

## ch22

Student: \_\_\_\_\_

1. Federal regulations in the U.S. allow derivatives to be used only by the 25 largest banks.  
True False
2. Derivative contracts allow an FI to manage interest rate and foreign exchange risk.  
True False
3. The replacement cost of the derivative contracts for the top 25 derivative users was greater than the credit exposure as of June 2009.  
True False
4. The Financial Accounting Standards Board requires that all derivatives be marked-to-market with any losses and gains transparent on FI's financial statements.  
True False
5. A spot contract specifies deferred delivery and payment.  
True False
6. A forward contract specifies immediate delivery for immediate payment.  
True False
7. In a forward contract agreement, the quantity of product to be traded, the time of the actual trade and the price are determined at the time of the agreement.  
True False
8. Forward contracts are individually negotiated and, therefore, can be unique.  
True False
9. Commercial banks, investment banks, and broker-dealers are the major forward market participants.  
True False
10. As of June 2009, U.S. commercial banks held over \$42 trillion of forward contracts that were listed for trading on the Chicago Mercantile exchange.  
True False
11. Forward contracts are marked-to-market on a daily basis.  
True False
12. A forward contract has only one payment cash flow that occurs at the time of delivery.  
True False
13. A futures contract has only one payment cash flow that occurs at the time of delivery.  
True False
14. Delivery of the underlying asset almost always occurs in the futures market.  
True False
15. As of June 2009, commercial banks held more forward contracts than futures contracts for trading.  
True False
16. Futures contracts are the primary security that insurance companies and banks use to hedge interest rate risk prior to originating mortgages.  
True False
17. A perfect hedge, or perfect immunization, seldom occurs.  
True False

18. Immunizing the balance sheet against interest rate risk means that gains (losses) from an off-balance-sheet hedge will exactly offset losses (gains) from the balance sheet position.  
True False
19. An FI with a positive duration gap is exposed to interest rate declines and could hedge its interest rate risk by buying forward contracts.  
True False
20. An FI with a negative duration gap is exposed to interest rate declines and could hedge its interest rate risk by buying forward contracts.  
True False
21. An off-balance-sheet forward position is used to hedge the FI's on-balance-sheet risk exposure.  
True False
22. More FIs fail due to credit risk exposure than exposure to either interest rate risk or foreign exchange risk.  
True False
23. It is not possible to separate credit risk exposure from the lending process itself.  
True False
24. Microhedging uses futures or forward contracts to hedge the entire balance sheet duration gap.  
True False
25. Macrohedging uses a derivative contract, such as a futures or forward contract, to hedge a particular asset or liability risk.  
True False
26. Routine hedging will allow the FI to achieve greater return from the assets and liabilities on the balance sheet.  
True False
27. Selective hedging that results in an over-hedged position may be regarded as speculative by regulators.  
True False
28. Selective hedging occurs by reducing the interest rate risk by selling sufficient futures contracts to offset the interest rate risk exposure of a portion of the cash positions on the balance sheet.  
True False
29. Hedging selectively only a portion of the balance sheet is an attempt to increase the return of the FI by accepting some level of interest rate risk.  
True False
30. The sensitivity of the price of a futures contract depends on the duration of the deliverable asset underlying the contract.  
True False
31. All bonds that are deliverable under a Treasury bond futures contract have a maturity of 20 years and an interest rate of 8 percent.  
True False
32. Hedging a specific on-balance-sheet cash position usually will only require more T-bill futures contracts than hedging the same cash position with T-bond futures contracts because the T-bond contract size is only 10 percent as large as the T-bill contract.  
True False
33. A conversion factor often is to figure the invoice price on a futures contract when a bond other than the benchmark bond is delivered to the buyer.  
True False

34. Basis risk occurs when the underlying security in the futures contract is not the same asset as the cash asset on the balance sheet.  
True False
35. An adjustment for basis risk with a value of "br" less than one means that the percent change in the spot rates is greater than the change in rate in the deliverable bond in the futures market.  
True False
36. Hedging foreign exchange risk in the futures market may involve uncertainty about all of the transactions necessary to achieve the hedge to fulfillment.  
True False
37. Tailing-the-hedge normally requires an FI manager to utilize more futures contracts to hedge a cash position than are warranted by the initial analysis.  
True False
38. The hedge ratio measures the impact that tailing-the-hedge will have on the number of contracts necessary to hedge the cash position.  
True False
39. Hedging effectiveness often is measured by the squared correlation between past changes in the spot asset prices and futures prices.  
True False
40. In a credit forward agreement hedge, the loss on the balance sheet cash position is offset completely by the gain on the off-balance-sheet credit forward agreement if the characteristics of the benchmark bond and the bank's loan to the borrower are the same.  
True False
41. A credit forward agreement specifies a credit spread on a benchmark U.S. Treasury bond.  
True False
42. Catastrophe futures are designed to hedge extreme losses of natural disasters for property-casualty insurance companies.  
True False
43. The payoff on a catastrophe futures contract is adjusted for the actual loss ratio of the insurer.  
True False
44. The use of futures contracts by banks is subject to risk-based capital guidelines through the off-balance-sheet risk calculations for risk-based capital.  
True False
45. Financial futures can be used by FIs to manage  
A. credit risk.  
B. interest rate risk.  
C. liquidity risk.  
D. foreign exchange risk.  
E. Answers A, B, and D only.
46. A forward contract  
A. has more credit risk than a futures contract.  
B. is more standardized than a futures contract.  
C. is marked to market more frequently than a futures contract.  
D. has a shorter time to delivery than a futures contract.  
E. is less risky than a futures contract.

