

# Reading 42: Portfolio Risk and Return: Part II

## Question #1 of 69

Question ID: 710155

Which of the following is the *most accurate* description of the market portfolio in Capital Market Theory? The market portfolio consists of all:

- ✓ **A)** risky assets in existence.
- X **B)** risky and risk-free assets in existence.
- X **C)** equity securities in existence.

Explanation

The market portfolio, in theory, contains all risky assets in existence. It does not contain any risk-free assets.

References

**Question From:** Session 12 > Reading 42 > LOS b

**Related Material:**

- Key Concepts by LOS

## Question #2 of 69

Question ID: 415053

An analyst has developed the following data for two companies, PNS Manufacturing (PNS) and InCharge Travel (InCharge). PNS has an expected return of 15% and a standard deviation of 18%. InCharge has an expected return of 11% and a standard deviation of 17%. PNS's correlation with the market is 75%, while InCharge's correlation with the market is 85%. If the market standard deviation is 22%, which of the following are the betas for PNS and InCharge?

<u>Beta of PNS</u>	<u>Beta of InCharge</u>
X <b>A)</b> 0.66	0.61
X <b>B)</b> 0.92	1.10
✓ <b>C)</b> 0.61	0.66

Explanation

$$\text{Beta}_i = (s_i/s_M) \times r_{i, M}$$
$$\text{BetaPNS} = (0.18/0.22) \times 0.75 = 0.6136$$
$$\text{BetaInCharge} = (0.17/0.22) \times 0.85 = 0.6568$$

References

**Question From:** Session 12 > Reading 42 > LOS e

**Related Material:**

- Key Concepts by LOS

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### Question #3 of 69

Question ID: 415060

Which of the following is NOT an assumption of capital market theory?

- ☐ A) The capital markets are in equilibrium.
- ☐ B) Interest rates never change from period to period.
- ☒ C) Investors can lend at the risk-free rate, but borrow at a higher rate.

#### Explanation

Capital market theory assumes that investors can borrow or lend at the *risk-free* rate. The other statements are basic assumptions of capital market theory.

#### References

**Question From:** Session 12 > Reading 42 > LOS f

#### **Related Material:**

- Key Concepts by LOS
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### Question #4 of 69

Question ID: 415070

What is the expected rate of return on a stock that has a beta of 1.4 if the market risk premium is 9% and the risk-free rate is 4%?

- ☐ A) 13.0%.
- ☐ B) 11.0%.
- ☒ C) 16.6%.

#### Explanation

Using the security market line (SML) equation:

$$4\% + 1.4(9\%) = 16.6\%.$$

#### References

**Question From:** Session 12 > Reading 42 > LOS g

#### **Related Material:**

- Key Concepts by LOS
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### Question #5 of 69

Question ID: 710163

The stock of Mia Shoes is currently trading at \$15 per share, and the stock of Video Systems is currently trading at \$18 per share. An analyst expects the prices of both stocks to increase by \$2 over the next year and neither company pays dividends. Mia Shoes has a beta of 0.9 and Video Systems has a beta of (-0.3). If the expected market return is 15% and the risk-free rate is 8%, which trading strategy does the CAPM indicate for these two stocks?

Mia Shoes

Video Systems

- X **A)** Buy Buy
- X **B)** Buy Sell
- ✓ **C)** Sell Buy

#### Explanation

The required return for Mia Shoes is  $0.08 + 0.9 \times (0.15 - 0.08) = 14.3\%$ . The forecast return is  $\$2/\$15 = 13.3\%$ . The stock is overvalued and the investor should sell it. The required return for Video Systems is  $0.08 - 0.3 \times (0.15 - 0.08) = 5.9\%$ . The forecast return is  $\$2/\$18 = 11.1\%$ . The stock is undervalued and the investor should buy it.

#### References

**Question From:** Session 12 > Reading 42 > LOS h

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #6 of 69

Question ID: 415059

The expected rate of return is 1.5 times the 16% expected rate of return from the market. What is the beta if the risk free rate is 8%?

- X **A)** 3.
- ✓ **B)** 2.
- X **C)** 4.

#### Explanation

$$24 = 8 + \beta (16 - 8)$$

$$24 = 8 + 8\beta$$

$$16 = 8\beta$$

$$16 / 8 = \beta$$

$$\beta = 2$$

#### References

**Question From:** Session 12 > Reading 42 > LOS e

#### **Related Material:**

- Key Concepts by LOS
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### Question #7 of 69

Question ID: 415044

Which of the following is *least likely* considered a source of systematic risk for bonds?

- X **A)** Market risk.
- X **B)** Purchasing power risk.
- ✓ **C)** Default risk.

### Explanation

Default risk is based on company-specific or unsystematic risk.

### References

**Question From:** Session 12 > Reading 42 > LOS c

### **Related Material:**

- Key Concepts by LOS
- 

## Question #8 of 69

Question ID: 415035

Portfolios that represent combinations of the risk-free asset and the market portfolio are plotted on the:

- ✓ **A)** capital market line.
- ✗ **B)** utility curve.
- ✗ **C)** capital asset pricing line.

### Explanation

The introduction of a risk-free asset changes the Markowitz efficient frontier into a straight line. This straight efficient frontier line is called the capital market line (CML). Investors at point  $R_f$  have 100% of their funds invested in the risk-free asset. Investors at point M have 100% of their funds invested in market portfolio M. Between  $R_f$  and M, investors hold both the risk-free asset and portfolio M. To the right of M, investors hold more than 100% of portfolio M. *All investors have to do to get the risk and return combination that suits them is to simply vary the proportion of their investment in the risky portfolio M and the risk-free asset.*

Utility curves reflect individual preferences.

### References

**Question From:** Session 12 > Reading 42 > LOS b

### **Related Material:**

- Key Concepts by LOS
- 

## Question #9 of 69

Question ID: 485797

An active manager will *most likely* short a security with an expected Jensen's alpha that is:

- ✗ **A)** zero.
- ✓ **B)** negative.
- ✗ **C)** positive.

### Explanation

A security's expected Jensen's alpha is the difference between an active manager's estimate of a security's expected return and the CAPM expected return. A security that is expected to have a negative alpha will plot below the SML (i.e., the security is overvalued and should be sold or sold short).

### References

**Question From:** Session 12 > Reading 42 > LOS i

**Related Material:**

- Key Concepts by LOS
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### Question #10 of 69

Question ID: 467389

Which of the following statements about systematic and unsystematic risk is *most* accurate?

