult

54. The standard deviation of a two-asset portfolio is a linear function of the assets' weights when

A. the assets have a correlation coefficient less than zero.
B. the assets have a correlation coefficient equal to zero.
C. the assets have a correlation coefficient greater than zero.
D. the assets have a correlation coefficient equal to one.
E. the assets have a correlation coefficient less than one.

When there is a perfect positive correlation (or a perfect negative correlation), the equation for the portfolio variance simplifies to a perfect square. The result is that the portfolio's standard deviation is linear relative to the assets' weights in the portfolio.

Bodie - Chapter 07 #54
Difficulty: Moderate

55. A two-asset portfolio with a standard deviation of zero can be formed when

A. the assets have a correlation coefficient less than zero.
B. the assets have a correlation coefficient equal to zero.
C. the assets have a correlation coefficient greater than zero.
D. the assets have a correlation coefficient equal to one.
E. the assets have a correlation coefficient equal to negative one.

When there is a perfect negative correlation, the equation for the portfolio variance simplifies to a perfect square. The result is that the portfolio's standard deviation equals $|w_A\sigma_A - w_B\sigma_B|$, which can be set equal to zero. The solution $w_A = \sigma_B/(\sigma_A + \sigma_B)$ and $w_B = 1 - w_A$ will yield a zero-standard deviation portfolio.

Bodie - Chapter 07 #55
Difficulty: Moderate

56. When borrowing and lending at a risk-free rate are allowed, which Capital Allocation Line (CAL) should the investor choose to combine with the efficient frontier?
I) with the highest reward-to-variability ratio.
II) that will maximize his utility.
III) with the steepest slope.
IV) with the lowest slope.

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

The optimal CAL is the one that is tangent to the efficient frontier. This CAL offers the highest reward-to-variability ratio, which is the slope of the CAL. It will also allow the investor to reach his highest feasible level of utility.

Bodie - Chapter 07 #56
Difficulty: Difficult

57. Which Excel tool can be used to find the points along an efficient frontier?

A. Regression
B. Solver
C. Scenarios
D. Goal Seek
E. Data Analysis

Even if the student isn't familiar with Excel's Solver tool, he should recognize it from the discussion in the text.

Bodie - Chapter 07 #57
Difficulty: Moderate

58. The separation property refers to the conclusion that

A. the determination of the best risky portfolio is objective and the choice of the best complete portfolio is subjective.
B. the choice of the best complete portfolio is objective and the determination of the best risky portfolio is objective.
C. the choice of inputs to be used to determine the efficient frontier is objective and the choice of the best CAL is subjective.
D. the determination of the best CAL is objective and the choice of the inputs to be used to determine the efficient frontier is subjective.
E. investors are separate beings and will therefore have different preferences regarding the risk-return tradeoff.

The determination of the optimal risky portfolio is purely technical and can be done by a manager. The complete portfolio, which consists of the optimal risky portfolio and the risk-free asset, must be chosen by each investor based on preferences.

Bodie - Chapter 07 #58
Difficulty: Difficult

Consider the following probability distribution for stocks A and B:

State	Probability	Return on Stock A	Return on Stock B
1	0.15	8%	8%
2	0.20	13%	7%
3	0.15	12%	6%
4	0.30	14%	9%
5	0.20	16%	11%

Bodie - Chapter 07

59. The expected rates of return of stocks A and B are _____ and _____, respectively.

A. 13.2%; 9%.
B. 13%; 8.4%
C. 13.2%; 7.7%
D. 7.7%; 13.2%
E. none of the above

E(RA) = 0.15(8%) + 0.2(13%) + 0.15(12%) + 0.3(14%) + 0.2(16%) = 13%; E(RB) = 0.15(8%) + 0.2(7%) + 0.15(6%) + 0.3(9%) + 0.2(11%) = 8.4%.

