

TEST BANK for Intermediate Financial Management 12th Edition Brigham Daves.

CHAPTER 3—RISK AND RETURN: PART II

1. The slope of the SML is determined by the value of beta.

- a. True
- b. False

ANSWER: False

POINTS: 1

DIFFICULTY: Difficulty: Easy

LEARNING OBJECTIVES: INTE.GENE.16.12 - LO: 3-4

NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: SML

KEYWORDS: Bloom's: Knowledge

2. If you plotted the returns of Selleck & Company against those of the market and found that the slope of your line was negative, the CAPM would indicate that the required rate of return on Selleck's stock should be less than the risk-free rate for a well-diversified investor, assuming that the observed relationship is expected to continue in the future.

- a. True
- b. False

ANSWER: True

POINTS: 1

DIFFICULTY: Difficulty: Easy

LEARNING OBJECTIVES: INTE.GENE.16.12 - LO: 3-4

NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: SML

KEYWORDS: Bloom's: Knowledge

3. If the returns of two firms are negatively correlated, then one of them must have a negative beta.

- a. True
- b. False

ANSWER: True

POINTS: 1

DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Beta coefficients
KEYWORDS: Bloom's: Knowledge

4. A stock with a beta equal to -1.0 has zero systematic (or market) risk.
a. True
b. False

ANSWER: False
POINTS: 1
DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Beta coefficients
KEYWORDS: Bloom's: Knowledge

5. It is possible for a firm to have a positive beta, even if the correlation between its returns and those of another firm are negative.
a. True
b. False

ANSWER: True
POINTS: 1
DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
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TOPICS: Beta coefficients
KEYWORDS: Bloom's: Knowledge

6. In portfolio analysis, we often use ex post (historical) returns and standard deviations, despite the fact that we are interested in ex ante (future) data.
a. True
b. False

ANSWER: True
POINTS: 1
DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Portfolio risk
KEYWORDS: Bloom's: Knowledge

7. If investors are risk averse and hold only one stock, we can conclude that the required rate of return on a stock whose standard deviation is 0.21 will be greater than the required return on a stock whose standard deviation is 0.10. However, if stocks are held in portfolios, it is possible that the required return could be higher on the low standard deviation stock.

- a. True
- b. False

ANSWER: True
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.14 - LO: 3-2
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Risk aversion
KEYWORDS: Bloom's: Comprehension

8. The CAPM is a multi-period model which takes account of differences in securities' maturities, and it can be used to determine the required rate of return for any given level of systematic risk.

- a. True
- b. False

ANSWER: False
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.15 - LO: 3-3
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: CAPM
KEYWORDS: Bloom's: Comprehension

9. The SML relates required returns to firms' systematic (or market) risk. The slope and intercept of this line can be influenced by managerial actions.

- a. True
- b. False

ANSWER: False
RATIONALE: Managers can influence the firm's beta coefficient by changing such things as the capital structure (more debt will increase beta) and changing the type of assets held by the firm (riskier assets will tend to increase beta). However, managers cannot control the risk-free rate or the return on the market.
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.12 - LO: 3-4
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: SML
KEYWORDS: Bloom's: Comprehension

10. The Y-axis intercept of the SML indicates the return on an individual asset when the realized return on an average ($b = 1$) stock is zero.

- a. True
- b. False

ANSWER: False
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.12 - LO: 3-4
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: SML
KEYWORDS: Bloom's: Comprehension

11. We will almost always find that the beta of a diversified portfolio is less stable over time than the beta of a single security.

- a. True
- b. False

ANSWER: False
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Portfolio beta
KEYWORDS: Bloom's: Comprehension

12. Arbitrage pricing theory is based on the premise that more than one factor affects stock returns, and the factors are specified to be (1) market returns, (2) dividend yields, and (3) changes in inflation.

- a. True
- b. False

ANSWER: False
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.16 - LO: 3-7
NATIONAL STANDARDS: United States - BUSPROG: Reflective Thinking
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Arbitrage pricing theory
KEYWORDS: Bloom's: Comprehension

13. You have the following data on three stocks:

<u>Stock</u>	<u>Standard Deviation</u>	<u>Beta</u>
A	0.15	0.79
B	0.25	0.61
C	0.20	1.29

As a risk minimizer, you would choose Stock ____ if it is to be held in isolation and Stock ____ if it is to be held as part of a well-diversified portfolio.

- A; B.
- B; C.
- C; A.
- C; B.
- A; A.

ANSWER: a

POINTS: 1

DIFFICULTY: Difficulty: Easy

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Risk aversion

KEYWORDS: Bloom's: Comprehension

OTHER: TYPE: Multiple Choice: Conceptual

14. Which is the best measure of risk for an asset held in isolation, and which is the best measure for an asset held in a diversified portfolio?

- Standard deviation; correlation coefficient.
- Beta; variance.
- Coefficient of variation; beta.
- Beta; beta.
- Variance; correlation coefficient.

ANSWER: c

POINTS: 1

DIFFICULTY: Difficulty: Easy

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Risk measures

KEYWORDS: Bloom's: Comprehension

OTHER: TYPE: Multiple Choice: Conceptual

15. Which of the following is **NOT** a potential problem with beta and its estimation?

- Sometimes, during a period when the company is undergoing a change such as toward more leverage or riskier assets, the calculated beta will be drastically different than the "true" or "expected future" beta.
- The beta of "the market," can change over time, sometimes drastically.
- Sometimes the past data used to calculate beta do not reflect the likely risk of the firm for the future because conditions have changed.

d. There is a wide confidence interval around a typical stock's estimated beta.

e. Sometimes a security or project does not have a past history which can be used as a basis for calculating beta.