- ☐ A) The unsystematic risk for a specific firm is similar to the unsystematic risk for other firms in the same industry.
- ☐ B) As an investor increases the number of stocks in a portfolio, the systematic risk will remain constant.
- ☒ C) Total risk equals market risk plus firm-specific risk.

#### Explanation

Total risk equals systematic (market) plus unsystematic (firm-specific) risk.

The unsystematic risk for a specific firm is *not* similar to the unsystematic risk for other firms in the same industry. Unsystematic risk is firm-specific or unique risk.

Systematic risk of a portfolio can be changed by adding high-beta or low-beta stocks.

#### References

**Question From:** Session 12 > Reading 42 > LOS c

**Related Material:**

- Key Concepts by LOS
- 

### Question #11 of 69

Question ID: 415026

An equally weighted portfolio of a risky asset and a risk-free asset will exhibit:

- ☐ A) more than half the returns standard deviation of the risky asset.
- ☐ B) less than half the returns standard deviation of the risky asset.
- ☒ C) half the returns standard deviation of the risky asset.

#### Explanation

A risk free asset has a standard deviation of returns equal to zero and a correlation of returns with any risky asset also equal to zero. As a result, the standard deviation of returns of a portfolio of a risky asset and a risk-free asset is equal to the weight of the risky asset multiplied by its standard deviation of returns. For an equally weighted portfolio, the weight of the risky asset is 0.5 and the portfolio standard deviation is  $0.5 \times$  the standard deviation of returns of the risky asset.

#### References

**Question From:** Session 12 > Reading 42 > LOS a

**Related Material:**

- Key Concepts by LOS
- 

## Question #12 of 69

Question ID: 415040

Which of the following statements about the capital market line (CML) is *least* accurate?

- ☐ A) Investors choose a portfolio on the CML by varying their weightings of the risk-free asset and the market portfolio.
- ☐ B) The CML will not be a linear relationship if investors' borrowing and lending rates are not equal.
- ☒ C) The market portfolio lies on the CML and has only unsystematic risk.

### Explanation

The first part of this statement is true - the market portfolio does lie on the CML. However, the market portfolio is well diversified and thus has *no unsystematic risk*. The risk that remains is *market risk*, or *nondiversifiable*, or *systematic* risk.

The CML measures standard deviation (or total risk) against returns. The CML will "kink" if the borrowing rate and lending rate are not equal. Investors choose a portfolio on the CML by lending or borrowing at the risk-free rate to vary the weighting of their investments in the risk-free asset and the market portfolio.

### References

**Question From:** Session 12 > Reading 42 > LOS b

### **Related Material:**

- Key Concepts by LOS
- 

## Question #13 of 69

Question ID: 492022

Which of the following statements about risk is NOT correct?

- ☒ A) Total risk = systematic risk - unsystematic risk.
- ☐ B) The market portfolio consists only of systematic risk.
- ☐ C) Unsystematic risk is diversifiable risk.

### Explanation

Total risk = systematic risk + unsystematic risk

### References

**Question From:** Session 12 > Reading 42 > LOS c

### **Related Material:**

- Key Concepts by LOS
- 

## Question #14 of 69

Question ID: 710154

All portfolios on the capital market line:

- ☐ **A)** are unrelated except that they all contain the risk-free asset.
- ☐ **B)** contain different risky assets.
- ☒ **C)** are perfectly positively correlated.

#### Explanation

The introduction of a risk-free asset changes the Markowitz efficient frontier into a straight line. This straight efficient frontier line is called the capital market line (CML). Since the line is straight, the math implies that the returns on any two portfolios on this line will be perfectly, positively correlated with each other. Note: When  $r_{a,b} = 1$ , then the equation for risk changes to  $s_{port} = W_A s_A + W_B s_B$ , which is a straight line. The risky assets for each portfolio on the CML are the same, the tangency (or market) portfolio of risky assets.

#### References

**Question From:** Session 12 > Reading 42 > LOS b

#### **Related Material:**

- Key Concepts by LOS

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### Question #15 of 69

Question ID: 710162

Mason Snow, CFA, is considering two stocks: Bahre (with an expected return of 10% and a beta of 1.4) and Cubb (with an expected return of 15% and a beta of 2.0). Snow uses a risk-free of 7% and estimates that the market risk premium is 4%. Based on capital market theory, Snow should conclude that:

- ☐ **A)** only Bahre is underpriced.
- ☒ **B)** neither security is underpriced.
- ☐ **C)** only Cubb is underpriced.

#### Explanation

In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

Bahre: Expected return = 10% < CAPM Required return  $R = 0.07 + (1.4)(0.11-0.07) = 12.6\%$  and is overpriced.

For Cubb: Expected return = 15% = CAPM Required return  $= 0.07 + (2.0)(0.11-0.07) = 15\%$ .

#### References

**Question From:** Session 12 > Reading 42 > LOS h

#### **Related Material:**

- Key Concepts by LOS

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### Question #16 of 69

Question ID: 415038

What is the risk measure associated with the CML?

- ☐ A) Beta.
- ☐ B) Market risk.
- ☒ C) Standard deviation.

#### Explanation

In the context of the CML, the measure of risk (x-axis) is total risk, or standard deviation. Beta (systematic risk) is used to measure risk for the security market line (SML).

#### References

**Question From:** Session 12 > Reading 42 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #17 of 69**

Question ID: 415062

Which is NOT an assumption of capital market theory?

- ☒ A) Investments are not divisible.
- ☐ B) There are no taxes or transaction costs.
- ☐ C) There is no inflation.

#### Explanation

Capital market theory assumes that all investments are infinitely divisible. The other statements are basic assumptions of capital market theory.

#### References

**Question From:** Session 12 > Reading 42 > LOS f

#### **Related Material:**

- Key Concepts by LOS
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### **Question #18 of 69**

Question ID: 434369

A portfolio's excess return per unit of systematic risk is known as its:

- ☐ A) Sharpe ratio.
- ☐ B) Jensen's alpha.
- ☒ C) Treynor measure.

#### Explanation

The Treynor measure is excess return relative to beta. The Sharpe ratio measures excess return relative to standard deviation. Jensen's alpha measures a portfolio's excess return relative to return of a portfolio on the SML that has the same beta.

