

## CHAPTER 13

### *Return, Risk, and the Security Market Line*

#### I. DEFINITIONS

##### PORTFOLIOS

- a 1. A portfolio is:
  - a. a group of assets, such as stocks and bonds, held as a collective unit by an investor.
  - b. the expected return on a risky asset.
  - c. the expected return on a collection of risky assets.
  - d. the variance of returns for a risky asset.
  - e. the standard deviation of returns for a collection of risky assets.

##### PORTFOLIO WEIGHTS

- b 2. The percentage of a portfolio's total value invested in a particular asset is called that asset's:
  - a. portfolio return.
  - b. portfolio weight.
  - c. portfolio risk.
  - d. rate of return.
  - e. investment value.

##### SYSTEMATIC RISK

- c 3. Risk that affects a large number of assets, each to a greater or lesser degree, is called \_\_\_\_\_ risk.
  - a. idiosyncratic
  - b. diversifiable
  - c. systematic
  - d. asset-specific
  - e. total

##### UNSYSTEMATIC RISK

- d 4. Risk that affects at most a small number of assets is called \_\_\_\_\_ risk.
  - a. portfolio
  - b. undiversifiable
  - c. market
  - d. unsystematic
  - e. total

##### PRINCIPLE OF DIVERSIFICATION

- e 5. The principle of diversification tells us that:
  - a. concentrating an investment in two or three large stocks will eliminate all of your risk.
  - b. concentrating an investment in three companies all within the same industry will greatly reduce your overall risk.
  - c. spreading an investment across five diverse companies will not lower your overall risk at all.
  - d. spreading an investment across many diverse assets will eliminate all of the risk.
  - e. spreading an investment across many diverse assets will eliminate some of the risk.

**SYSTEMATIC RISK PRINCIPLE**

- b 6. The \_\_\_\_\_ tells us that the expected return on a risky asset depends only on that asset's nondiversifiable risk.
- a. Efficient Markets Hypothesis (EMH)
  - b. systematic risk principle
  - c. Open Markets Theorem
  - d. Law of One Price
  - e. principle of diversification

**BETA COEFFICIENT**

- a 7. The amount of systematic risk present in a particular risky asset, relative to the systematic risk present in an average risky asset, is called the particular asset's:
- a. beta coefficient.
  - b. reward-to-risk ratio.
  - c. total risk.
  - d. diversifiable risk.
  - e. Treynor index.

**REWARD-TO-RISK RATIO**

- c 8. A particular risky asset's risk premium, measured relative to its beta coefficient, is its:
- a. diversifiable risk.
  - b. systematic risk.
  - c. reward-to-risk ratio.
  - d. security market line.
  - e. market risk premium.

**SECURITY MARKET LINE**

- d 9. The linear relation between an asset's expected return and its beta coefficient is the:
- a. reward-to-risk ratio.
  - b. portfolio weight.
  - c. portfolio risk.
  - d. security market line.
  - e. market risk premium.

**MARKET RISK PREMIUM**

- e 10. The slope of an asset's security market line is the:
- a. reward-to-risk ratio.
  - b. portfolio weight.
  - c. beta coefficient.
  - d. risk-free interest rate.
  - e. market risk premium.

**II. CONCEPTS****EXPECTED RETURN**

- e 11. You are considering purchasing stock S. This stock has an expected return of 8 percent if the economy booms and 3 percent if the economy goes into a recessionary period. The overall expected rate of return on this stock will:
- be equal to one-half of 8 percent if there is a 50 percent chance of an economic boom.
  - vary inversely with the growth of the economy.
  - increase as the probability of a recession increases.
  - be equal to 75 percent of 8 percent if there is a 75 percent chance of a boom economy.
  - increase as the probability of a boom economy increases.

**EXPECTED RETURN**

- c 12. Which one of the following statements is correct concerning the expected rate of return on an individual stock given various states of the economy?
- The expected return is a geometric average where the probabilities of the economic states are used as the exponential powers.
  - The expected return is an arithmetic average of the individual returns for each state of the economy.
  - The expected return is a weighted average where the probabilities of the economic states are used as the weights.
  - The expected return is equal to the summation of the values computed by dividing the expected return for each economic state by the probability of the state.
  - As long as the total probabilities of the economic states equal 100 percent, then the expected return on the stock is a geometric average of the expected returns for each economic state.

**EXPECTED RETURN**

- d 13. The expected return on a stock that is computed using economic probabilities is:
- guaranteed to equal the actual average return on the stock for the next five years.
  - guaranteed to be the minimal rate of return on the stock over the next two years.
  - guaranteed to equal the actual return for the immediate twelve month period.
  - a mathematical expectation based on a weighted average and not an actual anticipated outcome.
  - the actual return you should anticipate as long as the economic forecast remains constant.