47. A futures contract
- A. is tailor-made to fit the needs of the buyer and the seller.
  - B. has more credit risk than a forward contract.
  - C. is marked to market more frequently than a forward contract.
  - D. has a shorter time to delivery than a forward contract.
  - E. has more price risk than a forward contract.
48. Which of the following identifies the largest group of derivative contracts as of June 2009?
- A. Futures.
  - B. Forwards.
  - C. Options.
  - D. Swaps.
  - E. Credit derivatives.
49. Which of the following group of derivative securities had the smallest notational value among the top 25 FIs?
- A. Futures and forwards.
  - B. Caps, floors, and collars.
  - C. Options.
  - D. Swaps.
  - E. Credit derivatives.
50. An agreement between a buyer and a seller at time 0 to exchange a standardized, prespecified asset for cash at a specified later date is characteristic of a
- A. spot contract.
  - B. forward contract.
  - C. futures contract.
  - D. put options contract.
  - E. call options contract.
51. An agreement between a buyer and a seller at time 0 where the seller of an asset agrees to deliver an asset immediately and the buyer agrees to pay for the asset immediately is the characteristic of a
- A. spot contract.
  - B. forward contract.
  - C. futures contract.
  - D. put options contract.
  - E. call options contract.
52. An agreement between a buyer and a seller at time 0 to exchange a prespecified asset for cash at a specified later date is the characteristic of a
- A. spot contract.
  - B. forward contract.
  - C. futures contract.
  - D. put options contract.
  - E. call options contract.
53. What is a difference between a forward contract and a future contract?
- A. The settlement price of a forward contract is fixed over the life of the contract but in a futures contract is marked to market daily.
  - B. Forward contracts are normally arranged through an organized exchange, while most futures contracts are OTC contracts.
  - C. Both are essentially the same, except for trading volumes which are higher for futures contracts.
  - D. Both are essentially the same, except for the fact that the terms of a forward contract is set by the exchange, subject to the approval of the CFTC.
  - E. Delivery of the underlying asset almost always occurs on a futures contract but almost never occurs on a forward contract.

54. The primary benefit of a futures exchange is
- A. always knowing its exact location.
  - B. indemnifying counterparties against credit or default risk.
  - C. guarantee of trading volume.
  - D. intervention on the trader's behalf with government regulators.
  - E. availability of free legal services.
55. The terms of futures contracts traded in the U.S. are set by the exchange on which they propose to be traded, but are subject to approval by the
- A. Federal Reserve.
  - B. Commodity Futures Trading Commission.
  - C. CME Group (formerly Chicago Mercantile Exchange).
  - D. Chicago Board of Trade.
  - E. Securities and Exchange Commission.
56. Futures contracts are standard in terms of all of the following EXCEPT
- A. contract size.
  - B. delivery month.
  - C. specific asset to be delivered.
  - D. trading hours.
  - E. daily price limits.
57. A naive hedge occurs when
- A. an FI manager wishes to use futures or other derivative securities to hedge the entire balance sheet duration gap.
  - B. a cash asset is hedged on a direct dollar-for-dollar basis with a forward or futures contract.
  - C. an FI reduces its interest rate or other risk exposure to the lowest possible level by selling sufficient futures to offset the interest rate risk exposure of its whole balance sheet.
  - D. an FI purchases an insurance cover to the extent of 80% of losses arising from adverse movement in asset prices.
  - E. All of the above.
58. Routine hedging
- A. is a hedging strategy that occurs on a set, predetermined basis by the FI.
  - B. always results in excess returns.
  - C. is a strategy to follow when interest rates are abnormally low.
  - D. is a strategy used when interest rates are extremely unpredictable.
  - E. is a strategy to follow when interest rates are abnormally high.
59. An FI issued \$1 million of 1-year maturity floating rate commercial paper. The commercial paper is repriced every three months at the 91-day Treasury bill rate plus 2 percent. What is the FI's interest rate risk exposure and how can it use financial futures and options to hedge that risk exposure?
- A. The FI can hedge its exposure to interest rate increases by selling financial futures.
  - B. The FI can hedge its exposure to interest rate decreases by selling financial futures.
  - C. The FI can hedge its exposure to interest rate increases by buying financial futures.
  - D. The FI can hedge its exposure to interest rate increases by buying call options.
  - E. The FI cannot hedge its exposure to interest rate increases or decreases using financial futures.
60. The number of futures contracts that an FI should buy or sell in a macrohedge depends on the
- A. size of its interest rate risk exposure.
  - B. direction of its interest rate risk exposure.
  - C. return risk trade-off from fully hedging that risk.
  - D. return risk trade-off from selectively hedging that risk.
  - E. All of the above.

