Topic 9 - The Standard Capital Asset Pricing Model

Test ID: 8291970

Question #1 of 51

Question ID: 438573

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

✓ **A) Default risk.**

✗ **B)** Interest rate risk.

✗ **C)** Purchasing power risk.

✗ **D)** Market risk.

Explanation

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

Question #2 of 51

Question ID: 438579

Consider the expected returns and standard deviations for the following portfolios:

	Portfolio 1	*Portfolio 2*	*Portfolio 3*	*Portfolio 4*
Expected Return	10%	12%	11%	14%
Standard Deviation	14%	13%	12%	18%

Relative to the other portfolios, the portfolio that is not mean variance efficient is:

✗ **A) Portfolio 4.**

✗ **B)** Portfolio 2.

✓ **C)** Portfolio 1.

✗ **D)** Portfolio 3.

Explanation

Portfolio 1 is not efficient because it has a lower expected return and higher risk than both Portfolios 2 and 3.

Question #3 of 51

Question ID: 438622

A portfolio manager wants to purchase stocks with betas that are greater than the market beta. He has asked his analyst to evaluate two stocks, Stock X and Stock Y, and determine if their betas are greater than the market beta. The following information about Stocks X and Y is available to the analyst:

	Stock X	*Stock Y*
Standard deviation of returns	0.15	0.16

Covariance between the return on the market and: 0.014 0.021

The return on the market is 0.12 and the standard deviation of returns on the market is 0.13.

Which of the stocks should the analyst recommend?

> Recommend X Recommend Y

✗	**A)**	**Yes**	**Yes**
✗	**B)**	Yes	No
✗	**C)**	No	No
✓	**D)**	No	Yes

Explanation

The analyst should recommend the stock if the stock's beta is greater than 1.
Stock X's beta = $0.014/(0.13)^2 = 0.82$.
Stock Y's beta = $0.021/(0.13)^2 = 1.24$.

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Question ID: 438586

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)** -4.0%.
- ✗ **C)** +3.0%.
- ✗ **D)** +3.5%.

Explanation

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

A bit of algebraic manipulation results in:

$R_{Market} = [RR_{Stock} - R_f - (Beta_{Stock} \times R_f)] / Beta_{Stock} = [8 - 5 - (-0.5 \times 5)] / -0.5 = 0.5 / -0.5 =$ **-1%**

Question #5 of 51

Question ID: 438614

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

- ✗ **A) All stocks and bonds in existence.**
- ✓ **B)** All risky assets in existence.
- ✗ **C)** All risky and risk-free assets in existence.
- ✗ **D)** All stocks in existence.

Explanation

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

Question #6 of 51

Question ID: 438624

Gregg Goebel and Mason Erikson are studying for the Level I CFA examination. They have just started the section on Portfolio Management and Erikson is having difficulty with the equations for the covariance ($cov_{1,2}$) and the correlation coefficient ($r_{1,2}$) for two-stock portfolios. Goebel is confident with the material and creates the following quiz for Erikson. Using the information in the table below, he asks Erickson to fill in the question marks.

	Portfolio J	*Portfolio K*	*Portfolio L*
Number of Stocks	2	2	2
Covariance	**?**	$cov_{1,2} = 0.020$	$cov_{1,2} = 0.003$
Correlation coefficient	$r_{1,2} = 0.750$	**?**	**?**
Risk measure Stock 1	Std. $Deviation_1 = 0.08$	Std. $Deviation_1 = 0.20$	Std. $Deviation_1 = 0.18$
Risk measure Stock 2	Std. $Deviation_2 = 0.18$	Std. $Deviation_2 = 0.12$	$Variance_2 = 0.09$

Which of the following choices correctly gives the covariance for Portfolio J and the correlation coefficients for Portfolios K and L?