**DIVERSIFIABLE RISKS**

- b 14. Which one of the following is an example of diversifiable risk?
- the price of electricity just increased
  - the employees of Textile, Inc. just voted to go on strike
  - the government just imposed new safety standards for all employees
  - the government just lowered corporate income tax rates
  - the cost of group health insurance just increased nationwide

**DIVERSIFIABLE RISKS**

- a 15. Which of the following statements are correct concerning diversifiable risks?
- I. Diversifiable risks can be essentially eliminated by investing in several unrelated securities.
  - II. The market rewards investors for diversifiable risk by paying a risk premium.
  - III. Diversifiable risks are generally associated with an individual firm or industry.
  - IV. Beta measures diversifiable risk.
- a. I and III only
  - b. II and IV only
  - c. I and IV only
  - d. II and III only
  - e. I, II, and III only

**NONDIVERSIFIABLE RISKS**

- c 16. Which of the following are examples of nondiversifiable risks?
- I. the inflation rate spikes nationwide
  - II. an unexpected terrorist event occurs
  - III. the price of lumber suddenly spikes
  - IV. taxes are increased on hotels
- a. I and III only
  - b. II and IV only
  - c. I and II only
  - d. II and III only
  - e. I, II, and IV only

**NONDIVERSIFIABLE RISKS**

- d 17. Which of the following statements concerning nondiversifiable risk are correct?
- I. Nondiversifiable risk is measured by standard deviation.
  - II. Systematic risk is another name for nondiversifiable risk.
  - III. The risk premium increases as the nondiversifiable risk increases.
  - IV. Nondiversifiable risks are those risks you can not avoid if you are invested in the financial markets.
- a. I and III only
  - b. II and IV only
  - c. I, II, and III only
  - d. II, III, and IV only
  - e. I, II, III, and IV

**NONDIVERSIFIABLE RISKS**

- b 18. Which one of the following is an example of a nondiversifiable risk?
- a. a well respected president of a firm suddenly resigns
  - b. a well respected chairman of the Federal Reserve suddenly resigns
  - c. a key employee of a firm suddenly resigns and accepts employment with a key competitor
  - d. a well managed firm reduces its work force and automates several jobs
  - e. a poorly managed firm suddenly goes out of business due to lack of sales

**RISK PREMIUM**

- a 19. The risk premium for an individual security is computed by:
  - a. multiplying the security's beta by the market risk premium.
  - b. multiplying the security's beta by the risk-free rate of return.
  - c. adding the risk-free rate to the security's expected return.
  - d. dividing the market risk premium by the quantity  $(1 - \text{beta})$ .
  - e. dividing the market risk premium by the beta of the security.

**STANDARD DEVIATION**

- a 20. Standard deviation measures \_\_\_\_\_ risk.
  - a. total
  - b. nondiversifiable
  - c. unsystematic
  - d. systematic
  - e. economic

**PORTFOLIO WEIGHT**

- c 21. When computing the expected return on a portfolio of stocks the portfolio weights are based on the:
  - a. number of shares owned in each stock.
  - b. price per share of each stock.
  - c. market value of the total shares held in each stock.
  - d. original amount invested in each stock.
  - e. cost per share of each stock held.

**PORTFOLIO EXPECTED RETURN**

- e 22. The portfolio expected return considers which of the following factors?
  - I. the amount of money currently invested in each individual security
  - II. various levels of economic activity
  - III. the performance of each stock given various economic scenarios
  - IV. the probability of various states of the economy
  - a. I and III only
  - b. II and IV only
  - c. I, III, and IV only
  - d. II, III, and IV only
  - e. I, II, III, and IV

**PORTFOLIO EXPECTED RETURN**

- d 23. The expected return on a portfolio:
  - a. can be greater than the expected return on the best performing security in the portfolio.
  - b. can be less than the expected return on the worst performing security in the portfolio.
  - c. is independent of the performance of the overall economy.
  - d. is limited by the returns on the individual securities within the portfolio.
  - e. is an arithmetic average of the returns of the individual securities when the weights of those securities are unequal.

**PORTFOLIO VARIANCE**

- b 24. If a stock portfolio is well diversified, then the portfolio variance:
- a. will equal the variance of the most volatile stock in the portfolio.
  - b. may be less than the variance of the least risky stock in the portfolio.
  - c. must be equal to or greater than the variance of the least risky stock in the portfolio.
  - d. will be a weighted average of the variances of the individual securities in the portfolio.
  - e. will be an arithmetic average of the variance of the individual securities in the portfolio.

**PORTFOLIO STANDARD DEVIATION**

- b 25. Which one of the following statements is correct concerning the standard deviation of a portfolio?
- a. The greater the diversification of a portfolio, the greater the standard deviation of that portfolio.
  - b. The standard deviation of a portfolio can often be lowered by changing the weights of the securities in the portfolio.
  - c. Standard deviation is used to determine the amount of risk premium that should apply to a portfolio.
  - d. Standard deviation measures only the systematic risk of a portfolio.
  - e. The standard deviation of a portfolio is equal to a weighted average of the standard deviations of the individual securities held within the portfolio.

**PORTFOLIO STANDARD DEVIATION**

- c 26. The standard deviation of a portfolio will tend to increase when:
- a. a risky asset in the portfolio is replaced with U.S. Treasury bills.
  - b. one of two stocks related to the airline industry is replaced with a third stock that is unrelated to the airline industry.
  - c. the portfolio concentration in a single cyclical industry increases.
  - d. the weights of the various diverse securities become more evenly distributed.
  - e. short-term bonds are replaced with long-term bonds.

