Subject ST5 — Finance and Investment Specialist Technical A

EXAMINERS' REPORT

September 2008

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.

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Chairman of the Board of Examiners

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General comments

Generally a poorly answered paper than previous diets; although the pass rate was consistent with recent diets, this equated to a disappointingly lower pass mark. Candidates typically answered Questions 5 and 6 better than the others, with Questions 1 and 3 attracting the worst responses.

Many candidates seemed to understand the key issues being examined and so appreciated the general content of solutions that the examiners were looking for – however those that were unsuccessful will find their solutions lacked sufficient (and often the most basic) detail and scored lower accordingly. Worse, some candidates deviated from the topic and included irrelevant material – although candidates will not be explicitly penalised for this, it gives an impression of a lack of understanding and, more importantly, wastes valuable time. Where candidates made relevant points in other parts of their solutions, the examiners have used their discretion as to whether to recognise these answers or not.

Again there were many candidates close to the pass mark whom were awarded an FA – most candidates would be very surprised to see just how tightly distributed the marks are; deciding where the pass mark falls will have a material impact on the numbers of candidates who are successful and the examiners take great care to ensure a consistency of standard across candidates, subjects and diets. It was fairly clear where the hurdle should have been set; as a result, the pass rate for this diet was similar to last time. However the pass mark remains much lower than the examiners feel ought to achievable by candidates, many of whom are likely to be working as advisers or asset managers in this most practical of fields. Several candidates were awarded an FD in this diet and the examiners remain concerned by the numbers of candidates still achieving only an FC grade, since this too would imply little preparation or, worse, knowledge and understanding.

Candidates are reminded of a bias in the paper towards recognising higher level skills and practical application – this is intentional and will continue. Likewise the examination system does properly allow for prior subject knowledge to be assumed. Investment is a necessarily practical subject and, at this level, the examiners expect candidates to demonstrate a breadth and depth of competency as would be expected from a senior student in a frequently evolving discipline. Hence simple regurgitation of bookwork will never be sufficient to ensure a Pass grade – and this was evident from the dispersion of candidates' responses in the more differentiating questions.

As noted before, in order to succeed, candidates must ensure they familiarise themselves with the prevailing investment issues and the general market background facing institutional investors in the 18 months preceding a diet, more so the solutions (and sources of) being debated by the various stakeholders. A recurring theme in recent years has been a move towards capital market rather than purely insurance and asset management solutions – hence questions regarding banking and derivative approaches to asset and liability risk management or modern financial theory and commercial applications should be considered likely scope for examination. New asset classes and ways of investment will themselves generate new types of risk and so the need for new regulation and ways of monitoring and management.

All extenuating and mitigating circumstances were considered in awarding grades.

1 (i) $IR = [\alpha r_i + (1 - \alpha)r_j - r_f]/[\alpha^2\sigma_i^2 + (1 - \alpha)^2\sigma_j^2 + 2\alpha(1 - \alpha)\rho_{ij}\sigma_i\sigma_j]^{½}$

where α = proportion in asset class i

r_i, r_j = annual return for asset class i, j $i = 1, 2$ $i < j \leq 3$

r_f = risk free return

σ_i, σ_j = tracking error asset class i, j

ρ_{ij} = correlation between asset classes i and j.

(ii) To satisfy minimum variance differentiate denominator of IR with respect to α and set to zero. This gives a solution of

$$\alpha = [\sigma_j^2 - \rho_{ij}\sigma_i\sigma_j] / [\sigma_i^2 + \sigma_j^2 - 2\rho_{ij}\sigma_i\sigma_j]$$

Asset Pair	*α*	*r (%)*	*σ (%)*	*IR*
1,2	0.25	3.75	3.95	0.95
1,3	0.125	1.625	4.84	0.34
2,3	0.5	2.00	4.33	0.46

(iii) Only the combination of assets 1 and 2 gives a better IR than asset1 or asset 2 on their own. The minimum variance portfolio does not give the best IR for each combination. This outlines the problem of using minimum variance portfolios in building a portfolio.

(iv) Gearing will give additional returns provided the cost of gearing is less than the asset's return. The debt is usually at a fixed rate of interest and so has no variance. Thus although higher returns are achieved they will be at the cost of higher risk (tracking error) unless the cost of debt is less than the risk free rate (unlikely). Thus the information ratio will fall.

