

# ch10

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

1. Market risk is the uncertainty of an FI's earnings resulting from changes in market conditions such as interest rates and asset prices.  
True False
2. As securitization of assets continues to expand, the management of market risk will become more important to FIs.  
True False
3. Income from trading activities of FIs is less important today than the traditional activities of banks.  
True False
4. Assets and liabilities that are expected to require extensive time to liquidate are normally placed in the investment portfolio.  
True False
5. Losses among FIs that actively traded mortgage-backed securities reached over \$3 trillion world-wide by mid-2009.  
True False
6. The major traders of mortgage-backed securities prior to the recent financial crisis were investment banks and securities firms.  
True False
7. Although financial markets deteriorated during the summer of 2009, by September of that year the banking system had returned to normal operation.  
True False
8. Market risk management is important as a source of information on risk exposure for senior management.  
True False
9. Considering the market risk of traders' portfolios for the purpose of establishing logical position limits per trader in each area of trading is a resource allocation benefit of market risk measurement.  
True False
10. If a trader in charge of an investment portfolio of an FI generates returns that are higher than other traders at the FI, she should be rewarded with higher compensation.  
True False
11. Market risk is the potential gain caused by an adverse movement in market conditions.  
True False
12. Banks are limited by regulation to using the historic or back simulation method to quantify market risk exposure.  
True False
13. Daily earnings at risk is defined as the dollar value of a position times price sensitivity.  
True False
14. Market value at risk (VAR) is defined as the daily earnings at risk (DEAR) times the number of days (N).  
True False

15. Price volatility is the price sensitivity times the potential adverse move in yield.  
True False
16. Price volatility of a bond can be estimated by multiplying the bond's modified duration by the adverse daily yield move.  
True False
17. In estimating price sensitivity, the JPM model prefers to use modified duration over the present value of cash flow changes.  
True False
18. The JPM RiskMetrics model generally prefers using the present value of cash flow changes as the price-sensitivity weights.  
True False
19. Calculating the risk of a multi-asset trading portfolio requires the consideration of the correlations of returns between the different assets.  
True False
20. The dollar value of a foreign exchange portfolio equals the FX position times the spot exchange rate.  
True False
21. The JPM RiskMetrics model is based on the assumption of a binomial distribution of asset returns.  
True False
22. The back simulation approach to estimating market risk exposure requires normally distributed asset returns, but does not require correlations of asset returns.  
True False
23. The back simulation approach to estimating market risk exposure requires the use of daily prices or returns for some period of immediately recent history.  
True False
24. One advantage of RiskMetrics over back simulation is that RiskMetrics provides a worst case scenario value.  
True False
25. A disadvantage of the back simulation approach to estimate market risk exposure is the limited confidence level based on the number of observations.  
True False
26. Monte-Carlo simulation is a process of creating asset returns based on actual trading days so that the probabilities of occurrence are consistent with recent historical experience.  
True False
27. One of the reasons for the development of internal risk measurement models is the proposal of the BIS to impose capital requirements on the trading portfolios of FIs.  
True False
28. Banks in the countries that are members of the BIS must use the standardized framework to measure market risk exposures.  
True False
29. In the BIS standardized framework model, the specific risk charge attempts to measure the decline in the liquidity or credit risk quality of the trading portfolio over the holding period.  
True False
30. In the BIS standardized framework model, the general market risk weights reflect the product of the modified durations and interest rate shocks.  
True False

31. As compared to the BIS standardized framework model for measuring market risk, the internal models allowed by the large banks are subject to audit by the regulators.  
True False
32. A charge reflecting the risk of the decline in the liquidity or credit risk quality of the trading portfolio is the general market risk charge in the BIS framework.  
True False
33. In the BIS framework, vertical offsets are charges that reflect the modified duration and interest rate shocks for each maturity.  
True False
34. In the BIS framework, horizontal offsets within time zones are used to adjust residual positions between zones.  
True False
35. In the early 2000s the market risk capital requirement uniformly was a large proportion of the total risk capital requirements for the largest US banks.  
True False
36. The root cause of much of the losses of FIs during the financial crisis of 2008-2009 was  
A. interest rate risk.  
B. market risk.  
C. sovereign risk.  
D. firm-specific risk.  
E. systematic risk.
37. Conceptually, an FI's trading portfolio can be differentiated from its investment portfolio by  
A. liquidity.  
B. time horizon.  
C. size of assets.  
D. interest rate fluctuations.  
E. Answers A and B only.
38. Regulators usually view tradable assets as those held for horizons of  
A. less than one year.  
B. greater than one year.  
C. less than a quarter.  
D. less than a week.  
E. less than three years.
39. Which term defines the risk related to the uncertainty of an FI's earnings on its trading portfolio caused by changes, and particularly extreme changes in market conditions?  
A. Interest rate risk.  
B. Credit risk.  
C. Sovereign risk.  
D. Market risk.  
E. Default risk.
40. The portfolio of a bank that contains assets and liabilities that are relatively illiquid and held for longer holding periods  
A. is the trading portfolio.  
B. is the investment portfolio.  
C. contains only long term derivatives.  
D. is subject to regulatory risk.  
E. cannot be differentiated on the basis of time horizon and liquidity.