61. Which of the following indicates the need to place a hedge?
  - A. The price movement in the underlying cash asset can not be forecasted perfectly.
  - B. The prices of the assets or liabilities are imperfectly correlated over time with the prices on the futures.
  - C. Basis risk prevents the minimum risk of the portfolio from reaching zero.
  - D. Treasury has been issuing more shorter-dated bonds to finance U.S. budget deficits.
  - E. Spot bonds and futures on bonds are traded in different markets.
62. Which of the following is an example of microhedging asset-side portfolio risk?
  - A. When an FI, attempting to lock in cost of funds to protect itself against a rise in short-term interest rates, takes a short position in futures contracts on CDs.
  - B. FI manager trying to pick a futures contract whose underlying deliverable asset is not matched to the asset position being hedged.
  - C. When an FI hedges a cash asset on a direct dollar-for-dollar basis with a forward or futures contract.
  - D. When an FI manager wants to insulate the value of the institution's bond portfolio fully against a rise in interest rates.
  - E. When an FI manager wishes to use futures or other derivative securities to hedge the entire balance sheet duration gap.
63. An FI has reduced its interest rate risk exposure to the lowest possible level by selling sufficient futures to offset the risk exposure of its whole balance sheet or cash positions in each asset and liability. The FI is involved in
  - A. microhedging.
  - B. selective hedging.
  - C. routine hedging.
  - D. overhedging.
  - E. speculation.
64. What is overhedging?
  - A. Selectively hedging a proportion of an FI's balance sheet position.
  - B. Choosing to bear some interest rate risk as well as credit and FX risks.
  - C. Reducing the risk to the lowest level possible.
  - D. Using more hedge vehicles than is necessary to offset the risk in the cash asset.
  - E. Partially hedging the individual assets and liabilities.
65. Why does basis risk occur?
  - A. Changes in the spot asset's price are not perfectly correlated with changes in the price of the asset delivered under a forward or futures contract.
  - B. The daily marking-to-market process enables an FI manager to close out a futures position by taking an exactly offsetting position.
  - C. Spot and futures contracts are traded in different markets with different demand and supply functions.
  - D. Answers B and C only.
  - E. Answers A and C only.
66. Which of the following measures the dollar value of futures contracts that should be sold per dollar of cash position exposure?
  - A. Hedge ratio.
  - B. Open position.
  - C. Implied volatility.
  - D. Payoff.
  - E. Risk ratio.
67. How is a hedge ratio commonly determined?
  - A. By discounting the optimal number of futures to sell per \$1 of cash position using the yield involved.
  - B. By using the ratio of the most recent spot and futures price changes.
  - C. By running an ordinary least squares regression of changes in spot prices on changes in futures prices.
  - D. By using the conversion factor.
  - E. By squaring the correlation between past changes in spot asset prices and futures prices.

68. When will the estimated hedge ratio be greater than one?
- A. When spot rate changes are greater than futures rate changes.
  - B. When spot rate changes are less sensitive than futures price changes over time.
  - C. When spot rate changes are equally sensitive as futures price changes over time.
  - D. When basis risk is absent.
  - E. When the spot and future exchange rates are expected to move perfectly together.
69. The current price of June \$100,000 T-Bonds trading on the Chicago Board of Trade is 109.24. What is the price to be paid if the contract is delivered in June?
- A. \$107,240.
  - B. \$109,240.
  - C. \$109,750.
  - D. \$110,250.
  - E. \$115,760.
70. If a 16-year 12 percent semi-annual \$100,000 T-bond, currently yielding 10 percent, is used to deliver against a 20-year, 8 percent T-bond at 114-16/32, what is the conversion factor? What would the buyer have to pay the seller?
- A. 1.158; \$132,591.
  - B. 1.156; \$115,600.
  - C. 1.150; \$131,284.
  - D. 1.102; \$124,200.
  - E. 1.000; \$114,160.
71. If a 12-year, 6.5 percent semi-annual \$100,000 T-bond, currently yielding 4.10 percent, is used to deliver against a 6-year, 5 percent T-bond at 110-17/32, what is the conversion factor? What would the buyer have to pay the seller?
- A. 1.1027; \$110,531.
  - B. 1.2257; \$135,478.
  - C. 1.8370; \$253,830.
  - D. 1.3622; \$163,339.
  - E. 1.7263; \$141,788.
72. Historical analysis of recent changes in exchange rates in both the spot and futures markets for a given currency reveals that spot rates are thirty percent more sensitive than futures prices. Given this information, the hedge ratio for this currency is
- A. 0.70.
  - B. 0.77.
  - C. 1.30.
  - D. 1.43.
  - E. 1.86.
73. The covariance of the change in spot exchange rates and the change in futures exchange rates is 0.6060, and the variance of the change in futures exchange rates is 0.5050. What is the estimated hedge ratio for this currency?
- A. 0.306.
  - B. 0.694.
  - C. 1.440.
  - D. 1.200.
  - E. 0.833.