#### References



**Question From:** Session 12 > Reading 42 > LOS i

**Related Material:**

- Key Concepts by LOS
- 

### Question #19 of 69

Question ID: 415050

In Fama and French's multifactor model, the expected return on a stock is explained by:

- ☐ A) firm size, book-to-market ratio, and price momentum.
- ☐ B) excess return on the market portfolio, book-to-market ratio, and price momentum.
- ☒ C) firm size, book-to-market ratio, and excess return on the market portfolio.

#### Explanation

In the Fama and French model, the three factors that explain individual stock returns are firm size, the firm's book value-to-market value ratio, and the excess return on the market portfolio. The Carhart model added price momentum as a fourth factor.

#### References

**Question From:** Session 12 > Reading 42 > LOS d

**Related Material:**

- Key Concepts by LOS
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### Question #20 of 69

Question ID: 415032

The market portfolio in Capital Market Theory is determined by:

- ☐ A) a line tangent to the efficient frontier, drawn from any point on the expected return axis.
- ☐ B) the intersection of the efficient frontier and the investor's highest utility curve.
- ☒ C) a line tangent to the efficient frontier, drawn from the risk-free rate of return.

#### Explanation

The Capital Market Line is a straight line drawn from the risk-free rate of return (on the Y axis) through the market portfolio. The market portfolio is determined as where that straight line is exactly tangent to the efficient frontier.

#### References

**Question From:** Session 12 > Reading 42 > LOS b

**Related Material:**

- Key Concepts by LOS
- 

### Question #21 of 69

Question ID: 415056

The expected rate of return is twice the 12% expected rate of return from the market. What is the beta if the risk-free rate is 6%?

- ☐ A) 4.
- ☒ B) 3.
- ☐ C) 2.

Explanation

$$24 = 6 + \beta (12 - 6)$$

$$18 = 6\beta$$

$$\beta = 3$$

References

**Question From:** Session 12 > Reading 42 > LOS e

**Related Material:**

- Key Concepts by LOS
- 

**Question #22 of 69**

Question ID: 710160

For a stock with a beta of 1.25, what is its expected return according to the CAPM when the risk-free rate is 6% and the expected rate of return on the market is 12%?

- ☒ A) 13.5%.
- ☐ B) 31%.
- ☐ C) 10%.

Explanation

$$k = 6 + 1.25 (12 - 6)$$

$$= 6 + 1.25(6)$$

$$= 6 + 7.5$$

$$= 13.5$$

References

**Question From:** Session 12 > Reading 42 > LOS g

**Related Material:**

- Key Concepts by LOS
- 

**Question #23 of 69**

Question ID: 472417

The slope of the characteristic line is used to estimate:

- ☐ A) risk aversion.
- ☒ B) beta.
- ☐ C) a risk premium.

### Explanation

Beta for an individual security can be estimated by the slope of its characteristic line, a least-squares regression of the security's excess returns against the market's excess returns.

### References

**Question From:** Session 12 > Reading 42 > LOS e

#### **Related Material:**

- Key Concepts by LOS
- 

## **Question #24 of 69**

Question ID: 415066

The expected market premium is 8%, with the risk-free rate at 7%. What is the expected rate of return on a stock with a beta of 1.3?

- X **A)** 16.3%.
- ✓ **B)** 17.4%.
- X **C)** 10.4%.

### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return, and  $R_f$  = risk-free rate, and  $(R_{\text{Market}} - R_f)$  = market premium

Here,  $RR_{\text{Stock}} = 7 + (8 \times 1.3) = 7 + 10.4 = \mathbf{17.4\%}$ .

### References

**Question From:** Session 12 > Reading 42 > LOS g

#### **Related Material:**

- Key Concepts by LOS
- 

## **Question #25 of 69**

Question ID: 498770

A plot of the expected returns and standard deviations of each possible portfolio that combines a risky asset and a risk-free asset will be:

- X **A)** a curve that approaches an upper limit.
- X **B)** convex to the origin.
- ✓ **C)** a straight line.

### Explanation

The possible portfolios of a risky asset and a risk-free asset have a linear relationship between expected return and standard deviation.

### References

**Question From:** Session 12 > Reading 42 > LOS a

**Related Material:**

- Key Concepts by LOS
- 

**Question #26 of 69**

Question ID: 415028

The *slope* of the capital market line (CML) is a measure of the level of:

- ☐ A) expected return over the level of inflation.
- ☐ B) risk over the level of excess return.
- ☒ C) excess return per unit of risk.

Explanation

The slope of the CML indicates the excess return (expected return less the risk-free rate) per unit of risk.

References

**Question From:** Session 12 > Reading 42 > LOS b

**Related Material:**

- Key Concepts by LOS
- 

**Question #27 of 69**

Question ID: 710158

What is the required rate of return for a stock with a beta of 1.2, when the risk-free rate is 6% and the market risk premium is 12%?

- ☐ A) 15.4%.
- ☒ B) 20.4%.
- ☐ C) 13.2%.

Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return, and  $R_f$  = risk-free rate.

Here,  $RR_{\text{Stock}} = 6 + (12) \times 1.2 = 6 + 14.4 = 20.4\%$ . We are given the market risk premium  $E(R_{\text{mkt}}) - R_f$ , not the expected return on the market.

References

**Question From:** Session 12 > Reading 42 > LOS g

**Related Material:**

- Key Concepts by LOS
- 

**Question #28 of 69**

Question ID: 415085

A stock's abnormal rate of return is defined as the:

- ✓ **A)** actual rate of return less the expected risk-adjusted rate of return.
- ✗ **B)** expected risk-adjusted rate of return minus the market rate of return.
- ✗ **C)** rate of return during abnormal price movements.

#### Explanation

Abnormal return = Actual return - expected risk-adjusted return

#### References

**Question From:** Session 12 > Reading 42 > LOS h

#### **Related Material:**

- Key Concepts by LOS

## Question #29 of 69

Question ID: 415075

The following information is available for the stock of Park Street Holdings:

- The price today ( $P_0$ ) equals \$45.00.
- The expected price in one year ( $P_1$ ) is \$55.00.
- The stock's beta is 2.31.
- The firm typically pays no dividend.
- The 3-month Treasury bill is yielding 4.25%.
- The historical average S&P 500 return is 12.5%.

Park Street Holdings stock is:

- ✗ **A)** undervalued by 3.7%.
- ✗ **B)** undervalued by 1.1%.
- ✓ **C)** overvalued by 1.1%.

#### Explanation

To determine whether a stock is overvalued or undervalued, we need to compare the expected return (or holding period return) and the required return (from Capital Asset Pricing Model, or CAPM).