41. How can market risk be defined in absolute terms?
- A. A dollar exposure amount or as a relative amount against some benchmark.
  - B. The gap between promised cash flows from loans and securities and realized cash flows.
  - C. The change in value of an FI's assets and liabilities denominated in nondomestic currencies.
  - D. The cost incurred by an FI when its technological investments do not produce anticipated cost savings.
  - E. The capital required to offset a sudden decline in the value of its assets.
42. Which benefit of market risk measurement (MRM) provides senior management with information on the risk exposure taken by FI traders?
- A. Regulation.
  - B. Resource allocation.
  - C. Management information.
  - D. Setting limits.
  - E. Performance evaluation.
43. Market risk measurement considers the return-risk ratio of traders, which may allow a more rational compensation system to be put in place. Thus MRM aids in
- A. regulation.
  - B. resource allocation.
  - C. management information.
  - D. setting limits.
  - E. performance evaluation.
44. Using the MRM to identify the potential return per unit of risk in different areas by comparing returns to market risk in areas of trading so more capital and resources can be directed to these areas is considered to be which of the following?
- A. Regulation.
  - B. Resource allocation.
  - C. Management information.
  - D. Setting limits.
  - E. Performance evaluation.
45. A reason for the use of MRM for the purpose of identifying potential misallocations of resources caused by prudential regulation is which of the following?
- A. Regulation.
  - B. Resource allocation.
  - C. Management information.
  - D. Setting limits.
  - E. Performance evaluation.
46. The earnings at risk for an FI is a function of
- A. the time necessary to liquidate assets.
  - B. the potential adverse move in yield.
  - C. the dollar market value of the position.
  - D. the price sensitivity of the position.
  - E. All of the above.
47. In calculating the VAR of fixed-income securities in the RiskMetrics model
- A. the VAR is related in a linear manner to the DEAR.
  - B. the price volatility is the product of the modified duration and the adverse yield change.
  - C. the yield changes are assumed to be normally distributed.
  - D. All of the above.
  - E. Answers B and C only.

48. Daily earnings at risk (DEAR) is calculated as
- A. the price sensitivity times an adverse daily yield move.
  - B. the dollar value of a position times the price volatility.
  - C. the dollar value of a position times the potential adverse yield move.
  - D. the price volatility times the ÖN.
  - E. More than one of the above is correct.
49. When using the JPM RiskMetrics model, price volatility is calculated as
- A. the price sensitivity times an adverse daily yield move.
  - B. the dollar value of a position times the price volatility.
  - C. the dollar value of a position times the potential adverse yield move.
  - D. the price volatility times the ÖN.
  - E. None of the above.
50. In the JPM RiskMetrics model, VAR is calculated as
- A. the price sensitivity times an adverse daily yield move.
  - B. the dollar value of a position times the price volatility.
  - C. the dollar value of a position times the potential adverse yield move.
  - D. the price volatility times the ÖN.
  - E. DEAR times the ÖN.
51. Which of the following securities is most unlikely to have a symmetrical return distribution, making the use of JPM RiskMetrics model inappropriate?
- A. Common stock.
  - B. Preferred stock.
  - C. Option contracts.
  - D. Consol bonds.
  - E. 30-year U.S. Treasury bonds.
52. Which of the following is a problem encountered while using more observations in the back simulation approach?
- A. Past observations become decreasingly relevant in predicting VAR in the future.
  - B. Calculations become highly complex.
  - C. Need to assume a symmetric (normal) distribution for all asset returns.
  - D. Requirement for calculating the correlations of asset returns.
  - E. Answers B and C only.
53. Considering the Capital Asset Pricing Model, which of the following observations is incorrect?
- A. In a well-diversified portfolio, unsystematic risk can be largely diversified away.
  - B. Systematic risk is considered to be a diversifiable risk.
  - C. Total risk is the sum of systematic risk and unsystematic risk.
  - D. Systematic risk reflects the comovement of a stock with the market portfolio.
  - E. Unsystematic risk is specific to the firm.
54. If a stock portfolio replicates the returns on a stock market index, the beta of the portfolio will be
- A. less than 1.
  - B. greater than 1.
  - C. equal to 0.
  - D. equal to 1.
  - E. negative.
55. If an FI's trading portfolio of stock is not well-diversified, the additional risk that must be taken into account is
- A. firm-specific risk.
  - B. default risk.
  - C. timing risk.
  - D. interest rate risk.
  - E. systematic risk.