	Portfolio J	Portfolio K	Portfolio L
✗ **A)**	**1.680**	**0.002**	**0.076**
✗ **B)**	1.680	0.833	0.056
✗ **C)**	0.011	0.002	0.076
✓ **D)**	0.011	0.833	0.056

Explanation

The calculations are as follows:

> *Portfolio J covariance* = $cov_{1,2} = (r_{1,2}) \times (s_1) \times (s_2) = 0.75 \times 0.08 \times 0.18 = 0.0108$, or 0.011.
> *Portfolio K correlation coefficient* = $(r_{1,2}) = cov_{1,2} / [(s_1) \times (s_2)] = 0.02 / (0.20 \times 0.12) = 0.833$.
> *Portfolio L correlation coefficient* = $(r_{1,2}) = cov_{1,2} / [(s_1) \times (s_2)^{1/2}] = 0.003 / (0.18 \times 0.09^{1/2}) = 0.003 / (0.18 \times 0.30) = 0.056$.

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Question ID: 438598

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

✓ **A) see the same risk/return distribution for a given stock.**

✗ **B)** have multiple-period time horizons.

✗ **C)** select portfolios that lie above the efficient frontier to optimize the risk-return relationship.

✗ **D)** select portfolios that lie below the efficient frontier to optimize the risk-return relationship.

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 ID: 438595

Capital market theory is *least likely* to assume that:

✗ **A) all investors have the same one-period time horizon.**

✓ **B)** all investors desire to be the same location on the efficient frontier.

✗ **C)** it is possible to buy or sell fractional shares of an investment.

✗ **D)** investors can lend any amount of money at the risk-free rate.

Explanation

Capital market theory assumes that all investors want to be on the efficient frontier, but the exact location on the efficient frontier for each investor will depend on that investor's risk-return utility function.

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Question ID: 438597

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

✓ **A) Investors can lend at the risk-free rate, but borrow at a higher rate.**

✗ **B)** The capital markets are in equilibrium.

✗ **C)** There are no taxes or transaction costs.

✗ **D)** Interest rates never change from period to period.

Explanation

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

Question #10 of 51

Question ID: 438592

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) 1.07.**

✓ **B)** 0.89.

✗ **C)** 0.05.

✗ **D)** 1.12.

Explanation

The formula for beta is: $(Cov_{stock,market})/(Var_{market})$, or $(0.003)/(0.058)^2 = 0.89$.

Question #11 of 51

Question ID: 438585

A security's systematic risk is proportional to:

✗ **A) the variance of its return.**

✗ **B)** the standard deviation of its return.

✗ **C)** its diversifiable risk.

✓ **D)** the covariance of its return with the return on the market portfolio.

Explanation

The measure of systematic risk is beta, and beta is proportional to the covariance of a security's return with the return on the market portfolio.

Question #12 of 51

Question ID: 438605

The Capital Market Line (CML) shows that under certain assumptions, when a portfolio on the Markowitz efficient frontier is combined with an investment in a risk-free asset:

✗ **A) the maximum attainable expected return results from a 100% allocation to the frontier portfolio and a 0% allocation to the risk-free asset.**

✗ **B)** all portfolios on the Markowitz efficient frontier are dominated in terms of risk and return by a portfolio on the CML.

✓ **C)** there is a positive linear relationship between portfolio risk and expected return.

✗ **D)** a 100% allocation to the risk-free asset results in a portfolio with an expected return and standard deviation of zero.

Explanation

Under the assumptions of the capital market theory, the CML represents the positive linear relationship between portfolio risk (standard deviation of returns) and expected return. Not every portfolio on the Markowitz efficient frontier is dominated by a portfolio on the CML: the market (tangency) portfolio lies on both. An expected return greater than that of the market portfolio can be attained by borrowing at the risk-free rate and investing the borrowed funds in the frontier portfolio (allocating more than 100% of assets to the frontier portfolio). A portfolio with a 100% allocation to the risk-free asset will have a standard deviation of zero and an expected return equal to the risk-free rate.

Question #13 of 51

Question ID: 438587

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

✓ **A) is riskier than the market, while a beta less than one is less risky than the market.**

✗ **B)** overvalued, while a beta less than one is undervalued.

✗ **C)** risky, while a beta less than one is risk-free.