*Step 1: Calculate Expected Return (Holding period return):*

The formula for the (one-year) holding period return is:

$$\text{HPR} = (D_1 + S_1 - S_0) / S_0, \text{ where } D = \text{dividend and } S = \text{stock price.}$$

$$\text{Here, HPR} = (0 + 55 - 45) / 45 = 22.2\%$$

*Step 2: Calculate Required Return:*

The formula for the required return is from the CAPM:

$$\text{RR} = R_f + (ER_M - R_f) \times \text{Beta}$$

$$\text{RR} = 4.25\% + (12.5 - 4.25\%) \times 2.31 = 23.3\%.$$

*Step 3: Determine over/under valuation:*

The required return is greater than the expected return, so the security is overvalued.

The amount =  $23.3\% - 22.2\% = 1.1\%$ .

#### References

**Question From:** Session 12 > Reading 42 > LOS h

**Related Material:**

- Key Concepts by LOS
- 

### Question #30 of 69

Question ID: 710159

If the risk-free rate of return is 3.5%, the expected market return is 9.5%, and the beta of a stock is 1.3, what is the required return on the stock according to the capital asset pricing model?

- ☐ A) 7.8%.
- ☒ B) 11.3%.
- ☐ C) 12.4%.

#### Explanation

The formula for the required return is:  $ER_{\text{stock}} = R_f + (E_{RM} - R_f) \times \text{Beta}_{\text{stock}}$ ,  
or  $0.035 + 1.3 \times (0.095 - 0.035) = 0.113$ , or 11.3%.

#### References

**Question From:** Session 12 > Reading 42 > LOS g

**Related Material:**

- Key Concepts by LOS
- 

### Question #31 of 69

Question ID: 415036

For an investor to move further up the Capital Market Line than the market portfolio, the investor must:

- ☒ A) borrow and invest in the market portfolio.
- ☐ B) reduce the portfolio's risk below that of the market.
- ☐ C) diversify the portfolio even more.

#### Explanation

Portfolios that lie to the right of the market portfolio on the capital market line ("up" the capital market line) are created by borrowing funds to own more than 100% of the market portfolio (M).

The statement, "diversify the portfolio even more" is incorrect because the market portfolio is fully diversified.

#### References

**Question From:** Session 12 > Reading 42 > LOS b

**Related Material:**

- Key Concepts by LOS

### Question #32 of 69

Question ID: 415043

In the context of the capital market line (CML), which of the following statements is CORRECT?

- X **A)** Market risk can be reduced through diversification.
- ✓ **B)** Firm-specific risk can be reduced through diversification.
- X **C)** The two classes of risk are market risk and systematic risk.

#### Explanation

The other statements are false. Market risk *cannot* be reduced through diversification; market risk = systematic risk. The two classes of risk are *unsystematic* risk and systematic risk.

#### References

**Question From:** Session 12 > Reading 42 > LOS c

#### **Related Material:**

- Key Concepts by LOS

### Question #33 of 69

Question ID: 415057

Given the following data, what is the correlation coefficient between the two stocks and the Beta of stock A?

- standard deviation of returns of Stock A is 10.04%
- standard deviation of returns of Stock B is 2.05%
- standard deviation of the market is 3.01%
- covariance between the two stocks is 0.00109
- covariance between the market and stock A is 0.002

<u>Correlation Coefficient</u>	<u>Beta (stock A)</u>
--------------------------------	-----------------------

- |                    |      |
|--------------------|------|
| ✓ <b>A)</b> 0.5296 | 2.20 |
| X <b>B)</b> 0.5296 | 0.06 |
| X <b>C)</b> 0.6556 | 2.20 |

#### Explanation

correlation coefficient =  $0.00109 / (0.0205)(0.1004) = 0.5296$ .

beta of stock A = covariance between stock and the market / variance of the market

Beta =  $0.002 / 0.0301^2 = 2.2$

#### References

**Question From:** Session 12 > Reading 42 > LOS e

#### **Related Material:**

- Key Concepts by LOS
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### Question #34 of 69

Question ID: 415084

An investor believes Stock M will rise from a current price of \$20 per share to a price of \$26 per share over the next year. The company is not expected to pay a dividend. The following information pertains:

- $R_F = 8\%$
- $ER_M = 16\%$
- Beta = 1.7

Should the investor purchase the stock?

- ☒ **A)** Yes, because it is undervalued.
- ☐ **B)** No, because it is overvalued.
- ☐ **C)** No, because it is undervalued.

#### Explanation

In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

Here, the holding period (or expected) return is calculated as:  $(\text{ending price} - \text{beginning price} + \text{any cash flows/dividends}) / \text{beginning price}$ . The required return uses the equation of the SML:  $\text{risk free rate} + \text{Beta} \times (\text{expected market rate} - \text{risk free rate})$ .

$ER = (26 - 20) / 20 = 0.30$  or 30%,  $RR = 8 + (16 - 8) \times 1.7 = 21.6\%$ . The stock is underpriced therefore purchase.

#### References

**Question From:** Session 12 > Reading 42 > LOS h

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #35 of 69

Question ID: 712732

An analyst has estimated the following:

- Correlation of Bahr Industries returns with market returns = 0.8
- Variance of the market returns = 0.0441
- Variance of Bahr returns = 0.0225

The beta of Bahr Industries stock is *closest* to:

- ☒ **A)** 0.57.
- ☐ **B)** 0.67.
- ☐ **C)** 0.77.

#### Explanation



Covariance of Bahr and the market =  $0.8 \times \sqrt{0.0225} \times \sqrt{0.0441} = 0.0252$

Bahr beta =  $0.0252/0.0441 = 0.57$

#### References

**Question From:** Session 12 > Reading 42 > LOS e

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #36 of 69

Question ID: 415046

Which of the following statements about portfolio management is *most* accurate?

- ☐ A) The security market line (SML) measures systematic and unsystematic risk versus expected return; the CML measures total risk.
- ☒ B) Combining the capital market line (CML) (risk-free rate and efficient frontier) with an investor's indifference curve map separates out the decision to invest from the decision of what to invest in.
- ☐ C) As an investor diversifies away the unsystematic portion of risk, the correlation between his portfolio return and that of the market approaches negative one.

#### Explanation

Combining the CML (risk-free rate and efficient frontier) with an investor's indifference curve map separates out the decision to invest from what to invest in and is called the *separation theorem*. The investment selection process is thus simplified from stock picking to efficient portfolio construction through diversification.