Bodie - Chapter 07 #59
Difficulty: Easy

60. The standard deviations of stocks A and B are _____ and _____, respectively.

A. 1.56%; 1.99%
B. 2.45%; 1.68%
C. 3.22%; 2.01%
D. 1.54%; 1.11%
E. none of the above

$s_A = [0.15(8\% - 13\%)^2 + 0.2(13\% - 13\%)^2 + 0.15(12\% - 13\%)^2 + 0.3(14\% - 13\%)^2 + 0.2(16\% - 13\%)^2]^{1/2} = 2.449\%$; $s_B = [0.15(8\% - 8.4\%)^2 + 0.2(7\% - 8.4\%)^2 + 0.15(6\% - 8.4\%)^2 + 0.3(9\% - 8.4\%)^2 + 0.2(11\% - 8.4\%)^2]^{1/2} = 1.676\%$.

Bodie - Chapter 07 #60
Difficulty: Moderate

61. The coefficient of correlation between A and B is

A. 0.474.
B. 0.612.
C. 0.583.
D. 1.206.
E. none of the above.

covA,B = 0.15(8% - 13%)(8% - 8.4%) + 0.2(13% - 13%)(7% - 8.4%) + 0.15(12% - 13%)(6% - 8.4%) + 0.3(14% - 13%)(9% - 8.4%) + 0.2(16% - 13%)(11% - 8.4%) = 2.40; rA,B = 2.40/[(2.45)(1.68)] = 0.583.

Bodie - Chapter 07 #61
Difficulty: Difficult

62. If you invest 35% of your money in A and 65% in B, what would be your portfolio's expected rate of return and standard deviation?

A. 9.9%; 3%
B. 9.9%; 1.1%
C. 10%; 1.7%
D. 10%; 3%
E. none of the above

$E(R_P) = 0.35(13\%) + 0.65(8.4\%) = 10.01\%$; $s_P = [(0.35)^2(2.45\%)^2 + (0.65)^2(1.68)^2 + 2(0.35)(0.65)(2.45)(1.68)(0.583)]^{1/2} = 1.7\%$.

Bodie - Chapter 07 #62
Difficulty: Difficult

Consider two perfectly negatively correlated risky securities A and B. A has an expected rate of return of 12% and a standard deviation of 17%. B has an expected rate of return of 9% and a standard deviation of 14%.

Bodie - Chapter 07

63. The weights of A and B in the global minimum variance portfolio are _____ and _____, respectively.

A. 0.24; 0.76
B. 0.50; 0.50
C. 0.57; 0.43
D. 0.45; 0.55
E. 0.76; 0.24

wA = 14 /(17 + 14) = 0.45; wB = 1 - 0.45 = 0.55.

Bodie - Chapter 07 #63
Difficulty: Moderate

64. The risk-free portfolio that can be formed with the two securities will earn _____ rate of return.

A. 9.5%
B. 10.4%
C. 10.9%
D. 9.9%
E. none of the above

$E(R_P) = 0.45(12\%) + 0.55(9\%) = 10.35\%$.

Bodie - Chapter 07 #64
Difficulty: Difficult

65. Security X has expected return of 14% and standard deviation of 22%. Security Y has expected return of 16% and standard deviation of 28%. If the two securities have a correlation coefficient of 0.8, what is their covariance?

A. 0.038
B. 0.049
C. 0.018
D. 0.013
E. 0.054

$Cov(r_X, r_Y) = (.8)(.22)(.28) = .04928$

Bodie - Chapter 07 #65
Difficulty: Moderate

66. Security X has expected return of 9% and standard deviation of 18%. Security Y has expected return of 12% and standard deviation of 21%. If the two securities have a correlation coefficient of -0.4, what is their covariance?

A. 0.0388
B. 0.0706
C. 0.0184
D. -0.0133
E. -0.1512

$Cov(r_X, r_Y) = (-.4)(.18)(.21) = -.01512$

Bodie - Chapter 07 #66
Difficulty: Moderate

67. Given an optimal risky portfolio with expected return of 16% and standard deviation of 20% and a risk free rate of 4%, what is the slope of the best feasible CAL?

A. 0.60
B. 0.14
C. 0.08
D. 0.36
E. 0.31

Slope = (16 - 4)/20 = .6

Bodie - Chapter 07 #67
Difficulty: Moderate

68. Given an optimal risky portfolio with expected return of 12% and standard deviation of 26% and a risk free rate of 3%, what is the slope of the best feasible CAL?

