INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2015 examinations

SA6 – Investment
Specialist Applications

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 at the date the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

F Layton
Chairman of the Board of Examiners

July 2015

General comments on Subject SA6

Candidates are reminded to ensure that their answered are sufficiently detailed to demonstrate understanding, as there were instances where inadequate explanations led to candidates scoring less well on questions than they might have done. The model solutions are intended to reflect the level of detail that a high scoring candidate might be able to provide in the allocated time, to achieve full marks on the paper. Credit is available for valid alternative solutions, particularly in questions focussed on higher level skills.

Comments on the April 2015 paper

This paper was better answered than recent diets, reflected in an improved pass rate. Candidates in general demonstrated a good grasp of Core Reading and were able to apply this knowledge in familiar situations. The examiners continue to feel that candidates ought to be able to achieve higher scores overall, and a number of candidates struggled to score well in parts of questions where higher order skills were being assessed or where situations were unfamiliar and a question needed to be approached from "first principles".

1 (i) Quantitative Easing (QE) is a monetary policy used by some central banks to increase the supply of money. It usually involves both a direct increase in the money supply and a knock-on effect from the fractional reserve system, increasing the money supply further. Although it can involve just making changes to the fractional reserve system, which increases the money supply.

QE is usually implemented by a central bank by first crediting its own account with money it creates ex nihilo ("out of nothing"). It then purchases financial assets, for example government bonds, agency debt, mortgage-backed securities and corporate bonds, from banks and other financial institutions in a process referred to as open market operations. It can also involve changing the reserve requirements which through the fractional reserve system would increase the money supply.

(ii) Any direct increases in the money supply should put upward pressure on prices generally

This can be explained using the Quantity Theory of Money

$$M * V = P * Q$$

M = the amount of money in an economy
V = the velocity of money – the number of times money circulates around the economy over a specified period
P = the average price level of goods, services and assets
Q = the volume of goods, services and assets produced/transacted

If M increases – unless there is an increase in economic activity, there should be upward pressure on prices.

The main way that QE typically increases the money supply is indirectly through the fractional reserve system – whereby bank assets are bought from the banks by the central bank in exchange for money which then, due to the fractional reserve system / money multiplier, results in an increase the money supply.

The impact of this is typically greatest initially in the asset markets where the increase in the money supply is experienced both directly and indirectly, through an increase in the expectations of future money supply increases (as the QE results in an increase in the money supply over time through the fractional reserves system).

(iii) **Bond Market**

QE typically involves intervention in bond markets by the central bank – increasing bond prices and consequently lowering bond yields. A reduction in QE is likely to see relatively lower demand for bonds, relatively lower prices and relatively higher yields.

QE is typically used to impact the middle to longer end of the yield curve, which would not be directly impacted by more traditional monetary policy. Consequently, the impact of tapering is likely to be greatest in the middle to long end of the yield curve.

The recovery in economic growth may also mean that there is upward pressure on the central bank base rate and other short term interest rates – resulting in higher short term bond yields.

The impact of inflationary expectations will pay a role. If inflationary expectations are rising (or deflationary pressures reducing) due to the recovery in economic growth, this will put upward pressure on longer term bond yields. The tapering in QE may dampen or possibly negate some of these expectations, reducing the upward pressure on yields.

The relative impact on the government versus the non-government bond markets will depend upon the relative degree of tapering in each market (assuming that QE involved intervention in both the government and the non-government bond market).

Equity Market

If the tapering of QE increases bond yields, this will reduce the relative attractiveness of equities compared to bonds, and also increase the discount rate at which future earnings are discounted, putting downward pressure on equity prices.

The impact of inflationary expectations could impact equities. Equities are a real asset. Higher inflationary expectations (or lower deflationary expectations) from the economic recovery may mean equity prices rise. However, higher inflationary expectations (or lower deflationary expectations) can be negative for equities in the short term, due to any necessity of central banks to increase interest rates to control it.