The other statements are false. As an investor diversifies away the unsystematic portion of risk, the correlation between his portfolio return and that of the market approaches *positive* one. (Remember that the market portfolio has no unsystematic risk). The SML measures systematic risk, or beta risk.

#### References

**Question From:** Session 12 > Reading 42 > LOS c

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #37 of 69

Question ID: 415030

According to capital market theory, which of the following represents the risky portfolio that should be held by all investors who desire to hold risky assets?

- ☒ A) The point of tangency between the capital market line (CML) and the efficient frontier.
- ☐ B) Any point on the efficient frontier and to the right of the point of tangency between the CML and the efficient frontier.
- ☐ C) Any point on the efficient frontier and to the left of the point of tangency between the CML and the efficient frontier.

### Explanation

Capital market theory suggests that all investors should invest in the same portfolio of risky assets, and this portfolio is located at the point of tangency of the CML and the efficient frontier of risky assets. Any point below the CML is suboptimal, and points above the CML are not feasible.

### References

**Question From:** Session 12 > Reading 42 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

## **Question #38 of 69**

Question ID: 415054

If the standard deviation of the market's returns is 5.8%, the standard deviation of a stock's returns is 8.2%, and the covariance of the market's returns with the stock's returns is 0.003, what is the beta of the stock?

- ✓ **A)** 0.89.
- ✗ **B)** 0.05.
- ✗ **C)** 1.07.

### Explanation

The formula for beta is:  $(\text{Cov}_{\text{stock,market}})/(\text{Var}_{\text{market}})$ , or  $(0.003)/(0.058)^2 = 0.89$ .

### References

**Question From:** Session 12 > Reading 42 > LOS e

#### **Related Material:**

- Key Concepts by LOS
- 

## **Question #39 of 69**

Question ID: 415069

The beta of stock D is -0.5. If the expected return of Stock D is 8%, and the risk-free rate of return is 5%, what is the expected return of the market?

- ✗ **A)** +3.0%.
- ✓ **B)** -1.0%.
- ✗ **C)** +3.5%.

### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where RR = required return, R = return, and  $R_f$  = risk-free rate

A bit of algebraic manipulation results in:

$$R_{\text{Market}} = [RR_{\text{Stock}} - R_f + (\text{Beta}_{\text{Stock}} \times R_f)] / \text{Beta}_{\text{Stock}} = [8 - 5 + (-0.5 \times 5)] / -0.5 = 0.5 / -0.5 = -1\%$$

### References

**Question From:** Session 12 > Reading 42 > LOS g

**Related Material:**

- Key Concepts by LOS
- 

### Question #40 of 69

Question ID: 415051

Beta is a measure of:

- ☐ A) total risk.
- ☐ B) company-specific risk.
- ☒ C) systematic risk.

#### Explanation

Beta is a measure of systematic risk.

#### References

**Question From:** Session 12 > Reading 42 > LOS e

**Related Material:**

- Key Concepts by LOS
- 

### Question #41 of 69

Question ID: 485796

Portfolios that plot on the security market line in equilibrium:

- ☒ A) may be concentrated in only a few stocks.
- ☐ B) must be well diversified.
- ☐ C) have only systematic (beta) risk.

#### Explanation

All portfolios plot on the SML in equilibrium according to the capital asset pricing model.

#### References

**Question From:** Session 12 > Reading 42 > LOS f

**Related Material:**

- Key Concepts by LOS
- 

### Question #42 of 69

Question ID: 415034

A portfolio to the right of the market portfolio on the capital market line (CML) is created by:

- ☐ A) fully diversifying.

- ☐ **B)** holding both the risk-free asset and the market portfolio.
- ☒ **C)** holding more than 100% of the risky asset.

#### Explanation

Portfolios that lie to the right of the market portfolio on the capital market line are created by borrowing funds to own more than 100% of the market portfolio (M).

The statement, "holding both the risk-free asset and the market portfolio" refers to portfolios that lie to the *left* of the market portfolio. Portfolios that lie to the left of point M are created by lending funds (or buying the risk free-asset). These investors own less than 100% of both the market portfolio and more than 100% of the risk-free asset. The portfolio at point  $R_f$  (intersection of the CML and the y-axis) is created by holding 100% of the risk-free asset. The statement, "fully diversifying" is incorrect because the market portfolio is fully diversified.

#### References

**Question From:** Session 12 > Reading 42 > LOS b

#### **Related Material:**

- Key Concepts by LOS

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### Question #43 of 69

Question ID: 472418

One of the assumptions underlying the capital asset pricing model is that:

- ☒ **A)** there are no transactions costs or taxes.
- ☐ **B)** each investor has a unique time horizon.
- ☐ **C)** only whole shares or whole bonds are available.

#### Explanation

The CAPM assumes frictionless markets, i.e., no taxes or transactions costs. Among the other assumptions of the CAPM are that all investors have the same one-period time horizon and that all investments are infinitely divisible.

#### References

**Question From:** Session 12 > Reading 42 > LOS f

#### **Related Material:**

- Key Concepts by LOS

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### Question #44 of 69

Question ID: 415063

Which of the following statements regarding the Capital Asset Pricing Model is *least* accurate?

- ☒ **A)** It is when the security market line (SML) and capital market line (CML) converge.
- ☐ **B)** It is useful for determining an appropriate discount rate.
- ☐ **C)** Its accuracy depends upon the accuracy of the beta estimates.

#### Explanation

The CML plots expected return versus standard deviation risk. The SML plots expected return versus beta risk. Therefore, they are lines that are plotted in different two-dimensional spaces and will not converge.

#### References

**Question From:** Session 12 > Reading 42 > LOS f

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #45 of 69**

Question ID: 415083

Charlie Smith holds two portfolios, Portfolio X and Portfolio Y. They are both liquid, well-diversified portfolios with approximately equal market values. He expects Portfolio X to return 13% and Portfolio Y to return 14% over the upcoming year. Because of an unexpected need for cash, Smith is forced to sell at least one of the portfolios. He uses the security market line to determine whether his portfolios are undervalued or overvalued. Portfolio X's beta is 0.9 and Portfolio Y's beta is 1.1. The expected return on the market is 12% and the risk-free rate is 5%. Smith should sell:

- ☐ A) both portfolios X and Y because they are both overvalued.
- ☒ B) portfolio Y only.
- ☐ C) either portfolio X or Y because they are both properly valued.

