Advanced Portfolio Management Exam
Spring 2010

<u>Important Exam Information:</u>

Exam Date and Time	A read-through time will be given prior to the start of the exam–15 minutes in the morning session and 15 minutes in the afternoon session.
Exam Registration	Candidates may register online or with an application.
Study Note Order Form	Study notes are part of the required syllabus and are not available electronically.
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 copy of the case study will be provided with the examinations. Candidates will not be allowed to bring their copy of the case study into the examination room.
Formula Package (update 02.18.10)	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.
Past Exams	Past Exams from 2000-present are available on SOA web site.
Updates	Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices.

1. **Investment Management Process**
    a. Explain how an investment policy and an investment strategy can help manage risk and create value.
    b. Identify the obligations of a fiduciary in managing investment portfolios and explain how they apply in a given situation.
    c. Determine how a client's objectives, needs and constraints affect the selection of an investment strategy or the construction of a portfolio. Considerations include:
        - Funding objective
        - Investment policy
        - Risk-return trade-off
        - Regulatory requirements
        - Target rating from rating agency
        - Risk appetite
        - Liquidity constraints
        - Capital, tax, and accounting considerations
    d. Evaluate the particular issues influencing investment strategies for institutional investors, including
        - liquidity requirements,
        - valuation concerns,
        - cash flow variability,
        - compliance risk,
        - regulatory constraints,
        - taxation impacts, and
        - investment management mandates.
    e. Explain principles of risk-based capital management and their impact upon portfolio management, including, for example,
        - Regulatory requirements
        - Rating agency standards, and
        - Economic capital measures

SYLLABUS RESOURCES:

Maginn & Tuttle, *Managing Investment Portfolios*, 3rd Ed., 2007 **(background only)**
- Ch. 1, "The Portfolio Management Process and the Investment Policy Statement", by Maginn, Tuttle, McLeavey, & Pinto
- Ch. 3, "Managing Institutional Investor Portfolios," by Tschampion, Siegel, Takahashi, & Maginn.

Tilman, *Asset/Liability Management of Financial Institutions*, 2003
- Ch. 24, Accounting Standards and Requirements, by E. Habayeh & S. Sethi

V-C126-07: Derivatives: Practices and Principles, Section II
V-C127-09: Liability-Relative Strategic Asset Allocation Policies
V-C133-07: Deloitte – International Financial Reporting Standards; Model Financial Statements and Disclosures Checklists 2005, (pp. 204-205 IAS 39 only)
V-C136-10: Fiduciary Liability Issues for Selection of Investments
V-C137-09: Introduction to the Formation of Investment Strategy for Life Insurance Companies and Pension Plans
V-C138-09: Managing your Advisor: A Guide to Getting the Most Out of the Portfolio Management Process
V-C139-09: New Insurance Capital Model Embraces Trends in Risk Management
V-C140-09: SOA Specialty Guide to Economic Capital
V-C141-09: Modern Valuation Techniques
V-C142-09: Ch. 4 of The Fair Value of Insurance Business, Fair-Value Accounting for Financial Liabilities
V-C175-09: "Theory of Risk Capital in Financial Firms," by Merton & Perold., Journal of Applied Corporate Finance, Fall 1993.

An Overview of an Investment Policy Statement in a Asset/Liability Management Context," CIA Guidance Note, http://www.actuaries.ca/members/publications/1994/9430e.pdf

"Liquidity Risk Measurement," CIA Educational Note
http://www.actuaries.ca/members/publications/1996/9626e.pdf

"Liquidity Modeling and Management," RSA, Volume 27, No. 2
http://www.soa.org/files/pdf/RSA01V27N2101PD.PDF

"Fair Valuation of Insurance Liabilities: Principles and Methods," AAA Monograph, September 2002 http://www.actuary.org/pdf/finreport/fairval_sept02.pdf

2. Asset Classes

a. Compare and select specialized financial instruments that can be used in the construction of an asset portfolio supporting financial institutions and pension plan liabilities.

