

# EXAMINATION

*8 June 2011 (am)*

## **Subject F105 — Finance and Investment Fellowship Principles**

*Time allowed: Three hours*

### **INSTRUCTIONS TO THE CANDIDATE**

1. *Enter all the candidate and examination details as requested on the front of EACH OF your answer booklets.*
2. *You have 15 minutes at the start of the examination in which to read the questions.  
You are strongly encouraged to use this time for reading only, but notes may be made.  
You then have three hours to complete the paper.*
3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all seven (7) questions, beginning your answer to each question IN A SEPARATE BOOKLET.*
6. *Candidates should show calculations where this is appropriate.*

### **AT THE END OF THE EXAMINATION**

*Hand in your answer booklets, with any additional sheets firmly attached to the correct booklet, AND this question paper.*

<p><i>In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.</i></p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## QUESTION 1

You are the Chief Investment Officer of a specialist equity asset manager whose investment philosophy has historically been firmly founded on fundamental analysis. Your firm runs three funds: a cyclical industries fund, a defensive industries fund and a Socially Responsible Investment (SRI) fund. At your weekly Monday morning meeting with the three fund managers, you are considering two important issues:

- A proposal by the cyclical industries fund manager to use a technical analysis overlay to decision-making where buy and sell signals will be derived from chartist support and resistance levels; this will however only be used to make decisions where the fundamental analysis is indeterminate, i.e. provides neither a strong buy nor sell signal. She argues that technical analysis is justified by sub-optimal investment decisions made by other investors as a result of common behavioural biases such as overconfidence.
  - The announcement of a merger between the country's largest electronic goods manufacturer and its third-largest tobacco company.
    - i. State the possible advantages and disadvantages of using technical analysis to supplement your existing investment approach. [4]
    - ii. Outline the two primary causes of overconfidence in investors, and give an example of how each might lead to sub-optimal investment decisions. [4]
    - iii. State the possible motives for the merger between the electronic goods manufacturer and the tobacco company, and outline counter-arguments to two of the motives. [7]
    - iv. Discuss the primary investment implication of the merger for each of the three equity funds. [3]
- [Total 18]

## QUESTION 2

- i. List the key issues that a credit rating agency should consider in assessing and ascribing an issuer rating for a company that issues debt. [4]
  - ii. List additional considerations in assessing and ascribing a rating to a general insurer to reflect its ability to meet its liabilities to its policyholders. [4]
- [Total 8]

**PLEASE TURN OVER**

### QUESTION 3

You have been tasked with constructing an index of private equity fund performance in your country where there is a thriving private equity market.

- i. Define 'private equity' and outline the main forms of private equity. [4]
  - ii. Describe the main limitations in constructing an investment index of private equity fund performance and suggest ways to overcome these. [9]
  - iii. An associate has suggested that calculating and publishing risk-adjusted returns on the index would be useful to investors. Discuss this suggestion and comment on the suitability of utilising the Sharpe Ratio for this purpose. [5]
- [Total 18]

### QUESTION 4

Following several high-profile failures of derivative transactions by asset managers of pension funds, the regulatory authority of a country contemplates regulating the use of over-the-counter (OTC) derivative instruments.

- i. Outline the general and specific reasons for wanting to regulate the use of OTC derivative instruments by pension funds. [6]
- ii. Explain the steps that pension funds can take in response to the regulator's aims. [4]
- iii. Differentiate between a rules-based and a principles-based approach to regulation, and briefly outline the advantages and disadvantages of each approach. [6]

The regulator decides to follow a principles-based approach and determines the following principle:

“Entities that participate in the OTC derivatives markets should be licensed and operate within a statutory framework. Minimum entry requirements and comprehensive prudential standards must exist for these entities.”

- iv. Explain the rationale behind the above principle. [2]
- v. List four types of entities which might be subject to the proposed regulation, and suggest suitable minimum requirements for licensed entities. [4]

[Total 22]

**PLEASE TURN OVER**

## QUESTION 5

In its marketing material, XYZ Equity Fund Managers launches their Absolute Return Fund (ARF) as “an investment vehicle that will seek to produce inflation-beating returns that have a low correlation with equity market movements through a significant reduction of market risk by using derivatives.”

- i. State the uses of financial futures in investment portfolio management. [2]
  - ii. Describe how financial futures may be used to meet the objective of the ARF. [3]
  - iii. Explain why returns of equity may not be appropriate performance objective for the ARF and describe a performance objective that will be appropriate. [3]
  - iv. State, with reasons, the types of investor that may find the ARF attractive. [2]
- [Total 10]

## QUESTION 6

The trustees of a multi-national defined benefit pension fund are mainly concerned about sovereign risk. The investment manager recommends that the fund does not follow a fully matched investment strategy but instead uses an Asset-Liability Model (ALM) where, within a 95% confidence level, the fund will be able to afford pension increases of 80% of the relevant consumer price index (CPI) over a 12-year time horizon.

In support of the choice of a 95% confidence level, the trustees argue that it is not uncommon for the insurance and banking industries to use confidence levels of 99.5% and 99.95% respectively.

- i. Comment on the recommendation for the fund to use an ALM. [3]
  - ii. Outline the importance of the choice of confidence level, and explain why the insurance and banking industry may use more conservative confidence levels. [4]
  - iii. Suggest reasons for choice of a 95% confidence level and a 12-year time horizon. [3]
- [Total 10]

**PLEASE TURN OVER**

## QUESTION 7

You are the product development actuary of a life insurance company that is about to launch a new investment product aimed at individuals saving for their retirement.

The marketing department has suggested that one of the features of the product should be a guaranteed annuity option which will allow policyholders to convert their accumulated savings at retirement date into a minimum guaranteed annuity income.

You are concerned about the financial implications of providing a guarantee.

- i. Outline the interest rate risk faced by the life office in writing this business and describe how swaptions might be used to hedge it. [4]
- ii. Outline the key risks to the life office of using swaptions. [3]
- iii. It now two years since the product was launched. Interest rates have been declining. Calculate the value of the swaption to the life office at the valuation date by using the following assumptions:

Principal: R105 million  
Swap term: 33 years, starting in 19 years' time  
Fixed rate payments: 10.2% p.a. annually in arrears  
Swap rate volatility: 0.3

The spot yield curve is flat at 8.9% p.a. with continuous compounding.

[7]  
[Total 14]

**END OF PAPER**