ANSWER: b
POINTS: 1
DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Analytic
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Beta coefficients
KEYWORDS: Bloom's: Comprehension
OTHER: TYPE: Multiple Choice: Conceptual

16. Stock A's beta is 1.5 and Stock B's beta is 0.5. Which of the following statements must be true about these securities? (Assume market equilibrium.)

- a. Stock B must be a more desirable addition to a portfolio than Stock A.
- b. Stock A must be a more desirable addition to a portfolio than Stock B.
- c. The expected return on Stock A should be greater than that on Stock B.
- d. The expected return on Stock B should be greater than that on Stock A.
- e. When held in isolation, Stock A has greater risk than Stock B.

ANSWER: c
POINTS: 1
DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Analytic
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Beta coefficients
KEYWORDS: Bloom's: Comprehension
OTHER: TYPE: Multiple Choice: Conceptual

17. For markets to be in equilibrium (that is, for there to be no strong pressure for prices to depart from their current levels),

- a. The past realized rate of return must be equal to the expected rate of return; that is, $\bar{r} = \hat{r}$.
- b. The required rate of return must equal the realized rate of return; that is, $r = \bar{r}$.
- c. All companies must pay dividends.
- d. No companies can be in danger of declaring bankruptcy.
- e. The expected rate of return must be equal to the required rate of return; that is, $\hat{r} = r$.

ANSWER: e
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.14 - LO: 3-2
NATIONAL STANDARDS: United States - BUSPROG: Analytic
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Market equilibrium
KEYWORDS: Bloom's: Analysis
OTHER: TYPE: Multiple Choice: Conceptual

18. Which of the following statements is CORRECT?

- a. The slope of the CML is $(\hat{r}_M - r_{RF})/b_M$.
- b. All portfolios that lie on the CML to the right of σ_M are inefficient.
- c. All portfolios that lie on the CML to the left of σ_M are inefficient.
- d. The slope of the CML is $(\hat{r}_M - r_{RF})/\sigma_M$.
- e. The Capital Market Line (CML) is a curved line that connects the risk-free rate and the market portfolio.

ANSWER:d

POINTS:1

DIFFICULTY: Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.12 - LO: 3-4

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: CML

KEYWORDS: Bloom's: Analysis

OTHER: TYPE: Multiple Choice: Conceptual

19. In a portfolio of three different stocks, which of the following could **NOT** be true?

- a. The riskiness of the portfolio is greater than the riskiness of one or two of the stocks.
- b. The beta of the portfolio is less than the betas of each of the individual stocks.
- c. The beta of the portfolio is greater than the beta of one or two of the individual stocks' betas.
- d. The beta of the portfolio cannot be equal to 1.
- e. The riskiness of the portfolio is less than the riskiness of each of the stocks if they were held in isolation.

ANSWER:b

POINTS:1

DIFFICULTY: Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Portfolio risk and return

KEYWORDS: Bloom's: Analysis

OTHER: TYPE: Multiple Choice: Conceptual

20. You have the following data on (1) the average annual returns of the market for the past 5 years and (2) similar information on Stocks A and B. Which of the possible answers best describes the historical betas for A and B?

<u>Years</u>	<u>Market</u>	<u>Stock A</u>	<u>Stock B</u>
1	0.03	0.16	0.05
2	-0.05	0.20	0.05
3	0.01	0.18	0.05
4	-0.10	0.25	0.05

- 5 0.06 0.14 0.05
- $b_A > +1$; $b_B = 0$.
 - $b_A = 0$; $b_B = -1$.
 - $b_A < 0$; $b_B = 0$.
 - $b_A < -1$; $b_B = 1$.
 - $b_A > 0$; $b_B = 1$.

ANSWER:c

RATIONALE: B's returns are independent of the market, hence its beta is zero. If you plot A's returns against those of the market, you see a negative slope, hence B's beta is negative. Therefore, d is the correct answer.

POINTS: 1

DIFFICULTY: Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Beta coefficients

KEYWORDS: Bloom's: Analysis

OTHER: TYPE: Multiple Choice: Conceptual

21. Which of the following statements is CORRECT?

- The typical R^2 for a stock is about 0.94 and the typical R^2 for a portfolio is about 0.6.
- The typical R^2 for a stock is about 0.3 and the typical R^2 for a large portfolio is about 0.94.
- The typical R^2 for a stock is about 0.94 and the typical R^2 for a portfolio is also about 0.94.
- The typical R^2 for a stock is about 0.6 and the typical R^2 for a portfolio is also about 0.6.
- The typical R^2 for a stock is about 0.3 and the typical R^2 for a portfolio is also about 0.3.

ANSWER:b

POINTS:1

DIFFICULTY: Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Beta calculation

KEYWORDS: Bloom's: Analysis

OTHER: TYPE: Multiple Choice: Conceptual

22. Which of the following statements is CORRECT?

- The characteristic line is the regression line that results from plotting the returns on a particular stock versus the returns on a stock from a different industry.
- The slope of the characteristic line is the stock's standard deviation.
- The distance of the plot points from the characteristic line is a measure of the stock's market risk.
- The distance of the plot points from the characteristic line is a measure of the stock's diversifiable risk.
- "Characteristic line" is another name for the Security Market Line.

