QFI – Portfolio Management Exam

Spring 2023

Important Exam Information:

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 for this 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.
Table	A Cumulative normal distribution table will be provided with the exam.

Copyright © Society of Actuaries

1. **Topic: Fixed Income Investments**

Learning Objectives

The candidate will understand the nature and the variety of fixed income investments that can be used in constructing fixed income portfolios.

This section deals with fixed income securities. As the name implies the cash flow is often predictable, however there are various risks that affect cash flows of these instruments. In general, candidates should be able to identify the cash flow pattern and the factors affecting these cash flows for commonly available fixed income investments.

Learning Outcomes

The Candidate will be able to:

a) Demonstrate an understanding of various fixed income investments considering:
    - cash flow characteristics,
    - markets in which they trade, and
    - underlying risks such as interest rate, credit and event risks

Resources

- *Handbook of Fixed Income Securities,* Fabozzi, F.J., 9thEdition, 2021
    - Ch. 1: Overview of the Types and Features of Fixed Income Securities (background only)
    - Ch.2: Risks Associated with Investing in Fixed Income Securities (background only)
    - Ch. 7: U.S. Treasury Securities (background only)
    - Ch. 10: Corporate Bonds
    - Ch. 11: Leveraged Loans
    - Ch. 15: Inflation-Linked Bonds
    - Ch.21: An Overview of Mortgages and the Mortgage Market
    - Ch.25: Nonagency Residential Mortgage-Backed Securities: Legacy, RMBS 2.0, and Non-QM
    - Ch.30: Collateralized Loan Obligations
    - Ch.60: Financing Positions in the Bond Market
- *Commercial Real Estate Analysis and Investments*, Miller & Geltner, 3rd Edition, 2014
    - Section VI Introduction (background only)
    - Ch. 16: Mortgage Basics I: An Introduction and Overview
    - Ch. 20: Commercial Mortgage-Backed Securities (excluding appendices)
- QFIP-135-19: High-Yield Bond Market Primer
- QFIP-146-20: Private Debt in an Institutional Portfolio

2. Topic: Equity and Alternative Investments

Learning Objectives

The candidate will understand the variety and assess the role of equities in investment portfolios.

The candidate will demonstrate an understanding of the distinguishing investment characteristics and potential contributions to investment portfolios of the following major asset groups:

- Real Estate
- Public Equity
- Private Equity
- Commodities
- Hedge Funds
- Timber and Farmland Investments
- Distressed Debts

Fixed income securities typically work well to defease fixed liabilities. The above assets add growth to long term portfolios. Interest rates in US markets generally declined from the early 1980s to the late 2010s. This secular trend pressured financial institutions to expand into public equity and alternative asset classes and eventually to build product offerings around them. Alternative asset classes now are a source of differentiation and competitive advantage for many financial institutions.

Learning Outcomes

The Candidate will be able to:

a) Demonstrate an understanding of the investment strategies and portfolio roles that are characteristic of various types of equity and alternative investments

b) Use different types of equity and alternative investments available for an investor's growth allocation in portfolio construction, considering portfolio design, risk management, liquidity management, manager selection, and implementation

c) Explain the basic active equity selection strategies including value, growth and combination approaches, and compare techniques for characterizing investment style of an asset manager

d) Recommend and justify an optimal portfolio allocation in a risk-return framework

Resources

- *Managing Investment Portfolios,* Maginn & Tuttle, 3rd Edition, 2007
  - *Ch*. 7: Equity Portfolio Management (Sections 1, 2, 4, 9)
    1. Introduction
    2. The Role of the Equity Portfolio
    4. Passive Equity Investing
    9. Structuring Equity Research and Security Selection