A. 0.64
B. 0.14
C. 0.08
D. 0.35
E. 0.36

Slope = (12 - 3)/26 = .346

Bodie - Chapter 07 #68
Difficulty: Moderate

Consider the following probability distribution for stocks C and D:

State	Probability	Return on Stock C	Return on Stock D
1	0.30	7%	-9%
2	0.50	11%	14%
3	0.20	-16%	26%

69. The expected rates of return of stocks C and D are _____ and _____, respectively.

A. 4.4%; 9.5%.
B. 9.5%; 4.4%
C. 6.3%; 8.7%
D. 8.7%; 6.2%
E. none of the above

E(RC) = 0.30(7%) + 0.5(11%) + 0.20(-16%) = 4.4%; E(RD) = 0.30(-9%) + 0.5(14%) + 0.20(26%) = 9.5%.

Bodie - Chapter 07 #69
Difficulty: Easy

70. The standard deviations of stocks C and D are _____ and _____, respectively.

A. 7.62%; 11.24%
B. 11.24%; 7.62%
C. 9.34%; 12.93%
D. 12.93%; 9.34%
E. none of the above

$s_C = [0.30(7\% - 4.4\%)^2 + 0.5(11\% - 4.4\%)^2 + 0.20(-16\% - 4.4\%)^2]^{1/2} = 9.34\%$; $s_D = [0.30(-9\% - 9.5\%)^2 + 0.50(14\% - 9.5\%)^2 + 0.20(26\% - 9.5\%)^2]^{1/2} = 12.93\%$.

Bodie - Chapter 07 #70
Difficulty: Moderate

71. The coefficient of correlation between C and D is

A. 0.665.
B. 0.554.
C. -0.554.
D. -0.665.
E. none of the above.

covC,D = 0.30(7% - 4.4%)(-9% - 9.5%) + 0.50(11% - 4.4%)(14% - 9.5%) + 0.20(-16% - 4.4%)(26% - 9.5%) = 2.40; rA,B = -66.90/[(9.34)(12.93)] = -0.554

Bodie - Chapter 07 #71
Difficulty: Difficult

72. If you invest 25% of your money in C and 75% in D, what would be your portfolio's expected rate of return and standard deviation?

A. 9.891%; 8.63%
B. 9.945%; 11.12%
C. 10.425%; 8.63%
D. 10.275%; 11.12%
E. none of the above

$E(R_P) = 0.25(4.4\%) + 0.75(9.5\%) = 10.425\%$; $s_P = [(0.25)^2(9.34\%)^2 + (0.75)^2(12.93)^2 + 2(0.25)(0.75)(9.34)(12.93)(-0.554)]^{1/2} = 8.63\%$.

Bodie - Chapter 07 #72
Difficulty: Difficult

Consider two perfectly negatively correlated risky securities K and L. K has an expected rate of return of 13% and a standard deviation of 19%. L has an expected rate of return of 10% and a standard deviation of 16%.

Bodie - Chapter 07

73. The weights of K and L in the global minimum variance portfolio are _____ and _____, respectively.

A. 0.24; 0.76
B. 0.50; 0.50
C. 0.54; 0.46
D. 0.45; 0.55
E. 0.76; 0.24

wA = 19 /(19 + 16) = 0.54; wB = 1 - 0.54 = 0.46.

Bodie - Chapter 07 #73
Difficulty: Moderate

74. The risk-free portfolio that can be formed with the two securities will earn _____ rate of return.

A. 9.5%
B. 10.4%
C. 10.9%
D. 9.9%
E. none of the above

$E(R_P) = 0.54(13\%) + 0.46(10\%) = 11.62\%$.

Bodie - Chapter 07 #74
Difficulty: Difficult

75. Security M has expected return of 17% and standard deviation of 32%. Security S has expected return of 13% and standard deviation of 19%. If the two securities have a correlation coefficient of 0.78, what is their covariance?

A. 0.038
B. 0.049
C. 0.047
D. 0.045
E. 0.054

$Cov(r_X, r_Y) = (.78)(.32)(.19) = .0474$

Bodie - Chapter 07 #75
Difficulty: Moderate

76. Security X has expected return of 7% and standard deviation of 12%. Security Y has expected return of 11% and standard deviation of 20%. If the two securities have a correlation coefficient of -0.45, what is their covariance?