✗ **D)** undervalued, while a beta less than one is overvalued.

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 ID: 438576

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)
✗ **A)**	**0.6556**	**0.06**
✗ **B)**	0.6556	2.20
✗ **C)**	0.5296	0.06
✓ **D)**	0.5296	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

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Question ID: 438600

According to the capital asset pricing model, a negative risk premium:

✗ **A)** **would only occur if the covariance of a security's return with the return on the market is positive.**

✓ **B)** would only occur if the covariance of a security's return with the return on the market is negative.

✗ **C)** is an impossibility.

✗ **D)** would only occur if the covariance of a security's return with the return on the market is zero.

Explanation

A negative risk premium would occur if the beta of the security was negative, which would occur if the covariance of a security's return with the return on the market is negative.

Question #16 of 51

Question ID: 438609

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

✗ **A) utility curve.**

✗ **B)** characteristic line.

✗ **C)** capital asset pricing line.

✓ **D)** 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 Rf have 100 percent of their funds invested in the risk-free asset. Investors at point M have 100 percent of their funds invested in market portfolio M. Between Rf and M, investors hold both the risk-free asset and portfolio M. To the right of M, investors hold more than 100 percent 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.*

The term "characteristic line" refers to Beta, used to form the security market line (SML). Utility curves reflect individual preferences.

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Question ID: 438578

Beta is *least* accurately described as:

✗ **A) the covariance of a security's returns with the market return, divided by the variance of market returns.**

✓ **B)** a standardized measure of the total risk of a security.

✗ **C)** a measure of the sensitivity of a security's return to the market return.

✗ **D)** the factor by which the market risk premium is multiplied in the Capital Asset Pricing Model.

Explanation

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

Question #18 of 51

Question ID: 438601

The assumption that returns are normally distributed means that investors:

✗ **A) have the same horizon.**

✗ **B)** do not need to consider transactions costs.

✗ **C)** are risk averse.

✓ **D)** only consider the mean and standard deviation of the returns.

Explanation

If a distribution is normally distributed, then it is completely described by the mean and standard deviation. Then, these are the only two parameters in the investors' utility functions.

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Question ID: 438594

All of the following are assumptions of the capital asset pricing model **EXCEPT**:

✗ **A) investors can borrow and lend at the same risk-free rate.**

✓ **B)** the time horizons of investors are normally distributed.

✗ **C)** each investor seeks to maximize the expected utility of wealth at the end of his horizon.

✗ **D)** investors have the same expectations concerning returns.

Explanation

The CAPM assumes that investors all have the same horizon (as well as expectations). This means that the distribution of the horizons is not normal because normality implies a bell-shaped curve distribution, which would have a positive variance and, hence, dispersion.

Question #20 of 51

Question ID: 438575

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) 5.**

✗ **B)** 4.

✓ **C)** 3.

✗ **D)** 2.

Explanation

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

$18 = 6\beta$

$\beta = 3$

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Question ID: 438610

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)** continue to invest only in common stocks.

✓ **C)** borrow and invest in the market portfolio.

✗ **D)** reduce the portfolio's risk below that of the market.

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 #22 of 51

Question ID: 438599

Which of the following statements about asset pricing models is *most* accurate?

✗ **A) Adding the risk-free asset to a portfolio will reduce return and total risk.**

✗ **B)** It is difficult for the individual investor to achieve the benefits from diversification because significantly reducing risk requires the purchase of approximately 1,000 securities.

✓ **C)** According to the Capital Asset Pricing Model (CAPM), the expected rate of return of a portfolio with a beta of 1.0 is the market expected return.

✗ **D)** Assuming assets are not perfectly positively correlated, the systematic risk of a portfolio decreases as more assets are added.

Explanation

Diversification reduces *unsystematic*, or unique risk. With the risk-free asset and a portfolio of risky assets, the equation for the expected standard deviation is linear: $w_A s_A$. A combination of the risk free asset and a portfolio always gives more return for a given level of risk. Risk tends to be reduced, but assuming that assets are not perfectly positively correlated, an investor can achieve the benefits of diversification by adding just one security (Markowitz). Studies have shown that approximately 18-30 stocks are needed for proper diversification. The main point is that the number of stocks required is small and is significantly less than all securities (and significantly less than 1,000 securities).