56. The capital requirements of internally generated market risk exposure estimates can be met
- A. only with two types of capital.
  - B. only with Tier 1, Tier 2, or Tier 3 capital.
  - C. with retained earnings and common stock only.
  - D. only with retained earnings, common stock, and long-term subordinated debt.
  - E. only with short- or long-term subordinated debt.
57. Which of the following items is not considered to be an advantage of using back simulation over the RiskMetrics approach in developing market risk models?
- A. Back simulation is less complex.
  - B. Back simulation creates a higher degree of confidence in the estimates.
  - C. Asset returns do not need to be normally distributed.
  - D. The correlation matrix does not need to be calculated.
  - E. A worst-case scenario value is determined by back simulation.
58. An advantage of the historic or back simulation model for quantifying market risk includes
- A. calculation of a standard deviation of returns is not required.
  - B. all return distributions must be symmetric and normal.
  - C. the systematic risk of the trading positions is known.
  - D. there is a high degree of confidence when using small sample sizes.
  - E. None of the above.
59. A disadvantage of the historic or back simulation model for quantifying market risk includes
- A. calculation of a standard deviation of returns is not required.
  - B. calculation of the correlation between asset returns is not required.
  - C. estimates of past returns used in the model may not be relevant to the current market returns.
  - D. it accounts for non-standard return distributions.
  - E. None of the above.
60. Which of the following is a method that may overcome weaknesses in the historic or back simulation model?
- A. The use of smaller sample sizes to estimate return distributions.
  - B. Weight sample size observations so that the more recent observations contribute a larger amount to the model.
  - C. Decrease the number of assets in the trading portfolio so that past returns will provide more accuracy to the model.
  - D. Increase the number of assets in the trading portfolio in order to benefit from higher levels of diversification.
  - E. The weaknesses in the model cannot be overcome.
61. The specific risk charge in the BIS standardized framework of market risk measurement
- A. reflects the product of the modified durations and the interest rate shocks.
  - B. measures the credit risk quality of the trading portfolio.
  - C. measures the vertical offsets of the portfolio.
  - D. measures the decline in liquidity of the portfolio.
  - E. More than one of the above is correct.
62. The general market risk charge in the BIS standardized framework of market risk measurement
- A. reflects the product of the modified durations and the interest rate shocks.
  - B. measures the credit risk quality of the trading portfolio.
  - C. measures the vertical offsets of the portfolio.
  - D. measures the decline in liquidity of the portfolio.
  - E. More than one of the above is correct.

63. The additional capital charge for basis risk
- A. reflects the product of the modified durations and the interest rate shocks.
  - B. measures the credit risk quality of the trading portfolio.
  - C. measures the vertical offsets of the portfolio.
  - D. measures the decline in liquidity of the portfolio.
  - E. More than one of the above is correct.
64. In the BIS standardized framework model, these are disallowance factors caused by basis risk between the returns of different types of assets.
- A. Horizontal offsets within time zones
  - B. Horizontal offsets between time zones
  - C. Vertical offsets
  - D. Specific risk charges
  - E. Residual charges
65. Which approach, in effect, amounts to simulating or creating artificial trading days and FX rate changes?
- A. Back simulation approach.
  - B. Variance/covariance approach.
  - C. Monte Carlo simulation approach.
  - D. RiskMetrics Model.
  - E. All of the above.
66. The BIS plan allowing internal models by the BIS allows the following EXCEPT
- A. an adverse change is defined as the 95th percentile instead of the 90th percentile.
  - B. the minimum holding period for VAR estimation is 10 days.
  - C. empirical correlations can be estimated for broad categories of assets.
  - D. empirical correlations cannot be estimated for assets within a category.
  - E. the average estimated VAR will be multiplied by a minimum factor of 3.

