
SOCIETY OF ACTUARIES
Retirement Plan Investment & Risk Management Exam

Exam RETRPIRM

Date: Tuesday, October 27, 2015

Time: 2:00 p.m. – 4:15 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 40 points.

This exam consists of 7 questions, numbered 1 through 7.

The points for each question are indicated at the beginning of the question.
2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.
3. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.
2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.
3. The answer should be confined to the question as set.
4. When you are asked to calculate, show all your work including any applicable formulas.
5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate Exam RETRPIRM.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

Tournez le cahier d'examen pour la version française.

****BEGINNING OF EXAMINATION****

1. (6 points)

- (a) (1 point) Explain how to construct a liability benchmark.
- (b) (2 points) Describe four characteristics of an effective liability benchmark.
- (c) (3 points) Explain how a liability benchmark is used in practice.

2. (5 points) A pension regulator has asked you to assist in evaluating their regulatory regime. They are considering moving to a risk-based approach to regulating pension plans.

Describe four risk factors that should be considered in a risk-based approach to regulating pension plans.

- 3.** (3 points) Your colleague is interested in evaluating the performance of a fund manager who specializes in U.S. large-cap stocks with a value stock selection style. As a benchmark to evaluate the fund manager's performance, your colleague proposes using either:
- (i) the median return of all U.S. large-cap fund managers; or
 - (ii) the return of the S&P 500 Index.

Evaluate the use of each proposed benchmark.

- 4.** (8 points) ABC Company is considering an annuity buy-in for its defined benefit pension plan.
- (a) (1 point) Identify the key features of an annuity buy-in contract.
 - (b) (2 points) Describe how the annuity buy-in affects the risks borne by the Company with respect to the pension plan.
 - (c) (2 points) Describe two ongoing accounting methods for valuing annuity buy-in assets and the associated Projected Benefit Obligations.
 - (d) (3 points) Compare and contrast the accounting treatment of annuity buy-in contracts and annuity buy-out contracts under U.S. GAAP.

5. (7 points) DEF Company is considering amending its pension plan investment policy to add the following asset classes:

- Real Estate Investment Trusts (REITs); and
- Private equity.

You have been asked to evaluate the addition of these asset classes using the Capital Asset Pricing Model (CAPM). Currently, the plan's assets are invested 50% in U.S. large-cap public equities and 50% in fixed income.

- (a) (1 point) List the assumptions made about individual investor behaviour that form the basis of the CAPM.
- (b) (2 points) You are given:

Proposed Funds	Benchmark Expected Return	Fund Beta (β) in Relation to the Market
WX REIT Fund	6.5% per annum	1.05
YZ Private Equity Fund	9.0% per annum	0.85

The risk-free rate of return is 3.0% per annum.

Calculate the risk-adjusted return for each of the proposed funds using CAPM.

Show all work.

- (c) (4 points) Describe the advantages and disadvantages of investing pension plan assets in REITs and private equity.

- 6.** (6 points) List the arguments for and against including public equities in a defined benefit pension fund from the perspective of:
- (i) shareholders of a publicly traded company; and
 - (ii) taxpayers of a government that sponsors the pension plan.
- 7.** (5 points) XYZ Company is the sponsor of a defined benefit pension plan. An external investment manager has proposed that XYZ delegate the investment of the plan's assets to the investment manager.
- (a) (1 point) Describe the circumstances in which XYZ would consider delegating this function.
 - (b) (3 points) Describe the considerations XYZ should address before delegating this function.
 - (c) (1 point) Describe XYZ's responsibilities after delegating this function.

****END OF EXAMINATION****

USE THIS PAGE FOR YOUR SCRATCH WORK

USE THIS PAGE FOR YOUR SCRATCH WORK