Question #23 of 51

Question ID: 438602

Under the CAPM, which of the following can investors choose for their portfolios?

I. The risk-free asset.
II. The market portfolio.
III. Assets that maximize return relative to asset-specific risk.
IV. A portfolio (other than the market portfolio) on the efficient frontier of risky portfolios.

✗ **A) II and III only.**

✗ **B)** I, II and IV only.

✓ **C)** I and II only.

✗ **D)** I only.

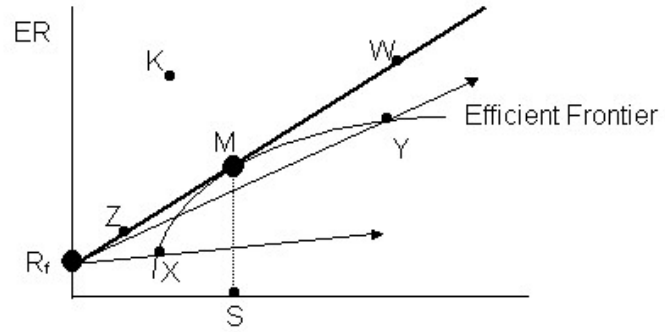
Explanation

All investors will combine the market portfolio with the risk-free asset. Asset-specific risk is not important and is actually eliminated with the choice of the market portfolio.

Question #24 of 51

Question ID: 438606

Consider the following graph of the risk-free asset R_f and the efficient frontier. The letters K, W, X Y, and Z represent risky portfolios. Portfolio M is the market portfolio. The lines $R_f X$ and $R_f Y$ represent the combination of the risk-free asset and the risky portfolio.



Which of the following statements about the above graph is *least* accurate?

✗ **A) Point S represents the standard deviation of returns on the market portfolio.**

✓ **B)** Portfolio K is possible, but not the most efficient because it does not fall on the efficient frontier and is overvalued.

✗ **C)** Investors on the capital market line to the right of M are leveraged and hold more than 100% of portfolio M.

✗ **D)** Portfolios W and Z are perfectly positively correlated with each other.

Explanation

By definition, all stocks and portfolios other than M, the market portfolio, fall on or below the CML. Thus, K is not a possible portfolio on this graph. Overvaluation/undervaluation is usually expressed in relation to the security market line. The other statements are true.

Question #25 of 51

Question ID: 438593

Which of the following statements about the security market line (SML) is *least* accurate?

✓ **A) Securities that plot on the SML have no intrinsic value to the investor.**

✗ **B)** Securities that plot above the SML are undervalued.

✗ **C)** The risk-free rate defines where the SML intersects the vertical axis.

✗ **D)** The market portfolio consists of all risky assets.

Explanation

Securities that fall on the SML are properly priced. They have value to an investor in that they still earn a return.

Question #26 of 51

Question ID: 438615

The capital market line results from combining the efficient frontier with a risk-free asset. Given the availability of risky assets and a risk-free asset, the best combinations of risk and return are represented by:

✗ **A) combinations of the market portfolio and minimum variance portfolio of risky assets.**

✗ **B)** combinations of the minimum variance portfolio of risky assets and the risk-free asset.

✓ **C)** combinations of the market portfolio and risk-free borrowing or lending.

✗ **D)** the efficient frontier of risky assets.

Explanation

The best combinations of risk and return are represented by combinations of the market portfolio and risk-free borrowing or lending.

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Question ID: 438590

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

	Beta of PNS	Beta of InCharge
✗ **A)**	**0.66**	**0.61**
✓ **B)**	0.61	0.66
✗ **C)**	0.92	1.10
✗ **D)**	1.10	0.92

Explanation

$Beta_i = (s_i/s_M) \text{ ' } r_{I,M}$
$Beta_{PNS} = (0.18/0.22) \times 0.75 = 0.6136$
$Beta_{InCharge} = (0.17/0.22) \times 0.85 = 0.6568$

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Question ID: 438613

The market portfolio in Capital Market Theory is determined by:

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

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.