**EXPECTED AND UNEXPECTED RETURNS**

- c 27. Which one of the following events is considered part of the expected return on Fido stock?
- a. The president of Fido suddenly announced that the firm is going to cut production effective immediately.
  - b. The government just announced a tax cut which will directly impact the sales of Fido.
  - c. The management of Fido announced their ten-year plan for expansion five years ago.
  - d. The price of Fido stock suddenly dropped due to rumors concerning company fraud.
  - e. Fido just won a major government contract which they had not anticipated winning.

**EXPECTED AND UNEXPECTED RETURNS**

- e 28. Which one of the following statements is correct?
- a. The unexpected return is always negative.
  - b. The expected return minus the unexpected return is equal to the total return.
  - c. Over time, the average return is equal to the unexpected return.
  - d. The expected return includes the surprise portion of news announcements.
  - e. Over time, the average unexpected return will be zero.

**TOTAL RISK**

- d 29. \_\_\_\_\_ measures total risk.
- a. The mean
  - b. Beta
  - c. The geometric average
  - d. The standard deviation
  - e. The arithmetic average

**SYSTEMATIC RISK**

- b 30. Systematic risk is measured by:
- a. the mean.
  - b. beta.
  - c. the geometric average.
  - d. the standard deviation.
  - e. the arithmetic average.

**SYSTEMATIC RISK**

- c 31. Which one of the following is an example of systematic risk?
- a. the price of lumber declines sharply
  - b. airline pilots go on strike
  - c. the Federal Reserve increases interest rates
  - d. a hurricane hits a tourist destination
  - e. people become diet conscious and avoid fast food restaurants

**SYSTEMATIC RISK**

- a 32. The systematic risk of the market is measured by:
- a. a beta of 1.0.
  - b. a beta of 0.0.
  - c. a standard deviation of 1.0.
  - d. a standard deviation of 0.0.
  - e. a variance of 1.0.

**SYSTEMATIC RISK**

- c 33. Which one of the following portfolios should have the most systematic risk?
- a. 50 percent invested in U.S. Treasury bills and 50 percent in a market index mutual fund
  - b. 20 percent invested in U.S. Treasury bills and 80 percent invested in a stock with a beta of .80
  - c. 10 percent invested in a stock with a beta of 1.0 and 90 percent invested in a stock with a beta of 1.40
  - d. 100 percent invested in a mutual fund which mimics the overall market
  - e. 100 percent invested in U.S. Treasury bills

**SYSTEMATIC RISK**

- e 34. Which of the following risks are relevant to a well-diversified investor?
- I. systematic risk
  - II. unsystematic risk
  - III. market risk
  - IV. nondiversifiable risk
- a. I and III only
  - b. II and IV only
  - c. II, III, and IV only
  - d. I, II, and IV only
  - e. I, III, and IV only

**UNSYSTEMATIC RISK**

- a 35. Unsystematic risk:
- a. can be effectively eliminated through portfolio diversification.
  - b. is compensated for by the risk premium.
  - c. is measured by beta.
  - d. cannot be avoided if you wish to participate in the financial markets.
  - e. is related to the overall economy.

**UNSYSTEMATIC RISK**

- c 36. Which one of the following is an example of unsystematic risk?
- a. the inflation rate increases unexpectedly
  - b. the federal government lowers income taxes
  - c. an oil tanker runs aground and spills its cargo
  - d. interest rates decline by one-half of one percent
  - e. the GDP rises by 2 percent more than anticipated

**UNSYSTEMATIC RISK**

- e 37. Which of the following actions help eliminate unsystematic risk in a portfolio?
- I. spreading the retail industry portion of a portfolio over five separate stocks
  - II. combining stocks with bonds in a portfolio
  - III. adding some international securities into a portfolio of U.S. stocks
  - IV. adding some U.S. Treasury bills to a risky portfolio
- a. I and III only
  - b. I, II, and IV only
  - c. I, III, and IV only
  - d. II, III, and IV only
  - e. I, II, III, and IV



**UNSYSTEMATIC RISK**

- a 38. Which of the following statements is (are) correct concerning unsystematic risk?
- I. Assuming unsystematic risk is rewarded by the marketplace.
  - II. Eliminating unsystematic risk is the responsibility of the individual investor.
  - III. Unsystematic risk is rewarded when it exceeds the market level of unsystematic risk.
  - IV. The Capital Asset Pricing Model specifically rewards investors for assuming unsystematic risk via the application of beta in the formula.
- a. II only
  - b. III and IV only
  - c. I, III and IV only
  - d. II and III only
  - e. I and III only

**DIVERSIFICATION**

- c 39. The primary purpose of portfolio diversification is to:
- a. increase returns and risks.
  - b. eliminate all risks.
  - c. eliminate asset-specific risk.
  - d. eliminate systematic risk.
  - e. lower both returns and risks.