<u>SYLLABUS RESOURCES:</u>

Fabozzi, *Handbook of Fixed Income Securities*, 7th Edition, 2005

- Ch. 1, Overview of the Types and Features of Fixed Income Securities
- Ch. 10, U.S. Treasury and Agency Securities (pp. 229-231, 241-245)
- Ch. 11, Municipal Bonds (pp. 251-256)
- Ch. 12, Private Money Market Instruments (pp. 285-297)
- Ch. 13, Corporate Bonds (pp. 305-327, 331-335)
- Ch. 14, Medium-term notes (pp. 339-340, 344-350)
- Ch. 15, Inflation-Linked Bonds (pp. 351-359, 364-369)
- Ch. 16, Floating-Rate Securities (pp. 373-379, 382-383)
- Ch. 20, Emerging Market Debt (pp. 441-453)
- Ch. 22, An Overview of Mortgages and the Mortgage Market (pp. 487-501)
- Ch. 23, Agency Mortgage-Backed Securities (pp. 513-527)
- Ch. 24, Collateralized Mortgage Obligations
- Ch. 25, Nonagency CMOs
- Ch. 26, Residential Asset-Backed Securities (pp. 589-595)
- Ch. 27, Commercial Mortgage-Backed Securities (pp. 615-625)
- Ch. 30, Cash-Collateralized Debt Obligations
- Ch. 31, Synthetic CDOs (pp. 695-728)

V-C143-09: "Hedge Funds: Past, Present, and Future," R. Stulz, *Journal of Economic Perspectives*, Spring 2007, pp 175-194.
V-C144-09: "Hedge Funds: Risk and Return," by B. Malkiel and A. Saha, *Financial Analysts Journal*, November 2005.
V-C146-09: Greer, R., "The Role of Commodities in Investment Portfolios," CFA Conference proceedings QuarterlyDecember 2007, pp. 35-46. Vol 24 #4
V-C176-09: Fabozzi, *Handbook of Mortgage Backed Securities*, 6th Edition

- Ch. 20, "The Effect of PAC Bond Features on Performance" by Lowell
- Ch.21, "Z-Bonds," by Lowell, & Mahood.

V-C177-09: Rudolph, M., Subprime Mortgage Overview
V-C179-10: J. Coval, J. Jurek & E. Stafford, "The Economics of Structured Finance", Journal of Economic Perspective, Winter 2009, pp. 3-35

3. Asset Allocation

a. Critique and propose asset allocation strategies that can be used to construct an asset portfolio.

SYLLABUS RESOURCES:

Litterman, *Modern Investment Management: An Equilibrium Approach*, 2003

- Ch. 9, Issues in Strategic Asset Allocation
- Ch. 10, Strategic Asset Allocation in the Presence of Uncertain Liabilities

Maginn & Tuttle, *Managing Investment Portfolios*, 3rd Ed.

- Ch. 5, "Asset Allocation", by Sharpe, Chen, Pinto, & McLeavey **(background only)**

V-C111-07: Creating Value in Pension Plans (Or, Gentlemen Prefer Bonds)
V-C127-09: Liability-Relative Strategic Asset Allocation Policies
V-C148-09: "Perspectives on the Equity Risk Premium," by J. Siegel, *Financial Analysts Journal*, November/December 2005.
V-C149-09: "Long-Term Returns on the Original S&P 500 Companies," by J. Siegel & J. Schwartz, *Financial Analysts Journal*, January/February 2006.
V-C150-09: "Stocks, Bonds, the Sharpe Ratio, and the Investment Horizon," by C. Hodges, W. Taylor, & J. Yoder, *Financial Analysts Journal*, November/December 1997.
V-C151-09: "Expected Utility Asset Allocation"by W. F. Sharpe, *Financial Analysts Journal*, September/October 2007, pp. 18 - 30.

