

2014

FRM Examination Study Guide

**The designation recognized by risk
management professionals worldwide**

Topic Outline, Readings, Test Weightings

The Study Guide sets forth primary topics and subtopics covered in the FRM Exam. The topics were selected by the FRM Committee as ones that risk managers who work in practice today have to master. The topics and their respective weightings are reviewed yearly to ensure the FRM Exam is kept timely and relevant.

The Study Guide also contains a full listing of all of the readings that are recommended as preparation for the FRM Examination. Key Concepts appear as bullet points at the beginning of each section and are intended to help candidates identify the

major themes and knowledge areas associated with that section.

The FRM Examination is a comprehensive examination, testing a risk professional on a number of risk management concepts and approaches.

FRM Examination Approach

The FRM Exam is a practice-oriented examination. Its questions are derived from

a combination of theory, as set forth in the readings, and “real-world” work experience. Candidates are expected to understand risk management concepts and approaches and how they would apply to a risk manager’s day-to-day activities.

It is rare that a risk manager will be faced with an issue that can immediately be slotted into one category. In the real world, a risk manager must be able to identify any number of risk-related issues and be able to deal with them effectively. As such, the FRM Examination is also a comprehensive examination, testing a risk professional on a number of risk management concepts and approaches.

Readings

Questions for the FRM Examination are related to and supported by the readings listed under each topic outline. These readings were selected by the FRM Committee to assist candidates in their review of the subjects covered by the exam. It is strongly suggested that candidates review these readings in depth prior to sitting for the exam. All of the readings listed in the FRM Study Guide are available through GARP. Further information can be found at the GARP website.

FRM Exam Prep Providers

Some candidates may want to more formally review the materials with FRM Exam Prep Providers (EPPs). A list of EPPs that have registered with GARP can be found at the GARP website. GARP does not endorse any Exam Prep Provider but merely lists them as a service to FRM candidates.

On the following pages, an asterisk after a reading title indicates that the reading is freely available on the GARP website.

FRM PART I—TOPICS AND READINGS

FOUNDATIONS OF RISK MANAGEMENT—Part I Exam Weight | 20%

- The role of risk management in corporate governance
- Basic risk types, measurement and management tools
- Creating value with risk management
- The Capital Asset Pricing Model (CAPM)
- Multi-factor models
- Risk-adjusted performance measurement
- Enterprise Risk Management (ERM)
- Information risk and data quality management
- Financial disasters and risk management failures
- Ethics and the GARP Code of Conduct

Readings for Foundations of Risk Management

1. “Risk Taking: A Corporate Governance Perspective,” (International Finance Corporation, World Bank Group, June 2012).*
2. Edwin J. Elton, Martin J. Gruber, Stephen J. Brown and William N. Goetzmann, *Modern Portfolio Theory and Investment Analysis, 8th Edition* (Hoboken, NJ: John Wiley & Sons, 2009).
 - Chapter 13.....The Standard Capital Asset Pricing Model
3. Zvi Bodie, Alex Kane, and Alan J. Marcus, *Investments, 9th Edition* (New York: McGraw-Hill, 2010).
 - Chapter 10Arbitrage Pricing Theory and Multifactor Models of Risk and Return
4. Noel Amenc and Veronique Le Sourd, *Portfolio Theory and Performance Analysis* (West Sussex, England: John Wiley & Sons, 2003).
 - Chapter 4, Section 4.2 onlyApplying the CAPM to Performance Measurement: Single-Index Performance Measurement Indicators
5. “Understanding and Communicating Risk Appetite,” (COSO, Dr. Larry Rittenberg and Frank Martens, January 2012).
6. Anthony Tarantino and Deborah Cernauskas, *Risk Management in Finance: Six Sigma and Other Next Generation Techniques* (Hoboken, NJ: John Wiley & Sons, 2009).
 - Chapter 3Information Risk and Data Quality Management
7. Steve Allen, *Financial Risk Management: A Practitioner’s Guide to Managing Market and Credit Risk, 2nd Edition* (New York: John Wiley & Sons, 2013).
 - Chapter 4Financial Disasters
8. René Stulz, “Risk Management Failures: What are They and When Do They Happen?” Fisher College of Business Working Paper Series, October 2008.*
9. GARP Code of Conduct.*