**DIVERSIFICATION**

- e 40. Which one of the following would tend to indicate that a portfolio is being effectively diversified?
- a. an increase in the portfolio beta
  - b. a decrease in the portfolio beta
  - c. an increase in the portfolio rate of return
  - d. an increase in the portfolio standard deviation
  - e. a decrease in the portfolio standard deviation

**DIVERSIFICATION**

- c 41. The majority of the benefits from portfolio diversification can generally be achieved with just \_\_\_\_\_ diverse securities.
- a. 3
  - b. 6
  - c. 30
  - d. 50
  - e. 75

**SYSTEMATIC RISK PRINCIPLE**

- c 42. The systematic risk principle implies that the \_\_\_\_\_ an asset depends only on that asset's systematic risk.
- a. variance of the returns on
  - b. standard deviation of the returns on
  - c. expected return on
  - d. total risk assumed by owning
  - e. diversification benefits of

**SYSTEMATIC RISK PRINCIPLE**

- e 43. Which one of the following measures is relevant to the systematic risk principle?
- a. variance
  - b. alpha
  - c. standard deviation
  - d. theta
  - e. beta

**PORTFOLIO BETA**

- b 44. Which of the following statements are correct concerning the beta of a portfolio?
- I. Portfolio betas will always be greater than 1.0.
  - II. A portfolio beta is a weighted average of the betas of the individual securities contained in the portfolio.
  - III. A portfolio of U.S. Treasury bills will have a beta equal to minus one.
  - IV. If the portfolio beta is greater than one then the portfolio has more risk than the overall market.
- a. I and III only
  - b. II and IV only
  - c. I, II, and III only
  - d. II, III, and IV only
  - e. I, II, and IV only

**PORTFOLIO BETA**

- b 45. Which of the following variables do you need to know to estimate the amount of additional reward you will receive for purchasing a risky asset instead of a risk-free asset?
- I. standard deviation
  - II. beta
  - III. risk-free rate of return
  - IV. market risk premium
- a. I and III only
  - b. II and IV only
  - c. I, III, and IV only
  - d. II, III, and IV only
  - e. I, II, III, and IV

**SECURITY MARKET LINE (SML)**

- c 46. A security that is fairly priced will have a return that lies \_\_\_\_\_ the Security Market Line.
- a. below
  - b. on or below
  - c. on
  - d. on or above
  - e. above

**SECURITY MARKET LINE (SML)**

- a 47. The intercept point of the security market line is the rate of return which corresponds to:
- the risk-free rate of return.
  - the market rate of return.
  - a value of zero.
  - a value of 1.0.
  - the beta of the market.

**SECURITY MARKET LINE (SML)**

- c 48. A stock with an actual return that lies above the security market line:
- has more systematic risk than the overall market.
  - has more risk than warranted based on the realized rate of return.
  - has yielded a higher return than expected for the level of risk assumed.
  - has less systematic risk than the overall market.
  - has yielded a return equivalent to the level of risk assumed.

**SECURITY MARKET LINE (SML)**

- c 49. The market rate of return is 12 percent and the risk-free rate of return is 4 percent. A stock that has 5 percent more risk than the market has an actual return of 12 percent. This stock:
- is underpriced.
  - is overpriced.
  - will plot below the security market line.
  - will plot above the security market line.
- I and III only
  - I and IV only
  - II and III only
  - II and IV only
  - neither I, II, III, nor IV

**REWARD-TO-RISK RATIO**

- c 50. If the market is efficient and securities are priced fairly then the \_\_\_\_\_ will be constant for all securities.
- systematic risk
  - standard deviation
  - reward-to-risk ratio
  - beta
  - risk premium

**REWARD-TO-RISK RATIO**

- c 51. The reward-to-risk ratio for stock A exceeds the reward-to-risk ratio of stock B. Stock A has a beta of 1.4 and stock B has a beta of .90. This information implies that:
- stock A is riskier than stock B and both stocks are fairly priced.
  - stock A is less risky than stock B and both stocks are fairly priced.
  - either stock A is underpriced or stock B is overpriced or both.
  - both stock A and stock B are correctly priced since stock A is riskier than stock B.
  - either stock A is overpriced or stock B is underpriced or both.

**MARKET RISK PREMIUM**

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- d 52. The market risk premium is computed by:
- adding the risk-free rate of return to the inflation rate.
  - adding the risk-free rate of return to the market rate of return.
  - subtracting the risk-free rate of return from the inflation rate.
  - subtracting the risk-free rate of return from the market rate of return.
  - multiplying the risk-free rate of return by a beta of 1.0.

### MARKET RISK PREMIUM

- b 53. The excess return earned by an asset that has a beta of 1.0 over that earned by a risk-free asset is referred to as the:
- market rate of return.
  - market risk premium.
  - systematic return.
  - total return.
  - real rate of return.

### MARKET RISK PREMIUM

- d 54. The \_\_\_\_\_ divided by the beta of the market is equal to the slope of the Security Market Line.
- total return of the market
  - risk-free rate of return
  - real return of the market
  - market risk premium
  - nominal return of the market

### CAPITAL ASSET PRICING MODEL (CAPM)

- c 55. The Capital Asset Pricing Model (CAPM) assumes that:
- a risk-free asset has no systematic risk.
  - standard deviation measures systematic risk.
  - the risk-to-reward ratio is constant.
  - a risk-free asset generally has a positive rate of return.
- I and III only
  - II and IV only
  - I, III, and IV only
  - II, III, and IV only
  - I, II, and III only

### CAPITAL ASSET PRICING MODEL (CAPM)

- e 56. A security that has a rate of return that exceeds the U.S. Treasury bill rate but is less than the market rate of return must:
- be a risk-free asset.
  - have a beta that is greater than 1.0 but less than 2.0.
  - be a risk-free asset with a beta less than .99.
  - be a risky asset with a standard deviation less than 1.0.
  - be a risky asset with a beta less than 1.0.

