

QFI – Investment Risk Management Exam

Spring 2023/Fall 2023

Important Exam Information:

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| Exam Registration | Candidates may register online or with an application. |
| Order Study Notes | Study notes are part of the required syllabus and are not available electronically but may be purchased through the online store. |
| Syllabus Readings | Readings listed in this syllabus may include study notes, online readings and textbooks. Candidates are responsible for all readings in their entirety, including sections such as Appendices, unless it is stated otherwise in the syllabus. |
| Introductory Study Note | The Introductory Study Note has a complete listing of all study notes as well as errata and other important information. |
| Case Study | A case study will not be provided with the examination. |
| Past Exams | Past Exams from 2000-present are available on SOA website. |
| Updates | Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices to the current syllabus. |
| Formula Package | A Formula Package will be provided with the exam. Please see the Introductory Study Note for more information. |

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| 1. Topic: Identification of Risk Types |
| Learning Objectives |
| The candidate will understand and be able to identify and describe types of risk present in investment management. |
| Learning Outcomes |
| The Candidate will be able to: a) Identify and describe the various kinds of risks, including strategic, market, credit, operational, liquidity etc. b) Describe and apply various risk identification tools c) Identify behavioral risks and explain how they factor into investment management |
| Resources |
| <ul style="list-style-type: none">• <i>Financial Enterprise Risk Management</i>, Sweeting, Paul, 2nd Edition, 2017<ul style="list-style-type: none">○ Ch. 8: Risk Identification• <i>Quantitative Enterprise Risk Management</i>, Hardy, Mary and Saunders, David, 2022<ul style="list-style-type: none">○ Ch. 2: Risk Taxonomy○ Ch. 19: Behavioural Risk Management |

2. Topic: Risk Measurement and Assessment

Learning Objectives

Understand and be able to apply different approaches to measuring and assessing risk exposures.

Learning Outcomes

The Candidate will be able to:

- a) Explain the advantages and limitations of different risk metrics
- b) Explain how different approaches and tests form a set of complementary investment risk metrics
- c) Analyze and evaluate the use and misuse of correlation, integrated risk distributions and copulas
- d) Understand the difference between real world and risk neutral processes and select appropriate market risk models
- e) Understand, evaluate, and apply credit risk models
- f) Apply different techniques of assessing rare event risks, including stress testing and scenario analysis
- g) Evaluate a company's or a portfolio's exposures to various risks, including liquidity risk

Resources

- *Credit Risk Modeling*, Bolder, David, 2018
 - Ch. 1: Getting started (background)
 - Ch. 2: A Natural First Step
 - Ch. 3: Mixture or Actuarial Models
 - Ch. 4: Threshold Models
- *Quantitative Enterprise Risk Management*, Hardy, Mary and Saunders, David, 2022
 - Ch. 3: Risk Measures
 - Ch. 6: Copulas
 - Ch. 7: Stress Testing
 - Ch. 8: Market Risk Models
- *Investment Risk Management*, Baker, Kent and Filbeck, Greg, 2015
 - Ch. 8: Liquidity Risk
- QFII-104-14: Correlation: Pitfalls and Alternatives
- QFII-110-15: The Devil is in the Tails: Actuarial Mathematics and the Subprime Mortgage Crisis
- QFII-123-21: IAA Note on Stress Testing and Scenario Analysis (pp. 1-6, 14-17, 19-26& 32-39)