- *Commercial Real Estate Analysis and Investments*, Geltner & Miller, 3rd Edition, 2014
    - Ch. 12: Advanced Micro-Level Valuation (excluding Appendix 12B)
    - Ch. 14: After-Tax Investment Analysis & Corporate Real Estate (excluding appendices)
- *Handbook of Alternative Assets*, Mark Anson, 2nd Edition, 2006
    - Ch. 1: What Is an Alternative Asset Class? (exclude the last section OVERVIEW OF THIS BOOK)
    - Ch. 3: Introduction to Hedge Funds
    - Ch 6: Risk Management Part I: Hedge Funds Return Distribution
    - Ch 7: Risk Management Part II: Additional Hedge Funds risks
    - Ch 12: Introduction to Commodities
    - Ch 16: Introduction to Venture Capital
    - Ch 17: Introduction to Leveraged Buyouts
    - Ch 20: The Economics of Private Equity
    - Ch 24: Collateralized Debt Obligations
- QFIP-131-19: Addressing Built-in Biases in Real Estate Investment (including Appendix)

3. Topic: Credit Risk Management

Learning Objectives

The candidate will understand the credit risk of fixed income portfolios, securities, and sectors and be able to apply a variety of credit risk theories and models.

In many sectors financial institutions primarily invest in corporate bonds, commercial mortgages, mortgage-backed securities, and other fixed income securities. The additional yield received above that of similar maturity government bonds comes with the risk of default and loss of principal. This default or credit risk varies by rating, sector, and with macroeconomic and political cycles, and the investment actuary must understand, be able to model, and inform stakeholders about these return and risk dynamics.

Learning Outcomes

The Candidate will be able to:

a) Demonstrate an understanding of credit risk analysis

b) Demonstrate an understanding of the basic concepts of credit risk such as probability of default, loss given default, exposure at default, and expected loss

c) Understand and apply various approaches for managing credit risk in a portfolio setting, including the use of Credit Default Swaps

Resources

- *The Handbook of Credit Risk Management*, Bouteille & Coogan-Pushner, 2nd Edition, 2022
    - Ch. 1: Fundamentals of Credit Risk
    - Ch. 4: Measurement of Credit Risk
    - Ch. 5: Dynamic Credit Exposure
    - Ch. 13: Credit Portfolio Management
    - Ch. 20: Credit Derivatives
- QFIP-157-23: Ch 12 of *Quantitative Enterprise Risk Management,* Hardy & Saunders

4. Topic: Investment Policy and Regulatory Framework

Learning Objectives

The candidate will:

- Demonstrate an understanding of regulatory and accounting frameworks around investment governance.
- Understand how to develop an investment policy including governance for institutional investors within regulatory and accounting constraints.

Learning Outcomes

The Candidate will be able to:

a) Describe the regulatory and rating agency contexts in which various institutions operate and how those contexts affect portfolio strategy

b) Explain how investment policies and strategies can manage risk and create value

c) Identify a fiduciary's obligations and explain how they apply in managing portfolios

d) Determine how a client's objectives, needs and constraints affect investment strategy and portfolio construction. Considerations and constraints include:

   - Capital and expected return on allocated capital
   - Risk appetite and risk-return trade-off
   - Tax
   - Accounting
   - Regulators
   - Rating agencies
   - Liquidity

e) Incorporate financial and non-financial risk into an investment policy, including currency, credit, spread, liquidity, interest rate, equity, insurance product, operational, technology, legal, political, reputational, and environmental, social, and governance (ESG) risks

f) Demonstrate an understanding of issues related to incorporating ESG criteria into the investment process

Resources

- *Managing Investment Portfolios: A Dynamic Process*, Maginn & Tuttle, 3rd Edition, 2007
  - Ch. 1: The Portfolio Management Process and The Investment Policy Statement
  - Ch. 3: Managing Institutional Investor Portfolios
- QFIP-133-19: Environmental, Social, and Governance Criteria: Why Investors Should Care
- QFIP-136-19: Elements of an Investment Policy Statement for Institutional Investors

5. Topic: Investment Portfolio Management and Asset Allocation

Learning Objectives

The candidate will understand:

- The design and management of asset portfolios in alignment with investment objectives and strategies, including investments in fixed income, equity and alternative assets.
- The theory and techniques of portfolio asset allocation.

