

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2014 examinations

Subject ST5 – Finance and Investment Specialist Technical A

Introduction

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

D C Bowie
Chairman of the Board of Examiners

July 2014

General comments on Subject ST5

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.

Whilst the examiners will tolerate bullet point style responses, handwriting that is too poor to assess will lose marks. Likewise “text speak” abbreviations will not be accepted.

Specific comments on the April 2014 paper

Comments on individual questions are incorporated in the solutions below.

Many questions represented opportunities to demonstrate higher level skills in terms of non-standard/practical application of theory to current or unusual issues in investment. Most candidates seemed to identify and 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 or application of knowledge and scored lower accordingly. Thus, weaker candidates found difficulties with Question 1 and the later parts of Questions 3, 7 and 8.

Whilst some candidates are too narrow in their responses, a greater number still deviate from the topic and include irrelevant material or over emphasise minor points. Although candidates will not be explicitly penalised for this, it gives an impression of a lack of understanding and, more importantly, wastes limited time. Time and priority management are key skills actuaries need to have.

Weaker candidates often fail to respond to the *specific* issues included in the question. Instead, they regurgitate a *generic* answer based on the syllabus topic. More care needs to be given to crafting answers that directly address the points raised in the question.

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. Likewise the examiners share and agree alternative possible solutions to questions alongside the approach outlined below.

- 1** There is a mismatch between the index used for measuring returns, and the investment guidelines given to the manager.

This leads to an incentive for the manager to align the investment portfolio to the index rather than the investor's investment guidelines. This may not be the investor's expectation.

In some circumstances there could be significant deviations between the manager's target portfolio and the actual portfolio, since the restrictions will constrain the manager. The manager will be uncomfortable with this as their active management process will be constrained.

Particular examples of situations where the deviations could be significant include:

- Composition of index differs markedly from a 50% government bond / 50% corporate bond mix
- In particular, the index includes supranational and agency bonds
- Duration of index differs markedly from a 50% government bond / 50% corporate bond mix
- Different segments of the bond markets diverge in their returns (e.g. "flight to quality" scenario benefiting government bonds, or a "dash for trash" benefiting lower grade bonds)

The size of the portfolio will also influence ability to gain access to corporate bond issues.

The performance fee strongly incentivises the manager to minimise risk relative to the aggregate index, rather than the investor's expected portfolio. Indeed, the need to outperform the index by more than 1% to earn the performance fee may incentivise the manager to take excess risk. This may be exacerbated by the relatively low "fixed" fee.

For all these reasons, it would be preferable for the benchmark to be aligned more closely to the investment guidelines or if this is not possible, to restructure the fee to remove the performance fee.

Many candidates needed to give more attention to the impact of the fee structure on the manager's actions.

- 2
- (i) (a) The Beta of a portfolio is a measure of the portfolio's volatility relative to movements in the whole market. It is usually defined as the covariance of the return on the portfolio with the return on the market, divided by the variance of the market return.
- (b) A beta of 2 means the change in value of the portfolio should be 100% greater than the change in value of the market.
- (ii) The performance of the portfolio would be compared to the return on the index. The portfolio's target return should recognise the pre specified level of risk. Using an index representative of the market the portfolio is invested in, target returns could be calculated as 1.5x the index return. Quarterly returns for the portfolio could be compared to the quarterly returns on the target over, say, a five year period. The excess return would indicate the level of value added by the manager.

*Explanations using the Jensen measure or Attribution analysis are valid alternatives **provided** they reference a beta of 1.5.*

- (iii)
- The performance will differ because the portfolio will be unlikely to hold stocks and sectors in weights which are wholly representative of the index.
 - The portfolio's beta over the period may have varied to levels significantly above or below 1.5 affecting returns
 - The portfolio may have other objectives/constraints which effect performance.
 - The diversification (or lack of it) may affect volatility of portfolio returns;
 - The volume and dealing cost impact of trades in the portfolio
 - The effects of other expenses
 - The effects of cash flow
 - The impact of tax
 - Some securities in the benchmark are unmarketable, and cannot be held.
 - The benchmark may not have been available for a long enough period

This question was generally well answered.

3 (i) The total rate of tax on an investment.

How the tax is split between different components of the investment return.

The availability of personal allowances

The timing of tax payments.