The DEAR of a bank's trading portfolio has been estimated at \$5,000. It is assumed that the daily earnings are independently and normally distributed.

67. What is the 10-day VAR?
- A. \$5,000.
  - B. \$10,000.
  - C. \$15,811.
  - D. \$22,361.
  - E. \$50,000.
68. What is the 20-day VAR?
- A. \$5,000.
  - B. \$10,000.
  - C. \$15,811.
  - D. \$22,361.
  - E. \$50,000.

The mean change in the value of a portfolio of trading assets has been estimated to be 0 with a standard deviation of 20 percent. Yield changes are assumed to be normally distributed.

69. What is the maximum yield change expected if a 90 percent confidence (one-tailed) limit is used?
- A. 3.30%.
  - B. 20.0%.
  - C. 33.0%.
  - D. 39.2%.
  - E. 46.6%.

70. What is the maximum yield change expected if a 95 percent confidence (one-tailed) limit is used?
- A. 3.30%.
  - B. 20.0%.
  - C. 33.0%.
  - D. 39.2%.
  - E. 46.6%.
71. What is the maximum yield change expected if a 99 percent confidence (one-tailed) limit is used?
- A. 3.30%.
  - B. 20.0%.
  - C. 33.0%.
  - D. 39.2%.
  - E. 46.6%.

City bank has six-year zero coupon bonds with a total face value of \$20 million. The current market yield on the bonds is 10 percent.

72. What is the modified duration of these bonds?
- A. 5.45 years.
  - B. 6.00 years.
  - C. 6.60 years.
  - D. 10.0 years.
  - E. 10.9 years.
73. What is the price volatility if the maximum potential adverse move in yields is estimated at 20 basis points?
- A. -1.32 percent.
  - B. -2.00 percent.
  - C. -2.18 percent.
  - D. -1.09 percent.
  - E. -1.20 percent.
74. What is the daily earnings at risk (DEAR) of this bond portfolio?
- A. -\$246,110.63.
  - B. -\$123,055.32.
  - C. -\$135,473.74.
  - D. -\$149,021.12.
  - E. -\$225,789.57.
75. What is the 10-day VAR assuming the daily returns are independently distributed?
- A. -\$714,009.31
  - B. -\$778,270.16
  - C. -\$389,135.09
  - D. -\$428,405.58
  - E. -\$471,246.16

Sumitomo Bank's risk manager has estimated that the DEARs of two of its major assets in its trading portfolio, foreign exchange and bonds, are -\$150,000 and -\$250,000, respectively.

76. What is the total DEAR of Sumitomo's trading portfolio if the correlations among assets are ignored?
- A. -\$100,000.
  - B. -\$291,548.
  - C. -\$350,000.
  - D. -\$380,789.
  - E. -\$400,000.



77. What is the total DEAR of Sumitomo's trading portfolio if the correlation among assets is assumed to be 1.0?
- \$100,000.
  - \$291,548.
  - \$350,000.
  - \$380,789.
  - \$400,000.
78. What is the total DEAR of Sumitomo's trading portfolio if the correlation among assets is assumed to be 0.80?
- \$100,000.
  - \$291,548.
  - \$350,000.
  - \$380,789.
  - \$400,000.
79. What is the total DEAR of Sumitomo's trading portfolio if the correlation among assets is assumed to be 0.0?
- \$100,000.
  - \$291,548.
  - \$350,000.
  - \$380,789.
  - \$400,000.
80. What is the total DEAR of Sumitomo's trading portfolio if the correlation among assets is assumed to be -1.0?
- \$100,000.
  - \$291,548.
  - \$350,000.
  - \$380,789.
  - \$400,000.
81. What is the 10-day VAR of Sumitomo's trading portfolio if the correlation among assets is assumed to be -1.0?
- \$100,000.
  - \$316,228.
  - \$1,106,797.
  - \$1,204,161.
  - \$1,264,911.

On December 31, 2001 Historic Bank had long positions of 200,000,000 Japanese Yen and 50,000,000 Swiss Francs. The closing exchange rates were  $\times 92/\$$  and  $\text{Swf} 1.89/\$$ .

82. What were the respective positions of the two currencies in dollars?
- \$2,173,913 and \$94,500,000.
  - \$18,400,000,000 and \$26,455,026.
  - \$2,173,913 and \$26,455,026.
  - \$18,400,000,000 and \$94,500,000.
  - None of the above.
83. What is the value of delta for the respective positions of the two currencies in dollars?
- \$200,000,000 and -\$50,000,000.
  - \$21,524 and -\$261,930.
  - \$21,524 and -\$50,000,000.
  - \$200,000,000 and -\$261,640.
  - \$21,524 and -\$317,642.