#### Explanation

Portfolio X's required return is  $0.05 + 0.9 \times (0.12 - 0.05) = 11.3\%$ . It is expected to return 13%. The portfolio has an expected excess return of 1.7%

Portfolio Y's required return is  $0.05 + 1.1 \times (0.12 - 0.05) = 12.7\%$ . It is expected to return 14%. The portfolio has an expected excess return of 1.3%.

Since both portfolios are undervalued, the investor should sell the portfolio that offers less excess return. Sell Portfolio Y because its excess return is less than that of Portfolio X.

#### References

**Question From:** Session 12 > Reading 42 > LOS h

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #46 of 69**

Question ID: 415029

Which of the following is the vertical axis *intercept* for the Capital Market Line (CML)?

- ☐ A) Expected return on the portfolio.
- ☐ B) Expected return on the market.
- ☒ C) Risk-free rate.

#### Explanation

The CML originates on the vertical axis from the point of the risk-free rate.

## References

**Question From:** Session 12 > Reading 42 > LOS b

### Related Material:

- Key Concepts by LOS

## Question #47 of 69

Question ID: 434367

An analyst collected the following data for three possible investments.

Stock	Price Today	Forecast Price*	Dividend	Beta
Alpha	25	31	2	1.6
Omega	105	110	1	1.2
Lambda	10	10.80	0	0.5
*Expected price one year from today.				

The expected return on the market is 12% and the risk-free rate is 4%. Assuming that capital markets are in equilibrium, what is the required return for Omega?

X **A)** 17.4%.

X **B)** 1.2%.

✓ **C)** 13.6%.

### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return,  $R_f$  = risk-free rate, and  $(R_{\text{Market}} - R_f)$  = market premium

$$RR_{\text{Stock}} = 4 + (12 - 4) \times 1.2 = 4 + 9.6 = 13.6\%.$$

## References

**Question From:** Session 12 > Reading 42 > LOS h

### Related Material:

- Key Concepts by LOS

## Question #48 of 69

Question ID: 415058

The expected rate of return is 2.5 times the 12% expected rate of return from the market. What is the beta if the risk-free rate is 6%?

X **A)** 5.

X **B)** 3.

✓ **C)** 4.

### Explanation

$$30 = 6 + \beta (12 - 6)$$

$$24 = 6\beta$$

$$\beta = 4$$

### References

**Question From:** Session 12 > Reading 42 > LOS e

### Related Material:

- Key Concepts by LOS

## Question #49 of 69

Question ID: 434366

An analyst collected the following data for three possible investments.

Stock	Price Today	Forecast Price*	Dividend	Beta
Alpha	25	31	2	1.6
Omega	105	110	1	1.2
Lambda	10	10.80	0	0.5
*Expected price one year from today.				

The expected return on the market is 12% and the risk-free rate is 4%. According to the security market line (SML), which of the three securities is correctly priced?

- X **A)** Alpha.
- ✓ **B)** Lambda.
- X **C)** Omega.

### Explanation

In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

Here, the holding period (or expected) return is calculated as: (ending price - beginning price + any cash flows / dividends) / beginning price. The required return uses the equation of the SML: risk free rate + Beta × (expected market rate – risk free rate).

- For Alpha:  $ER = (31 - 25 + 2) / 25 = 32\%$ ,  $RR = 4 + 1.6 \times (12 - 4) = 16.8\%$ . Stock is underpriced.
- For Omega:  $ER = (110 - 105 + 1) / 105 = 5.7\%$ ,  $RR = 4 + 1.2 \times (12 - 4) = 13.6\%$ . Stock is overpriced.
- For Lambda,  $ER = (10.8 - 10 + 0) / 10 = 8\%$ ,  $RR = 4 + 0.5 \times (12 - 4) = 8\%$ . Stock is correctly priced.

### References

**Question From:** Session 12 > Reading 42 > LOS h

### Related Material:

- Key Concepts by LOS

## Question #50 of 69

Question ID: 415076

A stock that plots below the Security Market Line *most likely*:

- ☐ A) is below the efficient frontier.
- ☐ B) has a beta less than one.
- ☒ C) is overvalued.

#### Explanation

Since the equation of the SML is the capital asset pricing model, you can determine if a stock is over- or underpriced graphically or mathematically. Your answers will always be the same.

*Graphically:* If you plot a stock's expected return on the SML and it falls below the line, it indicates that the stock is currently overpriced, causing its expected return to be too low. If the plot is above the line, it indicates that the stock is underpriced. If the plot falls on the SML, it indicates the stock is properly priced.

*Mathematically:* In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

#### References

**Question From:** Session 12 > Reading 42 > LOS h

#### **Related Material:**

- Key Concepts by LOS
- 

## Question #51 of 69

Question ID: 434368

Which of the following measures produces the same portfolio rankings as the Sharpe ratio but is stated in percentage terms?

- ☐ A) Jensen's alpha.
- ☒ B) M-squared.
- ☐ C) Treynor measure.

#### Explanation

M-squared measures the excess return of a leveraged portfolio relative to the market portfolio and produces the same portfolio rankings as Sharpe ratio.

#### References

**Question From:** Session 12 > Reading 42 > LOS i

#### **Related Material:**

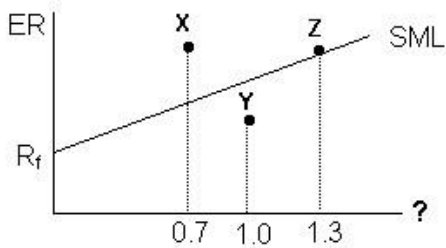
- Key Concepts by LOS
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## Question #52 of 69

Question ID: 710164

Consider the following graph of the Security Market Line (SML). The letters X, Y, and Z represent risky asset portfolios and an analyst's forecast for their returns over the next period. The SML crosses the y-axis at 0.07.





The expected market return is 13.0%.

Using the graph above and the information provided, the analyst *most likely* believes that:

- ☐ A) Portfolio X's required return is greater than its forecast return.
- ☒ B) the expected return for Portfolio Z is 14.8%.
- ☐ C) Portfolio Y is undervalued.

Explanation

Portfolio Z has a beta of 1.3 and its required return can be calculated as  $7.0\% + 1.3 \times (13.0\% - 7.0\%) = 14.8\%$ . Because it plots on the SML, its expected (forecast) return and required return are equal.

The SML plots beta (*systematic risk*) versus expected equilibrium (required) return. The analyst believes that Portfolio Y is overvalued - any portfolio located below the SML has a forecast return less than its required return and is overpriced in the market. Since Portfolio X plots above the SML, it is undervalued and the statement should read, "Portfolio X's required return is less than its forecast return."