ANSWER: d
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Analytic
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Characteristic line
KEYWORDS: Bloom's: Analysis
OTHER: TYPE: Multiple Choice: Conceptual

23. Which of the following statements is CORRECT?

- a. Richard Roll has argued that it is possible to test the CAPM to see if it is correct.
- b. Tests have shown that the risk/return relationship appears to be linear, but the slope of the relationship is greater than that predicted by the CAPM.
- c. Tests have shown that the betas of individual stocks are stable over time, but that the betas of large portfolios are much less stable.
- d. The most widely cited study of the validity of the CAPM is one performed by Modigliani and Miller.
- e. Tests have shown that the betas of individual stocks are unstable over time, but that the betas of large portfolios are reasonably stable over time.

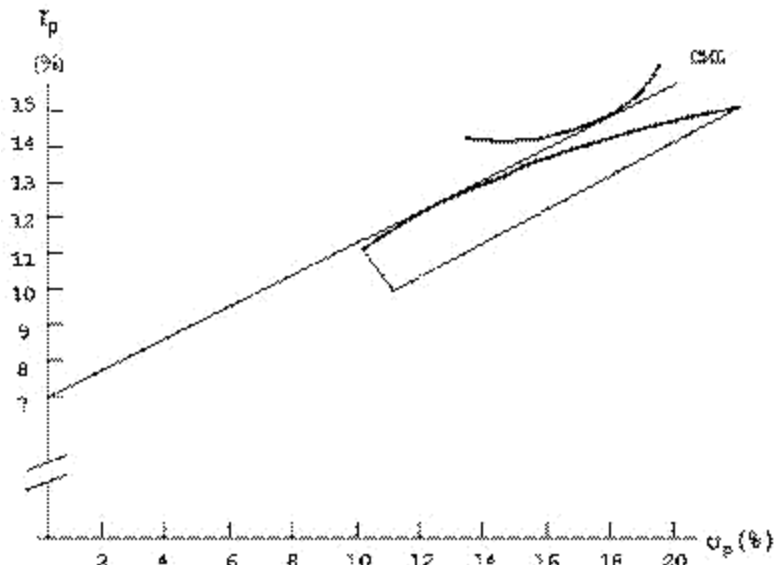
ANSWER: e
POINTS: 1
DIFFICULTY: Difficulty: Moderate
LEARNING OBJECTIVES: INTE.GENE.16.17 - LO: 3-6
NATIONAL STANDARDS: United States - BUSPROG: Analytic
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Tests of the CAPM
KEYWORDS: Bloom's: Analysis
OTHER: TYPE: Multiple Choice: Conceptual

24. Assume an economy in which there are three securities: Stock A with $r_A = 10\%$ and $\sigma_A = 10\%$; Stock B with $r_B = 15\%$ and $\sigma_B = 20\%$; and a riskless asset with $r_{RF} = 7\%$. Stocks A and B are uncorrelated ($r_{AB} = 0$). Which of the following statements is most CORRECT?

- a. The expected return on the investor's portfolio will probably have an expected return that is somewhat below 10% and a standard deviation (SD) of approximately 10%.
- b. The expected return on the investor's portfolio will probably have an expected return that is somewhat below 15% and a standard deviation (SD) that is between 10% and 20%.
- c. The investor's risk/return indifference curve will be tangent to the CML at a point where the expected return is in the range of 7% to 10%.
- d. Since the two stocks have a zero correlation coefficient, the investor can form a riskless portfolio whose expected return is in the range of 10% to 15%.
- e. The expected return on the investor's portfolio will probably have an expected return that is somewhat above 15% and a standard deviation (SD) of approximately 20%.

ANSWER: b

RATIONALE:



Percent A	Percent B	r_p	σ_p
100	0	10.00%	10.00%
75	25	11.25	9.01
50	50	12.50	11.18
25	75	13.75	15.20
0	100	15.00	20.00

$r_p = xr_A + (1 - x)r_B$. $\sigma_p = \sqrt{x^2\sigma_A^2 + (1-x)^2\sigma_B^2 + 2x(1-x)\rho_{AB}\sigma_A\sigma_B}$. But $\rho_{AB} = 0$, so,

$\sigma_p = \sqrt{x^2\sigma_A^2 + (1-x)^2\sigma_B^2}$. For our investor, $r_p = 14.75\%$ and $\sigma_p = 14.25\%$.

- POINTS:** 1
- DIFFICULTY:** Difficulty: Challenging
- LEARNING OBJECTIVES:** INTE.GENE.16.14 - LO: 3-2
- NATIONAL STANDARDS:** United States - BUSPROG: Analytic
- STATE STANDARDS:** United States - AK - DISC: Risk and return
- LOCAL STANDARDS:** United States - OH - Default City - TBA
- TOPICS:** Portfolios and risk
- KEYWORDS:** Bloom's: Analysis
- OTHER:** TYPE: Multiple Choice: Conceptual

25. You hold a portfolio consisting of a \$5,000 investment in each of 20 different stocks. The portfolio beta is equal to 1.12. You have decided to sell a coal mining stock ($b = 1.00$) at \$5,000 net and use the proceeds to buy a like amount of a mineral rights company stock ($b = 2.00$). What is the new beta of the portfolio?