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| 3. Topic: Risk Management |
| Learning Objectives |
| The candidate will understand and be able to apply the components of an effective risk management system to investment portfolio management and enterprise management. |
| Learning Outcomes |
| The Candidate will be able to: a) Identify and describe various approaches for managing portfolio risks including VaR/ ES methods, risk budgeting, position limits, etc. b) Explain the best practices of investment risk management c) Understand and evaluate model and parameter risks |
| Resources |
| <ul style="list-style-type: none">• <i>Quantitative Enterprise Risk Management</i>, Hardy, Mary and Saunders, David, 2022<ul style="list-style-type: none">○ Ch. 9: Short Term Portfolio Risk○ Ch.14: Model Risk and Governance• <i>The Top Ten Operational Risks: A Survival Guide for Investment Management Firms and Hedge Funds</i>, Miller and Lawton, 2010• QFII-119-19: Chapter 3 of <i>The Known, the Unknown, and the Unknowable in Financial Risk Management: Measurement and Theory Advancing Practice</i>• QFII-120-20: IAA Note on ERM for Capital and Solvency Purposes in the Insurance Industry, pp. 9-38• QFII-128-23: Liquidity Risk Management: Best Risk Management Practices CRO Forum, October 2008• QFII-129-23: Ch 2, Risk Budgeting Approach of <i>Introduction to Risk Parity and Risk Budgeting</i>, T. Roncalli |

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| 4. Topic: Risk Mitigation |
| Learning Objectives |
| Understand and be able to apply different approaches to mitigate investment risks using derivatives |
| Learning Outcomes |
| The Candidate will be able to: <ul style="list-style-type: none">a) Explain and implement techniques used to mitigate market risksb) Understand interest rate derivatives and use them to mitigate interest rate riskc) Understand credit derivatives and use them to mitigate credit riskd) Understand CDS valuations and marking-to-market counterparty risk in credit derivatives |
| Resources |
| <ul style="list-style-type: none">• <i>Quantitative Enterprise Risk Management</i>, Hardy, Mary and Saunders, David, 2022<ul style="list-style-type: none">○ Ch. 15: Risk mitigation using options and derivatives• <i>Fixed Income Securities: Valuation, Risk, and Risk Management</i>, Pietro Veronesi<ul style="list-style-type: none">○ Ch. 5: Interest Rate Derivatives: Forwards and Swaps○ Ch. 6: Interest Rate Derivatives: Futures and Options• <i>Investment Risk Management</i>, Baker, Kent and Filbeck, Greg, 2015<ul style="list-style-type: none">○ Ch. 25: Futures○ Ch. 26: Swaps• <i>Handbook of Fixed Income Securities</i>, Fabozzi, Frank J., 9th Edition, 2021<ul style="list-style-type: none">○ Ch. 68: Credit Derivatives○ Ch. 69: Credit Derivative Valuation and Risk |

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| 5. Topic: Risk Culture and Governance |
| Learning Objectives |
| The candidate will understand the importance of risk culture and governance. |
| Learning Outcomes |
| The Candidate will be able to: <ul style="list-style-type: none">a) Explain the importance of risk culture and ethics in an investment firmb) Identify sources of unethical conduct and explain the role of a fiduciaryc) Compare the interests of key stakeholders and describe governance mechanisms that attempt to address conflictsd) Explain how governance may be structured to gain competitive advantages and efficienciese) Understand and apply the lessons learned from risk management failures. |
| Resources |
| <ul style="list-style-type: none">• <i>Financial Enterprise Risk Management</i>, Sweeting, Paul, 2nd Edition, 2017<ul style="list-style-type: none">○ Ch. 20: Case Studies (except 3 cases: Korean Air, Maxwell, Space shuttle)• <i>Investment Ethics</i>, Peck, Sarah, 2011<ul style="list-style-type: none">○ Ch. 1-3, 7 & 9 (Cases 1, 4, 5, 10, 13, 20, 21 & 30)• QFII-101-14: Chapter 11 of <i>Strategic Management: An Integrated Approach</i>, Hill & Jones, pp. 378-384 only, up to “Agency Theory” (including example 11.1 “Strategy in Action”)• QFII-116-19: Chapter 45 of <i>Risk Management: Foundations for a Changing Financial World</i>, Haslett Jr., Walter V., 2010• QFII-130-23: General American Life Can’t Pay Investors |