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Question ID: 438603

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

✗ **A) expected return over the level of inflation.**
✓ **B)** excess return per unit of risk.

✗ **C)** inflation over the level of expected return.

✗ **D)** 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.

Question #30 of 51

Question ID: 438607

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)** **Any point on the efficient frontier and to the left of the point of tangency between the CML and the efficient frontier.**

✓ **B)** The point of tangency between the capital market line (CML) and the efficient frontier.

✗ **C)** Any point on the efficient frontier and above the CML.

✗ **D)** Any point on the efficient frontier and to the right of the point of tangency between the CML and the efficient frontier.

Explanation

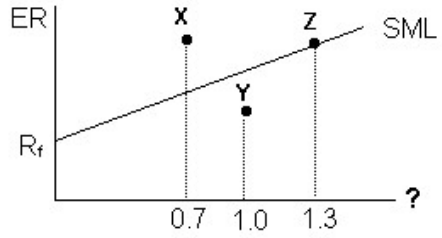
Capital market theory suggests that all investors should invest in the same portfolio of risky assets, and this portfolio is located at the point of tangency of the CML and the efficient frontier of risky assets. Any point below the CML is suboptimal, and points above the CML are not feasible.

Question #31 of 51

Question ID: 438619

In the graph of the Security Market Line (SML) below (not drawn to scale):

- The letters X, Y, and Z represent risky asset portfolios.
- The SML crosses the y-axis at 5%.
- The market premium is 7.5%.
- Portfolio Y and Z have the same expected return (holding period return).



Using the graph and the list of assumptions, determine which of the following statements is *most* accurate.

✗ **A)** **Portfolio X is overvalued.**

✗ **B)** The expected return on Portfolio Y is 15%.

✗ **C)** The expected return on Portfolio Z is greater than the required return.

✓ **D)** The required return on Portfolio X is 10.25%.

Explanation

Remember that the SML graph plots systematic, or beta, risk versus expected return. Thus, the numbers on the x-axis represent beta. Using the Capital Asset Pricing Model (CAPM) equation, the required return for portfolio X = R_f + (ER_M - R_f) × Beta = 5.0% + 0.7(7.5%) = 10.25%.

Portfolio Y lies below the SML and is thus overvalued and the expected return must be less than the required return. Using the CAPM, required return for portfolio Y = R_f + (ER_M - R_f) × Beta = 5.0% + 1.0(7.5%) = 12.50%. (On the exam, you can quickly determine the required return for a portfolio or asset with a beta of 1.0 by adding the risk-free rate and the market premium.) Since the expected return on portfolio Y must be less than the required return, the expected return must be less than 12.50% and cannot be 15%. Since Portfolio Z is on the SML, it is fairly valued and its expected return equals its required return. Since Portfolio X lies above the SML, it is *under*valued.

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Question ID: 438591

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

✗ **A) 5.5%.**

✗ **B)** 21.5%.

✗ **C)** 15.5%.

✓ **D)** 10.5%.

Explanation

k = 5 + 1.10 (10 - 5)

= 5 + 1.10 (5)

= 5 + 5.5

= 10.5

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Question ID: 438623

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 overvalued.**

✓ **B)** Yes, because it is undervalued.

✗ **C)** No, because it is undervalued.

✗ **D)** No, because it is overvalued.

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).

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

Question #34 of 51

Question ID: 438608

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

✗ **A) fully diversifying.**

✓ **B)** holding more than 100% of the risky asset.

✗ **C)** holding both the risk-free asset and the market portfolio.

✗ **D)** buying the risk-free 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).

Both the statement, "holding both the risk-free asset and the market portfolio" and "buying the risk-free asset" refer 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 #35 of 51

Question ID: 438577

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

✗ **A) Its accuracy depends upon the accuracy of the beta estimates.**

✗ **B)** It relies on the existence of a risk-free asset.