Credit also given for similar argument based on economic growth leading to changing expectations for dividend or earnings growth

The tapering of QE may slow down any growth in the money supply, reducing the demand for equities.

Higher bond yields should lead to higher commercial interest rates which should dampen economic activity, decrease corporate profitability and future dividends, and thus dampen equity prices.

The tapering of QE may have a disproportionate effect on the stock market in the short term, as QE will likely have had a disproportionate effect on it earlier.

Exchange Rate

Initially the exchange rate should rise – unless there is similar or greater tapering of QE in other countries.

Higher interest rates increase the demand for the domestic currency as it attracts "hot money".

Higher exchange rates should decrease the competitiveness of all exports. This is despite reducing the cost of imported raw materials used in production.

Higher exchange rates should decrease the relative competitiveness and demand for domestically produced goods and services stimulating domestic growth in the next few years.

Any increased uncertainty about the economy will likely cause the exchange rate to fall, or any reduction in uncertainty about the economy will likely cause the exchange rate to rise. If the market feels more/less confident about the country's economic growth prospects, then the exchange rate may rise/fall.

Economic Growth

Higher short-term interest rates and bond yields discourage investment spending by firms and dampen consumer spending. However, there is usually a lag between increases in interest rates and bond yields and any fall-off in growth.

Any reduction in capital investment spending by firms reduces employment levels and therefore incomes. However there is a lag between any reduction in the planning and building of new production facilities and the full impact on economic output.

For consumer spending to fall, one or more of the following is needed:

- Reduced disposable income from any increase in the cost of servicing existing debt – the effect will be more immediate if borrowing is generally at floating rather than fixed rates.

- Encouraged savings and / or discouraged spending of existing savings – higher interest rates provide more reward for savings. The impact on consumer confidence will be important (e.g. job security or prospects) on savings, if consumers feel confident due to the economic recovery, then the impact on savings may be dampened.

- Discouraged personal borrowing – higher interest rates make borrowing more expensive. Again consumer confidence (e.g. job security or prospects) is an important factor influencing borrowing intentions of consumers.

Inflation

The slowdown in the supply of money, all else being equal, should dampen any inflationary pressures.

Higher exchange rates will decrease the cost of imported goods and services leading to lower supply side inflation. The impact on the inflation rate will depend on whether these lower costs can be passed on to consumers. Strong demand and the pressure of domestic alternatives are a limiting influence.

The use of forward currency contracts will create a longer lag on any impact on inflation.

Higher real interest rates may mean a decreased quantity of money is demanded which is met by a decrease in the money supply. This can lead to lower inflation (demand side).

Demand side inflation can typically have a longer lag than economic growth.

Any rising wage inflation pressures may add to general inflation pressures.

Other

Overseas QE activity may support asset prices despite domestic tapering of QE.

This was the best answered question on the paper. The first part was relatively well answered but few candidates achieved close to full marks despite the question being knowledge based. Candidates tackled the third part reasonably well but only a minority scored significantly over half marks, which was disappointing.

2 (i) The following factors should be considered:

- whether or not the portfolio has to meet certain **known or unknown cashflows** in the future
- any minimum hurdles that need to be met such as a **minimum rate of return**
- whether **competitive constraints** mean that the portfolio must have regard to other portfolios of the company's competitors
- the **risk appetite or objectives** of the investor
- the **performance monitoring** process
- the **sophistication and size of the investor**
- **regulatory and statutory constraints**
- **ethical constraints**, and other voluntary constraints
- **liquidity** requirements
- **minimising costs and tax** paid
- the **investor's views** on the economic outlook and asset classes

(ii) All investors will have some constraints but the following are examples of investors with significant assets in excess of their ongoing requirements.

wealthy individuals − some individuals have sufficient surplus cash that the liabilities of financing their future life are small in relation to their personal assets.

sovereign wealth funds − examples include excess funds from natural resource extraction (e.g. oil) that governments have chosen to save in order to enhance the quality of living of future generations.

company cash reserves − some companies have accrued exceptional profits, beyond what can reasonably be either invested in the business or used for acquisition, or returned to investors without tax implications.