4. Managing Equity and Alternative Asset Portfolios

a) Explain how liability requirements affect the selection of an investment strategy or the selection of an optimal portfolio.

b) Assess a portfolio position against portfolio management objectives and recommend a strategy to rebalance the portfolio.

c) Evaluate complex situations associated with the presence of embedded options, hedging strategies, accounting considerations, taxation and capital requirements under a range of economic environments.

d) Explain how deterministic and stochastic models can be used to assess different investment strategies.

e) Recommend an investment strategy for a given situation
   - Portfolio policy and objectives
   - Asset selection criteria
   - Capital market expectations
   - Risk management strategy

SYLLABUS RESOURCES:

Babbel & Fabozzi, *Investment Management for Insurers*, 1999
- Ch. 25, Investment Analysis: Profiting from a Complex Equity Market
- Ch. 26, The Use of Derivatives in Managing Equity Portfolios

Litterman, *Modern Investment Management: An Equilibrium Approach*, 2003
- Ch. 26, Strategic Asset Allocation and Hedge Funds
- Ch. 27, Managing a Portfolio of Hedge Funds
- Ch. 28, Investing in Private Equity (pp. 518 – 520 only)

Maginn & Tuttle, *Managing Investment Portfolios*, 3rd Ed. 2007,
- Ch. 7, "Equity Portfolio Management," by Gastineau, Olman, & Zielinski
- Ch. 8, "Alternative Investments Portfolio Management," by Yau, Schneeweis, Robinson, & Weiss
- Ch. 11, "Monitoring & Rebalancing," by Arnott, Burns, Plaxco, & Moore

Tilman, *Asset/Liability Management of Financial Institutions*, 2003
- Ch. 6, The Role of Alternative Investments in Asset/Liability Management of Financial Institutions

V-C114-07: The Real Estate Portfolio Management Process
V-C135-08, "Living with Mortality: Longevity Bonds and Other Mortality-Linked Securities", by Blake, Cairns and Dowd, Institute of Actuaries, 2006 (Sections 3-5)
V-C153-09: "Mutual Fund Fee Securitizations: A Surveillance Perspective," *Standard & Poor's Ratings Direct*, May 2003.
V-C154-09Bertram, R., "Balancing the Opportunities in Real Return Investments," *CFA Institute Conference Proceedings Quarterly*, September 2007, pp. 41 – 49.
V-C174-09: Anson, *The Handbook of Alternative Assets*, Second Edition, 2006
- Ch. 20, The Economics of Private Equity
- Ch. 22 Trends in Private Equity

5. Managing Fixed Income Portfolios

a. Explain the rationale for managing risk and for the selection of the appropriate hedging level.
b. Identify and describe financial and non-financial risks faced by an entity, including but not limited to:
   - Currency risk, credit risk, spread risk, liquidity risk, interest rate risk, equity risk, product risk, operational risk, legal risk and political risk.
c. Assess the overall corporate risk exposure arising from financial and non-financial risks.
d. Define risk metrics to quantify major types of risk exposure in the context of an integrated risk management process.
e. Explain the limitations of risk metrics.
f. Compare and select risk management techniques that can be used to deal with financial and non-financial risks listed in b).
g. Demonstrate how to apply ALM principles to the establishment of investment policy and strategy including asset allocation.
h. Show the impact of risk analysis, including interest rate and equity risk, on portfolio construction.
i. Calculate effective duration and effective key-rate durations of a portfolio.
j. Contrast modified duration and effective duration measures.
k. Demonstrate how to apply funding and portfolio management strategies to control equity and interest rate risk, including key rate risks. Explain the concepts of immunization including modern refinements and practical limitations.
l. Explain how derivatives, synthetic securities, and financial contracting may be used to manage risk and recommend appropriate ones for a given situation.