**CAPITAL ASSET PRICING MODEL (CAPM)**

- b 57. Which of the following will increase the expected rate of return on an individual security as computed by the Capital Asset Pricing Model (CAPM)? Assume that the security's beta, the risk-free rate of return, and the market rate of return are all positive.
- I. a decrease in the security's beta
  - II. an increase in the security's beta
  - III. a decrease in the risk premium
  - IV. an increase in the market rate of return
- a. I and III only
  - b. II and IV only
  - c. I and IV only
  - d. II and III only
  - e. II, III, and IV only

**III. PROBLEMS****ANALYZING A PORTFOLIO**

- a 58. You want your portfolio beta to be 1.20. Currently, your portfolio consists of \$100 invested in stock A with a beta of 1.4 and \$300 in stock B with a beta of .6. You have another \$400 to invest and want to divide it between an asset with a beta of 1.6 and a risk-free asset. How much should you invest in the risk-free asset?
- a. \$0
  - b. \$140
  - c. \$200
  - d. \$320
  - e. \$400

**ANALYZING A PORTFOLIO**

- d 59. You have a \$1,000 portfolio which is invested in stocks A and B plus a risk-free asset. \$400 is invested in stock A. Stock A has a beta of 1.3 and stock B has a beta of .7. How much needs to be invested in stock B if you want a portfolio beta of .90?
- a. \$0
  - b. \$268
  - c. \$482
  - d. \$543
  - e. \$600

**EXPECTED RETURN**

- c 60. You recently purchased a stock that is expected to earn 12 percent in a booming economy, 8 percent in a normal economy and lose 5 percent in a recessionary economy. There is a 15 percent probability of a boom, a 75 percent chance of a normal economy, and a 10 percent chance of a recession. What is your expected rate of return on this stock?
- a. 5.00 percent
  - b. 6.45 percent
  - c. 7.30 percent
  - d. 7.65 percent
  - e. 8.30 percent

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### EXPECTED RETURN

- a 61. The Inferior Goods Co. stock is expected to earn 14 percent in a recession, 6 percent in a normal economy, and lose 4 percent in a booming economy. The probability of a boom is 20 percent while the probability of a normal economy is 55 percent and the chance of a recession is 25 percent. What is the expected rate of return on this stock?
- a. 6.00 percent
  - b. 6.72 percent
  - c. 6.80 percent
  - d. 7.60 percent
  - e. 11.33 percent

### EXPECTED RETURN

- b 62. You are comparing stock A to stock B. Given the following information, which one of these two stocks should you prefer and why?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Rate of Return if State Occurs</u>	
		<u>Stock A</u>	<u>Stock B</u>
Boom	60%	9%	15%
Recession	40%	4%	-6%

- a. Stock A; because it has an expected return of 7 percent and appears to be more risky.
- b. Stock A; because it has a higher expected return and appears to be less risky than stock B.
- c. Stock A; because it has a slightly lower expected return but appears to be significantly less risky than stock B.
- d. Stock B; because it has a higher expected return and appears to be just slightly more risky than stock A.
- e. Stock B; because it has a higher expected return and appears to be less risky than stock A.

### RISK PREMIUM

- d 63. Zelo, Inc. stock has a beta of 1.23. The risk-free rate of return is 4.5 percent and the market rate of return is 10 percent. What is the amount of the risk premium on Zelo stock?
- a. 4.47 percent
  - b. 5.50 percent
  - c. 5.54 percent
  - d. 6.77 percent
  - e. 12.30 percent

### VARIANCE

- c 64. If the economy booms, RTF, Inc. stock is expected to return 10 percent. If the economy goes into a recessionary period, then RTF is expected to only return 4 percent. The probability of a boom is 60 percent while the probability of a recession is 40 percent. What is the variance of the returns on RTF, Inc. stock?
- a. .000200
  - b. .000760
  - c. .000864
  - d. .001594
  - e. .029394

### VARIANCE

- a 65. The rate of return on the common stock of Flowers by Flo is expected to be 14 percent in a boom economy, 8 percent in a normal economy, and only 2 percent in a recessionary economy. The probabilities of these economic states are 20 percent for a boom, 70 percent for a normal economy, and 10 percent for a recession. What is the variance of the returns on the common stock of Flowers by Flo?
- .001044
  - .001280
  - .001863
  - .002001
  - .002471

**STANDARD DEVIATION**

- c 66. Kurt's Adventures, Inc. stock is quite cyclical. In a boom economy, the stock is expected to return 30 percent in comparison to 12 percent in a normal economy and a negative 20 percent in a recessionary period. The probability of a recession is 15 percent. There is a 30 percent chance of a boom economy. The remainder of the time the economy will be at normal levels. What is the standard deviation of the returns on Kurt's Adventures, Inc. stock?
- 10.05 percent
  - 12.60 percent
  - 15.83 percent
  - 17.46 percent
  - 25.04 percent

