

# EXAMINATION

27 April 2009 (pm)

## Subject SA6 — Investment Specialist Applications

*Time allowed: Three hours*

### **INSTRUCTIONS TO THE CANDIDATE**

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*
2. *You have 15 minutes before 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 three questions, beginning your answer to each question on a separate sheet.*
6. *Candidates should show calculations where this is appropriate.*

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

*Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.*

*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.*

- 1 Your firm is replying to an invitation to tender to provide investment advisory services to the University Endowment Fund, which had total assets of €2,500 million as at 31 December 2008. In recent years the Endowment Fund has grown significantly through the adoption of a highly diversified investment strategy focussing on illiquid, skill-based investments, and through a number of successful finance-raising campaigns.

The Endowment Fund has the following broad objectives in its governing documentation:

- to increase assets after distribution at a rate higher than inflation
- to contribute to the University's budget in a sustainable manner
- to avoid sudden changes in the monetary level of spending

The following information has been provided to you regarding the Endowment Fund's finances:

<i>Year ended</i>	<i>Spending by Endowment</i>	<i>% of total University income</i>	<i>Gifts to Endowment</i>	<i>Investment return</i>
31/12/2008	€240m	38%	€50m	(€400m)
31/12/2007	€220m	36%	€125m	€250m
31/12/2006	€170m	29%	€115m	€275m
31/12/2005	€160m	31%	€75m	€200m
31/12/2004	€150m	30%	€70m	€200m

Asset allocation at 31/12/2008:

<i>Asset class</i>	<i>%</i>
Absolute return equities	20%
Market neutral equity hedge funds	20%
Credit hedge funds	5%
Commodity funds	10%
Other active management strategies	10%
Private equity	10%
Illiquid assets — timber, infrastructure	15%
Inflation-linked bonds	5%
Cash and short term bonds	5%

You have been advised that the University has very little flexibility to reduce its expenditure in the next three to five years, and that the short-term outlook for gifts is weak due to the current economic climate.

- (i) Describe the various factors that should be considered in determining the level of investment risk that should be adopted by the Endowment Fund. [6]
- (ii) Analyse the experience of the Endowment Fund, having regard to the financial objectives listed above. [9]

- (iii) (a) Explain whether the University's increasing dependence on the Endowment Fund should necessitate the adoption of a lower-risk investment strategy. [8]
- (b) Recommend a target allocation to bonds consistent with your answer to part (a). [4]
- [Total 12]

The University is subsequently offered a gift of €500m in five equal annual payments. The donor has requested that his gift is used for long-term purposes and capital expenditure only, and not used to meet other expenditure in the next five years. He is also extremely concerned that his gift should not fall in value in the short-term and he has therefore suggested that the first payment could be invested in a principal protected note marketed by a bank that has a five year term and provides at maturity the following payment:

$$€100m \times \max\left(1, \frac{\text{FTSE100 Price Index @ 1/4/2014}}{\text{FTSE100 Price Index @ 1/4/2009}}\right)$$

- (iv) Explain how the issuer of such a note would invest the proceeds to provide this payout. [3]
- (v) Explain:
- (a) why such a note carries counterparty risk
- (b) where the note would rank within the capital structure of the bank [4]
- (vi) (a) Describe two alternative ways of generating the same payout that would avoid loss of principal in the event of the issuing bank failing.
- (b) Explain how issuer risk has been mitigated for each alternative in (a).
- (c) Describe any residual risks that remain. [8]

As part of its investment process, the Endowment Fund carries out scenario testing based on specific shocks to different industry sectors. These are in addition to the more typical scenarios that would be investigated for risk management purposes.

The Chief Investment Officer has asked you to consider the impact of global overcapacity within the automobile industry sector, assuming a neutral economic climate in terms of economic growth and interest rates, with stable commodity prices and price inflation and wages.

- (vii) Comment on the potential impact on the various parts of the portfolio of this particular scenario. [10]
- [Total 52]

**2** Describe the financial behaviours exhibited by a non-professional investor who:

- (a) Continues to hold shares in a company which has lost 60% of its value in the last 12 months and the general market consensus is that the share price will fall further.
- (b) Buys stock in his favourite car company based on one positive research note written by a non-professional, whereas all other broker notes are negative towards the stock.
- (c) Buys a stock in MakemeMoney (an internet retailer) which has risen in value from £20 to £40 per share over the last two years. MakemeMoney has been successful at winning new customers. However, the market is becoming more competitive and it is likely that MakemeMoney will lose customers. The investor continues to hold the stock as he believes that, based on past performance and his own research, the share price will double again over the next two years.
- (d) Buys a bond with a 5% per annum guaranteed return. The alternative investment he could have made was in a bond with a 20% probability of a 0% return and an 80% chance of a return greater than 10% per annum. When discussing the bond investment with his wife, he states “we can either invest in a bond which will guarantee 5% each year or in a bond where there is a 20% chance we will not make any money”.

[16]

**3** A developed economy has experienced significant problems with its banking industry following the collapse of a property boom in its domestic economy, and the exposure of the banking industry to bad loans resulting from this. The problems in the banking industry have significantly impacted confidence and bank liquidity been significantly reduced.

Similar problems are also occurring in other economies. However, in order to prevent a meltdown in its banking industry, and consequently to help the broader domestic economy, the government has decided to purchase the most illiquid mortgage debt from banks. This will involve doubling the fiscal deficit.

- (i) Discuss the effectiveness of the government’s proposal in helping the broader economy, including its effects on the country’s exchange rate. [14]
- (ii) Discuss another action that the government could take to alleviate the problems in its banking industry. [4]

The regulators are considering changing the accruals accounting policies, and introducing an embedded value reporting regime for its domestic mortgage banks. This would involve estimating the “future value” of a mortgage bank’s mortgage book, and basing profitability on the annual change in this value, along with income accrued during the year.

In this economy all mortgages sold are “tracker” type mortgages, with rates fixed at 100 basis points (bps) over the base interest rate set by its central bank.

- (iii) Calculate and discuss the likely implications of this proposal, in an environment where inter-banking lending rates have increased significantly following the banking crisis.

In your discussion, include a hypothetical numerical example of a typical mortgage bank, assuming that inter-bank lending rates have increased from 20bps over the central bank rate to 120bps over the central bank rate, and that the mortgage bank's costs are 40bps. [8]

- (iv) Explain the main argument against implementing the proposal in this circumstance. [2]

An actuary has just been appointed as the chief banking regulator in this economy.

- (v) Describe two changes that the actuary is likely to propose to the banks. [4]  
[Total 32]

**END OF PAPER**