## Question #1 of 10

Question ID: 1587597

If the value of a stock portfolio equals 16 times the futures price of the appropriate equity index contract and beta of the equity portfolio, and futures prices were equal, how many contracts would it take to reduce the beta of the equity index to zero?

**A)** A long position in 16 contracts.

**B)** A long position in 4 contracts.

**C) A short position in 16 contracts.**

**Explanation**

Number of contracts = –16 = (0 − beta) × (16 × futures price) / (beta × futures price)

(Module 7.3, LOS 7.c)

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## Question #2 of 10

Question ID: 1587601

Sofia Chiara manages an equity fund that invests in Italian stocks. The fund has a market value of €120,000,000 and a beta of 1.3 relative to the major Italian index (FTSE MIB). Chiara wishes to reduce the beta of her portfolio to 0.8 over the next 12 months. Chiara will use the FTSE MIB future with 24 months to maturity to achieve her goal. Contract details are as follows:

| FTSE MIB Future | |
|---|---|
| 24 months futures contract price | 21,312 |
| Multiplier | €5 |
| Current index value | 21,350 |

The futures position that Chiara will need to take to achieve her desired beta is *closest* to:

**A)** short 11 contracts.

**B) short 563 contracts.**

**C)** short 2,815 contracts.

**Explanation**

Be careful when answering questions containing index futures. Futures contracts will often have different multipliers. The S&P 500 Index has a multiplier of $250. If you used that multiplier, you would arrive at one of the other answer choices. The FTSE MIB has a multiplier of €5. In any case, the correct multiplier will always be given in the case facts.

Short futures positions are used to decrease the beta of a portfolio, and long futures positions are used to increase the beta of a portfolio. A portfolio's beta is the weighted average of the stocks' betas contained within the portfolio.

$$\text{Number of futures required} = \left(\frac{\beta_{\text{T}} - \beta_{\text{P}}}{\beta_{\text{F}}}\right)\left(\frac{\text{MV}_{\text{P}}}{\text{F}}\right)$$

where:

$\beta_T$ = target portfolio beta

$\beta_P$ = current portfolio beta

$\beta_F$ = futures beta (beta of stock index)

$MV_P$ = market value of portfolio

F = futures contract value = futures price × multiplier

Number of futures required = (0.8 − 1.31)[€120,000,000 / (21.312 × €5)]= −563.06

Chiara will need to sell 563 futures contracts to achieve her target portfolio beta.

(Module 7.3, LOS 7.c)

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## Question #3 of 10

Question ID: 1587598

Which of the following statements about portfolio hedging is *least accurate*?

**A)** To synthetically create the risk/return profile of an underlying common equity security, buy the corresponding futures contract, sell the common short, and invest in a T-bill.

**B)** Futures contracts have a symmetrical payoff profile.

**C)** **For a fixed portfolio insurance horizon, using put options generally requires less rebalancing and monitoring than with the use of futures contracts.**

**Explanation**

To synthetically create the risk/return profile of an underlying common equity security, buy the corresponding futures contract and invest in a T-bill.

Futures contracts involve margin, so there may be margin calls that require rebalancing. Option contracts do not have margin calls.

Futures contracts are a zero-sum game, to the extent that one side loses, the other side gains by the same. Therefore, the payoff profile is symmetrical.

(Module 7.3, LOS 7.c)

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## Question #4 of 10

Question ID: 1587648

A Canadian manager has a large portfolio with exposures to numerous foreign currencies, including the U.S. dollar (USD), the euro (EUR), the British pound (GBP), the Swiss franc (CHF), and some emerging-market currencies. When hedging the portfolio's foreign currency risk, which of following hedges would the manager *most likely* use?

**A) Cross hedge.**

**B)** Direct hedge.

**C)** Macro hedge.

**Explanation**

A macro hedge is a type of cross hedge that addresses portfolio-wide risk factors rather than the risk of individual portfolio assets. One type of currency macro hedge uses a derivatives contract based on a fixed basket of currencies to modify currency exposure at a macro (portfolio) level. The currency basket in the contract may not precisely match the currency exposures of the portfolio, but it can be less costly than hedging each currency exposure individually. The manager must make a choice between accepting higher residual currency risk versus lower cost.