QUANTITATIVE ANALYSIS—Part I Exam Weight | 20%

- Discrete and continuous probability distributions
- Population and sample statistics
- Statistical inference and hypothesis testing
- Estimating the parameters of distributions
- Graphical representation of statistical relationships
- Linear regression with single and multiple regressors
 - The Ordinary Least Squares (OLS) method
 - Interpreting and using regression coefficients, the t-statistic, and other output
 - Hypothesis testing and confidence intervals
 - Heteroskedasticity and multicollinearity
- Simulation methods
- Estimating correlation and volatility using EWMA and GARCH models
- Volatility term structures

Readings for Quantitative Analysis

10. Michael Miller, *Mathematics and Statistics for Financial Risk Management* (Hoboken, NJ: John Wiley & Sons, 2012).
 - Chapter 2Probabilities
 - Chapter 3Basic Statistics
 - Chapter 4Distributions
 - Chapter 5Hypothesis Testing and Confidence Intervals
11. James Stock and Mark Watson, *Introduction to Econometrics, Brief Edition* (Boston: Pearson Education, 2008).
 - Chapter 4Linear Regression with One Regressor
 - Chapter 5Regression with a Single Regressor
 - Chapter 6Linear Regression with Multiple Regressors
 - Chapter 7Hypothesis Tests and Confidence Intervals in Multiple Regression
12. Dessislava Pachamanova and Frank Fabozzi, *Simulation and Optimization in Finance* (Hoboken, NJ: John Wiley & Sons, 2010).
 - Chapter 4Simulation Modeling
13. John Hull, *Options, Futures, and Other Derivatives, 8th Edition* (New York: Pearson Prentice Hall, 2012).
 - Chapter 22Estimating Volatilities and Correlations

FINANCIAL MARKETS AND PRODUCTS—Part I Exam Weight | 30%

- Mechanics of OTC and exchange markets
- Forwards, futures, swaps and options
 - Mechanics
 - Pricing and factors that affect it
 - Uses in hedging and hedging strategies
 - Delivery options
- Interest rates and measures of interest rate sensitivity
- Derivatives on fixed income securities, interest rates, foreign exchange, futures, commodities, and equities
- Foreign exchange risk
- Corporate bonds
- Rating agencies

Readings for Financial Markets and Products

14. The Institute for Financial Markets, *Futures and Options* (Washington, DC: The Institute for Financial Markets, 2011).
 - Chapter 1Introduction: Futures and Options Markets
 - Chapter 2Futures Industry Institutions and Professionals
 - Chapter 7Hedging with Futures and Options
15. Hull, *Options, Futures, and Other Derivatives, 8th Edition*.
 - Chapter 1Introduction
 - Chapter 2Mechanics of Futures Markets
 - Chapter 3Hedging Strategies Using Futures
 - Chapter 4Interest Rates
 - Chapter 5Determination of Forward and Futures Prices
 - Chapter 6Interest Rate Futures
 - Chapter 7Swaps
 - Chapter 10Properties of Stock Options
 - Chapter 11.....Trading Strategies Involving Options
16. Robert McDonald, *Derivatives Markets, 3rd Edition* (Boston: Addison-Wesley, 2013).
 - Chapter 6Commodity Forwards and Futures

17. Helyette Geman, *Commodities and Commodity Derivatives: Modeling and Pricing for Agriculturals, Metals and Energy* (West Sussex, England: John Wiley & Sons, 2005).
 - Chapter 1Fundamentals of Commodity Spot and Futures Markets: Instruments, Exchanges and Strategies
18. Anthony Saunders and Marcia Millon Cornett, *Financial Institutions Management: A Risk Management Approach, 7th Edition* (New York: McGraw-Hill, 2011).
 - Chapter 14.....Foreign Exchange Risk
19. Frank Fabozzi (editor), *The Handbook of Fixed Income Securities, 8th Edition* (New York: McGraw-Hill, 2012).
 - Chapter 12.....Corporate Bonds, by Frank Fabozzi, Steven Mann and Adam Cohen
20. John B. Caouette, Edward I. Altman, Paul Narayanan, and Robert W.J. Nimmo, *Managing Credit Risk, 2nd Edition* (New York: John Wiley & Sons, 2008).
 - Chapter 6The Rating Agencies