✓ **C)** It is when the security market line (SML) and capital market line (CML) converge.

✗ **D)** 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.

Question #36 of 51

Question ID: 438574

Which of the following statements about risk is **FALSE**?

✗ **A) The market portfolio consists only of systematic risk.**

✓ **B)** Total risk = systematic risk - unsystematic risk.

✗ **C)** Unsystematic risk is diversifiable risk.

✗ **D)** Systematic risk is undiversifiable risk.

Explanation

Total risk = systematic risk + unsystematic risk

Question #37 of 51

Question ID: 438611

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

✗ **A) risky stocks and bonds only.**

✗ **B)** 12-18 stocks needed to provide maximum diversification.

✓ **C)** all existing risky assets.

✗ **D)** the risk-free asset.

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.

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Question ID: 438620

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 percent and the risk-free rate is 8 percent, which trading strategy will Green employ?

> Mia Shoes Video Systems

✗	**A)**	**Sell**	**Sell**
✗	**B)**	Buy	Sell
✗	**C)**	Buy	Buy
✓	**D)**	Sell	Buy

Explanation

The required return for Mia Shoes is 0.08 + 0.9 × (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 × (0.15-0.08) = 5.9%. The forecast return is $2/$18 = 11.1%. The stock is undervalued and the investor should buy it.

Questions #39-40 of 51

An analyst collected the following data for three possible investments.

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

The expected return on the market is 12% and the risk-free rate is 4%.

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Question ID: 438583

According to the security market line (SML), which of the three securities is correctly priced?

✗ **A) None of the securities are correctly priced.**

✗ **B)** Omega.

✗ **C)** Alpha.

✓ **D)** Lambda.

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 × (12 − 4) = 16.8%. Stock is underpriced.
- For Omega: ER = (110 - 105 + 1) / 105 = 5.7%, RR = 4 + 1.2 × (12 − 4) = 13.6%. Stock is overpriced.
- For Lambda, ER = (10.8 - 10 + 0) / 10 = 8%, RR = 4 + 0.5 × (12 − 4) = 8%. Stock is correctly priced.

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Question ID: 438584

Which of the three securities identified by Williams would plot on the capital market line(CML)?

✗ **A) Alpha.**

✓ **B)** None of the securities would plot on the CML.

✗ **C)** Omega.

✗ **D)** Lambda.

Explanation

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 ID: 438617

A stock is expected to earn a return of 10%, which is 6% greater than the risk-free rate. If the expected return on the market is 12% and the beta of the stock is 0.75, the stock *most likely*:

✓ **A) is properly valued.**

✗ **B)** will plot above the security market line.

✗ **C)** will plot below the security market line.

✗ **D)** is overvalued.

Explanation

The risk-free rate is 10% − 6% = 4%. Using the CAPM, the required return on the stock is 4% + 0.75(12% − 4%) = 10%. Because the expected return on the stock is equal to its required return, the stock is properly valued according to the CAPM and will plot on the security market line. (*Tip:* You can immediately eliminate the responses "is overvalued" and "will plot below the security market line" because they mean the same thing.)

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Question ID: 438596

Which is **NOT** an assumption of capital market theory?

✗ **A) All investors have homogeneous expectations.**

✓ **B)** Investments are not divisible.

✗ **C)** There is no inflation.

✗ **D)** There are no taxes or transaction costs.

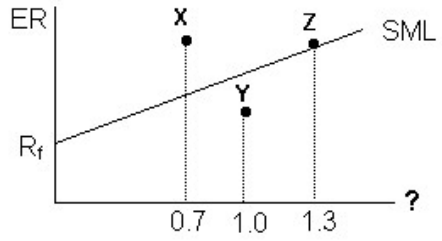
Explanation

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

Question #43 of 51

Question ID: 438618

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%.**

✗ **B)** Portfolio X's required return is greater than the market expected return.

✗ **C)** The correct label for the x-axis is total risk.

✗ **D)** 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) × Beta = 7.0% + (13.0% − 7.0%) × 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."