- a. 1.1139
- b. 1.1700
- c. 1.2311
- d. 1.2927
- e. 1.3573

ANSWER: b

RATIONALE: % lead stock: 5%
 Coal beta: 1.00
 Mineral beta: 2.00

Old beta: $1.12 = 0.95X + 0.05(1.00)$
 where X is the portfolio's average beta w/o Mineral.
 $X = 1.12/0.95 - 0.05 = 1.1263$
 New beta = $0.95X + 0.05(2.00) = 0.95 \times 1.1263 + 0.05 \times 2.00 = 1.1700$

POINTS: 1
DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Analytic
STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Portfolio beta
KEYWORDS: Bloom's: Application
OTHER: TYPE: Multiple Choice: Problem

26. Your mother's well-diversified portfolio has an expected return of 12.0% and a beta of 1.20. She is in the process of buying 100 shares of Safety Corp. at \$10 a share and adding it to her portfolio. Safety has an expected return of 15.0% and a beta of 2.00. The total value of your current portfolio is \$9,000. What will the expected return and beta on the portfolio be after the purchase of the Safety stock?

- r_p b_p
 a. 11.69%; 1.22
 b. 12.30%; 1.28
 c. 12.92%; 1.34
 d. 13.56%; 1.41
 e. 14.24%; 1.48

ANSWER: b
RATIONALE:

Old portfolio return	12.0%
Old portfolio beta	1.20
New stock return	15.0%
New stock beta	2.00
Percent of portfolio in new stock:	10%

New expected portfolio return = $r_p = 0.1 \times 15\% + 0.9 \times 12\% = 12.30\%$
 New expected portfolio beta = $b_p = 0.1 \times 2.00 + 0.9 \times 1.20 = 1.28$

POINTS: 1
DIFFICULTY: Difficulty: Easy
LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5
NATIONAL STANDARDS: United States - BUSPROG: Analytic
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TOPICS: Portfolio beta
KEYWORDS: Bloom's: Application
OTHER: TYPE: Multiple Choice: Problem

27. Suppose that (1) investors expect a 4.0% rate of inflation in the future, (2) the real risk-free rate is 3.0%, (3) the market risk premium is 5.0%, (4) Talcott Inc.'s beta is 1.00, and (5) its realized rate of return has averaged 15.0% over the last 5 years. Calculate the required rate of return for Talcot Inc.
 a. 10.29%

- b. 10.83%
- c. 11.40%
- d. 12.00%
- e. 12.60%

ANSWER: d

RATIONALE:

IP:	4.00%
Real rate:	3.00%
RPM:	5.00%
Beta:	1.00
Required return = 3% + 4% + 1.0(5%) = 12.00%	

POINTS: 1

DIFFICULTY: Difficulty: Easy

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Required rate of return

KEYWORDS: Bloom's: Application

OTHER: TYPE: Multiple Choice: Problem

28. A stock you are holding has a beta of 2.0 and the stock is currently in equilibrium. The required rate of return on the stock is 15% versus a required return on an average stock of 10%. Now the required return on an average stock increases by 30.0% (not percentage points). The risk-free rate is unchanged. By what percentage (not percentage points) would the required return on your stock increase as a result of this event?

- a. 36.10%
- b. 38.00%
- c. 40.00%
- d. 42.00%
- e. 44.10%

ANSWER: c

RATIONALE:

Beta:	2.00
Required return on stock:	15.0%
Required return on market:	10.0%
Increase in required market return:	30.0%
Find risk-free rate:	
$r_s = r_{RF} + b(r_M - r_{RF}) = r_{RF} + b(r_M) - b(r_{RF}); r_{RF} = b(r_M) - r_s$	
$r_{RF} = b(r_M) - r_s = 2.0(10\%) - 15\% =$	5.00%
Find new return on average stock = 10.0%(1.3)	13.00%
Find new market risk premium = 13% - 5% =	8.00%
New req. return on our stock = $r_s = r_{RF} + b(r_M - r_{RF}) = 5\% + 2(8\%) =$	21.00%
% increase in stock's req. return = $(21\% - 15\%)/15\% =$	40.00%

POINTS: 1

DIFFICULTY: Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return
LOCAL STANDARDS: United States - OH - Default City - TBA
TOPICS: Required rate of return
KEYWORDS: Bloom's: Analysis
OTHER: TYPE: Multiple Choice: Problem

29. Calculate the required rate of return for the Wagner Assets Management Group, which holds 4 stocks. The market's required rate of return is 15.0%, the risk-free rate is 7.0%, and the Fund's assets are as follows:

<u>Stock</u>	<u>Investment</u>	<u>Beta</u>
A	\$ 200,000	1.50
B	300,000	-0.50
C	500,000	1.25
D	1,000,000	0.75

- a. 10.67%
- b. 11.23%
- c. 11.82%
- d. 12.45%
- e. 13.10%

ANSWER: e

RATIONALE: $r_M = 15.0\%$

$r_{RF} = 7.0\%$

Find portfolio beta:	<u>Weight</u>	<u>Beta</u>	<u>Product</u>
\$200,000	0.100	1.50	0.1500
\$300,000	0.150	-0.50	-0.0750
\$500,000	0.250	1.25	0.3125
\$1,000,000	<u>0.500</u>	0.75	<u>0.3750</u>
\$2,000,000	1.000		0.7625

Find RPM = $r_M - r_{RF} = 8.00\%$ $r_s = r_{RF} + b(\text{RPM}) = 13.10\%$

POINTS: 1

DIFFICULTY: Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Required rate of return

KEYWORDS: Bloom's: Analysis

OTHER: TYPE: Multiple Choice: Problem

30. Consider the information below for Postman Builders Inc. Suppose that the expected inflation rate and thus the inflation premium increase by 2.0 percentage points, and Postman acquires risky assets that increase its beta by the indicated percentage. What is the firm's new required rate of return?