84. Over the past 500 days, the 25th worst day for adverse exchange rate changes saw a change in the exchange rates of 0.78 percent for the Yen and 0.30 percent for the Swiss Franc. What is the expected VAR exposure on December 31?
- \$95,368.
  - \$2,157,088.
  - \$26,375,899.
  - \$109,233.
  - \$314,848.

Swiss Bank USA has the following foreign exchange positions in its trading portfolio, reported in dollars: \$40 long in Swiss francs (SF), \$20 million short in Swiss francs, \$35 million long in Euros (€) and \$20 million short in €, \$30 million long in British pounds (£) and \$50 million short in £. It uses the standardized framework proposed by the Bank for International Settlements (BIS) to estimate its capital charge for its foreign exchange positions.

85. What are the net positions for each foreign exchange held in the portfolio?
- \$20 million short in SF, \$15 million long in €, and \$20 million short in £.
  - \$20 million short in SF, \$15 million long in €, and \$20 million long in £.
  - \$20 million long in SF, \$15 million long in €, and \$20 million long in £.
  - \$20 million long in SF, \$15 million long in €, and \$20 million short in £.
  - \$20 million long in SF, \$15 million short in €, and \$20 million short in £.
86. What is the capital charge for its foreign exchange holdings using the BIS short hand method?
- \$1.6 million.
  - \$2.8 million.
  - \$3.2 million.
  - \$4.0 million.
  - \$4.4 million.

Company	Long	Short
ABN-AMRO	\$20 million	\$10 million
ING	\$25 million	\$50 million
AXA	\$40 million	\$15 million

An FI has the following stocks in its portfolio:

87. What is the capital charge for unsystematic risk (x-factor) under the BIS proposals?
- \$1.2 million.
  - \$2.4 million.
  - \$3.2 million.
  - \$6.4 million.
  - \$12.8 million.
88. What is the capital charge for systematic risk (y-factor) under the BIS proposals?
- \$1.2 million.
  - \$4.8 million.
  - \$3.2 million.
  - \$6.4 million.
  - \$12.8 million.

89. What is the total capital charge for its portfolio of stocks under the BIS proposals?
- A. \$7.6 million.
  - B. \$8.8 million.
  - C. \$9.6 million.
  - D. \$12.8 million.
  - E. \$11.2 million.

TransAmerica Bank has estimated its previous day's DEAR to be -1.28 million. It has also estimated its average VAR over the last sixty working days to be -\$1.75 million. It uses its own internal model to estimate its capital requirements following the BIS guidelines. It currently has \$2.75 million in Tier I capital, \$2.80 million in Tier II capital, and \$1.25 million in Tier III capital.

90. What is the 10-day VAR using the previous day's DEAR estimate?
- A. \$1.28 million.
  - B. \$3.24 million.
  - C. \$4.05 million.
  - D. \$10.05 million.
  - E. \$12.80 million.
91. Using the BIS internal guidelines, what is the total capital (Tier I, II and III) required to lower market risk?
- A. \$1.28 million.
  - B. \$3.24 million.
  - C. \$4.05 million.
  - D. \$5.25 million.
  - E. \$12.80 million.
92. Is there sufficient capital to meet the BIS proposed standards?
- A. Yes, Tier I capital alone is more than sufficient to meet the minimum requirements.
  - B. Yes, Tier I and II capital is more than sufficient to meet the minimum requirements; Tier III is not necessary.
  - C. Yes, Tier I, II and III capital is more than sufficient to meet the minimum requirements, but Tier II must be included.
  - D. No, Tier I and II capital is not sufficient to meet the minimum requirements.
  - E. No, Tier I, II and III capital is not sufficient to meet the minimum requirements.

## ch10 Key

1. TRUE
2. TRUE
3. FALSE
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12. FALSE
13. FALSE
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42. C  
43. E  
44. B  
45. A  
46. E  
47. E  
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73. D  
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- 75. C
- 76. E
- 77. E
- 78. D
- 79. B
- 80. A
- 81. B
- 82. C
- 83. B
- 84. A
- 85. D
- 86. B
- 87. D
- 88. B
- 89. E
- 90. C
- 91. D
- 92. B

# ch10 Summary

<u>Category</u>	<u># of Questions</u>
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