**STANDARD DEVIATION**

- d 67. What is the standard deviation of the returns on a stock given the following information?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Rate of Return if State Occurs</u>
Boom	10%	16%
Normal	60%	11%
Recession	30%	-8%

- 5.80 percent
- 7.34 percent
- 8.38 percent
- 9.15 percent
- 9.87 percent

**PORTFOLIO WEIGHT**

- d 68. You have a portfolio consisting solely of stock A and stock B. The portfolio has an expected return of 10.2 percent. Stock A has an expected return of 12 percent while stock B is expected to return 7 percent. What is the portfolio weight of stock A?
- 46 percent
  - 54 percent
  - 58 percent
  - 64 percent
  - 70 percent

**PORTFOLIO WEIGHT**

- e 69. You own the following portfolio of stocks. What is the portfolio weight of stock C?

<u>Stock</u>	<u>Number of Shares</u>	<u>Price per Share</u>
A	100	\$22
B	600	\$17
C	400	\$46
D	200	\$38

- a. 30.8 percent
- b. 37.4 percent
- c. 42.3 percent
- d. 45.2 percent
- e. 47.9 percent

**PORTFOLIO EXPECTED RETURN**

- b 70. You own a portfolio with the following expected returns given the various states of the economy. What is the overall portfolio expected return?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Rate of Return if State Occurs</u>
Boom	15%	18%
Normal	60%	11%
Recession	25%	-10%

- a. 6.3 percent
- b. 6.8 percent
- c. 7.6 percent
- d. 10.0 percent
- e. 10.8 percent

**PORTFOLIO EXPECTED RETURN**

- b 71. What is the expected return on a portfolio which is invested 20 percent in stock A, 50 percent in stock B, and 30 percent in stock C?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Returns if State Occurs</u>		
		<u>Stock A</u>	<u>Stock B</u>	<u>Stock C</u>
Boom	20%	18%	9%	6%
Normal	70%	11%	7%	9%
Recession	10%	-10%	4%	13%

- a. 7.40 percent
- b. 8.25 percent
- c. 8.33 percent
- d. 9.45 percent
- e. 9.50 percent



**PORTFOLIO EXPECTED RETURN**

- d 72. What is the expected return on this portfolio?

<u>Stock</u>	<u>Expected Return</u>	<u>Number of Shares</u>	<u>Stock Price</u>
A	8%	520	\$25
B	15%	300	\$48
C	6%	250	\$26

- a. 9.50 percent  
 b. 9.67 percent  
 c. 9.78 percent  
 d. 10.59 percent  
 e. 10.87 percent

**PORTFOLIO EXPECTED RETURN**

- c 73. What is the expected return on a portfolio comprised of \$3,000 in stock K and \$5,000 in stock L if the economy is normal?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Returns if State Occurs</u>	
		<u>Stock K</u>	<u>Stock L</u>
Boom	20%	14%	10%
Normal	80%	5%	6%

- a. 3.75 percent  
 b. 5.25 percent  
 c. 5.63 percent  
 d. 5.88 percent  
 e. 6.80 percent

**PORTFOLIO EXPECTED RETURN**

- d 74. What is the expected return on a portfolio comprised of \$4,000 in stock M and \$6,000 in stock N if the economy enjoys a boom period?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Returns if State Occurs</u>	
		<u>Stock M</u>	<u>Stock N</u>
Boom	10%	18%	10%
Normal	75%	7%	8%
Recession	15%	-20%	6%

- a. 6.4 percent  
 b. 6.8 percent  
 c. 10.4 percent  
 d. 13.2 percent  
 e. 14.0 percent

**PORTFOLIO VARIANCE**

- b 75. What is the portfolio variance if 30 percent is invested in stock S and 70 percent is invested in stock T?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Returns if State Occurs</u>	
		<u>Stock S</u>	<u>Stock T</u>
Boom	40%	12%	20%
Normal	60%	6%	4%

- a. .002220
- b. .004056
- c. .006224
- d. .008080
- e. .098000

**PORTFOLIO VARIANCE**

- b 76. What is the variance of a portfolio consisting of \$3,500 in stock G and \$6,500 in stock H.

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Returns if State Occurs</u>	
		<u>Stock G</u>	<u>Stock H</u>
Boom	15%	15%	9%
Normal	85%	8%	6%

- a. .000209
- b. .000247
- c. .002098
- d. .037026
- e. .073600

**PORTFOLIO STANDARD DEVIATION**

- c 77. What is the standard deviation of a portfolio that is invested 40 percent in stock Q and 60 percent in stock R?

<u>State of Economy</u>	<u>Probability of State of Economy</u>	<u>Returns if State Occurs</u>	
		<u>Stock Q</u>	<u>Stock R</u>
Boom	25%	18%	9%
Normal	75%	9%	5%

- a. 0.7 percent
- b. 1.4 percent
- c. 2.6 percent
- d. 6.8 percent
- e. 8.1 percent

**PORTFOLIO STANDARD DEVIATION**

- a 78. What is the standard deviation of a portfolio which is comprised of \$4,500 invested in stock S and \$3,000 in stock T?