Whether the tax is deducted at source or has to be paid subsequently.

The extent to which tax deducted at source can be reclaimed by the investor.

To what extent losses or gains can be aggregated between different investments or over different time periods for tax purposes.

(ii) Compared to the previous system, capital gains and income will be treated equally in terms of the rate of taxation, although there will be some deferral of taxation if capital gains are unrealised. Thus, there may be different effects depending on the individual investor's personal tax position and their awareness of the impact of taxation.

Under the new regime, no specific savings wrapper (e.g. pension, insurance, deposit) would be tax favoured. This may lead to behavioural changes and disincentivise saving for long-term needs (e.g. retirement or care).

Due to a simplified tax system, it is likely that product designs will become simpler and administration costs may fall. However, where a product has now become taxable, additional features may be needed to attract customers.

With the only allowance being the annual personal allowance (covering all sources of income), product sales are unlikely to have any strong seasonal effects arising from a desire to "use up" allowances in the current tax year.

Managers will respond by restructuring existing products where possible, and by launching new product designs to maximise demand. Some existing investments will not be amenable to restructuring.

Individuals are likely to find borrowing relatively more attractive since interest payments are deductible against savings or earned income.

The change to the taxation system may influence attitudes to overseas investment.

Other valid points raised were given credit.

Many candidates did not focus sufficiently on 'the personal investment marketplace' as specified in the question. Instead, they wasted time discussing more general economic issues (which were not required).

- 4 (i) First we have to calculate β 's of the two investment trusts

$$\beta_i = \frac{\text{Cov}(R_i, R_m)}{V_m}$$

$$\begin{aligned}\beta_A &= \frac{(0.36)(0.135)(0.065)}{(0.065)^2} = \frac{0.003159}{0.004225} \\ &= 0.74769\end{aligned}$$

$$\begin{aligned}\beta_B &= \frac{(0.75)(0.095)(0.065)}{(0.065)^2} = \frac{0.004631}{0.004225} \\ &= 1.0962\end{aligned}$$

Investment trust A

$$\text{Treynor measure} = \frac{0.09 - 0.04}{0.74769} = 0.06687$$

$$\text{Sharpe measure} = \frac{(0.09 - 0.04)}{0.135} = 0.37037$$

$$\begin{aligned}\text{Jensen measure} &= 0.09 - (0.04 + 0.74769 (0.07 - 0.04)) \\ &= 0.02757\end{aligned}$$

$$\begin{aligned}\text{Prespecified SD} &= 0.09 - \left(0.04 + \frac{0.07 - 0.04}{0.065} \times 0.135 \right) \\ &= -0.01231\end{aligned}$$

Investment trust B

$$\text{Treynor measure} = \frac{0.08 - 0.04}{1.0962} = 0.03649$$

$$\text{Sharpe measure} = \frac{0.08 - 0.04}{0.095} = 0.42105$$

$$\begin{aligned}\text{Jensen measure} &= 0.08 - (0.04 + 1.0962 (0.07 - 0.04)) \\ &= 0.007114\end{aligned}$$

$$\begin{aligned}\text{Prespecified SD} &= 0.08 - \left(0.04 + \frac{0.07 - 0.04}{0.065} \times 0.095 \right) \\ &= -0.00385\end{aligned}$$

(ii) **Comments**

- (a) On the basis of SD of return (Sharpe and Prespecified SD)
Trust B outperforms A.
- (b) On the basis of systemic risk (Treynor and Jensen)
Trust A outperforms B.

Limitations

- (a) The data is based only on 3 years. There is no guarantee that the same will hold in future.
- (b) It is not known whether the returns are gross or net.
- (c) We have not considered the suitability relative to any liabilities.
- (d) The Treynor and Jensen measures are based on the validity of the Capital Asset Pricing Model.

Generally well answered, although some candidates did not calculate the trust betas, but rather used the correlation coefficients directly. Not all candidates addressed the limitations in part (ii).

5 (i) The main problems in an asset allocation change of this size are:

- The possibility of shifting market prices (both on the sale of the existing portfolio and the purchase of new assets).
- The time needed to effect the change and the difficulty of making sure that the timing of trades is advantageous.
- The dealing costs (commission, dealing spreads, purchase taxes, etc.) involved.
- The possibility of the crystallisation of capital gains leading to a tax liability.