References

**Question From:** Session 12 > Reading 42 > LOS h

**Related Material:**

- Key Concepts by LOS

**Question #53 of 69**

Question ID: 415078

Level I CFA candidate Adeline Bass is a member of an investment club. At the next meeting, she is to recommend whether or not the club should purchase the stocks of CS Industries and MG Consolidated. The risk-free rate is at 6% and the expected return on the market is 15%. Prior to the meeting, Bass gathers the following information on the two stocks:

	<i>CS Industries</i>	<i>MG Consolidated</i>
Current Market Value	\$25	\$50
Expected Market Value in One Year	\$30	\$55
Expected Dividend	\$1	\$1
Beta	1.2	0.80

Bass should recommend that the club:

- ☐ A) purchase both stocks.
- ☒ B) purchase CS only.

☐ **C)** purchase MG only.

#### Explanation

In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater than the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

Here, the holding period (or expected) return is calculated as:  $(\text{ending price} - \text{beginning price} + \text{any cash flows} / \text{dividends}) / \text{beginning price}$ . The required return uses the equation of the SML:  $\text{risk free rate} + \text{Beta} \times (\text{expected market rate} - \text{risk-free rate})$ .

- For CS Industries:  $ER = (30 - 25 + 1) / 25 = 24\%$ ,  $RR = 6 + 1.2 \times (15 - 6) = 16.8\%$ . Stock is underpriced - purchase.
- For MG Consolidated:  $ER = (55 - 50 + 1) / 50 = 12\%$ ,  $RR = 6 + 0.80 \times (15 - 6) = 13.2\%$ . Stock is overpriced - do not purchase.

#### References

**Question From:** Session 12 > Reading 42 > LOS h

**Related Material:**

- Key Concepts by LOS

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## Question #54 of 69

Question ID: 415039

Based on Capital Market Theory, an investor should choose the:

- ☐ **A)** market portfolio on the Capital Market Line.
- ☒ **B)** portfolio that maximizes his utility on the Capital Market Line.
- ☐ **C)** portfolio with the highest return on the Capital Market Line.

#### Explanation

Given the Capital Market Line, the investor chooses the portfolio that maximizes his utility. That portfolio may be exactly the market portfolio or it may be some combination of the risk-free asset and the market portfolio.

#### References

**Question From:** Session 12 > Reading 42 > LOS b

**Related Material:**

- Key Concepts by LOS

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## Question #55 of 69

Question ID: 415027

The correlation of returns on the risk-free asset with returns on a portfolio of risky assets is:

- ☐ **A)** negative.
- ☐ **B)** positive.
- ☒ **C)** zero.

#### Explanation

The risk-free asset has zero correlation of returns with any portfolio of risky assets.

#### References

**Question From:** Session 12 > Reading 42 > LOS a

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #56 of 69**

Question ID: 415061

Which of the following is an assumption of capital market theory? All investors:

- ☐ A) have multiple-period time horizons.
- ☐ B) select portfolios that lie above the efficient frontier to optimize the risk-return relationship.
- ☒ C) see the same risk/return distribution for a given stock.

#### Explanation

All investors select portfolios that *lie along* the efficient frontier, based on their utility functions. All investors have the same *one-period* time horizon, and have the same risk/return expectations.

#### References

**Question From:** Session 12 > Reading 42 > LOS f

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #57 of 69**

Question ID: 710157

For a security with a beta of 1.10 when the risk-free rate is 5%, and the expected market risk premium is 5%, what is the expected rate of return on the security according to the CAPM?

- ☒ A) 10.5%.
- ☐ B) 5.5%.
- ☐ C) 15.5%.

#### Explanation

$$k = 5 + 1.10 (5) = 10.5$$

#### References

**Question From:** Session 12 > Reading 42 > LOS g

#### **Related Material:**

- Key Concepts by LOS
-

## Question #58 of 69

Question ID: 415041

Which of the following is the risk that disappears in the portfolio construction process?

- ✓ **A)** Unsystematic risk.
- X **B)** Interest rate risk.
- X **C)** Systematic risk.

### Explanation

Unsystematic risk (diversifiable risk) is the risk that is eliminated when the investor builds a well-diversified portfolio.

### References

**Question From:** Session 12 > Reading 42 > LOS c

### **Related Material:**

- Key Concepts by LOS
- 

## Question #59 of 69

Question ID: 415079

Consider a stock selling for \$23 that is expected to increase in price to \$27 by the end of the year and pay a \$0.50 dividend. If the risk-free rate is 4%, the expected return on the market is 8.5%, and the stock's beta is 1.9, what is the current valuation of the stock? The stock:

- X **A)** is overvalued.
- X **B)** is correctly valued.
- ✓ **C)** is undervalued.

### Explanation

The required return based on systematic risk is computed as:  $ER_{\text{stock}} = R_f + (ER_M - R_f) \times \text{Beta}_{\text{stock}}$ , or  $0.04 + (0.085 - 0.04) \times 1.9 = 0.1255$ , or 12.6%. The expected return is computed as:  $(P_1 - P_0 + D_1) / P_0$ , or  $(\$27 - \$23 + \$0.50) / \$23 = 0.1957$ , or 19.6%. The stock is above the security market line  $ER > RR$ , so it is undervalued.

### References

**Question From:** Session 12 > Reading 42 > LOS h

### **Related Material:**

- Key Concepts by LOS
- 

## Question #60 of 69

Question ID: 415047

In equilibrium, investors should only expect to be compensated for bearing systematic risk because:

- ✓ **A)** nonsystematic risk can be eliminated by diversification.
- X **B)** individual securities in equilibrium only have systematic risk.
- X **C)** systematic risk is specific to the securities the investor selects.

### Explanation

In equilibrium, investors should not expect to earn additional return for bearing nonsystematic risk because this risk can be eliminated by diversification. Individual securities have both systematic and nonsystematic risk. Systematic risk is market risk; nonsystematic risk is specific to individual securities.

### References

**Question From:** Session 12 > Reading 42 > LOS c

#### **Related Material:**

- Key Concepts by LOS
- 

## **Question #61 of 69**

Question ID: 415049

The market model of the expected return on a risky security is *best* described as a(n):

- ✓ **A)** single-factor model.
- X **B)** two-factor model.
- X **C)** arbitrage-based model.