Beta:	1.50
Required return (r_S):	10.20%
RPM:	6.00%
Percentage increase in beta:	20%

- a. 14.00%

- b. 14.70%
- c. 15.44%
- d. 16.21%
- e. 17.02%

ANSWER:

a

RATIONALE:

Old beta: 1.50

Old $r_s = r_{RF} + b(RPM)$ 10.20%

RPM 6.00%

Percentage increase in beta: 20%

Find new beta after increase = 1.80

Find old r_{RF} : Old $r_s = r_{RF} + b(RPM)$: $10.2\% = r_{RF} + 1.5(6.0\%)$: $r_{RF} = 10.2\% - 9.0\% = 1.20\%$

Find new

Old $r_{RF} + 2.0\%$ increase in inflation = 3.20%

r_{RF} :

Find new $r_s = \text{new } r_{RF} + \text{new beta}(RPM) = 14.00\%$

POINTS:

1

DIFFICULTY:

Difficulty: Moderate

LEARNING OBJECTIVES:

INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS:

United States - BUSPROG: Analytic

STATE STANDARDS:

United States - AK - DISC: Risk and return

LOCAL STANDARDS:

United States - OH - Default City - TBA

TOPICS:

Required rate of return

KEYWORDS:

Bloom's: Analysis

OTHER:

TYPE: Multiple Choice: Problem

31. Assume that the market is in equilibrium and that stock betas can be estimated with historical data. The returns on the market, the returns on United Fund (UF), the risk-free rate, and the required return on the United Fund are shown below.

Based on this information, what is the required return on the market, r_M ?

Year	Market	UF
2011	-9%	-14%
2012	11%	16%
2013	15%	22%
2014	5%	7%
2015	-1%	-2%

r_{RF} : 7.00%;

r_{United} : 15.00%

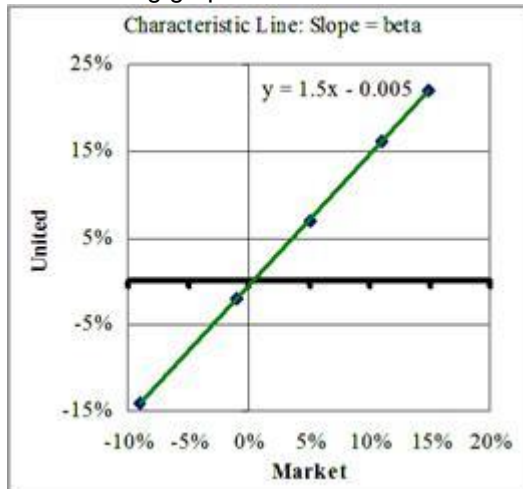
- a. 10.57%
- b. 11.13%
- c. 11.72%
- d. 12.33%
- e. 12.95%

ANSWER:

d

RATIONALE:

The following graph shows that United's returns are perfectly correlated with the market.



rRF: 7.00%

rUnited: 15.00%

1. Find beta: We found beta using Excel, but it could be found with a calculator or using the rise-over-run method as shown below:

$$\frac{\text{Rise}}{\text{Run}} = \frac{22 - 16}{15 - 11} = \frac{6}{4} = b = 1.5$$

2. Now find RPM :

$$r_s = 15\% = 7\% + 1.5(\text{RPM})$$

$$\text{RPM} = (15 - 7)/1.5 = 5.33\%$$

3. Find rm: $r_m = r_{RF} + \text{RPM} = \mathbf{12.33\%}$

1

POINTS:

DIFFICULTY:

Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS:

Market return

KEYWORDS:

Bloom's: Analysis

OTHER:

TYPE: Multiple Choice: Problem

32. You are given the following returns on "the market" and Stock F during the last three years. We could calculate beta using data for Years 1 and 2 and then, after Year 3, calculate a new beta for Years 2 and 3. How different are those two betas, i.e., what's the value of beta 2 – beta 1? (Hint: You can find betas using the Rise-Over-Run method, or using your calculator's regression function.)

<u>Year</u>	<u>Market</u>	<u>Stock F</u>
1	6.10%	6.50%
2	12.90%	-3.70%
3	16.20%	21.71%

- a. 7.89
- b. 8.30
- c. 8.74

d. 9.20

e. 9.66

ANSWER:

d

RATIONALE:

Year	Market	Stock F
1	6.10%	6.50%
2	12.90%	-3.70%
3	16.20%	21.71%

Years 1 and 2, beta 1 = Rise/Run = $(-3.7 - 6.5)/(12.9 - 6.1) = -1.50$

Years 2 and 3, beta 2 = Rise/Run = $(21.71 - -3.7)/(16.2 - 12.9) =$

Difference: 7.70 Beta 2 - Beta 1 = **9.20**

You would get the same result using a calculator to find the two betas.