Selling short an asset that has a lower expected return and re-investing in a higher returning asset will increase the return but will significantly increase the risk. However if the assets are moderately to highly correlated and the asset being bought has a sufficiently high risk adjusted return over the asset being sold it will be possible to have an improved IR. However such situations tend to be arbitraged away very quickly.

2 The most important consideration is the retailer's quality and financial strength as the rental income from all the properties in the portfolio are dependent on these factors.

It is therefore important to assess the financial position of the company both pre and post the sale and leaseback.

Why is the company looking to sell the properties?

What will it be doing with the money it raises?

How long has the company been trading?

How long has the current management team been running the chain, do they have any plans for retirement/succession?

What future plans do the management have for the chain?

Has it been through more than one economic cycle? If so how did it perform during a recession? If not does it sell necessities or luxury items?

The properties themselves are also important.

Their location both in terms of which towns and the location within the town.

Age and the state of repair.

Could other retailers easily move into the space?

The lease details would need to be determined.

How long are the leases?

Are there any break clauses?

Are the leases on upward only rent reviews?

How often are rents reviewed?

What rent will be paid initially?

Finally details of the yields on similar properties would need to be ascertained.

3 (i) (a)+(b) Alpha is the difference between a fund's expected returns based on its beta and its actual returns. Alpha is sometimes called the value that a portfolio manager adds to the performance. If a fund returns more than what you'd expect given its beta, it has a positive alpha. If a fund returns less than its beta predicts, it has a negative alpha.

Looking at the three strands separately:

- Gaining superior information

This should not be confused with inside information.

In practice this is probably the most difficult of the three areas to gain a competitive edge.

Information can be gained from a number of sources – the company itself, their competitors, their customers, their suppliers, the press etc.

In order to gain superior information an analyst will probably need to spend more time researching the company and its industry.

This has implications for the number of stocks an analyst can cover and therefore for the total number of analysts required.

- Processing the information better

This is an area that has received a lot of attention in the recent past with the advent of quantitative models.

These models may allow investors to better identity anomalies and thereby make better decisions.

Given the large amount of data available a system that processes this information better may well lead to improved or more rapid decision making.

Given the wide variety of information available any processing system will have to be very flexible.

Better models of companies and sectors can also be developed to better predict the future profitability and cash flows of a company or sector.

Again given the diversity of companies and sectors it is difficult to devise a financial model that will be applicable to all companies.

- Eliminating behavioural bias

This is easier said than done.

There are a number of behavioural biases.

Namely: Anchoring, loss aversion, framing, over confidence and mental accounting.

Elimination of all these sources of bias would take considerable expertise in the field of behavioural finance.

In order to effectively eliminate these biases some form of mechanistic investment process may be required.

If it were possible to eliminate behavioural bias this would not necessarily lead to the generation of alpha as if other investors were still influenced by behavioural bias these biases could influence asset prices.

Therefore the elimination of behavioural bias may lead to better long term performance but it may have a detrimental impact on short term performance.

(c) Given/depending on the arguments advanced in (b) it would seem that the 3% target is challenging, especially allowing for fees of management. It is possible that such a performance is achievable in the short term (and this would be borne out by historic manager return statistics), but may be much harder to sustain a long term competitive advantage, especially as other managers may come to adopt similar styles and so "arbitrage out" the scope for added value.

Credit will be given for other reasoned arguments.

(ii) In order to implement such a strategy the department would need:

- A large number of analysts unless the aim was only to cover a limited part of the market.
- A quantitative team.
- Experts in behavioural finance.
- A data entry function to input the large amounts of data.

All these functions would need co-ordination and there would need a person or people to reconcile the different recommendations and actually construct a portfolio.

It is possible that an investment process with all these inputs may become unwieldly.

There is also the possibility that the various input streams may produce conflicting recommendations.

There is a danger that a portfolio constructed using these ideas could exhibit abnormally high or low tracking errors. This would need careful explanation to potential clients.

The attribution and explanation of performance would also be very complex.

The cost of such an operation may mean that this approach is only open to fund managers with significant funds under management.