These problems are particularly acute in the inflation-linked bond market due to the relatively low liquidity of these bonds, both in the UK and the US markets.

This reflects that a large proportion of the bonds in issue are held by investors as hedges against inflation-linked liabilities.

As both UK index-linked gilts and US Treasury Inflation-Protected Securities have $T+1$ settlement cycles, it is possible (but unlikely) that there would be significant out of market exposure .

- (ii) Total return swaps (TRS) can be helpful in a transaction of this nature for the following reasons:

Dealing costs should be significantly mitigated.

There may be a tax advantage where there is no need to crystallise gains on the portfolio being swapped.

Implementing a TRS should not cause asset prices to move.

A TRS on a large allocation can be executed quickly with a bank, unlike a physical asset sale. Given the size of the switch involved here, this could be significant.

Under a TRS the price of paying or receiving an asset return is transparent (quoted as LIBOR plus or minus a spread). Therefore if paying one asset return and receiving another asset return, it is very clear what the switch costs are.

Conversely, with a physical switch, it is unclear what the transaction costs will be for the return switch until it takes place. Thus, the use of TRS can be very helpful from a portfolio management point of view.

Disadvantages

The main disadvantage of a TRS is its fixed term. Since we only have *the expectation* that the swap will be amended in three to six months' time there is the prospect that the TRS arranged will have to be rolled over or terminated prematurely. To break a TRS mid-term can be expensive.

Additionally, it is not certain that a TRS will result in lower costs than a physical switch, particularly if cash settled .

Counterparty risk is introduced, since the TRS will only deliver the required cash flows if the counterparty honours its commitments. Given the size of the switch involved here, this could again be a significant issue.

The requirement to provide collateral for a TRS is also a disadvantage.

It may not be possible to synthesise the underlying portfolio (as the TRS probably based on an index).

Generally well answered, but some candidates failed to appreciate the implications of the fixed term swap contract. Rather, they stated that such contracts could be easily closed-out. The specific points relating to inflation-linked bonds (in the US and the UK) were not generally appreciated.

- 6** (i) The price of an individual company's shares is affected by the level of supply and demand for those shares. The key factors affecting relative demand for individual shares are investors' expectations of:

- future dividend payments
- future capital growth
- the risks of the business and thus the uncertainty of estimates of the above

Factors that drive expectations for capital and dividend growth are estimates of profits, free cash flow, and total enterprise value.

- (ii) Oil and Gas companies – large companies, global and risky

Consumer goods companies – brand names

Industrial companies – profits move ahead of trade cycle, volatile profits

Utilities – high dividend yield

Financials – high gearing, volatile profits

Other sectors which could be used are:

Technology stocks – risky, global

Consumer services – volatile profits, brand names

Additional factors:

Oil and Gas – commodity price dependent

Consumer goods – capital intensive, low profit margin, high gearing

Industrials – cyclical, dependent on government spending, high profits when conditions good, low gearing, overseas exposure

Utilities – natural monopolies, low growth, heavily government regulated

Financials – labour costs, brand names

Consumer services – poss. high gearing

There are other ways of structuring the portfolio and these were given credit.

Generally well answered.

- 7** (i) The principal aims of regulation are:
- to correct market inefficiencies and to promote efficient and orderly markets
 - to protect consumers of financial products
 - to maintain confidence in the financial system
 - to help reduce financial crime
- (ii) An important aspect of the legislative framework is to maintain confidence in the financial system and to avoid a systemic financial collapse. To avoid a collapse in this scenario, liquidity was provided to the bank.

Bank A should have observed high standards of integrity and fair dealing when deciding to purchase Building Society B. If this had happened then the transaction may not have completed.

A particular problem with this scenario was the bank's decision to undertake the due diligence itself. It appears that bank did not act with due skill, care and diligence in considering whether to acquire the building society otherwise the bad debts should have been identified.

In undertaking the due diligence itself, the bank was exposed to potential conflicts of interest which could have been avoided. The bank may have intended to manage these conflicts internally, but decision makers could have interests in the transaction proceeding, despite the bad debt issue. The bank should not unfairly place its interests above others, e.g. its customers and the wider population who may ultimately need to bail out the bank.