A. 0.0388
B. -0.0108
C. 0.0184
D. -0.0133
E. -0.1512

$Cov(r_X, r_Y) = (-.45)(.12)(.20) = -.0108$

Bodie - Chapter 07 #76
Difficulty: Moderate

77. Given an optimal risky portfolio with expected return of 13% and standard deviation of 26% and a risk free rate of 5%, what is the slope of the best feasible CAL?

A. 0.60
B. 0.14
C. 0.08
D. 0.36
E. 0.31

Slope = (13 - 5)/26 = .31

Bodie - Chapter 07 #77
Difficulty: Moderate

78. Given an optimal risky portfolio with expected return of 12% and standard deviation of 23% and a risk free rate of 3%, what is the slope of the best feasible CAL?

A. 0.64
B. 0.39
C. 0.08
D. 0.35
E. 0.36

Slope = (12 - 3)/23 = .391

Bodie - Chapter 07 #78
Difficulty: Moderate

79. Theoretically, the standard deviation of a portfolio can be reduced to what level? Explain. Realistically, is it possible to reduce the standard deviation to this level? Explain.

Theoretically, if one could find two securities with perfectly negatively correlated returns (correlation coefficient = -1), one could solve for the weights of these securities that would produce the minimum variance portfolio of these two securities. The standard deviation of the resulting portfolio would be equal to zero. However, in reality, securities with perfect negative correlations do not exist.
Feedback: The rationale for this question is to ascertain whether or not the student understands the concept of the minimum variance portfolio, the theoretical zero risk portfolio, and the probability of obtaining a zero risk portfolio.

Bodie - Chapter 07 #79
Difficulty: Moderate

80. Discuss how the investor can use the separation theorem and utility theory to produce an efficient portfolio suitable for the investor's level of risk tolerance.

One can identify the optimum risky portfolio as the portfolio at the point of tangency between a ray extending from the risk-free rate and the efficient frontier of risky securities. Below the point of tangency on this ray from the risk-free rate, the efficient portfolios consist of both the optimum risky portfolio and risk-free investments (T-bills); above the point of tangency, the efficient portfolios consist of the optimum risky portfolio purchased on margin. If the investor's indifference curve, which reflects that investor's preferences regarding risk and return, is superimposed on the ray from the risk-free rate, the resulting point of tangency represents the appropriate combination of the optimum risky portfolio and either risk-free assets or margin buying for that investor. Thus, the separation theorem separates the investing and financing decisions. That is, all investors will invest in the same optimal risky portfolio, and adjust the risk level of the portfolio by either lending (investing in U.S. Treasuries, i.e., lending to the U.S. government) or borrowing (buying risky securities on margin).
Feedback: The purpose of this question is to ascertain whether the student understands the basic principles of utility theory, the optimal risky portfolio, and the separation theorem, as these concepts relate to constructing the ideal portfolio for a particular investor.

Bodie - Chapter 07 #80
Difficulty: Moderate

81. State Markowitz's mean-variance criterion. Give some numerical examples of how the criterion would be applied.

The mean-variance criterion states that asset A dominates asset B if and only if $E(R_A)$ is greater than or equal to $E(R_B)$ and the standard deviation of A's returns is less than or equal to the standard deviation of B's returns, with at least one strict inequality holding. Students can give examples of securities dominating others on the basis of expected return or standard deviation, and can also give examples of comparisons where neither security is inefficient.
Feedback: The mean-variance criterion is the basis of the chapter material. It is essential that students have a firm grasp of this material.

Bodie - Chapter 07 #81
Difficulty: Easy

82. Draw a graph of a typical efficient frontier. Explain why the efficient frontier is shaped the way it is.

The efficient frontier has a curved appearance, as shown throughout the chapter. Figure 7-5 shows several correlation values and the corresponding shapes of the frontier. The typical shape results from the fact that assets' returns are not perfectly (positively or negatively) correlated.
Feedback: This question relates to the fundamentals of assets' relationships and their impact on the efficient frontier. Sometimes students get used to seeing the efficient frontier as it is depicted in subsequent graphs and forget its origin.

Bodie - Chapter 07 #82
Difficulty: Moderate

ch7 Summary

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