4 (i) The formula is:

$$\text{Index level at time } t = K \frac{\sum_i W(P_{it} / P_{i0})}{\sum_i W_i}$$

Where P_{it} is the price of stock i at time t.
P_{i0} is the price of stock i at the base date.
W_i is the weight applied to stock i.

K is a constant related to the starting value of the index at the base date.
The weights used are usually the market capitalisations at the base date.

The initial value if the index can be set at any number other than zero, however it is usually a round number e.g. 1,000.

(ii) From the equation above the value of *K* in this case = 10,000.

The index value at end of day 1 =
10,000*(512.5+302+200+690+804+918+1010)/4,400 = 10,082.95

The index value at the end of day 2 =
10,000*(512.5+310+208+696+760+927+1,006)/4,400
= 10,044.32

(iii) In calculating a total return it is usually assumed that dividends are reinvested back into the index at the ex-dividend date. In this case there was one dividend of 25 and stock E went ex-dividend at the start of day 2.

Total return = ((10082.95+50/0.44)*10044.32/10082.95)/10,000
= 1.01575
i.e. 1.58%

(iv) The investors in the fund must pay investment management fees, custody fees, audit fees, governance fees and administration fees whereas such fees are not taken into account in the calculation of returns on the Index.

The Index includes the reinvestment of gross dividends paid by its constituent companies whereas the investment manager will only receive such dividends net of withholding tax.

The Index does not take into account the costs of rebalancing the index for such activities as new entrants, exits, mergers and takeovers and changes in the market capitalisation of constituents.

Such costs include stockbrokers' commissions, stamp duty and other levies.

When the fund manager receives small amounts of dividend income, it may not be cost effective for her to invest such small amounts across the constituents in the correct proportions.

The manager will therefore have part of the portfolio invested in the constituents of the index and part invested in cash.

The cash holding will cause the manager to under perform the index in a rising market and out perform the index in a falling market.

Needs to reflect situation of non-domestic investor and the ability to replicate or otherwise track individual markets.

There may be limited derivatives available to develop synthetic approaches.

Problem with definition of emerging market. This will vary between investors and index providers.

Lack of homogeneity means alternatives for stock/sector exposures may not be closely correlated.

At individual market level and relevant weights, there may be foreign ownership restrictions, different share classes and different definitions of capitalisation according to free float.

Some markets may be very concentrated with associated liquidity issues. This could have implications for investors with caps on exposures to particular companies.

Marketability and availability of stock will vary and political instability can cause capital control issues and so grounds for inclusion/exclusion within index with limited notice of change.

For total return, income adjustment should reflect investor circumstances in terms of reinvestment (actual receipt may be long after dividend declaration) and taxation e.g. unrecoverable taxes.

Pricing and valuation information may be poor and untimely which will affect dealing and monitoring of tracking.

Costs of dealing may be higher and may need to be reflected in judging tracking success.

Restrictions on investment in certain countries imposed either by trustees or regulation may render index less appropriate.

May have undue sector or stock biases versus total portfolio.

Research, administration, custody and dealing costs may be disproportionate or difficult to facilitate.

Taxation will be a particular problem especially capital gains tax.

If making direct investment, unlikely to have portfolio similar to index.

Other practical management and monitoring issues.

5 (i)

- Measure of short term market movements
- Providing a history of market movements
- Tool for estimating future movements in market given past trends
- Benchmark for assessing portfolio performance
- Valuing notional portfolio
- Analysing sub-sectors of the market
- As a basis for index funds to track a particular market
- To provide basis for the creation of derivative instruments

(ii)

- UK -FTSE 100- largest 100 companies by market cap. Account for 80% of total market. Weighted arithmetic average basis. Free float.
- USA –Dow, 30 shares. Unweighted arithmetic average.
- S&P 500, weighted arithmetic index
- Japan – Nikkei 225 companies, unweighted arithmetic average
- Topix – 1100 shares, market cap weighted arithmetic
- Germany – DAX 30 shares, total return index
- France CAC, 250 shares free float, market cap

(iii)

- Efficient portfolio or transition management i.e. Asset allocation, equitising cash holdings
- Long term and/or short term risk reduction i.e. Hedging strategic exposures
- Creating structured products with bespoke payoff profiles
- Speculation

(iv)