Good corporate governance requires management to make decisions based on the interests of relevant stakeholders rather than on their own personal interests. It is possible that these bad debts were discovered but then not disclosed. Full disclosure requirements may therefore have avoided the crisis.

Bank A should organise and control its internal affairs in a responsible manner and keep proper records, so that this type of scenario could be avoided. Staff involved with the transaction should be suitably qualified, adequately trained and properly supervised. Well defined compliance procedures should be embedded as part of day to day activity.

The fact that a capital injection was required shows that the bank was not fully monitoring the risks it was exposed to. The bank should have ensured that it maintained adequate financial resources to meet its investment commitments and to withstand the risks to which it is faced.

The bank should be required to disclose all relevant information and be ready to provide a full and fair account of the fulfilment of its responsibilities to them. The regulator should expect the bank to deal with it in an open and co-

operative manner and to keep it fully informed of anything concerning the bank which may cause problems in the future. A strong regulator is likely to be needed to ensure orderly markets and reduce fraudulent activity.

Discussion of the application of these principals to either Bank A or Building Society B was given credit. Simply regurgitating the material in the Core Reading regarding financial services legislation, without referencing the specifics of the question, was not sufficient.

8 (i) Each company needs to be considered individually, but factors that will generally be investigated include:

- management ability
- quality of products
- prospects for market growth
- competition
- input costs
- retained profits
- history

Thus topics to be investigated include:

- the financial accounts and accounting ratios
- dividend and earnings cover
- profit variability and growth (by looking at all sources of revenue and expenditure)
- the level of borrowing
- the level of liquidity
- growth in asset values
- comparative figures for other similar companies

It will be necessary to use all the available sources of information. The primary source is likely to be the company's published accounts but there are many other sources of information which include:

- the financial press and other commercial information providers
- the trade press
- public statements by the company
- the exchange where the securities are listed
- government sources of statutory information that a company has to provide
- visits to the company
- discussions with company management
- discussions with competitors
- stockbrokers' publications

- (ii) When investigating a recently formed company, some of the factors in (i) will not be available.

Not much info on current management ability – look at their experience from previous companies, if they have any.

Input costs – difficult to have a good understanding as they have not been running long enough to have stable costs. Look to compare against a similar company with longer track record.

Retained profits – don't have any so would need to model expected profits stating assumptions.

Financial and commercial press – given company is so young there is likely not to be excessive information. Need to find trade press and fashion articles.

Public statements by company – likely to be very few.

Online fashion is a fairly new industry so could struggle to find information on other firms to draw comparisons. Could try and use other online industries that appear to have similar characteristics.

Low barriers to entry which means competition could increase rapidly which is difficult to factor-in to analysis.

Intern has not completed a report before and might lack the knowledge of how to complete analysis. He should ask for help and possibly a mentor.

Intern junior status might mean senior management would not be willing to meet to discuss. The intern should ask someone with market experience to join them on the visit.

Candidates needed to use the specific details given in the question to answer this part well.

- (iii) Investigation of a recently formed company will be an equal problem for both. The differences and similarities between carrying out analysis for investment and the rating agencies' approach to rating companies:

Similarities

Both will focus on:

- the competitive position (relative to peers)
- the downside risk of investment vs. the upside potential of the company
- the quality of profitability of the company and. EPS growth
- cash flow generation vs. book profitability
- forward looking analysis
- strategy, management track record and risk appetite

Differences

- The credit agency focuses on fundamental risks of the company's industry whereas the asset management analysis is more company focussed from the outset
- Credit agencies give a public ratings and release information on their analysis, whereas asset management company ratings tend to be internal only with less client friendly analysis (higher order)
- Credit agencies are supposed to be more conservative in their approach to ratings than an asset management company (higher order)
- The credit agencies will have more emphasis on the capital structure and financial flexibility although asset management will carry out some analysis

With respect to the credit rating agencies the review is based on comprehensive information, both public and private (background and supplemental rating questionnaires). An important component is frequent meetings and discussions between rating analysts and company management, providing crucial information and understanding of the company's operations, financial condition, competitive market position and future business plans. Although asset managers will focus on similar things credit agencies arguably have greater access to information.

Part (iii) was generally poorly answered. Many candidates gave relevant details, but few focussed sufficiently on comparing the similarities and differences.

END OF EXAMINERS' REPORT