### Explanation

The market model is a single-factor model. The single factor is the expected excess return on the market portfolio, or  $[E(R_m) - RFR]$ .

### References

**Question From:** Session 12 > Reading 42 > LOS d

#### **Related Material:**

- Key Concepts by LOS
- 

## **Question #62 of 69**

Question ID: 415037

In the context of the CML, the market portfolio includes:

- X **A)** the risk-free asset.
- X **B)** 12-18 stocks needed to provide maximum diversification.
- ✓ **C)** all existing risky assets.

### Explanation

The market portfolio has to contain *all the stocks, bonds, and risky assets in existence*. Because this portfolio has all risky assets in it, it represents the ultimate or completely diversified portfolio.

### References

**Question From:** Session 12 > Reading 42 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #63 of 69

Question ID: 415064

When the market is in equilibrium:

- ☐ A) investors own 100% of the market portfolio.
- ☒ B) all assets plot on the SML.
- ☐ C) all assets plot on the CML.

#### Explanation

When the market is in equilibrium, expected returns equal required returns. Since this means that all assets are correctly priced, all assets plot on the SML.

By definition, all stocks and portfolios other than the market portfolio fall *below* the CML. (Only the market portfolio is efficient.

#### References

**Question From:** Session 12 > Reading 42 > LOS f

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #64 of 69

Question ID: 415052

Beta is *least* accurately described as:

- ☐ A) a measure of the sensitivity of a security's return to the market return.
- ☐ B) the covariance of a security's returns with the market return, divided by the variance of market returns.
- ☒ C) a standardized measure of the total risk of a security.

#### Explanation

Beta is a standardized measure of the *systematic* risk of a security.  $\beta = \text{Cov}_{r,\text{mkt}} / \sigma^2_{\text{mkt}}$ . Beta is multiplied by the market risk premium in the CAPM:  $E(R_i) = \text{RFR} + \beta[E(R_{\text{mkt}}) - \text{RFR}]$ .

#### References

**Question From:** Session 12 > Reading 42 > LOS e

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #65 of 69

Question ID: 710161

A stock has a beta of 1.55 and an expected return of 17.3%. If the risk-free rate is 8%, , the expected market risk premium is:

- ☐ A) 14.0%.
- ☐ B) 12.0%.
- ☒ C) 6.0%.

#### Explanation

$$17.3 = 8 + 1.55(\text{MRP})$$

$$9.3 = 1.55(\text{MRP})$$

$$\text{MRP} = 9.3 / 1.55 = 6$$

#### References

**Question From:** Session 12 > Reading 42 > LOS g

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #66 of 69**

Question ID: 415048

A model that estimates expected excess return on a security based on the ratio of the firm's book value to its market value is *best* described as a:

- ☐ A) multifactor model.
- ☐ B) market model.
- ☒ C) single-factor model.

#### Explanation

A model that estimates a stock's expected excess return based only on the book-to-market ratio is a single-factor model. The market model is a single-factor model that estimates expected excess return based on a security's sensitivity to the expected excess return of the market portfolio. A multifactor model would estimate expected excess return based on more than one factor.

#### References

**Question From:** Session 12 > Reading 42 > LOS d

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #67 of 69**

Question ID: 415068

The beta of Stock A is 1.3. If the expected return of the market is 12%, and the risk-free rate of return is 6%, what is the expected return of Stock A?

- ☐ A) 14.2%.
- ☐ B) 15.6%.
- ☒ C) 13.8%.

#### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return, and  $R_f$  = risk-free rate

Here,  $RR_{\text{Stock}} = 6 + (12 - 6) \times 1.3 = 6 + 7.8 = 13.8\%$ .

### References

**Question From:** Session 12 > Reading 42 > LOS g

**Related Material:**

- Key Concepts by LOS
- 

## Question #68 of 69

Question ID: 415073

Given the following information, what is the required rate of return on Bin Co?

- inflation premium = 3%
- real risk-free rate = 2%
- Bin Co. beta = 1.3
- market risk premium = 4%

✓ **A)** 10.2%.

X **B)** 16.7%.

X **C)** 7.6%.

### Explanation

Use the capital asset pricing model (CAPM) to find the required rate of return. The approximate risk-free rate of interest is 5% (2% real risk-free rate + 3% inflation premium).

$$k = 5\% + 1.3(4\%) = 10.2\%.$$

### References

**Question From:** Session 12 > Reading 42 > LOS g

**Related Material:**

- Key Concepts by LOS
- 

## Question #69 of 69

Question ID: 415080

An analyst wants to determine whether Dover Holdings is overvalued or undervalued, and by how much (expressed as percentage return). The analyst gathers the following information on the stock:

- Market standard deviation = 0.70
- Covariance of Dover with the market = 0.85
- Dover's current stock price ( $P_0$ ) = \$35.00
- The expected price in one year ( $P_1$ ) is \$39.00
- Expected annual dividend = \$1.50
- 3-month Treasury bill yield = 4.50%.
- Historical average S&P 500 return = 12.0%.



Dover Holdings stock is:

- ✓ **A)** overvalued by approximately 1.8%.
- X **B)** undervalued by approximately 1.8%.
- X **C)** undervalued by approximately 2.1%.

#### Explanation

To determine whether a stock is overvalued or undervalued, we need to compare the expected return (or holding period return) and the required return (from Capital Asset Pricing Model, or CAPM).

##### *Step 1: Calculate Expected Return (Holding period return)*

The formula for the (one-year) holding period return is:

$HPR = (D_1 + S_1 - S_0) / S_0$ , where D = dividend and S = stock price.

Here,  $HPR = (1.50 + 39 - 35) / 35 = 15.71\%$

##### *Step 2: Calculate Required Return*

The formula for the required return is from the CAPM:  $RR = R_f + (ER_M - R_f) \times \text{Beta}$

Here, we are given the information we need except for Beta. Remember that Beta can be calculated with:  $\text{Beta}_{\text{stock}} = [\text{cov}_{S,M}] / [\sigma^2_M]$ . Here we are given the numerator and the denominator, so the calculation is:  $0.85 / 0.70^2 = 1.73$ .  $RR = 4.50\% + (12.0 - 4.50\%) \times 1.73 = 17.48\%$ .

##### *Step 3: Determine over/under valuation*

The required return is greater than the expected return, so the security is overvalued.

The amount =  $17.48\% - 15.71\% = 1.77\%$ .

#### References

**Question From:** Session 12 > Reading 42 > LOS h

#### **Related Material:**

- Key Concepts by LOS