VALUATION AND RISK MODELS—Part I Exam Weight | 30%

- Value-at-Risk (VaR)
 - Applied to stock, currencies, and commodities
 - Applied to linear and non-linear derivatives, and securities with embedded options
 - Structured Monte Carlo, stress testing, and scenario analysis
 - Limitations as a risk measure
 - Coherent risk measures
 - Volatility models
- Option valuation
 - Pricing options using binomial trees
 - The Black-Scholes-Merton Model
 - The “Greeks”
- Fixed income valuation
 - Discount factors, spot rates, forward rates, and yield to maturity
 - Arbitrage and the Law of One Price
 - One-factor measures of price sensitivity
 - Key rate exposures and multi-factor measures of price sensitivity
 - Hedging and immunization
- Country and sovereign risk models and management
- External and internal credit ratings
- Expected and unexpected losses
- Operational risk
- Stress testing and scenario analysis

Readings for Valuation and Risk Models

21. Linda Allen, Jacob Boudoukh and Anthony Saunders, *Understanding Market, Credit and Operational Risk: The Value at Risk Approach* (Oxford: Blackwell Publishing, 2004).
 - Chapter 2Quantifying Volatility in VaR Models
 - Chapter 3Putting VaR to Work
22. Hull, *Options, Futures, and Other Derivatives, 8th Edition*.
 - Chapter 12.....Binomial Trees
 - Chapter 14.....The Black-Scholes-Merton Model
 - Chapter 18.....The Greek Letters
23. Bruce Tuckman, *Fixed Income Securities, 3rd Edition* (Hoboken, NJ: John Wiley & Sons, 2011).
 - Chapter 1Prices, Discount Factors, and Arbitrage
 - Chapter 2Spot, Forward and Par Rates
 - Chapter 3Returns, Spreads and Yields
 - Chapter 4One-Factor Risk Metrics and Hedges
 - Chapter 5Multi-Factor Risk Metrics and Hedges
 - Chapter 6Empirical Approaches to Risk Metrics and Hedges

- 24. Daniel Wagner, *Managing Country Risk: A Practitioner's Guide to Effective Cross-Border Risk Analysis* (Boca Raton, FL: Taylor & Francis Group, 2012).**
- Chapter 3Assessing Country Risk
 - Chapter 4Country Risk Assessment in Practice
- 25. Arnaud de Servigny and Olivier Renault, *Measuring and Managing Credit Risk* (New York: McGraw-Hill, 2004).**
- Chapter 2External and Internal Ratings
- 26. Michael Ong, *Internal Credit Risk Models: Capital Allocation and Performance Measurement* (London: Risk Books, 2003).**
- Chapter 4Loan Portfolios and Expected Loss
 - Chapter 5Unexpected Loss
- 27. Kevin Dowd, *Measuring Market Risk, 2nd Edition* (West Sussex, England: John Wiley & Sons, 2005).**
- Chapter 2Measures of Financial Risk
- 28. John Hull, *Risk Management and Financial Institutions, 3rd Edition* (Boston: Pearson Prentice Hall, 2012).**
- Chapter 18.....Operational Risk
- 29. Philippe Jorion, *Value-at-Risk: The New Benchmark for Managing Financial Risk, 3rd Edition* (New York: McGraw Hill, 2007).**
- Chapter 14.....Stress Testing
- 30. "Principles for Sound Stress Testing Practices and Supervision" (Basel Committee on Banking Supervision Publication, May 2009).***

FRM PART II—TOPICS AND READINGS

MARKET RISK MEASUREMENT AND MANAGEMENT—Part II Exam Weight | 25%

- VaR and other risk measures
 - Parametric and non-parametric methods of estimation
 - VaR mapping
 - Backtesting VaR
 - Expected shortfall (ES) and other coherent risk measures
 - Modeling dependence: correlations and copulas
 - Extreme value theory (EVT)
- Term structure models of interest rates
- Volatility: smiles and term structures
- Discount rate selection
- Exotic options
- Mortgages and mortgage-backed securities (MBS)
 - Structure, markets, and valuation

Readings for Market Risk Measurement and Management

31. Kevin Dowd, *Measuring Market Risk, 2nd Edition* (West Sussex, England: John Wiley & Sons, 2005).
 - Chapter 3Estimating Market Risk Measures
 - Chapter 4Non-parametric Approaches
 - Chapter 5Appendix—Modeling Dependence: Correlations and Copulas
 - Chapter 7Parametric Approaches (II): Extreme Value
32. Jorion, *Value-at-Risk: The New Benchmark for Managing Financial Risk, 3rd Edition* (New York: McGraw Hill, 2007).
 - Chapter 6Backtesting VaR
 - Chapter 11.....VaR Mapping
33. Jacob Boudoukh, Matthew Richardson and Robert F. Whitelaw, “The Best of Both Worlds: A Hybrid Approach to Calculating Value at Risk,” Stern School of Business, NYU.
34. John Hull and Alan White, “Incorporating Volatility Updating into the Historical Simulation Method for Value at Risk,” *Journal of Risk*, October 1998.

