

## Question #1 of 68

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?

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

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:  $(\text{ending price} - \text{beginning price} + \text{any cash flows} / \text{dividends}) / \text{beginning price}$ . 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 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.

## Question #2 of 68

Question ID: 415060

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

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

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.

## Question #3 of 68

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

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

#### Explanation

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

### Question #4 of 68

Question ID: 415037

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

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

#### 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.

### Question #5 of 68

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?

- ☐ A) 1.2%.
- ☒ B) 13.6%.
- ☐ C) 17.4%.

#### 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

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

### Question #6 of 68

Question ID: 415062

Which is NOT an assumption of capital market theory?

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

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### Question #7 of 68

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%?

- ☐ A) 5.
- ☐ B) 3.
- ☒ C) 4.

#### Explanation

$$\begin{aligned}30 &= 6 + \beta (12 - 6) \\24 &= 6\beta \\ \beta &= 4\end{aligned}$$

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### Question #8 of 68

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) -1.0%.
- ☐ B) +3.0%.
- ☐ 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:

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

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### Question #9 of 68

Question ID: 434369

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

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

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.

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**Question #10 of 68**

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  $(0.003)/(0.058)^2 = 0.89$ .

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**Question #11 of 68**

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%?

- ☐ A) 3.
- ☐ B) 4.
- ☒ C) 2.

Explanation

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

$$24 = 8 + 8\beta$$

$$16 = 8\beta$$

$$16 / 8 = \beta$$

$$\beta = 2$$

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**Question #12 of 68**

Question ID: 415071

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?

- X A) 12.4%.
- ✓ B) 11.3%.
- X C) 7.8%.

Explanation

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

### Question #13 of 68

Question ID: 415032

The market portfolio in Capital Market Theory is determined by:

- X A) the intersection of the efficient frontier and the investor's highest utility curve.
- X B) a line tangent to the efficient frontier, drawn from any point on the expected return axis.
- ✓ 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.

### Question #14 of 68

Question ID: 415040

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

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

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.

### Question #15 of 68

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:

	CS Industries	MG Consolidated
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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:

- X **A) purchase both stocks.**
- X **B) purchase MG only.**
- ✓ **C) purchase CS 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: (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 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.

## Question #16 of 68

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

Correlation Coefficient    Beta (stock A)

- X **A) 0.5296**                      **0.06**
- ✓ **B) 0.5296**                      2.20
- X **C) 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 =  $0.002 / 0.0301^2 = 2.2$

### Question #17 of 68

Question ID: 485797

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

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

#### 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).

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### Question #18 of 68

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

#### 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.

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### Question #19 of 68

Question ID: 415045

Which of the following statements about risk is is NOT correct?

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

#### Explanation

Total risk = systematic risk + unsystematic risk

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### Question #20 of 68

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%?

- X **A) 13.0%.**
- X **B) 11.0%.**
- ✓ **C) 16.6%.**

#### Explanation

Using the security market line (SML) equation:

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

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### Question #21 of 68

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) half the returns standard deviation of the risky asset.
- ☐ C) less than 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.

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### Question #22 of 68

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) single-factor model.
- ☐ C) market 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.

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### Question #23 of 68

Question ID: 415061

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

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

#### 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.

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### Question #24 of 68

Question ID: 472418

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

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

#### 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.

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### Question #25 of 68

Question ID: 472417

The slope of the characteristic line is used to estimate:

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

#### 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.

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### Question #26 of 68

Question ID: 415055

Which of the following statements about a stock's beta is CORRECT? A beta greater than one is:

- ☐ A) risky, while a beta less than one is risk-free.
- ☐ B) undervalued, while a beta less than one is overvalued.
- ☒ C) riskier than the market, while a beta less than one is less risky than the market.

#### Explanation

Beta is a measure of the volatility of a stock. The overall market's beta is one. A stock with higher systematic risk than the market will have a beta greater than one, while a stock that has a lower systematic risk will have a beta less than one.

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### Question #27 of 68

Question ID: 415072

Given a beta of 1.25 and a risk-free rate of 6%, what is the expected rate of return assuming a 12% market return?

- ☐ A) 31%.
- ☐ B) 10%.
- ☒ C) 13.5%.

#### Explanation

$$\begin{aligned}k &= 6 + 1.25 (12 - 6) \\&= 6 + 1.25(6) \\&= 6 + 7.5 \\&= 13.5\end{aligned}$$

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### Question #28 of 68

Question ID: 415052

Beta is *least* accurately described as:

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

#### 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:  $E(R_i) = \text{RFR} + \beta[E(R_{\text{mkt}}) - \text{RFR}]$ .

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### Question #29 of 68

Question ID: 415038

What is the risk measure associated with the CML?

- ✗ **A) Beta.**
- ✓ **B) Standard deviation.**
- ✗ **C) Market risk.**

#### 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).

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### Question #30 of 68

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) Its accuracy depends upon the accuracy of the beta estimates.**
- ✗ **C) It is useful for determining an appropriate discount rate.**

#### 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.

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### Question #31 of 68

Question ID: 415074

Given a beta of 1.55 and a risk-free rate of 8%, what is the expected rate of return, assuming a 14% market return?