74. The covariance of the change in spot exchange rates and the change in futures exchange rates is 0.6606, and the variance of the change in futures exchange rates is 0.6060. The variance of the change in spot exchange rates is 0.9090. What is the degree of hedging effectiveness?
- 0.61.
  - 0.90.
  - 0.87.
  - 0.82.
  - 0.79.
75. The notational value of the world-wide credit derivative securities markets stood at \_\_\_\_\_ trillion as of June 2009, which compares to \_\_\_\_\_ trillion as of July 2008.
- \$31.2; \$54.6
  - \$13.2; \$31.2
  - \$31.2; \$16.8
  - \$7.8; \$14.7
  - \$16.0; \$27.4
76. A credit forward is a forward agreement that
- hedges against a decrease in default risk on a loan after the loan rate is determined and the loan issued.
  - hedges against an increase in default risk on a loan before the loan rate is determined and the loan issued.
  - hedges against an increase in default risk on a loan after the loan rate is determined and the loan issued.
  - hedges against a decrease in default risk on a loan before the loan rate is determined and the loan issued.
  - hedges against an increase in default risk on a loan after the loan rate is determined and before the loan is issued.
77. In a credit forward contract transaction
- the credit forward buyer is the lender who is trying to hedge the loan.
  - the credit forward seller is the lender who is trying to hedge the loan.
  - the credit forward buyer will pay the credit forward seller if the credit spread at the maturity of the . forward contract is less than at the initiation of the contract.
  - the credit forward seller will pay the credit forward buyer if the credit spread at the maturity of the . forward contract is greater than at the initiation of the contract.
  - the characteristics of the benchmark bond must be the same as those of the bank's loan to the borrower.
78. What is the purpose of a credit forward agreement?
- To allow property-casualty insurers to hedge the extreme losses that occur after major catastrophes.
  - To adjust prices on outstanding futures each day to reflect current futures market conditions.
  - To facilitate the future exchange of an asset for cash at a price that is determined daily.
  - To hedge a cash asset on a direct dollar-for-dollar basis with a forward or futures contract.
  - To hedge against an increase in the default risk of a loan.
79. Selling a credit forward agreement generates a payoff similar to
- selling a call option.
  - buying a call option.
  - selling a put option.
  - buying a put option.
  - buying forward contracts.



80. XYZ Bank lends \$20,000,000 to ABC Corporation which has a credit rating of BB. The spread of a BB rated benchmark bond is 2.5 percent over the U.S. Treasury bond of similar maturity. XYZ Bank sells a \$20,000,000 one-year credit forward contract to IWILL Insurance Company. At maturity, the spread of the benchmark bond against the Treasury bond is 2.1 percent, and the benchmark bond has a modified duration of 4 years. What is the amount of payment paid by whom to whom at the maturity of the credit forward contract?
- A. The seller pays the buyer \$320,000.
  - B. The buyer pays the seller \$320,000.
  - C. The seller pays the buyer \$80,000.
  - D. The buyer pays the seller \$80,000.
  - E. The borrower receives \$240,000.
81. Catastrophe futures contracts
- A. are designed to protect life insurance companies from the effects of natural disasters in which large numbers of lives are lost.
  - B. are designed to protect property-casualty insurers against the extreme losses that can occur in hurricanes.
  - C. are designed to hedge insurance companies from liability law suits.
  - D. provide a payoff when the actual loss ratio is less than the expected loss ratio.
  - E. provide a payoff to the seller of the contract that is equal to the loss ratio times the nominal value of the contract.
82. Who are the common buyers of credit forwards?
- A. Insurance companies.
  - B. Banks.
  - C. Federal Reserve.
  - D. Stock brokers.
  - E. Credit unions.
83. What is the reason for decrease in the number of futures contract needed to hedge a cash position in case of tailing the hedge?
- A. Lower average transaction costs resulting from higher number of transactions.
  - B. Interest income generated from reinvesting the cash flows generated by the futures contracts.
  - C. Lack of perfect correlation between spot and futures prices.
  - D. The effect of conversion factor.
  - E. Hedging only a proportion of balance sheet position.
84. Which of the following is NOT true regarding hedge ratio?
- A. When there is no basis risk hedge ratio is equal to one.
  - B. When  $h=1$ , both spot and futures are expected to change together by the same absolute amount.
  - C. When  $h=1$ , FX risk of the cash position should be hedged dollar for dollar by buying FX futures.
  - D. When basis risk is present, the spot and future exchange rates are expected to move imperfectly together.
  - E. The FI must sell a greater number of futures when there is basis risk than it has to when basis risk is absent.
85. What does  $R^2 = 0$  indicate?
- A. Changes in the spot rate and changes in the futures price are perfectly correlated.
  - B. All observations between changes in spot rate and changes in futures price lie on a straight line.
  - C. The spot and future exchange rates are expected to move imperfectly together.
  - D. The FI must sell a greater number of futures to hedge the cash position.
  - E. There is no statistical association between changes in spot rates and changes in futures price.