35. “Messages from the Academic Literature on Risk Measurement for the Trading Book,” Basel Committee on Banking Supervision, Working Paper No. 19, Jan 2011.
36. John Hull and Alan White, “LIBOR vs. OIS: The Derivatives Discounting Dilemma,” April 2013. Forthcoming in the *Journal of Investment Management*.
37. Bruce Tuckman, *Fixed Income Securities, 3rd Edition* (Hoboken, NJ: John Wiley & Sons, 2011).
- Chapter 7The Science of Term Structure Models
 - Chapter 8The Evolution of Short Rates and the Shape of the Term Structure
 - Chapter 9The Art of Term Structure Models: Drift
 - Chapter 10The Art of Term Structure Models: Volatility and Distribution
38. Hull, *Options, Futures, and Other Derivatives, 8th Edition*.
- Chapter 19.....Volatility Smiles
 - Chapter 25.....Exotic Options
39. Pietro Veronesi, *Fixed Income Securities* (Hoboken, NJ: John Wiley & Sons, 2010).
- Chapter 8Basics of Residential Mortgage Backed Securities
40. Frank Fabozzi, Anand Bhattacharya, William Berliner, *Mortgage-Backed Securities, 3rd Edition* (Hoboken, NJ: John Wiley & Sons, 2011).
- Chapter 1Overview of Mortgages and the Consumer Mortgage Market
 - Chapter 2Overview of the Mortgage-Backed Securities Market
 - Chapter 10Techniques for Valuing MBS

CREDIT RISK MEASUREMENT AND MANAGEMENT—Part II Exam Weight | 25%

- Credit analysis
- Default risk: Quantitative methodologies and risk neutral valuations
- Expected and unexpected losses
- Credit VaR
- Counterparty risk
 - Mitigation techniques
 - Credit exposure profiles
 - Collateralization and netting effects
 - Pricing credit value adjustments (CVA)
- Credit derivatives
 - Mechanics and structure
 - Valuation and spreads
- Structured finance and securitization
 - The structuring and securitization process
 - Agency problems and moral hazard
 - Subprime mortgages and securitization

Readings for Credit Risk Measurement and Management

41. Jonathan Golin and Philippe Delhaise, *The Bank Credit Analysis Handbook* (Hoboken, NJ: John Wiley & Sons, 2013).
 - Chapter 1The Credit Decision
 - Chapter 2The Credit Analyst
42. de Servigny and Renault, *Measuring and Managing Credit Risk*.
 - Chapter 3Default Risk: Quantitative Methodologies
43. René Stulz, *Risk Management & Derivatives* (Florence, KY: Thomson South-Western, 2002).
 - Chapter 18.....Credit Risks and Credit Derivatives
44. Allan Malz, *Financial Risk Management: Models, History, and Institutions* (Hoboken, NJ: John Wiley & Sons, 2011).
 - Chapter 6Credit and Counterparty Risk
 - Chapter 7Spread Risk and Default Intensity Models
 - Chapter 8Portfolio Credit Risk
 - Chapter 9Structured Credit Risk

- 45. Jon Gregory, *Counterparty Credit Risk and Credit Value Adjustment: A Continuing Challenge for Global Financial Markets, 2nd Edition* (West Sussex, UK: John Wiley & Sons, 2012).**
- Chapter 3Defining Counterparty Credit Risk
 - Chapter 4Netting, Compression, Resets, and Termination Features
 - Chapter 5Collateral
 - Chapter 8Credit Exposure
 - Chapter 10Default Probability, Credit Spreads, and Credit Derivatives
 - Chapter 12.....Credit Value Adjustment
 - Chapter 15.....Wrong Way Risk
- 46. Christopher Culp, *Structured Finance and Insurance: The Art of Managing Capital and Risk* (Hoboken, NJ: John Wiley & Sons, 2006).**
- Chapter 12.....Credit Derivatives and Credit-Linked Notes
 - Chapter 13.....The Structuring Process
 - Chapter 16.....Securitization
 - Chapter 17.....Cash Collateralized Debt Obligations
- 47. Adam Ashcraft and Til Schuermann, “Understanding the Securitization of Subprime Mortgage Credit,” Federal Reserve Bank of New York Staff Reports, No. 318 (March 2008).***