- ✓ **A) 17.3%.**
- X **B) 20.4%.**
- X **C) 12.4%.**

#### Explanation

$$\begin{aligned} k &= 8 + 1.55(14-8) \\ &= 8 + 1.55(6) \\ &= 8 + 9.3 \\ &= 17.3 \end{aligned}$$

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### Question #32 of 68

Question ID: 415065

Given a beta of 1.10 and a risk-free rate of 5%, what is the expected rate of return assuming a 10% market return?

- X **A) 5.5%.**
- X **B) 15.5%.**
- ✓ **C) 10.5%.**

#### Explanation

$$k = 5 + 1.10 (10 - 5) = 10.5$$

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### Question #33 of 68

Question ID: 415077

Mason Snow, CFA, is an analyst with Polari Investments. Snow's manager has instructed him to put only securities that are undervalued on the buy list. Today, Snow is to make a recommendation on the following 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). The risk-free rate is at 7% and the market premium is 4%.

Snow places:

- X **A) only Cubb on the list.**
- X **B) only Bahre on the list.**
- ✓ **C) neither security on the list.**

#### 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:  $(\text{ending price} - \text{beginning price} + \text{any cash flow or dividends}) / \text{beginning price}$ . 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 Bahre:  $ER = 10\%$  (given),  $RR = 0.07 + (1.4)(0.11 - 0.07) = 12.6\%$ . Stock is overpriced - do not put on buy list.
  - For Cubb:  $ER = 15\%$ , (given)  $RR = 0.07 + (2.0)(0.11 - 0.07) = 15\%$ . Stock is correctly priced - do not put on buy list (per Snow's manager).
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### Question #34 of 68

Question ID: 415051

Beta is a measure of:

- ✓ **A) systematic risk.**
- X **B) total risk.**
- X **C) company-specific risk.**

#### Explanation

Beta is a measure of systematic risk.

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### Question #35 of 68

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%?

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

#### Explanation

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

$$18 = 6\beta$$

$$\beta = 3$$

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### Question #36 of 68

Question ID: 434368

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

- X **A) Treynor measure.**
- X **B) Jensen's alpha.**
- ✓ **C) M-squared.**

#### 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.

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### Question #37 of 68

Question ID: 467389

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

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

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.

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**Question #38 of 68**

Question ID: 415064

When the market is in equilibrium:

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

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.)

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**Question #39 of 68**

Question ID: 415085

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

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

Explanation

Abnormal return = Actual return - expected risk-adjusted return

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**Question #40 of 68**

Question ID: 485796

Portfolios that plot on the security market line in equilibrium:

- X **A) must be well diversified.**

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

Explanation

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

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**Question #41 of 68**

Question ID: 415033

The market portfolio in the Capital Market Theory contains which types of investments?

- ☒ **A) All risky assets in existence.**
- ☐ **B)** All stocks in existence.
- ☐ **C)** All risky and risk-free assets in existence.

Explanation

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

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**Question #42 of 68**

Question ID: 415041

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

- ☒ **A) Unsystematic risk.**
- ☐ **B)** Systematic risk.
- ☐ **C)** Interest rate risk.

Explanation

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

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**Question #43 of 68**

Question ID: 415081

Luis Green is an investor who uses the security market line to determine whether securities are properly valued. He is evaluating the stocks of two companies, Mia Shoes and Video Systems. 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. Green expects the prices of both stocks to increase by \$2 in a year. Neither company pays dividends. Mia Shoes has a beta of 0.9 and Video Systems has a beta of (-0.30). If the market return is 15% and the risk-free rate is 8%, which trading strategy will Green employ?

<u>Mia Shoes</u>	<u>Video Systems</u>
------------------	----------------------

- |  |            |
|--|------------|
| <input checked="" type="checkbox"/> <b>A) Sell</b> | <b>Buy</b> |
| <input type="checkbox"/> <b>B) Buy</b>             | Buy        |
| <input type="checkbox"/> <b>C) Buy</b>             | Sell       |

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.

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### Question #44 of 68

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) undervalued by approximately 1.8%.
- ☐ B) undervalued by approximately 2.1%.
- ☒ C) overvalued by approximately 1.8%.

#### 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.

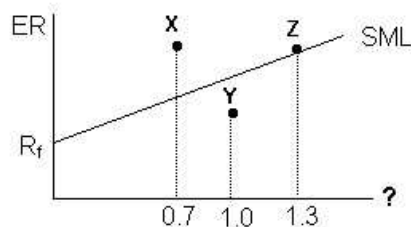
The amount =  $17.48\% - 15.71\% = 1.77\%$ .