86. What does a low value of R<sup>2</sup> indicate?
- It means the degree of confidence increases in the use of futures contracts, with a given hedge ratio estimate, to hedge cash asset-risk position.
  - It means that we have little confidence that the slope coefficient from the regression is actually the true hedge ratio.
  - It indicates that there is no statistical association at all between spot rates and future prices.
  - It indicates that the regression line does not fit the scatter of observations.
  - It indicates a low value of hedging ineffectiveness.
87. The uniform guidelines issued by bank regulators for trading in futures and forwards
- require a bank to establish trading limits.
  - require a bank to disclose large contract positions.
  - require a bank to establish internal guidelines regarding hedging activities.
  - All of the above are correct.
  - Answers A and C only.
88. For questions 88 to 94, use the following two choices to identify whether each intermediary or entity is a net buyer or net seller of credit derivative securities.
- |                        |            |       |
|------------------------|------------|-------|
| 1. Securities firms    | Net buyer  | _____ |
| 2. Banks               | Net buyer  | _____ |
| 3. Insurance companies | Net seller | _____ |
| 4. Corporations        | Net seller | _____ |
| 5. Hedge funds         | Net buyer  | _____ |
| 6. Mutual funds        | Net seller | _____ |
| 7. Pension funds       | Net seller | _____ |

91-day Treasury bill rates = 9.71 percent

91-day Treasury bill futures rates = 9.66 percent

(Reminder: Treasury bill prices are calculated using the following formula:

$$P = FV * (1 - dt/360)$$

where P = price, FV = face value, d = discount yield, and t = days until maturity.)

89. What is the basis on the T-bill futures contract?
- 19 basis points.
  - 21 basis points.
  - 5 basis points.
  - 2 basis points.
  - Insufficient information.
90. Calculate the cash flows on the above futures contract if all interest rates increase by 1.49 percent. (That is,  $\Delta R / (1 + R) = 1.49$  percent, and 1 bp = \$25.)
- The long futures position earns a profit of \$3,766.39.
  - The short futures position earns a profit of \$3,725.00.
  - The long futures position earns a profit of \$1.49 million.
  - The short futures position earns a profit of \$1.49 million.
  - The short futures position earns a loss of \$3,725.
91. An investor buys a \$100,000 Treasury bond futures contract at 99-13/32nds. The following day the Treasury bond futures settlement price is 99-26/32nds. What is the one-day profit or loss on the Treasury bond futures position?
- A profit of \$406.25.
  - A loss of \$406.25.
  - A profit of \$130.
  - A loss of \$329.
  - A profit of \$329.

92. An investor sold a \$100,000 Treasury bond futures contract at 99-02/32nds yesterday. Today the Treasury bond futures settlement price is 99-31/32nds. What is the one-day profit or loss on the Treasury bond futures position?
- A. A profit of \$906.25.
  - B. A loss of \$906.25.
  - C. A profit of \$733.
  - D. A loss of \$733.
  - E. A loss of \$290.

Conyers Bank holds U.S. Treasury bonds with a book value of \$30 million. However, the U.S. Treasury bonds currently are worth \$28,387,500.

93. The bank's portfolio manager wants to shorten asset maturities. Which of the following statements is true?
- A. The portfolio manager is reluctant to sell the bonds outright since the bank will have to take a loss.
  - B. The portfolio manager is willing to sell the bonds outright since they are not as valuable as their book value.
  - C. The portfolio manager is willing to sell the bonds outright since they are more valuable than their book value.
  - D. The portfolio manager is reluctant to sell the bonds outright since the bank will have to pay taxes on the gain.
  - E. None of the above.
94. If the portfolio manager wants to shorten the bank's asset maturity, what type of risk is she concerned about?
- A. Credit risk.
  - B. Foreign exchange rate risk.
  - C. The risk of rising interest rates.
  - D. The risk of falling interest rates.
  - E. Default risk.
95. How can the portfolio manager use futures markets to protect against the risk exposure of rising interest rates?
- A. Buy interest rate futures.
  - B. Sell currency futures.
  - C. Buy currency futures.
  - D. Sell interest rate futures.
  - E. Sell stock market index futures.
96. If Treasury bond futures prices are currently 89-00/32nds, what is the value of the Treasury bond futures hedge position?
- A. \$30,000,000.
  - B. \$28,387,500.
  - C. \$26,700,000.
  - D. \$89,000,000.
  - E. \$890,000.
97. If T-bond futures prices decrease to 81-27/32nds, what is the value of the futures hedge position?
- A. \$81,270,000.
  - B. \$24,553,125.
  - C. \$26,700,000.
  - D. \$812,700.
  - E. \$28,387,500.