OPERATIONAL AND INTEGRATED RISK MANAGEMENT—Part II Exam Weight | 25%

- Calculating and applying risk-adjusted return on capital (RAROC)
- Liquidity risk
- Model risk
 - Model validation
- Evaluating the performance of risk management systems
- Validating VaR models
- Enterprise Risk Management (ERM)
- Economic capital
- Operational loss data
 - Frequency and severity distributions
 - Modeling and fitting distributions
- Failure mechanics of dealer banks
- Risk appetite frameworks
- Data aggregation and risk reporting
- Regulation and the Basel Accords
 - Minimum capital requirements
 - Methods for calculating credit, market, and operational risk
 - Liquidity risk management
 - Stress testing
 - Revisions to the Basel II Accord
 - The Basel III framework
 - Comparing Basel II/III to Solvency II

Readings for Operational Risk Measurement and Management

48. “Principles for the Sound Management of Operational Risk,” (Basel Committee on Banking Supervision Publication, June 2011).*
49. Mo Chaudhury, “A Review of the Key Issues in Operational Risk Capital Modeling,” *The Journal of Operational Risk*, Volume 5/Number 3, Fall 2010: pp. 37-66.
50. Eric Cope, Giulio Mignola, Gianluca Antonini and Roberto Ugoccioni, “Challenges and Pitfalls in Measuring Operational Risk from Loss Data,” *The Journal of Operational Risk*, Volume 4/Number 4, Winter 2009/10: pp. 3-27.
51. Brian Nocco and René Stulz, “Enterprise Risk Management: Theory and Practice,” *Journal of Applied Corporate Finance* 18, No. 4 (2006): 8-20.*
52. Michel Crouhy, Dan Galai and Robert Mark, *Risk Management* (New York: McGraw-Hill, 2001).
 - Chapter 14.....Capital Allocation and Performance Measurement

53. “Range of Practices and Issues in Economic Capital Frameworks,” (Basel Committee on Banking Supervision Publication, March 2009).*
54. Dowd, *Measuring Market Risk, 2nd Edition*.
 - Chapter 14.....Estimating Liquidity Risks
 - Chapter 16.....Model Risk
55. Malz, *Financial Risk Management: Models, History, and Institutions*.
 - Chapter 11, Section 11.1Assessing the Quality of Risk Measures
 - Chapter 12.....Liquidity and Leverage
56. “Observations on Developments in Risk Appetite Frameworks and IT Infrastructure,” Senior Supervisors Group, December 2010.*
57. “Principles for Effective Data Aggregation and Risk Reporting,” (Basel Committee on Banking Supervision Publication, January 2013).
58. Til Schuermann. “Stress Testing Banks,” April 2012.*
59. Darrell Duffie, 2010. “Failure Mechanics of Dealer Banks,” *Journal of Economic Perspectives* 24:1, 51-72.*

Readings for Regulatory Reference

Candidates are expected to understand the objective and general structure of important international regulatory frameworks and general application of the various approaches for calculating minimum capital requirements.

60. “Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework—Comprehensive Version,” (Basel Committee on Banking Supervision Publication, June 2006).*
61. “Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems—Revised Version,” (Basel Committee on Banking Supervision Publication, June 2011).*
62. “Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools,” (Basel Committee on Banking Supervision Publication, January 2013).
63. “Revisions to the Basel II Market Risk Framework—Updated as of 31 December 2010,” (Basel Committee on Banking Supervision Publication, February 2011).*
64. “Operational Risk—Supervisory Guidelines for the Advanced Measurement Approaches,” (Basel Committee on Banking Supervision Publication, June 2011).*
65. Nadine Gatzert, Hannah Wesker, “A Comparative Assessment of Basel II/III and Solvency II,” Working Paper, Friedrich-Alexander-University of Erlangen-Nuremberg, Version: October 2011.*