A direct hedge is possible for widely traded currencies such as the USD, EUR, and GBP. However, because the portfolio contains some emerging-market currencies, those currencies are not likely to be efficiently hedged using direct hedges due to high transaction costs and the potential nonexistence of an appropriate hedging contract.

A cross hedge is likely most efficient for the emerging-market currencies (to reduce transaction costs), but it is not necessary for widely traded currencies such as the USD, EUR, and GBP.

(Module 8.6, LOS 8.h)

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## Question #5 of 10

Question ID: 1587614

To synthetically create the risk/return profile of an underlying common equity security:

**A) buy the corresponding futures contract and invest in a T-bill.**

**B)** sell short the corresponding futures contract and invest in a T-bill.

**C)** buy the corresponding futures contract and borrow at the risk-free rate.

**Explanation**

Futures + cash = security. Therefore, buy the corresponding futures contract and invest in a T-bill.

(Module 7.5, LOS 7.e)

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## Question #6 of 10

Question ID: 1587620

Redden Capital Management manages an intermediate, high-quality bond portfolio with a value of $12 million and a modified duration of the portfolio is 4.4 years. Scott Stuart, the manager of the portfolio, is concerned about rising interest rates over the next few months and wants to make a tactical adjustment and cut the duration of the portfolio in half. Stuart asks Amy Swemba, a junior portfolio manager with Redden, to accomplish this task. Swemba is aware that a Treasury bond futures contract exists with a value of $102,000, with a modified duration of 8.2 years. Swemba replies to Stuart's comments with the following statements:

| | |
|---|---|
| Statement 1: | The fastest and most cost-effective way to reduce the duration of the portfolio by half would be to sell $6 million dollars' worth of the actual bonds in the portfolio. |
| Statement 2: | The portfolio's duration could also be adjusted by selling 40 of the Treasury bond futures contracts. |

After listening to Swemba's statements, Stuart should:

**A) disagree with both Statement 1 and Statement 2.**

**B)** disagree with Statement 1, but agree with Statement 2.

**C)** agree with Statement 1, but disagree with Statement 2.

**Explanation**

Note: On the exam, it is very likely for material on tactical asset allocation to be tested in conjunction with material from derivatives as tactical asset allocation can be accomplished by selling assets, or with a derivative overlay. Stuart should disagree with both of Swemba's statements. Although Stuart's goal of reducing the duration could be accomplished by selling bonds in the portfolio, doing so would likely incur significant transaction costs. Also, because the duration of each bond in the portfolio is likely different, specific bonds would have to be selected to accomplish Stuart's goal, making the process more difficult. A derivative overlay, accomplished by using futures contracts, would be much easier and cost effective. Swemba is also incorrect with respect to the number of futures contracts that would need to be sold. The correct number of futures contracts to be sold is:

$$BPVHR = [(BPV_{target} - BPV_{portfolio}) / BPV_{CTD}] \times CF$$

Because the futures price is given, this is used instead of $(1 / BPV_{CTD}) \times CF$

$$BPV_{target} = \$12M \times 0.0001 \times 2.2 = 2,640$$

$$BPV_{portfolio} = \$12M \times 0.0001 \times 4.4 = 5,280$$

$$BPV_{futures} = 102,000 \times 0.0001 \times 8.2 = 83.64$$

$BPVHR = (2,640 - 5,280) / 83.64 = -31.56 \approx -32$ futures contracts. The minus sign means that 32 contracts should be sold to achieve the desired duration in the portfolio.

(Module 7.5, LOS 7.f)

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## Question #7 of 10

Question ID: 1551928

Which of the following portfolios would *most likely* follow a passive currency hedging strategy?

**A)** One with more confidence in the portfolio manager and high income needs.

**B)** One very concerned with minimizing regret and higher allocation to equity investments.

**C) One with a shorter time horizon and higher liquidity needs.**

**Explanation**

The following will shift the portfolio toward more passive currency management:

- A short time horizon for portfolio objectives
- High risk aversion
- Lack of concern with regret at missing opportunities to add value through discretionary currency management
- High short-term income and liquidity needs
- Significant foreign currency bond exposure
- Low hedging costs
- Clients who doubt the benefits of discretionary management

(Module 8.1, LOS 8.c)

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## Question #8 of 10

Question ID: 1587625

Nicholas Avery manages a U.S. equity fund with a market value of $990 million. Currently, the fund is invested 70% in large-cap equity and 30% in small-cap equity, but Avery wishes to alter the allocation to 60% in large-cap and 40% in small-cap equity. Avery's large-cap portfolio has a beta of 1.2 relative to the S&P 500, and his small-cap portfolio has a beta of 0.9 relative to the MSCI USA Small Cap Index. Avery plans to make use of the following futures contracts to achieve his target asset allocation:

| | S&P 500 Futures | MSCI USA Small Cap Index Futures |
|---|---|---|
| Futures price | 3,100 | 720 |
| Index multiplier | $250 | $100 |

Taking which of the following positions is *most likely* to achieve Avery's target asset allocation?