98. If the portfolio manager put on the hedge in question 102 (89-00/32nds), what is the profit/loss on the futures position given the settlement price in question 103 (81-27/32nds)?
- Profit of \$2,146,875.
  - Loss of \$2,146,875.
  - Profit of \$1,270,000.
  - Loss of \$1,270,000.
  - Loss of \$812,700.
99. The portfolio manager for Conyers Bank wishes to sell the entire issue of Treasury bonds at a current price of 87-05/32nds. What will be the gain or loss on the cash position since the futures contract was placed? (That is, since the bonds were valued at \$28,387,500.)
- Loss of \$3,834,375.
  - Loss of \$3,853,125.
  - Gain of \$2,240,625.
  - Gain of \$3,853,125.
  - Loss of \$2,240,625.
100. Assume that the portfolio manager sells the bonds at the price in question 105 (87-05/32), and that she closes out the futures hedge position at the price in question 103 (81-17/32). What will be the net gain or loss on the entire bond transaction from the time that the hedge was placed?
- Gain of \$2,583,125.
  - Loss of \$93,750.
  - Loss of \$2,583,125.
  - Gain of \$93,750.
  - Gain of \$812,700.

Consumer loans	\$50 million	Deposits	\$235 million
Commercial Loans	\$200 million	Equity	\$15 million
Total Assets	\$250 million	Total Liabilities & Equity	\$250 million

The average duration of the loans is 10 years. The average duration of the deposits is 3 years.

101. What is the leveraged-adjusted duration gap of the bank's portfolio?
- 10 years.
  - 7.3 years.
  - 7 years.
  - 7.18 years.
  - 3 years.
102. What is the change in the value of the FI's equity for a 1 percent increase in interest rates from the current rates of 10 percent (i.e.,  $\Delta R = +0.01$ , and  $1+R = 1.10$ )?
- \$,979,091.
  - \$16,318,182.
  - \$15,979,091.
  - +\$16,318,182.
  - +\$979,091.
103. Based on the estimate of gain or loss in question 108, what is the number of T-bond futures contracts necessary to hedge the balance sheet if the duration of the deliverable bonds is 9 years and the current price of the futures contract is \$96 per \$100 face value?
- 1,630 contracts.
  - 1,475 contracts.
  - 1,900 contracts.
  - 2,077 contracts.
  - 3,225 contracts.

104. Based on the estimate of gain or loss in question 108, what is the number of T-Bill futures contracts necessary to hedge the balance sheet if the duration of the deliverable T-bills is 0.25 years and the current price of the futures contract is \$98 per \$100 face value?

- A. 6,212 contracts.
- B. 6,805 contracts.
- C. 6,900 contracts.
- D. 7,112 contracts.
- E. 7,326 contracts.

105. How would your results to question 109 change if basis risk shows that for every 1 percent shock to interest rates, i.e.,  $\Delta R = 0.01$  and  $1+R = 1.10$ , the implied rate on the deliverable bonds in the futures market increases by 1.1 percent, i.e.,  $\Delta R_f / (1+R_f) = .011$ ?

- A. 1,500 contracts.
- B. 1,888 contracts.
- C. 2,100 contracts.
- D. 2,408 contracts.
- E. 3,100 contracts.

106. What is the gain or loss on the futures position using T-Bonds if the shock to interest rates is 0.01, i.e.  $\Delta R / (1+R) = .01$  &  $\Delta R_f / (1+R_f) = .01$ ?

- A. \$16,320,960 loss.
- B. \$16,312,320 gain.
- C. \$15,552,750 gain.
- D. \$15,552,750 loss.
- E. \$13,252,250 gain.

An FI has a 1-year 8-percent US\$160 million loan financed with a 1-year 7-percent UK£100 million CD. The current exchange rate is \$1.60/£.

107. If the exchange rate remains the same, what is the dollar spread earned by the bank at the end of the year?

- A. \$750,000.
- B. \$1,000,000.
- C. \$1,250,000.
- D. \$1,600,000.
- E. \$1,750,000.

108. If at the end of the year, the exchange rate is \$1.65/£, what is the spread earned on the loan by the FI in dollars after adjusting fully for exchange rates?