(iii) **Market efficiency**

Active managers overweight their allocation to investments they consider to be undervalued, and underweight allocations to investments they consider to be overvalued. Therefore they contribute to efficient market pricing by ensuring that market prices of financial assets do not deviate excessively from fundamental values. Conversely passive managers will maintain allocations very close to index weights. When some parts of the market are overvalued (eg a bubble within a sector), passive managers will continue to make allocations in line with market capitalisation weights.

Liquidity

Active managers improve liquidity as they have higher asset turnover levels than passive managers. They can further improve liquidity by opportunistically trading in the opposite direction to large flows, unlike a passive manager.

Research coverage

Active managers buy significant amounts of research from independent research organisations and brokers, resulting in a larger supply of such research.

Active managers also carry out their own fundamental research into companies and securities.

The above allows a wider range of corporate issuers to be covered by investment analysts than would otherwise be the case improving primary and secondary market liquidity due to improved market efficiency. [1] Passive managers are not significant users of investment research. **Corporate governance**

Active managers have regular discussions with company managers to represent their investors' interests. This allows investors to engage with corporates on a collective basis, allowing them to represent their interests more effectively than they would be able to do individually. Passive managers typically do not carry out this function.

Wealth creation

Active managers generate significant revenues for the national economy, from both domestic and overseas investors.

If active managers were replaced with passive managers, revenues would fall and export earnings would fall.

Outperformance potential

Provided that investors select an appropriately skilled manager, investors will benefit from active management since they gain the potential for higher returns than if they were to invest in line with an index. Active managers do this by taking advantage of market inefficiencies and overweight or underweight mispriced securities relative to a benchmark index.

Investor choice

Active management is a competitive activity with low barriers to entry.

Provided manager fees are transparent an appropriate fee is being charged for the service provided.

(iv) **Centralised procurement process**

The pension funds could reduce investment manager fees by negotiating based on consolidated assets with each manager.

This would require some coordination (e.g. a pricing committee) but would not require a new vehicle or funds to be set up, nor any asset transitions.

It will not be feasible to negotiate lower fees for all mandates.

The pension funds' assets will be as fragmented as currently, but over time the funds are likely to migrate assets towards managers with lower fee levels.

A centralised process will also be more efficient in terms of administration and governance.

Common investment fund

The pension funds could consolidate their holdings on asset class lines (or some other basis), by transitioning assets into a series of common investment funds.

A centralised investment body would then be responsible for manager structure and selection within the common investment funds.

Each pension fund would then hold units in the common investment funds.

This would allow significant fee reductions to be achieved through consolidation.

There will be some degree of transition costs where mandates are being terminated.

Economies of scale achieved are likely to be least under a centralised procurement process, and highest under the original proposal. A common investment fund that seeks to broadly maintain the current allocation whilst achieving some degree of consolidation will be an intermediate approach.

Governance improvements are unlikely under a centralised procurement approach. A common investment fund is likely to result in improved manager selection decisions and discipline (if well managed) , and may enable a superior manager structure to be implemented due to the larger fund size and the ability to support a larger number of specialist mandates with consistent investment guidelines . Again it is likely that the original proposal would have had greater success in improving investment governance.

This question was reasonably well answered. Candidates struggled with the third part and in particular a number of candidates failed to construct appropriate arguments to support the industry body's point of view. Some candidates failed to score as well as they could have in the final part due to careless reading of the question, which led to them proposing alternative solutions rather than commenting on the proposals they were asked to discuss.

3 (i) **Quantitative assessment**

Are the returns gross or net of fees? What was the impact of any performance related fees? Is there sufficient information to allow a transparent assessment of the fees paid versus returns achieved?

What level of breakdown of the overall return is given? Are performance figures given by asset category or by individual asset holding?

Are the performance figures outlined in an appropriate and suitable manner to enable an assessment of relative performance?

Do the performance figures allow an assessment of the level of risk taken? What measures of investment risk are used? Are they appropriate for the fund? Is any risk adjusted performance statistics included in the report? Are they appropriate (appropriate use of beta or standard deviation as the risk measure)?