POINTS:

1

DIFFICULTY:

Difficulty: Moderate

LEARNING OBJECTIVES: INTE.GENE.16.13 - LO: 3-5

NATIONAL STANDARDS: United States - BUSPROG: Analytic

STATE STANDARDS: United States - AK - DISC: Risk and return

LOCAL STANDARDS: United States - OH - Default City - TBA

TOPICS: Beta's sensitivity to the base year

KEYWORDS: Bloom's: Analysis

OTHER: TYPE: Multiple Choice: Problem

33. Security A has an expected return of 12.4% with a standard deviation of 15%, and a correlation with the market of 0.85. Security B has an expected return of -0.73% with a standard deviation of 20%, and a correlation with the market of -0.67. The standard deviation of r_M is 12%.

- To someone who acts in accordance with the CAPM, which security is more risky, A or B? Why? (Hint: No calculations are necessary to answer this question; it is easy.)
- What are the beta coefficients of A and B? Calculations are necessary.
- If the risk-free rate is 6%, what is the value of r_M ?

ANSWER:

The very fact that $r_A > r_B$ indicates that Security A is regarded by investors as the more risky one. This occurs because Security B has a negative covariance with the

a. market—holding B in a diversified portfolio lowers the riskiness of the portfolio.

Although it is not necessary for answering the question, one could use the data to calculate covariances for A and B:

$$\text{Cov}(r_A, r_M) = \rho_{A,M} \sigma_A \sigma_M, \text{ where}$$

$$\rho_{A,M} = \text{Correlation of A's return with the market return} = 0.85.$$

$$\sigma_{A,M} = \text{Standard deviations of returns of A and the market, respectively.}$$

$$\text{Cov}(r_A, r_M) = 0.85(0.15)(0.12) = 0.0153.$$

$$\text{Cov}(r_B, r_M) = \rho_{B,M} \sigma_B \sigma_M = -0.67(0.20)(0.12) = -0.01608.$$

Security A's contribution to the portfolio risk is, therefore, higher than that of B.

In a single-asset portfolio, the security's risk is measured by the variance of its returns.

$$\text{Variance}_A = \sigma_A^2 = (0.15)^2 = 0.0225, \text{ and } \text{Variance}_B = \sigma_B^2 = (0.20)^2 = 0.04.$$

Thus, in a single-asset portfolio, B is riskier than A, but in a diversified (CAPM) portfolio, A is riskier.

- b. Beta coefficients of A and B are calculated as follows:

$$b_A = \frac{\text{Cov}(r_A, r_M)}{\sigma_M^2} = \frac{(\rho_{A,M})(\sigma_A)(\sigma_M)}{\sigma_M^2} = \frac{0.0153}{(0.12)^2} = 1.0625.$$

$$b_B = \frac{\text{Cov}(r_B, r_M)}{\sigma_M^2} = \frac{-0.01608}{(0.12)^2} = -1.1167.$$

- c. The value of r_M is calculated from the CAPM equation:

$$r_{sA} = r_{RF} + (r_M - r_{RF})b_A. \quad 12.4\% = 6\% + (r_M - 6\%)1.0625.$$

Therefore,

$$1.0625r_M = 12.4\% - 6\% + 6.375\% = 12.775\%. \quad r_M = 12.775\%/1.0625 = 12.02\%.$$

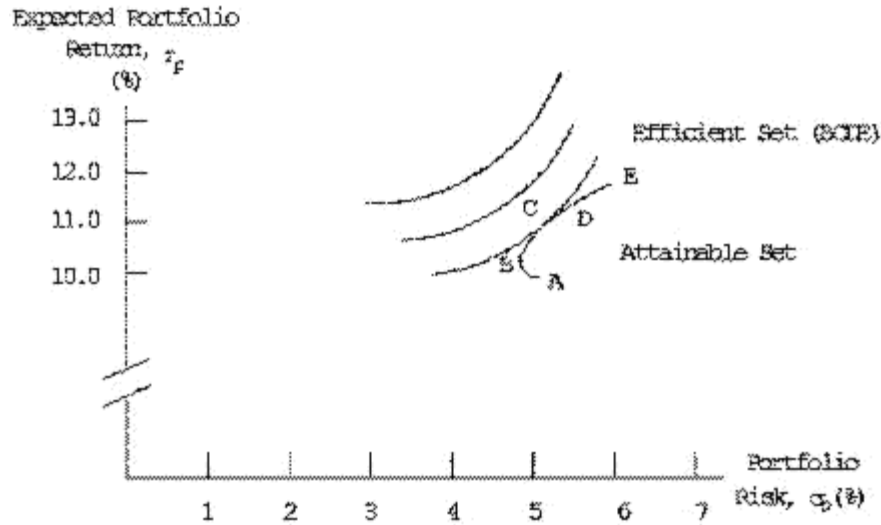
A similar solution could be obtained by applying the CAPM equation to Security B.

<i>POINTS:</i>	1
<i>DIFFICULTY:</i>	Difficulty: Challenging
<i>LEARNING OBJECTIVES:</i>	INTE.GENE.16.14 - LO: 3-2
<i>NATIONAL STANDARDS:</i>	United States - BUSPROG: Analytic
<i>STATE STANDARDS:</i>	United States - AK - DISC: Risk and return
<i>LOCAL STANDARDS:</i>	United States - OH - Default City - TBA
<i>TOPICS:</i>	Portfolios and risk–nonalgorithmic
<i>KEYWORDS:</i>	Bloom's: Analysis
<i>OTHER:</i>	TYPE: Short Answer: Problem

34. You plan to invest in Stock X, Stock Y, or some combination of the two. The expected return for X is 10% and $\sigma_X = 5\%$. The expected return for Y is 12% and $\sigma_Y = 6\%$. The correlation coefficient, r_{XY} , is 0.75.

