Faculty of Actuaries **Institute of Actuaries**

EXAMINATION

September 2005

Subject ST5 — Finance and Investment
Specialist Technical A

EXAMINERS' REPORT

Introduction

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

M Flaherty
Chairman of the Board of Examiners

29 November 2005

1 A custodian ensures that financial instruments are housed under a proper system that permits investment for proper purposes with proper authority.

The following services may also be provided: income collection, tax recovery, cash management, securities settlement, foreign exchange, stock lending.

2 (i) (a) Anomaly switches, as these are less likely to alter the duration match of the liabilities.

(b) Policy switches, as these allow the investor the freedom to attempt to maximise return based on the investor's view of future changes in the level and shape of the yield curve.

(ii) The investor may take the view that despite the 0.5% pa higher yield on the 20 year bond, the need for a greater level of reinvestment during the bond's term means that the additional return is insufficient compensation for the risk that reinvestment terms might worsen. This is particularly likely if yields are currently considered to be high relative to historical levels.

(iii) First an estimate of the risk premium for the AA rated bond will be needed, with a view to how this might change over the length of the anomaly switch.

This view will take into account default risk and other factors affecting the yield such as lack of liquidity, coupon and any tax differences.

This will be used to estimate the additional yield that could be obtained through changes in the risk premium relative to benchmark government bond yields.

An allowance should be made for transaction costs at both ends of the switch.

Based on the additional yield, a decision as to whether to proceed with the switch can be made.

3 (i) The borrowers underlying the mortgages in a mortgage backed security have a right to (but are under no obligation to) repay the mortgage to the lender … … at any time during the life of the mortgage at its face value.

This introduces pre-payment risk for the holders of mortgage backed securities.

(ii) (a) The W investment class.

All principal repayments go in the first instance to the class W investors; a rush of prepayments will impact this class of investors the most.

(b) W, X and Y. Class W will be repaid first because of the structure of the CLO and is likely to have the shortest duration followed in order by class X and class Y.

(c) Class Y investors bear very little pre-payment risk if the ratio of the par value of the securities is 5:2:1 but class Y investors bear significant pre-payment risk if the ratio of the par values is reversed to read 1:2:5.

4 (i) BF is based on the idea that a variety of mental biases and decision making errors affect financial decisions.

Central to BF is the psychology of how and why financial decisions are made.

Analysis within this field is believed to have some predictive qualities and the findings used to help the proponents in their own decision making.

(ii) Analysts and investment managers can be unreasonably drawn to a stock based on understanding and belief in the company's business model and/or management. This "affection" can lead them to persistently discount bad news about the stock.

Investment managers can be highly confident in their own abilities. Over confidence can lead the practice of managers using good news on a stock to reinforce their position whilst putting any bad news down to the ignorance of other market participants.

Managers will be reticent to take responsibility and crystallize a loss having defended the position to date.

(iii) Institute a level of discipline in the investment process to reduce bias without stifling invention and ideas.

Hold periodic peer reviews of the portfolio/decisions.

Create a culture, which actively encourages challenge and debate.

Introduce hard code rules and risk controls to take out some of the human element.

5 Needs to cover:

(i) Description of *all* the types of merger and the reasons why they are instigated (and why not) as per Unit 8 section 4.

(ii) Barriers to European integration as per Unit 10, section 9.

6 (i) Aim is to outperform benchmark

To outperform you need to be different

Extent of difference will be controlled to minimise risk of underperformance (and potential termination of mandate)

Justified because:

- Markets and asset classes are not perfectly correlated

Asset class and country returns may be predictable because:

- Valuations can drift away from fair value
- Investors may be slow to incorporate new information
- Risk premiums change over time among global markets
- Structural barriers exist across global markets
- Some market participants (e.g. central banks) may not be motivated by profits

(ii) Performance target
Style of management
Correlations between assets
Cash flows and income
Costs of rebalancing
Rebalancing frequency
Scope to use derivatives
Risk Tolerance

(iii) Not all factors will have limits placed on them as they are not manageable e.g. cash flows and income but they will be taken into account when considering other limits i.e. rebalancing to ensure efficient management.