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### Question #45 of 68

Question ID: 434365

Consider the following graph of the Security Market Line (SML). The letters X, Y, and Z represent risky asset portfolios. The SML crosses the y-axis at the point 0.07. The expected market return equals 13.0%. *Note: The graph is NOT drawn to scale.*



Using the graph above and the information provided, which of the following statements is *most* accurate?

- ✓ **A) The expected return (or holding period return) for Portfolio Z equals 14.8%.**
- X **B) Portfolio X's required return is greater than the market expected return.**
- X **C) Portfolio Y is undervalued.**

#### Explanation

At first, it appears that we are not given the information needed to calculate the holding period, or expected return (beginning price, ending price, or annual dividend). However, we are given the information required to calculate the required return (CAPM) and since Portfolio Z is on the SML, we know that the required return (RR) equals the expected return (ER). So,  $ER = RR = R_f + (ER_M - R_f) \times \text{Beta} = 7.0\% + (13.0\% - 7.0\%) \times 1.3 = 14.8\%$ .

The SML plots beta (or *systematic risk*) versus expected return, the CML plots total risk (systematic plus unsystematic risk) versus expected return. Portfolio Y is overvalued - any portfolio located below the SML has an  $RR > ER$  and is thus overpriced. Since Portfolio X plots above the SML, it is undervalued and the statement should read, "Portfolio X's required return is *less* than the market expected return."

### Question #46 of 68

Question ID: 415031

All portfolios on the capital market line are:

- X **A) distinct from each other.**
- X **B) unrelated except that they all contain the risk-free asset.**
- ✓ **C) 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 any two assets falling on this line will be perfectly, positively correlated with each other. Note: When  $r_{a,b} = 1$ , then the equation for risk changes to  $s_{\text{port}} = W_A s_A + W_B s_B$ , which is a straight line.

### Question #47 of 68

Question ID: 415044

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

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

#### Explanation



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

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### Question #48 of 68

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 A) 0.66		0.61
X B) 0.92		1.10
✓ C) 0.61		0.66

#### Explanation

$$\text{Beta}_i = (s_i/s_M) \times r_{i, M}$$

$$\text{BetaPNS} = (0.18/0.22) \times 0.75 = 0.6136$$

$$\text{BetaInCharge} = (0.17/0.22) \times 0.85 = 0.6568$$

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### Question #49 of 68

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?

- X A) 15.6%.
- ✓ B) 13.8%.
- X C) 14.2%.

#### Explanation

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

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

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### Question #50 of 68

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 1.1%.**
- ☐ **B) undervalued by 3.7%.**
- ☒ **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.

$$\text{The amount} = 23.3\% - 22.2\% = 1.1\%.$$

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## Question #51 of 68

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?

- ☐ **A) 16.3%.**
- ☒ **B) 17.4%.**
- ☐ **C) 10.4%.**

#### Explanation

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

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

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## Question #52 of 68

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) 7.6%.**
- ☐ **B) 16.7%.**
- ☒ **C) 10.2%.**

#### 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).

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

### Question #53 of 68

Question ID: 415036

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

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

#### 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.

### Question #54 of 68

Question ID: 415034

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

- ☐ **A) holding both the risk-free asset and the market portfolio.**
- ☐ **B) fully diversifying.**
- ☒ **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.

### Question #55 of 68

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:

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

#### 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.

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### Question #56 of 68

Question ID: 415076

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

- X **A) has a beta less than one.**
- X **B) is below the efficient frontier.**
- ✓ **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.

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### Question #57 of 68

Question ID: 415029

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

- X **A) Expected return on the portfolio.**
- ✓ **B) Risk-free rate.**
- X **C) Expected return on the market.**

#### Explanation

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

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### Question #58 of 68

Question ID: 415067

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 is offering 12%?

- ✓ **A) 13.2%.**
- X B) 7.2%.
- X C) 6.0%.

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,  $RR_{\text{Stock}} = 6 + (12 - 6) \times 1.2 = 6 + 7.2 = \mathbf{13.2\%}$ .

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**Question #59 of 68**

Question ID: 415028

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

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

Explanation

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

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**Question #60 of 68**

Question ID: 415039

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

- ✓ A) portfolio that maximizes his utility on the Capital Market Line.
- X B) market portfolio on the Capital Market Line.
- X 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.

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**Question #61 of 68**

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) arbitrage-based model.
- X C) two-factor model.

Explanation

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

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### Question #62 of 68

Question ID: 415035

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

- ☐ A) capital asset pricing line.
- ☐ B) utility curve.
- ☒ C) capital market 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.

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### Question #63 of 68

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

#### 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.

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### Question #64 of 68

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

#### 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.

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### Question #65 of 68

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.

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### Question #66 of 68

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:

- $R_F = 8\%$
- $ER_M = 16\%$
- $\text{Beta} = 1.7$

Should the investor purchase the stock?

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

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### Question #67 of 68

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.**
- X **B)** Any point on the efficient frontier and to the right of the point of tangency between the CML and the efficient frontier.
- X **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.

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### Question #68 of 68

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.