State of Economy	Probability of State of Economy	Returns if State Occurs	
		Stock S	Stock T
Boom	10%	12%	4%
Normal	65%	9%	6%
Recession	25%	2%	9%

- a. 1.4 percent  
b. 1.9 percent  
c. 2.6 percent  
d. 5.7 percent  
e. 7.2 percent

**PORTFOLIO STANDARD DEVIATION**

- d 79. What is the standard deviation of a portfolio which is invested 20 percent in stock A, 30 percent in stock B and 50 percent in stock C?

State of Economy	Probability of State of Economy	Returns if State Occurs		
		Stock A	Stock B	Stock C
Boom	10%	15%	10%	5%
Normal	70%	9%	6%	7%
Recession	20%	-14%	2%	8%

- a. 0.6 percent  
b. 0.9 percent  
c. 1.8 percent  
d. 2.2 percent  
e. 4.9 percent

**BETA**

- c 80. What is the beta of a portfolio comprised of the following securities?

Stock	Amount Invested	Security Beta
A	\$2,000	1.20
B	\$3,000	1.46
C	\$5,000	.72

- a. 1.008  
b. 1.014  
c. 1.038  
d. 1.067  
e. 1.127

**PORTFOLIO BETA**

- d 81. Your portfolio is comprised of 30 percent of stock X, 50 percent of stock Y, and 20 percent of stock Z. Stock X has a beta of .64, stock Y has a beta of 1.48, and stock Z has a beta of 1.04. What is the beta of your portfolio?
- a. 1.01
  - b. 1.05
  - c. 1.09
  - d. 1.14
  - e. 1.18

**PORTFOLIO BETA**

- e 82. Your portfolio has a beta of 1.18. The portfolio consists of 15 percent U.S. Treasury bills, 30 percent in stock A, and 55 percent in stock B. Stock A has a risk-level equivalent to that of the overall market. What is the beta of stock B?
- a. .55
  - b. 1.10
  - c. 1.24
  - d. 1.40
  - e. 1.60

**PORTFOLIO BETA**

- b 83. You would like to combine a risky stock with a beta of 1.5 with U.S. Treasury bills in such a way that the risk level of the portfolio is equivalent to the risk level of the overall market. What percentage of the portfolio should be invested in Treasury bills?
- a. .25
  - b. .33
  - c. .50
  - d. .67
  - e. .75

**MARKET RISK PREMIUM**

- d 84. The market has an expected rate of return of 9.8 percent. The long-term government bond is expected to yield 4.5 percent and the U.S. Treasury bill is expected to yield 3.4 percent. The inflation rate is 3.1 percent. What is the market risk premium?
- a. 2.2 percent
  - b. 3.3 percent
  - c. 5.3 percent
  - d. 6.4 percent
  - e. 6.7 percent

**CAPITAL ASSET PRICING MODEL (CAPM)**

- d 85. The risk-free rate of return is 4 percent and the market risk premium is 8 percent. What is the expected rate of return on a stock with a beta of 1.28?
- a. 9.12 percent
  - b. 10.24 percent
  - c. 13.12 percent
  - d. 14.24 percent
  - e. 15.36 percent

**CAPITAL ASSET PRICING MODEL (CAPM)**

- e 86. The common stock of Flavorful Teas has an expected return of 14.4 percent. The return on the market is 10 percent and the risk-free rate of return is 3.5 percent. What is the beta of this stock?
- a. .65
  - b. 1.09
  - c. 1.32
  - d. 1.44
  - e. 1.68

**CAPITAL ASSET PRICING MODEL (CAPM)**

- d 87. The stock of Big Joe's has a beta a 1.14 and an expected return of 11.6 percent. The risk-free rate of return is 4 percent. What is the expected return on the market?
- a. 7.60 percent
  - b. 8.04 percent
  - c. 9.33 percent
  - d. 10.67 percent
  - e. 12.16 percent

**CAPITAL ASSET PRICING MODEL (CAPM)**

- d 88. The expected return on HiLo stock is 13.69 percent while the expected return on the market is 11.5 percent. The beta of HiLo is 1.3. What is the risk-free rate of return?
- a. 2.8 percent
  - b. 3.1 percent
  - c. 3.7 percent
  - d. 4.2 percent
  - e. 4.5 percent

**CAPITAL ASSET PRICING MODEL (CAPM)**

- c 89. The stock of Martin Industries has a beta of 1.43. The risk-free rate of return is 3.6 percent and the market risk premium is 9 percent. What is the expected rate of return on Martin Industries stock?
- a. 11.3 percent
  - b. 14.1 percent
  - c. 16.5 percent
  - d. 17.4 percent
  - e. 18.0 percent

**CAPITAL ASSET PRICING MODEL (CAPM)**

- b 90. Nuvo, Inc. stock has a beta of .86 and an expected return of 10.5 percent. The risk-free rate of return is 3.2 percent and the market rate of return is 11.2 percent. Which one of the following statements is true given this information?
- a. The return on Nuvo stock will graph below the Security Market Line.
  - b. Nuvo stock is underpriced.
  - c. The expected return on Nuvo stock based on the Capital Asset Pricing Model is 9.88 percent.
  - d. Nuvo stock has more systematic risk than the overall market.
  - e. Nuvo stock is correctly priced.