- Options are financial instruments that convey the right, but not the obligation, to engage in a future transaction on some underlying security, or in a futures contract.
- Exchange traded options have standardized contracts, and are settled through a clearing house with fulfillment guaranteed by the credit of the exchange. Since the contracts are standardized, accurate pricing models are often available.
- Trading options entails the risk of the option's value changing over time. However, unlike traditional securities, the return from holding an option varies non-linearly with the value of the underlier and other factors.
- A further, often ignored, risk in derivatives such as options is counterparty risk. In an option contract this risk is that the seller won't sell or buy the underlying asset as agreed. However exchange trading enables independent parties to engage in price discovery and execute transactions. As an intermediary to both sides of the transaction, the exchange provides:
  - fulfillment of the contract is backed by the credit of the exchange, which typically has the highest rating (AAA),
  - counterparties remain anonymous,

  - enforcement of market regulation to ensure fairness and transparency, and
  - maintenance of orderly markets, especially during fast trading conditions.
- Basic options are to buy/sell puts/calls (and combinations thereof) depending on investors view of the markets
- As a small life office, ETOs offer low administration/efficient portfolio management and the ability to hedge risks to comply with regulatory or statutory requirements, particularly in volatile markets when fund cashflows are uncertain. Similarly they can be combined with other investments to create more attractive pay-off profiles with minimal counter-party risk.
- However like all standardised contracts, there will be inherent basis risk between the option and the office's underlying holdings and there may be cashflow or other trading risks if options are exercised.
- Buying options involves paying a premium which may be subsequently proven to have been "wasted" and so impact returns (and potentially competitive positioning).

6 (i) What investigations

- Management ability
- Quality of the cars/products
- Prospects for market growth, market research and outlook for future economy
- Competition, who else makes the same type of cars. What is their business model like
- Input costs
- R&D costs
- Likely Profit
- Marketing and sales strategy
- The accounting ratios
- Predicted level of borrowing

(ii) Describe the difficulties.

- Lack of publicly available information to analyse the company.
- Lack of company history for profit and cost analysis.
- Upfront costs of company setting up be higher than on-going.
- Difficult to predict demand for new brand.
- Lack of luxury car companies in same period of development for which to benchmark.

(iii) Describe how the company and the quoted shares might be affected.

- Car company would be defined as consumer good, durable, cyclical.
- As enter into recession PER will fall, share price likely to be depressed
- Sales of new cars likely to fall to less demand.
- Profits likely to decrease due to reduced demand and potential reduction in price. Input costs likely to remain unchanged.

(iv) Define the term "out of the money" for both a call option and a put option giving a brief example for each option.

- Out of money for a call option means the current share price is less than the strike price attached to the option. Example if strike price is 250 and current price is 200, out of the money.
- Out of money on put means that the current price of share is higher than the strike price attached to the option. Example current share price is 300 and the strike price attached to put option is 250.

(v) Marks were given for reasoned arguments reflecting points such as:

- There is a price to pay for the option which once added to current price means out of the money initially.
- The actual floatation price was lower than expected.
- Price reflects volatility and time values.

7 (i) Describe why it is important.

- To protect the ultimate beneficiaries from gross incompetence or mismanagement by fund managers.
- To encourage confidence in investment schemes and the benefits they secure.
- To promote the accumulation of investible funds.

(ii) The principles you would recommend.

- Effective decision making – decisions only taken by people with skill, information etc.
- Clear objectives – Setting investment objectives which represent best judgement on funds liabilities.
- Take account of attitude to risk
- Focus on asset allocation – should set strategic asset allocation to be in line with required risk return characteristics of individual fund circumstances
- Expert advice – need for expert advice for actuarial and investment advice
- Explicit mandates – Agree fund manager objectives, benchmark, risk parameters. Understand the manager's approach in attempting to achieve objective.
- Clear time scales of measurement and evaluation.
- Activism – Managers should have explicit strategy on activism
- Appropriate Benchmarks – explicit and benchmarks appropriate to assets being invested in.
- Default fund options.
- Performance Measurement – Have formal performance measurement agreements including the period which reviewed.
- Transparency – Statement of investment principles on who is taking decisions, the fund's investment objective, planned asset allocation, mandates given to managers, fee structures.
- Regular Reporting – members should be sent annual results of monitoring of fund managers.

END OF EXAMINERS' REPORT