

1. Calculate the price of a 1-year forward contract on gold. Assume the storage cost for gold is \$5.00 per ounce, with payment made at the end of the year. Spot gold is \$290 per ounce and the risk-free rate is 5%.
 - A. \$304.86
 - B. \$309.87
 - C. \$310.12
 - D. \$313.17

2. Which one of the following statements about historic Treasury yield curve changes is true?
 - A. Changes in long-term yields tend to be larger than in short-term yields.
 - B. Changes in long-term yields tend to be of approximately the same size as changes in short-term yields.
 - C. The same size yield change in both long-term and short-term rates tends to produce a larger price change in short-term instruments when all securities are trading near par.
 - D. The largest part of total return variability of spot rates is due to parallel changes with a smaller portion due to slope changes and the residual due to curvature changes.

3. I. The two-year risk-free rate in the is 8% per annum, continuously compounded
II. The two-year risk-free rate in is 5% per annum, continuously compounded
III. The current French Franc to the GBP currency exchange rate is that one unit of GBP currency costs 0.75 units of French Franc's

If the observed two-year forward price of one unit of the GBP is 0.850 units of the French Franc, what is your strategy to make an arbitrage profit?

 - A. Borrow GBP, buy French Francs and enter a short forward contract on French Francs.
 - B. Borrow French Francs, buy GBP, and enter a short forward contract on French Francs.
 - C. Borrow French Francs, buy GBP, and enter a short forward contract on GBP.
 - D. Borrow GBP, buy French Francs, and enter a short forward contract on GBP.

4. Consider an eight-month forward contract on a stock with a price of \$98/share. The delivery date is eight months hence. The firm is expected to pay a \$1.80 per share dividend in four months. Riskless zero-coupon interest rates (continuously compounded) are 4% for six months, and 4.5% for eight months. The theoretical forward price (to the nearest cent) is
 - A. 99.15
 - B. 99.18
 - C. 100.98
 - D. 96.20

5. If two securities have the same volatility and a correlation equal to -0.5 , their minimum variance hedge ratio is
- A. 4:1
 - B. 2:1
 - C. 16:1
 - D. 1:1
6. Use the following information to answer the next two questions. The two-year risk-free rate in the and is 8% and 5% per annum, continuously compounded, respectively. The current French franc (FF) to the GBP currency exchange rate is that one unit of GBP currency costs 0.75 units of French franc. What is the two-year forward price of one unit of the GBP in terms of the French franc so that no arbitrage opportunity exists?
- A. 0.578
 - B. 0.706
 - C. 0.796
 - D. 0.973
7. Which one of the following statement is most correct?
- A. When holding a portfolio of stocks, the portfolio's value can be hedged by purchasing a stock index futures contract.
 - B. Speculators play an important role in the futures market by providing the liquidity that makes hedging possible and assuming the risk that hedgers are trying to eliminate.
 - C. Someone hedging with a futures contract does not bear the basis risk.
 - D. Cross hedging involves an additional source of basis risk arising from that fact that the asset being hedged is exactly the same as the asset underlying the futures.
8. A fund manager has a USD 100 million portfolio with a beta of 0.75 . The manager has bullish expectations for the next couple of months and plans to use futures contracts on the S&P500 to increase the portfolio's beta to 1.8 . Given the following information, which strategy should the fund manager follow.
- I. The current level of the S&P index is 1250
 - II. Each S&P futures contract delivers USD 250 times the index
 - III. The risk-free interest rate is 6% per annum
- A. Enter into a long position of 480 S&P futures contracts
 - B. Enter into a short position of 240 S&P futures contracts
 - C. Enter into a long position of 336 S&P futures contract
 - D. Enter into a long position of 323 S&P futures contracts