**A)** Buy 1,238 MSCI USA small-cap futures; sell 153 S&P 500 futures.

**B)** Buy 1,650 MSCI USA small-cap futures; sell 115 S&P 500 futures.

**C) Buy 1,375 MSCI USA small-cap futures; sell 128 S&P 500 futures.**

**Explanation**

| Stock | Current | Target | Change in Exposure |
|---|---|---|---|
| Large cap | $693m (70%) | $594m (60%) | −$99m |
| Small cap | $297m (30%) | $396m (40%) | +$99m |
| Total | $990m | $990m | |

S&P 500 Futures

$$\text{Number of futures required} = \left(\frac{\beta_{\text{T}} - \beta_{\text{P}}}{\beta_{\text{F}}}\right)\left(\frac{\text{MV}_{\text{P}}}{\text{F}}\right)$$

where:

$\beta_T$ = target portfolio beta

$\beta_P$ = current portfolio beta

$\beta_F$ = futures beta (beta of stock index)

$MV_P$ = market value of portfolio

F = futures contract value = futures price × multiplier

Number of futures required = (0 − 1.2)[$99,000,000 / (3,100 × $250)] = −153.29

Avery will need to sell 153 futures contracts to achieve his target asset allocation.

MSCI USA Small Cap Index Futures

Number of futures required = (0.9 − 0)[$99,000,000 / (720 × $100)] = +1,237.50

Avery will need to buy 1,238 futures contracts to achieve his target asset allocation.

(Module 7.5, LOS 7.f)

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## Question #9 of 10

Question ID: 1587593

A maker of large computers has just received an order for some of its products. The agreed-upon price is in British pounds: £8 million. The firm will receive the pounds in 60 days. The current exchange rate is $1.32/£, and the 60-day forward rate is $1.35/£. If the firm uses the forward contract to hedge the corresponding exchange rate risk, how many dollars will it expect to receive?

**A) $10,800,000.00.**

**B)** $5,925,926.00.

**C)** $10,560,000.00.

**Explanation**

On the day the order comes in, the firm effectively has a long position in pounds; therefore, it should take a short position in a forward contract. This contract would obligate the firm to deliver the pounds that it will receive for dollars. The contract would be to exchange £8 million for the following:

$$\$10{,}800{,}000 = (£8{,}000{,}000) \times \$1.35/£$$

(Module 7.2, LOS 7.b)

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## Question #10 of 10

Question ID: 1587581

Jeanne Leon is the portfolio manager for a U.S. fixed income fund. Leon is concerned that central bank policy will lead to rising interest rates over the next two years. In anticipation of this, Leon wishes to reduce the duration of his portfolio. Which of the following derivatives is *most likely* to achieve his goals?

**A) Short position in Treasury bond futures.**

**B)** Two-year receiver swap.

**C)** Series of short FRA positions.

**Explanation**

Receiver swaps (receive fixed, pay floating) can be synthetically replicated by issuing FRNs and using the proceeds to buy fixed-coupon bonds. FRNs have lower durations than fixed-coupon bonds, resulting in receiver swaps increasing duration and payer swaps reducing duration. Leon should, therefore, enter payer interest rate swaps if she wishes to reduce the portfolio's duration.

A short FRA (forward rate agreements) is an obligation to pay floating and receive fixed. A series of short FRAs replicates a receiver swap. This strategy will increase the portfolio's duration. Leon should consider a series of long FRA contracts to replicate a payer swap if the goal is to reduce portfolio duration.

Taking positions such as U.S. Treasury bond futures can be used to modify a portfolio's duration. Long futures positions increase the exposure to fixed rate returns, and short futures positions will decrease the exposure.

(Module 7.1, LOS 7.a)