EXAMPLE 7.1: NOVATION

Novation is the process of:

a. Creating a new trade between two counterparties
b. Terminating an existing trade between two counterparties
c. Discharging a contract between the original counterparties and creating two new contracts, each with a central counterparty
d. Assigning a trade to another party

EXAMPLE 7.2: CENTRAL COUNTERPARTIES

Which of the following is *not* an advantage of establishing CCPs?

a. CCPs allow netting of contracts.
b. CCPs can be applied to some types of OTC trades.
c. CCPs can create more transparency in trading.
d. CCPs eliminate all counterparty risk in the financial system.

EXAMPLE 7.3: FRM EXAM 2008—QUESTION 2-15

The one-year U.S. dollar interest rate is 2.75% and one-year Canadian dollar interest rate is 4.25%. The current USD/CAD spot exchange rate is 1.0221–1.0225. Calculate the one-year USD/CAD forward rate. Assume annual compounding.

   a. 1.0076
   b. 1.0074
   c. 1.0075
   d. 1.03722

EXAMPLE 7.4: FRM EXAM 2005—QUESTION 16

Suppose that U.S. interest rates rise from 3% to 4% this year. The spot exchange rate quotes at 112.5 JPY/USD and the forward rate for a one-year contract is at 110.5. What is the Japanese interest rate?

   a. 1.81%
   b. 2.15%
   c. 3.84%
   d. 5.88%

EXAMPLE 7.5: FRM EXAM 2002—QUESTION 56

Consider a forward contract on a stock market index. Identify the *false* statement. Everything else being constant,

  a. The forward price depends directly on the level of the stock market index.
  b. The forward price will fall if underlying stocks increase the level of dividend payments over the life of the contract.
  c. The forward price will rise if time to maturity is increased.
  d. The forward price will fall if the interest rate is raised.

EXAMPLE 7.6: FRM EXAM 2007—QUESTION 119

A three-month futures contract on an equity index is currently priced at USD 1,000. The underlying index stocks are valued at USD 990 and pay dividends at a continuously compounded rate of 2%. The current continuously compounded risk-free rate is 4%. The potential arbitrage profit per contract, given this set of data, is closest to

  a. USD 10.00
  b. USD 7.50
  c. USD 5.00
  d. USD 1.50

EXAMPLE 7.7: FRM EXAM 2004—QUESTION 38

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

EXAMPLE 7.8: FRM EXAM 2004—QUESTION 66

Which one of the following statements is *incorrect* regarding the margining of exchange-traded futures contracts?

a. Day trades and spread transactions require lower margin levels.
b. If an investor fails to deposit variation margin in a timely manner, the positions may be liquidated by the carrying broker.
c. Initial margin is the amount of money that must be deposited when a futures contract is opened.
d. A margin call will be issued only if the investor's margin account balance becomes negative.

7.6 ANSWERS TO CHAPTER EXAMPLES

Example 7.1: Novation

c. Novation involves the substitution of counterparties. Clearinghouses use this process to interpose themselves between buyers and sellers. This requires consent from all parties, unlike an assignment.

Example 7.2: Central Counterparties

d. CCPs generally reduce counterparty risk but can be a source of systemic risk if they fail.

Example 7.3: FRM Exam 2008—Question 2-15

a. The spot price is the middle rate of $1.0223. Using annual (not continuous) compounding, the forward price is $F = S(1 + r)/(1 + R^*) = 1.0223(1.0275)/(1.0425) = 1.0076$.

Example 7.4: FRM Exam 2005—Question 16

b. As is the convention in the currency markets, the exchange rate is defined as the yen price of the dollar, which is the foreign currency. The foreign currency interest rate is the latest U.S. dollar rate, or 4%. Assuming discrete compounding, the pricing formula for forward contracts is $F(JPY/USD)/(1 + rT) = S(JPY/USD)/(1 + r^*T)$. Therefore, $(1 + rT) = (F/S)(1 + r^*T) = (110.5/112.5)(1.04) = 1.0215$, and $r = 2.15\%$. Using continuous compounding gives a similar result. Another approach would consider the forward discount on the dollar, which is $(F - S)/S = -1.8\%$. Thus the dollar is 1.8% cheaper forward than spot, which must mean that the Japanese interest rate must be approximately 1.8% lower than the U.S. interest rate.

Example 7.5: FRM Exam 2002—Question 56

d. Defining the dividend yield as q, the forward price depends on the cash price according to $F \exp(-rT) = S \exp(-qT)$. This can also be written as $F = S \exp[+(r - q)T]$. Generally, $r > q$. Statement a. is correct: F depends directly on S. Statement b. is also correct, as higher q decreases the term between brackets and hence F. Statement c. is correct because the term $r - q$ is positive, leading to a larger term in brackets as the time to maturity T increases. Statement d. is false, as increasing r makes the forward contract more attractive, or increases F.

Example 7.6: FRM Exam 2007—Question 119

c. The fair value of the futures contract is given by $F = S \exp(-r^*T)/\exp(-rT) = 990\exp(-0.02 \times 3/12)/\exp(-0.04 \times 3/12) = 994.96$. Hence the actual futures price is too high by $(1,000 - 995) = 5$.

Example 7.7: FRM Exam 2004—Question 38

a. This is a tricky question. Because the investor is short and the price fell, the position creates a profit and there is no variation margin. However, for the long the loss is $760, which would bring the equity to $3,200 - $760 = $2,440$. Because this is below the maintenance margin of $2,900, an additional payment of $760 is required to bring back the equity to the initial margin.

Example 7.8: FRM Exam 2004—Question 66

d. All the statements are correct, except d. If the margin account balance falls below the maintenance margin (not zero), a margin call will be issued.