- Calculate r_p and σ_p for 100%, 75%, 50%, 25%, and 0% in Stock X.
Use the values you calculated for r_p and σ_p to graph the attainable set of portfolios. Which part of the attainable set is efficient? Also, draw in a set of hypothetical indifference curves to show how an investor might select a portfolio comprised of Stocks X and Y. Let an indifference curve be tangent to the efficient set at the point where $r_p = 11\%$.
- Now suppose we add a riskless asset to the investment possibilities. What effects will this have on the construction of portfolios?
- Suppose $r_M = 12\%$, $\sigma_M = 4\%$, and $r_{RF} = 6\%$. What would be the required and expected return on a portfolio with $\sigma_p = 10\%$?
Suppose the correlation of Stock X with the market, r_{XM} , is 0.8, while $r_{YM} = 0.9$. Use this information, along with data given previously, to determine Stock X's and Stock Y's beta coefficients.
- What is the required rate of return on Stocks X and Y? Do these stocks appear to be in equilibrium? If not, what would happen to bring about an equilibrium?

ANSWER:



a. $r_p = X(r_X) + (1 - X)(r_Y)$

X	x	rX	+	(1 - X)	x	rY	=	r _p
1.00		10%		0.00		12%		10.0%
0.75		10		0.25		12		10.5
0.50		10		0.50		12		11.0
0.25		10		0.75		12		11.5
0.00		10		1.00		12		12.0

$$\sigma_p^2 = X^2 \sigma_X^2 + (1 - X)^2 \sigma_Y^2 + 2X(1 - X) \text{cov}_{XY}$$

$$\text{cov}_{XY} = r_{XY} \sigma_X \sigma_Y = (0.75)(0.05)(0.06) = 0.00225.$$

At 100% Stock X:

$$\sigma_p = \sqrt{(1.00)^2 (0.05)^2} = \sqrt{0.0025} = 0.05..$$

At 75% Stock X:

$$\begin{aligned} \sigma_p &= \sqrt{(0.75)^2 (0.05)^2 + (0.25)^2 (0.06)^2 + 2(0.75)(0.25)(0.00225)} \\ &= \sqrt{(0.00141) + (0.000225) + (0.000844)} = \sqrt{0.002479} = 0.0 \end{aligned}$$

At 50% Stock X:

$$\begin{aligned} \sigma_p &= \sqrt{(0.50)^2 (0.05)^2 + (0.50)^2 (0.06)^2 + 2(0.50)(0.50)(0.00225)} \\ &= \sqrt{(0.00625) + (0.0009) + (0.001125)} = \sqrt{0.00265} = 0.0514 \end{aligned}$$

At 25% Stock X:

$$\begin{aligned} \sigma_p &= \sqrt{(0.25)^2 (0.05)^2 + (0.75)^2 (0.06)^2 + 2(0.25)(0.75)(0.00225)} \\ &= \sqrt{(0.00156) + (0.002025) + (0.000844)} = \sqrt{0.003025} = 0.0 \end{aligned}$$

At 0% Stock X:

$$\sigma_p = \sqrt{(1.0)^2 (0.06)^2} = \sqrt{0.0036} = 0.06.$$

Portfolio	Percent in X	Percent in Y	r_p	σ_p
A	100%	0%	10.0%	5.00%
B	75%	25%	10.5%	4.98%
C	50%	50%	11.0%	5.15%
D	25%	75%	11.5%	5.50%
E	0%	100%	12.0%	6.00%

The segment BCDE is efficient. The segment BAE is not efficient.

c. With the addition of a riskless asset, a new portfolio can be created which combines risk-free and risky assets. Now investors will choose combinations of the market portfolio and the riskless asset. If borrowing is permitted, then less risk-averse investors will move out the CML beyond P.

d.
$$r_p = r_{RF} + \left(\frac{r_M - r_{RF}}{\sigma_M} \right) \sigma_p = 6\% + \left(\frac{12\% - 6\%}{4\%} \right) 10\% = 21\%.$$

e.
$$b_X = \frac{\text{cov}(r_X, r_M)}{\sigma_M^2} = \frac{\sigma_X \sigma_M \rho_{XM}}{\sigma_M^2} = \frac{\sigma_X \rho_{XM}}{\sigma_M} = \frac{5\%(0.80)}{4\%} = \frac{4\%}{4\%}$$