**REWARD-TO-RISK RATIO**

- b 91. Which one of the following stocks is correctly priced if the risk-free rate of return is 2.5 percent and the market risk premium is 8 percent?

<u>Stock</u>	<u>Beta</u>	<u>Expected Return</u>
A	.68	8.2%
B	1.42	13.9%
C	1.23	11.8%
D	1.31	12.6%
E	.94	9.7%

- a. A
- b. B
- c. C
- d. D
- e. E

**CAPITAL ASSET PRICING MODEL (CAPM)**

- c 92. Which one of the following stocks is correctly priced if the risk-free rate of return is 3.6 percent and the market rate of return is 10.5 percent?

<u>Stock</u>	<u>Beta</u>	<u>Expected Return</u>
A	.85	9.2%
B	1.08	11.8%
C	1.69	15.3%
D	.71	7.8%
E	1.45	12.3%

- a. A
- b. B
- c. C
- d. D
- e. E

**IV. ESSAYS**

**CAPM**

93. According to the CAPM, the expected return on a risky asset depends on three components. Describe each component, and explain its role in determining expected return.

The CAPM suggests that the expected return is a function of (1) the risk-free rate of return, which is the pure time value of money, (2) the market risk premium, which is the reward for bearing systematic risk, and (3) beta, which is the amount of systematic risk present in a particular asset. Better answers will point out that both the pure time value of money and the reward for bearing systematic risk are exogenously determined and can change on a daily basis, while the amount of systematic risk for a particular asset is determined by the firm's decision-makers.

**SECURITY MARKET LINE**

94. Draw the SML and plot asset C such that it has less risk than the market but plots above the SML, and asset D such that it has more risk than the market and plots below the SML. (Be sure to indicate where the market portfolio is on your graph.) Explain how assets like C or D can plot as they do and explain why such pricing cannot persist in a market that is in equilibrium.

The student should correctly draw a SML with points C and D correctly identified. In this case, asset C is underpriced and asset D is overpriced. This condition cannot persist in equilibrium because investors will buy C with its high expected return and sell D with its low expected return. This buying and selling activity will force the prices back to a level that eventually causes both C and D to plot on the SML.

**REWARD-TO-RISK RATIOS**

95. Explain what we mean when we say all assets have the same reward-to-risk ratio. What does this mean for investors?

A constant reward-to-risk ratio means that the reward for bearing risk (measured as the risk premium) increases as the amount of risk (measured by beta) also increases. Investors who are risk averse will not consider taking additional risk if they expect to receive no additional compensation for doing so. This is an equilibrium concept which essentially restates the axiom that prices observed in efficient markets are considered fair.

**DIVERSIFIABLE RISK**

96. Why are some risks diversifiable and some nondiversifiable? Give an example of each.

A reasonable answer would, at a minimum, explain that some risks (diversifiable) affect only a specific security, and when put into a portfolio, losses as a result of these firm-specific events will tend to be offset by price gains amongst other securities. Nondiversifiable risk, however, is unavoidable because such risks affect all or almost all securities in the market and can't be eliminated by forming portfolios. In the second part of the question, the students get a chance to use a minor amount of imagination. A strong answer would note the dependence of diversification effects on the degree of correlation between the assets used to form portfolios.

**RISK**

97. We routinely assume that investors are risk-averse return-seekers; i.e., they like returns and dislike risk. If so, why do we contend that only systematic risk and not total risk is important?

This question, of course, gets to the point of the chapter: That rational investors will diversify away as much risk as possible. From the discussion in the text, most students will also have picked up that it is quite easy to eliminate diversifiable risk in practice, either by holding portfolios with 25 to 30 assets, or by holding shares in a diversified mutual fund. And, as noted in the text, there will be no return for bearing diversifiable risk, thus, total risk is not particularly important to a diversified investor.

**EMH, CAPM, AND THE MARKET VALUE RULE**

98. In the first chapter, it was stated that financial managers should act to maximize shareholder wealth. Why are the efficient markets hypothesis (EMH), the CAPM, and the SML so important in the accomplishment of this objective?

In simple terms, one could say that maximizing shareholder wealth by maximizing the current share price (Chapter 1) is a reasonable objective if and only if we have some assurance that observed prices are meaningful; i.e., that they reflect the value of the firm. This is a major implication of the EMH. Further, if we are to be able to assess the wealth effects of future decisions on security and firm values, we must have a valuation model whose parameters can be shown to be affected by those decisions (Chapters 7 and 8). Finally, any valuation model we employ will require us to quantify return and risk (Chapters 12 and 13).

**BETA**

99. Explain in words what beta is and why it is important.

This is a concept check question that requires students to put into words that beta is a measure of systematic risk, the only risk an investor can expect to earn compensation for bearing. Beta specifically measures the amount of systematic risk an asset has relative to an average asset.

**NEGATIVE BETA**

100. Is it possible for an asset to have a negative beta? (Hint: yes.) What would the expected return on such an asset be? Why?

While it is unlikely to observe a negative beta asset, it would have less systematic risk than the risk-free asset and would be expected to provide an even lower return. One possibility often cited is that of gold. The return would be less than the risk-free rate because, while the risk-free rate is determined by changes in inflation and the business cycle for the economy at large, gold, as an ultimate store of value, is not affected by these factors (at least to the same degree).