SYLLABUS RESOURCES:

Babbel, D. and Fabozzi, F. J., 1999, *Investment Management for Insurers*,
- Ch. 1, “Risk Management by Insurers: An Analysis of the Process,” by Babbel & Santomero
- Ch. 17, “Effective and Ineffective Duration Measures for Life Insurers,” by D. Babbel
- Ch. 18, “Yield Curve Risk Management,” by R. Reitano.
- Ch. 19, Hedging Corporate Securities with Treasury and Derivative Instruments
- Ch. 20, Valuation and Portfolio Risk Management with Mortgage-Backed Securities (pp. 413-419: background only)
- Ch. 21, Hedging Mortgage Pass-through Securities
- Ch. 22, “Portfolio Risk Management,” by Fong & Vasicek

Fabozzi, *Handbook of Fixed Income Securities*, 7th Edition, 2005
- Ch. 47, Bond Immunization: An Asset/Liability Optimization Strategy
- Ch. 48, Dedicated Bond Portfolios

Maginn & Tuttle, *Managing Investment Portfolios*, 3rd Ed. 2007,
- Ch. 6, “Fixed-Income Portfolio Management,” by Fong & Guin **(background only)**

Tilman, *Asset/Liability Management of Financial Institutions*, 2003

- Ch. 13, Creditworthiness and asset/liability management of insurance companies: a rating agency perspective (p189-195)
- Ch. 14, Asset/liability management for life insurers: lessons learned and future directions
- Ch. 16, Understanding options embedded in insurers' balance sheets

V-C126-07: Derivatives: Practices and Principles, Section III

V-C154-09: Bertram, R., "Balancing the Opportunities in Real Return Investments," *CFA Institute Conference Proceedings Quarterly*, September 2007, pp. 41 – 49.
V-C155-09: Asset-Liability Management for Insurers
V-C156-09: , Asset Liability Management, IASA Handbook
V-C157-09: Hedging with Derivatives in Traditional Insurance Products
V-C158-09: Life Insurance Pricing and the Measurement of the Duration of Liabilities
V-C159-09: Long-Term Economic and Market Trends and Their Implications for Asset-Liability Management of Insurance Companies
V-C160-09: Mapping of Life Insurance Risks, AAA Report to NAIC
V-C161-09: On the Determinants of Corporate Hedging
V-C164-09: Dynkin, L., J. Hyman, & W. Wu, "Value of Security Selection versus Asset Allocation in Credit Markets: Part II – An Imperfect Foresight Study," Lehman Bros., June 2000.
V-C182-10: Citi Group, "*Modeling of Mortgage Defaults*", January 22, 2008, pp 5 – 38 excluding pp13-25(background only)

"Liquidity Risk Measurement," CIA Educational Note
http://www.actuaries.ca/members/publications/1996/9626e.pdf

6. Credit Risk

a. Define and evaluate credit risk as related to fixed income securities, derivatives, and reinsurance ceded.

b. Define and evaluate spread risk as related to fixed income securities and derivatives.

c. Describe, contrast and assess credit risk measurement techniques and models.

d. Describe and critique the role of rating agencies in evaluating credit risk.

e. Explain and recommend best practices in credit risk management, including:

- credit and underwriting policies
- comprehensive due diligence
- diversification requirements and aggregate counter-party exposure limits
- use of credit derivatives and credit support agreements

f. Recommend a credit risk management strategy for a given situation

SYLLABUS RESOURCES:

Crouhy, Galai, & Mark, *Risk Management*, 2001

- Ch. 7, Credit Rating Systems
- Ch. 8, Credit Migration Approach to Measuring Credit Risk
- Ch. 9, The Contingent Claim Approach to Measuring Credit Risk
- Ch. 10, Other Approaches: The Actuarial and Reduced-Form Approaches to Measuring Credit Risk
- Ch. 11, Comparison of Industry-Sponsored Credit Models and Associated Back-Testing Issues
- Ch. 12, Hedging Credit Risk

Tilman, *Asset/Liability Management of Financial Institutions*, 2003

- Ch. 13, Creditworthiness and asset/liability management of insurance companies: a rating agency perspective

V-C165-09: IMF, Global Financial Stability Report, April 2008, Chapter 2, pp.54-84.
V-C166-09: M. Gibson, Understanding the Risk of Synthetic CDOs, July 2004,
V-C178-09: Duffie,D. & K. Singleton, *Credit Risk*, 2003

- pp. 43-51
- pp. 80-91

V-C181-10: McNeil, Frey and Embrechts, “Quantitative Risk Management”, 2005

- Ch. 9, Dynamic Credit Risk Models and Credit Derivatives, pp. 400 – 408

V-C183-10: JP Morgan, “Bond-CDS Basis Handbook”, February 2009, pp. pp, 3- 48

7. Performance Measurement

a. Describe and assess techniques that can be used to select or build a benchmark for a given portfolio or portfolio management style.

b. Recommend a benchmark for a given portfolio or portfolio management style.

c. Describe and assess performance measurement methodologies for investment portfolios.

d. Recommend a performance measurement methodology.