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Question ID: 438621

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)** portfolio Y only.

✗ **C)** both portfolios X and Y because they are both overvalued.

✗ **D)** portfolio X only.

Explanation

Portfolio X's required return is 0.05 + 0.9 × (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 × (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 ID: 438604

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

✓ **A) Risk-free rate.**

✗ **B)** Expected return on the market.

✗ **C)** Expected return on the portfolio.

✗ **D)** Efficient frontier.

Explanation

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

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Question ID: 438616

The intercept and slope of the capital market line are:

✗ **A) R_M and $[E(R_M) - R_P] / \sigma_M$, respectively.**

✗ **B)** R_M and $[E(R_P) - R_F] / \sigma_P$, respectively.

✗ **C)** R_F and $[E(R_P) - R_F] / \sigma_M$, respectively.

✓ **D)** R_F and $[E(R_M) - R_F] / \sigma_M$, respectively.

Explanation

The CML is expressed by the following equation:

$$E(R_P) = R_F + \left[\frac{E(R_M) - R_F}{\sigma_M}\right]\sigma_P$$

The line begins at the vertical axis at R_F. With each increase in σ_P, the expected return increases by $[E(R_M) - R_F] / \sigma_M$.

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Question ID: 438588

Total Quality Inc. has a beta of 1.15. If the expected return on the market is 12 percent, and the risk-free rate is 6 percent, what is the expected return for Total Quality?

✓ **A) 12.90%.**

✗ **B)** 14.00%.

✗ **C)** 10.15%.

✗ **D)** 11.69%.

Explanation

Expected return = $R_f + \beta(R_M - R_f) = 6 + 1.15\ (12\text{-}6) = 12.90\%$

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Question ID: 438580

Jim Sheehan manages a diversified portfolio containing forty stocks. The portfolio beta is 1.05. Jim is considering adding the stock of ABC Inc. to the portfolio, and would fund the purchase with cash already in the portfolio. ABC Inc. has a beta of 1.20, and is currently not part of the portfolio. Which statement about the resulting portfolio is **TRUE**?

✗ **A) Both systematic risk and unsystematic risk would be unchanged.**

✗ **B)** Systematic risk would decrease, but the unsystematic risk would be unchanged.

✗ **C)** Both systematic risk and unsystematic risk would both increase.

✓ **D)** Systematic risk would increase, but the unsystematic risk would be unchanged.

Explanation

Since the portfolio is well diversified, the assumed level of unsystematic risk is zero. The addition of ABC Inc will increase the portfolio beta, and, hence, the level of systematic risk.

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Question ID: 438581

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)** 5.

✗ **C)** 4.

✓ **D)** 2.

Explanation

$24 = 8 + \beta (16 - 8)$
$24 = 8 + 8\beta$
$16 = 8\beta$
$16 / 8 = \beta$
$\beta = 2$

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Question ID: 438612

All portfolios on the capital market line are:

✗ **A) unrelated except that they all contain the risk-free asset.**

✓ **B)** perfectly positively correlated.

✗ **C)** perfectly negatively correlated.

✗ **D)** distinct from each other.

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 sport = $W_A s_A + W_B s_B$, which is a straight line.

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Question ID: 438589

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

✓ **A) The unsystematic risk for a specific firm is similar to the unsystematic risk for other firms in the same industry.**

✗ **B)** Total risk equals market risk plus firm-specific risk.

✗ **C)** As compared to a less-diversified portfolio, a diversified portfolio has lower unsystematic risk.

✗ **D)** As an investor increases the number of stocks in a portfolio, the systematic risk will remain constant.

Explanation

This statement should read, "The unsystematic risk for a specific firm is *not* similar to the unsystematic risk for other firms in the same industry." Thus, other terms for this risk are firm-specific, or unique, risk.

Systematic risk is *not* diversifiable. As an investor increases the number of stocks in a portfolio the *unsystematic risk* will decrease at a decreasing rate. Total risk equals systematic (market) plus unsystematic (firm-specific) risk.