$$b_Y = \frac{6\%(0.9)}{4\%} = \frac{5.4\%}{4\%} = 1.35.$$

f.
$$r_X = r_{RF} + (r_M - r_{RF})b_X = 6\% + (11\% - 6\%)1.0 = 11\%.$$

$$r_Y = 6\% + (11\% - 6\%)1.35 = 12.75\%.$$

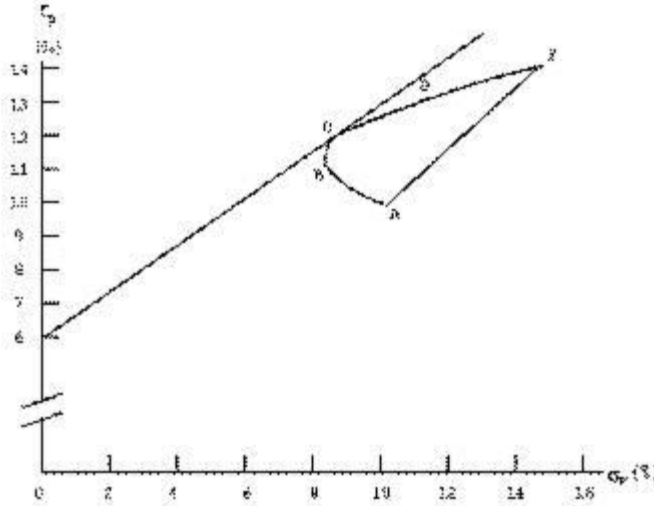
Since the expected return on X, $\hat{r}_X = 10\% < 11\%$, and $\hat{r}_Y = 12\% < 12.75\%$, both stocks are out of equilibrium. They are both overvalued. Their prices would decline, and their expected returns would rise, until an equilibrium was restored.

- POINTS:** 1
- DIFFICULTY:** Difficulty: Challenging
- LEARNING OBJECTIVE INTE.GENE.16.13 - LO: 3-5**
- S:**
- NATIONAL STANDARD** United States - BUSPROG: Analytic
- S:**
- STATE STANDARDS:** United States - AK - DISC: Risk and return
- LOCAL STANDARDS:** United States - OH - Default City - TBA
- TOPICS:** Portfolios and risk–nonalgorithmic
- KEYWORDS:** Bloom's: Analysis
- OTHER:** TYPE: Short Answer: Problem

35. Stock A has an expected return $r_A = 10\%$ and $\sigma_A = 10\%$. Stock B has $r_B = 14\%$ and $\sigma_B = 15\%$. $r_{AB} = 0$. The rate of return on riskless assets is 6%.

- a. Construct a graph that shows the feasible and efficient sets, giving consideration to the existence of the riskless asset.
- b. Explain what would happen to the CML if the two stocks had (a) a positive correlation coefficient or (b) a negative correlation coefficient.
Suppose these were the only three securities (A, B, and riskless) in the economy, and
- c. everyone's indifference curves were such that they were tangent to the CML to the right of the point where the CML was tangent to the efficient set of risky assets. Would this represent a stable equilibrium? If not, how would an equilibrium be produced?

ANSWER:



ABCDE = feasible set.

BCDE = efficient set of risky assets.

rRF D = efficient set including riskless asset.

- a. The table below shows the returns and standard deviations for various portfolios of Securities A and B.

Percent of Portfolio in Security A	Percent of Portfolio in Security B	Expected Portfolio Return	Standard Deviation of Portfolio Return
(x)	(1 - x)	r_p (%)	σ_p (%)
100	0	10.0	10.00
75	25	11.0	8.39
50	50	12.0	9.01
25	75	13.0	11.52
0	100	14.0	15.00

Calculations:

$$r_p = xr_A + (1 - x)r_B.$$

$$\sigma_p = \sqrt{x^2\sigma_A^2 + (1 - x)^2\sigma_B^2 + 2x(1 - x)\rho_{AB}\sigma_A\sigma_B}.$$

$$r_A = 10\%; \sigma_A = 10\%; r_B = 14\%; \sigma_B = 15\%; \rho_{AB} = 0.$$

For $x = 0.5$:

$$r_p = 0.5(10\%) + 0.5(14\%) = 0.05 + 0.07 = 0.12 = 12\%.$$

$$\begin{aligned} \sigma_p &= \sqrt{(0.5)^2(10)^2 + (0.5)^2(15)^2 + 2(0.5)(0.5)(0)(10)(15)} \\ &= \sqrt{25 + 56.25} = \sqrt{81.25} = 9.01\%. \end{aligned}$$

r_p and σ_p for other combinations of Securities A and B in the portfolio were similarly calculated.

- b. If the correlation coefficient were positive, then the CML would have a less steep slope. The riskiness of the portfolio would increase. If the correlation coefficient were negative, then the CML would be steeper.

- c. This would not represent a stable equilibrium, because no one would want to hold the riskless asset. In a stable equilibrium, all securities must be priced so that they will be held in portfolios. Therefore, the price of the riskless asset will fall, and its rate of return, r_{RF} , will rise. This will produce a new tangency point and cause a new CML to be created. However, at the new tangency point we have a new market portfolio. This will probably lead to a repricing of stocks, hence to a change in the efficient set.

The final results will include (1) a higher r_{RF} , (2) a CML that is less steep than the present one, (3) some change in the efficient set, (4) a rebalancing of portfolios, with some investors (those who are most risk averse) holding portfolios that contain some of the riskless asset and some of the market portfolio, and (5) an equilibrium situation in which all securities were held in portfolios and there was no general desire to change portfolio compositions.

<i>POINTS:</i>	1
<i>DIFFICULTY:</i>	Difficulty: Challenging
<i>LEARNING OBJECTIVES:</i>	INTE.GENE.16.12 - LO: 3-4
<i>NATIONAL STANDARDS:</i>	United States - BUSPROG: Analytic
<i>STATE STANDARDS:</i>	United States - AK - DISC: Risk and return
<i>LOCAL STANDARDS:</i>	United States - OH - Default City - TBA
<i>TOPICS:</i>	Efficient portfolios–nonalgorithmic
<i>KEYWORDS:</i>	Bloom’s: Analysis
<i>OTHER:</i>	TYPE: Short Answer: Problem