SYLLABUS RESOURCES:

Babbel & Fabozzi, *Investment Management for Insurers*, 1999

- Ch. 3, "A Performance Measurement System for Insurers" by Babbel, Stricker, & Vanderhoof.

Fabozzi. *Handbook of Fixed Income Securities*, 7th Edition, 2005

- Ch. 44, "Quantitative Management of Benchmarked Portfolios," by F. Fabozzi.

Maginn & Tuttle, *Managing Investment Portfolios: A Dynamic ProcessI,* Third Edition

- Ch. 12, "Evaluating Portfolio Performance," by Bailey, Richards, & Tierney

V-C107-07: Fabozzi, *Handbook of Portfolio Management,* [1998]

- Ch. 20, "Quantitative Analysis of Fixed Income Portfolios Relative to Indices," by Dynkin & Hyman.
- Ch. 21, "A Return Attribution Model for Fixed Income Securities," by Dynkin, Hyman, & Konstantinovsky.

V-C108-07: Laurence B. Siegel, *Benchmarks and Investment Management*Ch. 9, Fixed Income Benchmarks

V-C168-09: Murira, B. and H. Sierra, "Fixed Income Attribution: A Unified Framework – Part 1," *Journal of Performance Measurement* Fall 2006, pp. 23 – 35.

V-C169-09Murira, B. and H. Sierra, "Fixed Income Attribution: A Unified Framework – Part 2," *Journal of Performance Measurement* Winter 2006/2007, pp. 8 – 21.

8. Market Expectations and Behavioral Finance

a. Explain how behavioral characteristics of individuals or firms affect the investment or capital management process.

b. Describe how behavioral finance explains the existence of some market anomalies.

c. Identify and apply the concepts of behavioral finance with respect to investors, option holders and policyholders, including optimal behavior, real behavior, model behavior, and empirical studies.

d. Contrast expectations of future investment performance with historical performance.

<u>SYLLABUS RESOURCES:</u>

V-C119-07: "From Efficient Markets Theory to Behavioral Finance, by R. Shiller, *Journal of Economic Perspectives*, Winter 2003
V-C120-07: "The Efficient Market Hypothesis and Its Critics," B. Malkiel, *Journal of Economic Perspectives,* Winter 2003,
V-C122-07: "Anomalies: The Law of One Price in Financial Markets," Lamont & Thaler, *Journal of Economic Perspectives,* Fall 2003,
V-C124-07: Siegel, J. *Stocks for the Long Run,* ,

- Ch. 7, "The Great Bull Market, the New Economy, the Age Wave, and Future Stock Returns"

V-C171-09: "Behavioral Finance and Investment Committee Decision Making," by A. Wood, *CFA Institute Conference Proceedings*, December 2006.
V-C172-09: "Managing the Credit Cycle: A Behavioral Risk Interpretation," by J. Rizzi, *Commercial Lending Review*, January 2006.
V-C173-09:"What Are Stock Investors' Actual Historical Returns? Evidence from Dollar-Weighted Returns," by I. Dichev, *American Economic Review*, 91(1):386-401, March 2007.
V-C180-10: A. Lo, "The Three P's of Total Risk Management", Financial Analyst Journal, January/February 1999

Byrne & Brooks, "Behavioral Finance: Theory and Evidence,"
http://www.cfapubs.org/doi/pdf/10.2470/rflr.v3.n1.1?prevSearch=allfield%3A%28Behavioral+finance%5C%3A+Theories%29+and+%28allfield%3A%28Alistair%29%29