Learning Outcomes

The Candidate will be able to:

a) Demonstrate an understanding of common techniques to enhance yield and manage liquidity in fixed income portfolios
b) Construct and manage portfolios of fixed income investments under various strategies, including indexing and target return
c) Construct and manage portfolios of equity and alternative investments under various strategies, including active, passive and style management
d) Demonstrate an understanding of asset allocation approaches and techniques, including the concept of risk factor investing

Resources

- *Managing Investment Portfolios: A Dynamic Process*, Maginn & Tuttle, 3rd Edition, 2007
    - Ch. 5: Asset Allocation, Sections 1-3, 5-7, 9, 10
    - Ch. 6: Fixed Income Portfolio Management
    - Ch. 7: Equity Portfolio Management (Sections 3, 5, 6, 7, 8)
        - 3. Approaches to Equity Investment
        - 5. Active Equity Investing
        - 6. Semi-Active Investing
        - 7. Managing a Portfolio of Managers
        - 8. Identifying, Selecting, and Contracting with Equity Portfolio Managers
- QFIP-140-19: Ch. 7 Beyond Equilibrium, the Black-Litterman Approach of *Modern Investment Management: An Equilibrium Approach*, Litterman
- QFIP-155-21: Fundamentals of Efficient Factor Investing

6. Topic: Asset-Liability Management

Learning Objectives

The candidate will understand:

- Managing investment portfolios in the context of financial institution liabilities (asset-liability management).
- Investment dimensions of designing product offerings and managing in-force product liabilities.

Investment portfolios must be tuned to behave in similar ways to the liabilities they support as capital markets move and time passes. Otherwise, the difference between the accounting value or market value of assets will move differently than the liabilities, directly affecting capital, funding ratios, and solvency. The institution must remain solvent in the short term or else economic value in the long term is moot.

Learning Outcomes

The Candidate will be able to:

a) Construct and manage portfolios of fixed income investments relative to the liabilities that they support

b) Develop and critique asset allocation strategies appropriate to underlying liability profiles such as pension plans and long-tail insurance liabilities

c) Evaluate the difficulties of investing for long-tail liabilities (i.e. beyond 30 years) such as inflation indexed pension plans and secondary guarantee universal life insurance

d) Demonstrate an understanding of and apply tools and techniques of measuring and managing interest rate risk in an ALM context

Resources

- *Managing Investment Portfolios: A Dynamic Process*, Maginn & Tuttle, 3rd Edition, 2007
  - Ch. 5: Asset Allocation, Section 4
- *Fixed Income Securities,* Veronesi, 2010
  - Ch. 3 Basics of Interest Rate Risk Management
  - Ch. 4 Basic Refinements in Interest Rate Risk Management
- QFIP-139-19: Ch. 13 of *IAA Risk Book*, Asset Liability Management: Techniques and Practices for Insurance Companies, Gilbert
- QFIP-141-19: Liability Driven Investment Explained
- QFIP-142-19: Ch. 10 Strategic Asset Allocation in the Presence of Uncertain Liabilities of *Modern Investment Management: An Equilibrium Approach*, Litterman
- QFIP-151-20: Ch. 5 Role of Asset Managers in ALM in Fin. Inst.'s of *Asset Liability Management of Financial Institutions*, Tilman, 2003
- QFIP-154-20: The Evolution of Insurer Portfolio Investment Strategies for Long-term Investing
- QFIP-158-23: A Guide to Duration, DV01, and Yield Curve Risk Transformations

7. Topic: Performance Measurement and Attribution
Learning Objectives
The candidate will understand the need for and goals of assessing the performance of a portfolio, and the methods and limitations of performance attribution.
Learning Outcomes
The Candidate will be able to: a) Explain the use of segmented asset portfolios for supporting different investment objectives b) Apply performance measurement methodologies to various asset portfolios c) Describe and assess techniques to select or build an asset benchmark for a given investment objective d) Assess and interpret performance attribution metrics for a given asset or portfolio
Resources
• *Managing Investment Portfolios: A Dynamic Process*, Maginn & Tuttle, 3rd Edition, 2007 o Ch. 12: Evaluating Portfolio Performance • QFIP-145-19: Determinants of Portfolio Performance