- A. -\$3,750,000.
- B. -\$1,250,000.
- C. +\$1,250,000.
- D. +\$3,750,000.
- E. +\$5,000,000.

109. If the current (spot) rate for one-year British pound futures is currently at \$1.58/£ and each contract size is £62,500, how many contracts are required to be purchased or sold in order to fully hedge against the pound exposure? (Assume no basis risk).

- A. Sell 1,600 BP futures.
- B. Buy 1,600 BP futures.
- C. Sell 1,712 BP futures.
- D. Buy 2,560 BP futures.
- E. Buy 1,712 BP futures.

110. What is the cash spread earned by the FI if at the end of the year the  $\text{€}$  is trading at  $\$1.63/\text{€}$  in the cash market? Again adjust for all exchange rate changes.
- A.  $\$1,610,000$  gain.
  - B.  $\$1,610,000$  loss.
  - C.  $\$2,670,000$  loss.
  - D.  $\$2,670,000$  gain.
  - E.  $\$2,390,000$  loss.
111. Assume that the hedge was placed at the rates in question 114, and that the BP futures contract is trading at  $\$1.62/\text{€}$ . Assume the futures contract has some days remaining to maturity. What will be the gain or loss on the hedge if it is unwound at this price?
- A.  $\$4,280,000$  loss.
  - B.  $\$4,000,000$  loss.
  - C.  $\$4,280,000$  gain.
  - D.  $\$4,000,000$  gain.
  - E.  $\$6,400,000$  gain.
112. What is the net gain or loss on the loan given that the exchange rates at the time of repayment were  $\$1.63/\text{€}$  in the cash market and  $1.62/\text{€}$  in the futures market? Assume that the futures position is opened and unwound as stated in questions 114 and 116.
- A.  $\$2,120,000$  loss.
  - B.  $\$1,330,000$  loss.
  - C.  $\$2,670,000$  loss.
  - D.  $\$1,330,000$  gain.
  - E.  $\$2,670,000$  gain.
113. What should be the trading price of the BP futures contract at the end of the year in order for the FI to be perfectly hedged? That is, the FI earns its original anticipated spread without any effects of exchange rate changes?
- A.  $\$1.60/\text{€}$ .
  - B.  $\$1.61/\text{€}$ .
  - C.  $\$1.62/\text{€}$ .
  - D.  $\$1.63/\text{€}$ .
  - E.  $\$1.64/\text{€}$ .

A U.S. FI wishes to hedge a Euro 10,000,000 loan using euro currency futures. Each euro futures contract is for 125,000 euros, and the hedge ratio is 1.40. The loan is payable in one year in euros.

114. What type of currency hedge is necessary to protect the FI from exchange rate risk?
- A. Buy  $\text{€}$  currency futures.
  - B. Sell  $\text{€}$  currency futures.
  - C. Finance the loan with  $\text{€}$  deposits.
  - D. Finance the loan with Eurodollar deposits.
  - E. Either B or D.
115. How many currency contracts are necessary to hedge this asset?
- A. 112 contracts.
  - B. 57 contracts.
  - C. 80 contracts.
  - D. 75 contracts.
  - E. 42 contracts.

A U.S. bank issues a 1-year U.S. CD at 5 percent annual interest to finance a C\$1.274 million investment in 2-year fixed-rate Canadian bonds selling at par and paying 7 percent annually. You expect to liquidate your position in 1 year upon maturity of the CD. Spot exchange rates are US\$0.7849 per Canadian dollar.