Performance target — limit the under performance by more than a set percentage over a defined period, out performance also needs to be reviewed (too high risk?).

Style of management — permit only a limited percentage in non-style assets.

Correlations between assets — monitor for increases or decreases of a particular magnitude.

Costs of rebalancing — set a limit on management costs.

Rebalancing frequency — place a limit on asset allocation shifts other than due to cash flow or income.

Scope to use derivatives — limit exposure to derivatives to certain percentage of assets.

Risk tolerance — the funding level, corporate sponsor's financial status and asset class risk/return expectations will all have different influences at different times depending on how the risk of each is viewed. e.g. a well funded scheme with a large surplus may be prepared to consider wider parameters than one which is less well funded when the company sponsor is financially sound.

7 (i) What market, instrument or other underlying asset drives the performance of the derivative?

What is the formula for the magnitude of the cash flows likely to arise under the derivative contract?

What is the timing of those cash flows?

What is the likelihood of receipt or payment of the cash flows?

What is the liquidity of the contract?

(ii) The factors would be:

- return expected — what is it going to contribute to overall returns
- taxation — are there any implications for returns or other aspects of the portfolio
- applicable regulatory valuation rules — what rules may apply and will they cause complications
- accounting treatment of the derivative — is it treated as capital or are there income aspects that need to be allowed for
- integration with the existing portfolio — does it make strategic sense
- its effect on risk — what does it do to the overall portfolio's position

8 (i) **Grouping by industry**

To reduce the number of factors that have to be taken into account when analysing the share.

Quite a lot of industry statistics are available and are usually grouped by industry.

Methods of raising finance are often similar within a group.

Experience similar labour problems, costs of raw materials, consumer demand, economy will affect them similarly.

Financial statements are prepared in a similar fashion and will use similar jargon.

No other factor has proven to correlate to shares as closely as industry statistics.

(ii) **Disadvantages**

Tend not to look at companies between sectors, only companies within sectors.

Some shares don't move with their industry.

Advantages

Can become expert in one sector and understand it very well.

We can decide which factors affect a share price within an industry, then analyse companies with this in mind.

Could group by:

Large cap/small cap — valuations tend to reflect growth/maturity/financial strengths differently for large and small cap stocks.

Growth/Value — reflects the different universes and economic/market drivers operating on these companies.

Exporters/Importers — reflects earnings from domestic or overseas influences and impact of different regions' economic growths and currencies.

Any two sensible suggestions should earn marks.

(iii) See Core reading Unit 3 pages 2 & 3.

9 (i) The overall investment performance of a fund can be divided into:

- **Sector or asset class selection:** the extent to which the fund's proportions in the various sectors will have affected performance.

- **Stock selection:** within any one sector, have the selected stocks performed better or worse than the sector as a whole?

(ii)

	Fund	*Benchmark*	*Fund Ret*	*Index Ret*	*Asset Class Selection*	*Stock Selection*	*Total*
UK Eq	45%	60%	26.24%	19.06%	–0.14%	3.23%	3.09%
O'seas Eq	30%	20%	25.14%	17.04%	–0.11%	2.43%	2.32%
UK Bond	15%	10%	14.20%	18.07%	0.00%	–0.58%	–0.58%
O'seas Bond	10%	10%	6.63%	14.57%	0.00%	–0.79%	–0.79%
Total	100%	100%	22.14%	18.11%	–0.25%	4.29%	4.04%

There is a rounding error of 0.01%.

(iii) The fund has out performed by 4.03%. Asset allocation was poor due to under weighting UK equities and over weighting overseas equities. Equity stock selection in both markets was very good whilst bond selection was poor in both markets. Bond performance was consistently poor for both classes in each year. UK equity performance was consistently good but overseas equity performance was volatile with the third year accounting for more than the stock selection added value in total.

END OF EXAMINERS' REPORT