9. A commodity forward contract for delivery in 4 months is written with a forward price of \$38. The underlying asset's spot price is \$40. The continuously compounded interest rate is 5%. In present value terms, how much is the potential arbitrage profit assuming there are no transaction or storage costs and the commodity pays no dividends?
- A. \$0 (The forward price is fair.)
 - B. 1.67
 - C. 2.63
 - D. 2.88
10. A risk manager wants to recommend a reduction in firm-wide risk. To achieve that reduction, the firm has to cut some positions. She decides to cut her positions rapidly, but to minimize the cost of doing so, she chooses to leave intact her least liquid position. If the following are her positions, which positions would she not cut?
- A. Large cap listed equities
 - B. On the run US treasuries
 - C. Rated benchmark corporate bonds.
 - D. Exchange traded Eurodollar future contracts
11. Hanwha Investment is underwriting a 30-year zero coupon corporate bond issue with a face value of \$50 million and a current market value of \$2,676,776 (a yield of 5% per six-month period). The firm must hold the bonds for a few days before issuing them to the public, which exposes them to interest rate risk. Hanwha Investment wishes to hedge its position by using T-bond futures contracts. The current T-bond futures price is \$90.80 per \$100 par value, and the T-bond contract will be settled using a 20-year, 8% coupon bond paying interest semiannually. The contract is due to expire in a few days, so the T-bond price and the T-bond futures price are virtually identical. Assume that the yield curve is flat and that the corporate bond will continue to yield 0.5% more than T-bond per six-month period, even if the general level of market rates should change. What hedge ratio should Hanhwa Investment use to hedge its bond holdings against possible interest rate fluctuations over the next few days?
- A. 72 contracts held short to hedge
 - B. 85 contracts held short to hedge
 - C. 88 contracts held short to hedge
 - D. 93 contracts held short to hedge

12. A bronze producer will sell 1,000 mt (metric tons) of bronze in three months at the prevailing market price at that time. The standard deviation of the price of bronze over a three-month period is 2.6%. The company decides to use three-month futures on copper to hedge. The copper futures contract is for 25 mt of copper.

The standard deviation of the futures price is 3.2%. The correlation between three-month changes in the futures price and the price of bronze is 0.77. To hedge its price exposure, how many futures contracts should the company buy/sell?

- A. Buy 25 futures
 - B. Sell 25 futures
 - C. Buy 63 futures
 - D. Sell 38 futures
13. From the point of view of a company that uses derivatives to hedge foreign exchange risk, the main advantage of futures contracts over forward contracts is that:
- A. Futures are typically available for longer maturities.
 - B. Futures are less standardized.
 - C. Futures have less credit risk due to "marking-to-market."
 - D. Futures usually have smaller notional amounts.
14. Which of the following best describes what we would normally expect to see in a seasonal agricultural market like wheat? Assume "the harvest" is normal and not unusually big or unusually small. Now consider the following statements about the market.

- I. Prices fall at the harvest and rise after the harvest.
- II. Prices are constant on average across the year regardless of seasonality.
- III. Prices rise at the harvest and fall afterwards.
- IV. The market is in contango when the harvest comes in.
- V. The market is in backwardation when the harvest comes in.
- VI. If the market goes into contango, it is most likely to do so right before a new harvest.
- VII. If the market goes into backwardation, it is most likely to do so right before a new harvest.

Now choose the letter that best describes which of the above statements is true

- A. I, IV, and VI are the only true statements
- B. I, IV, and VII are the only true statements
- C. III, V, and VII are the only true statements
- D. I and IV are the only true statements

15. The following instruments are traded, on an ACT/360 basis:

3-month deposit (91 days), at 4.5%

3-6 FRA (92 days), at 4.6%

6-9 FRA (90 days), at 4.8%

9-12 FRA (92 days), at 6%

What is the 1-year interest rate on an ACT/360 basis?

- A. 0.0519
- B. 0.0512
- C. 0.0507
- D. 0.0498

16. An investor enters into a short position in a gold futures contract at USD 294.20. Each futures contract controls 100 troy ounces. The initial margin is USD 3,200, and the maintenance margin is USD 2,900. At the end of the first day, the futures price drops to USD 286.6. Which of the following is the amount of the variation margin at the end of the first day?

- A. 0
- B. USD 34
- C. USD 334
- D. USD 760

17. A company expects to buy 1 million barrels of West Intermediate crude oil in one year. The annualized volatility of the price of a barrel of WTI is calculated at 12%. The company chooses to hedge by buying a futures contract on Brent crude. The annualized volatility of the Brent futures is 17% and the correlation coefficient is 0.68. Calculate the variance-minimizing hedge ratio.

- A. 0.62
- B. 0.42
- C. 0.53
- D. 0.48

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19. Consider a 6-month futures contract on the S&P 500, and suppose the current value of the index is 1330. Suppose the dividend yield is 1.5% annually for the stocks underlying the index, and that the continuously compounded risk-free interest rate is 5.5% annually. What is the cost of carry for this futures contract?
- A. 2.0%
 - B. -2.0%
 - C. 4.0%
 - D. -4.0%
20. A money market fund invests in Treasury bills. What is the principal risk that the fund manager must hedge for?
- A. Interest rate risk
 - B. Default risk
 - C. Funding liquidity risk
 - D. Asset liquidity risk