RISK MANAGEMENT AND INVESTMENT MANAGEMENT—Part II Exam Weight | 15%

- Portfolio construction
- Portfolio risk measures
- Risk budgeting
- Risk monitoring and performance measurement
- Portfolio-based performance analysis
- Hedge funds
 - Hedge fund strategies
 - Due diligence and fraud detection
 - Liquidity
 - Risk management of hedge funds

Readings for Risk Management and Investment Management

66. Richard Grinold and Ronald Kahn, *Active Portfolio Management: A Quantitative Approach for Producing Superior Returns and Controlling Risk, 2nd Edition* (New York: McGraw-Hill, 2000).
 - Chapter 14.....Portfolio Construction
67. Jorion, *Value-at-Risk: The New Benchmark for Managing Financial Risk, 3rd Edition*.
 - Chapter 7Portfolio Risk: Analytical Methods
 - Chapter 17.....VaR and Risk Budgeting in Investment Management
68. Robert Litterman and the Quantitative Resources Group, *Modern Investment Management: An Equilibrium Approach* (Hoboken, NJ: John Wiley & Sons, 2003).
 - Chapter 17.....Risk Monitoring and Performance Measurement
69. Zvi Bodie, Alex Kane, and Alan J. Marcus, *Investments, 9th Edition* (New York: McGraw-Hill, 2010).
 - Chapter 24.....Portfolio Performance Evaluation
70. Kevin R. Mirabile, *Hedge Fund Investing: A Practical Approach to Understanding Investor Motivation, Manager Profits, and Fund Performance* (Hoboken, NJ: Wiley Finance, 2013).
 - Chapter 11.....Performing Due Diligence on Specific Managers and Funds
71. G. Constantinides, M. Harris and R. Stulz, eds., *Handbook of the Economics of Finance, Volume 2B* (Oxford: Elsevier, 2013).
 - Chapter 17.....Hedge Funds, by William Fung and David Hsieh
72. Andrew W. Lo, “Risk Management for Hedge Funds: Introduction and Overview,” *Financial Analysts Journal*, Vol. 57, No. 6 (November-December 2001), pp. 16-33.*

CURRENT ISSUES IN FINANCIAL MARKETS—Part II Exam Weight | 10%

- Risk management case studies
- Reference interest rates
- Comparative regulations for OTC derivatives
- Sovereign credit default swaps: roles and regulations
- Capital planning at large banks
- The European credit crisis and transmission of sovereign risks

Readings for Current Issues in Financial Markets

73. U.S. House of Representatives Subcommittee Report on MF Global (through p. 75), November 2012.*
74. “JPMorgan Chase Whale Trades: A Case History of Derivatives Risks and Abuses—Executive Summary,” U.S. Senate Subcommittee on Investigations, April 2013.*
75. “Towards Better Reference Rate Practices: A Central Bank Perspective,” Working Group Established by the BIS Economic Consultative Committee, March 2013.*
76. “OTC Derivatives: A Comparative Analysis of Regulation in the United States, European Union, and Singapore.” (Rajarshi Aroskar, IFM Review of Futures Markets, Volume 21, March 2013).*
77. “A New Look at the Role of Sovereign Credit Default Swaps,” IMF Global Financial Stability Report, Chapter 2, April 2013.*
78. “Capital Planning at Large Bank Holding Companies: Supervisory Expectations and Range of Current Practice,” Board of Governors of the Federal Reserve System, August 2013.
79. Jaime Caruana and Stefan Avdjiev, “Sovereign Creditworthiness and Financial Stability: An International Perspective.” Banque de France Financial Stability Review, No. 16 (April 2012), pp. 71-85.

NOTES

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2014 FRM Committee Members

Dr. René Stulz (Chairman)	Ohio State University
Richard Apostolik	Global Association of Risk Professionals
Richard Brandt	Citibank
Dr. Christopher Donohue	Global Association of Risk Professionals
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Keith Isaac, FRM	TD Bank
Kai Leifert, FRM	Northern Trust Global Investments
Steve Lerit, CFA	UBS Wealth Management
William May	Global Association of Risk Professionals
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Dr. Elliot Noma	Garrett Asset Management
Liu Ruixia	Industrial and Commercial Bank of China
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Serge Sverdlov	Redmond Analytics
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