116. Your position is exposed to:
- A. interest rate risk only.
  - B. credit risk only.
  - C. exchange rate risk only.
  - D. interest rate and exchange rate risk only.
  - E. interest rate risk, exchange rate risk, and credit risk.
117. If you wanted to hedge your bank's risk exposure, what hedge position would you take?
- AA short interest rate hedge to protect against interest rate declines and a short currency hedge to protect . against increases in the value of the Canadian dollar with respect to the U.S. dollar.
  - BA short interest rate hedge to protect against interest rate increases and a short currency hedge to protect . against declines in the value of the Canadian dollar with respect to the U.S. dollar.
  - CA long interest rate hedge to protect against interest rate increases and a long currency hedge to protect . against declines in the value of the Canadian dollar with respect to the U.S. dollar.
  - DA long interest rate hedge to protect against interest rate declines and a long currency hedge to protect . against increases in the value of the Canadian dollar with respect to the U.S. dollar.
  - EA long interest rate hedge to protect against interest rate declines and a short currency hedge to protect . against increases in the value of the Canadian dollar with respect to the U.S. dollar.
118. If in one year there is no change in either interest rates or exchange rates, what is the end-of-year profit or loss of your bank's cash position? Assume that annual interest is paid on both the CD and the Canadian bonds on the date of liquidation in exactly one year.
- A. Profit of US\$20,000.
  - B. Loss of C\$224,000.
  - C. Profit of US\$50,000.
  - D. Profit of C\$63,000.
  - E. Profit of US\$313,000.
119. What is the end-of-year profit or loss on the bank's cash position if in one year the exchange rate falls to US\$0.765/C\$1? Assume there is no change in interest rates.
- A. Loss of US\$75,000.
  - B. Profit of C\$274,000.
  - C. Loss of US\$7,000.
  - D. Profit of C\$9,000.
  - E. Loss of US\$5,000.
120. What is the end-of-year profit or loss on the bank's cash position if in one year Canadian bond rates increase to 7.5 percent? Assume no change in either current U.S. interest rates or current exchange rates.
- A. Loss of US\$5,000.
  - B. Profit of US\$15,000.
  - C. Loss of C\$119,000.
  - D. Profit of C\$50,000.
  - E. Loss of C\$50,000.
121. What is the end-of-year profit or loss on the bank's cash position if in one year both Canadian bond rates increase to 7.5 percent and the exchange rate falls to US\$0.765 per Canadian dollar (Assume no change in U.S. interest rates.)
- A. Loss of US\$12,000.
  - B. Loss of US\$75,000.
  - C. Profit of C\$9,000.
  - D. Profit of US\$50,000.
  - E. Loss of C\$119,000.

Use the futures price information below from the Wall Street Journal to set up hedge positions for the underlying cash position outlined in questions 128-129.

CANADIAN DOLLAR (IMM)-100,000 Canadian dollars; \$per

	Open	High	Settle
Dec09	0.7843	0.7844	0.7837

TREASURY NOTES (CBT)-\$100,000; pts. 32nds of 100%

	Open	High	Settle
Dec09	98-27	98-30	98-27

- 122.If Canadian dollar futures prices fall \$.0199 per Canadian dollar from today's settlement prices, and there is no basis risk, what is the profit/loss on the futures position if the bank fully hedges currency risk?
- Sell 13 futures contracts for an end-of-year futures profit of \$25,870.
  - Buy 13 futures contracts for an end-of-year futures profit of \$25,870.
  - Sell 13 futures contracts for an end-of-year futures profit of \$78,370.
  - Buy 13 futures contracts for an end-of-year futures profit of \$78,370.
  - Sell 1 futures contract for an end-of-year futures profit of \$76,380.
- 123.If Treasury note futures prices fall to 98-17 in one year, what is the profit/loss on the futures position if the bank fully hedges interest rate risk exposure? Assume that the duration of the Canadian bonds is the same as the duration of Treasury note futures.
- Buy 13 Treasury bond futures for an end-of-year futures profit of \$312.50.
  - Sell 13 Treasury bond futures for an end-of-year futures profit of \$312.50.
  - Sell 13 Treasury bond futures for an end-of-year futures profit of \$4,062.50.
  - Buy 13 Treasury bond futures for an end-of-year futures profit of \$4,062.50.
  - Sell 1 Treasury bond futures for an end-of-year futures profit of \$98,843.75



## ch22 Key

1. FALSE
2. TRUE
3. FALSE
4. TRUE
5. FALSE
6. FALSE
7. TRUE
8. TRUE
9. TRUE
10. FALSE
11. FALSE
12. TRUE
13. FALSE
14. FALSE
15. TRUE
16. FALSE
17. TRUE
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36. TRUE

- 37. FALSE
- 38. FALSE
- 39. TRUE
- 40. TRUE
- 41. FALSE
- 42. TRUE
- 43. TRUE
- 44. FALSE
- 45. E
- 46. A
- 47. C
- 48. D
- 49. E
- 50. C
- 51. A
- 52. B
- 53. A
- 54. B
- 55. B
- 56. C
- 57. B
- 58. D
- 59. A
- 60. E
- 61. A
- 62. D
- 63. C
- 64. D
- 65. E
- 66. A
- 67. C
- 68. A
- 69. B
- 70. A
- 71. B
- 72. C
- 73. D
- 74. E

75. A
76. C
77. B
78. E
79. D
80. A
81. B
82. A
83. B
84. C
85. E
86. B
87. D
88. Corporations :: Net buyer *and* Banks :: Net buyer *and* Insurance companies :: Net seller *and* Pension funds :: Net seller *and* Securities firms :: Net buyer *and* Hedge funds :: Net seller *and* Mutual funds :: Net seller
89. C
90. B
91. A
92. B
93. A
94. C
95. D
96. C
97. B
98. A
99. E
100. B
101. D
102. B
103. D
104. E
105. B
106. B
107. D
108. A
109. E
110. B
111. C
112. E

- 113. B
- 114. B
- 115. A
- 116. E
- 117. B
- 118. A
- 119. C
- 120. B
- 121. A
- 122. A
- 123. C

# ch22 Summary

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