Has an attribution analysis been carried out that enables an assessment of what were the main positive and negative contributing factors to performance?

Over what time periods are the performance statistics given? Do they also include historical performance measures over long periods of time?

Has performance varied over time as the fund's assets have increased or decreased?

Is there detailed disclosure of trading costs, third party expenses, and other manager fees?

Qualitative assessment

How clearly have the figures been communicated in the report? Is the report user-friendly?

Does the report adhere to Global Investment Performance Standards? Do they adhere to any other local performance standards?

Does it give a true and fair view of the performance achieved? Are there any areas of concern? Are there any areas where there is potential bias or other possible distortions?

Who are the individuals who produced the reports? Are they of an appropriate character?

The mark-to-market valuations

Has there been any significant inter-period volatility in the valuations?

Have independent valuations been obtained for mark to market assets (eg derivatives) where there is no single reference price?

The non-mark to market valuations

What methods have been used to value investments where no appropriate mark to market valuation was possible? Are they appropriate? Are they consistent with any best practice methods and/or professional guidance?

Is there consistency between the methods used for the non-quoted equities, bonds and venture capital investments?

(ii) **Assessing appropriateness of the investment**

Does the savings scheme (and/or their advisors including the investment consultant) consider that financial markets are efficient? If the answer is yes, then the rational approach might be passive management rather than investing in a hedge fund. Investing in a hedge fund implicitly assumes a judgment that markets are not fully efficient.

Assuming that the savings scheme considers that the market is somewhat inefficient – does the investment consultant have a comparative advantage in picking a high performing hedge fund? To what extent does the consultant consider that they can do this better than others?

Assessing comparative advantage of the hedge fund

Assuming that investing in a hedge fund has been deemed appropriate for the savings scheme, the comparative advantage of the hedge fund to be able to produce superior investment returns needs to be assessed.

People

What is the consultant's assessment of the quality of senior people – their experience, track record, motivation/enthusiasm and commitment to the business? To what extent are the senior people intrinsically or extrinsically motivated?

To what extent are the key investment decision makers capable of independent thought? Does the hedge fund have a sufficient number of such individuals?

Do the key investment decisions makers have humility of the ego, or might they be exposed to 'ego risk'? Are they exposed to letting profits go to their heads and/or are they exposed to fear when they experience losses?

What is the depth of the hedge fund's human capital resources – the number of investment staff involved for each major sector, the dependence on any "star" fund manager?

Has there been continuity of staff over recent times? This might be particularly important where the investment manager has had a successful track record in the past, and some of the key contributors have moved on.

Process

It could be argued that the hedge fund should have a clear understanding at all levels of how it expects to achieve "good long term returns" including the following:

- Internal vs external research
- Buy and sell disciplines
- Asset allocation approach

Past performance and attribution analysis can be helpful in evaluating the consistency of the process, and analysing manager actions.

The decision structure should be capable of being clearly articulated in terms of the manager's ability to make astute and effective decisions, and with clear articulation of the responsible person for each decision.

The decision process should allow the views of the key people to influence portfolios

The quality of research and how the hedge fund can translate decisions into portfolios at best prices will have a significant influence on its performance.

What trading practices are used? Do they have sufficient risk controls? What type of risk controls are used, VaR etc? Are stop loss policies use, and how?

A characteristic of poor trading would be running losing positions and cutting profitable positions too early.

Business

What is the quality of systems in the hedge fund? High quality systems can enable staff to focus on investment decisions, rather than fund administration.

What is the hedge fund's policy for growth of business, including restricting inflows into capacity constrained strategies?

Ability/plans to build capacity where internal resources are the limiting factor – hiring new people, or buying or building new systems

What training/development is available for new staff – this is essential for a business to grow organically.

Is there a good risk management culture?

What retention mechanisms does the hedge fund have? How is key staff members incentivised to remain with the business?

The best environment for the key investment decision makers is one where they have the freedom to express skill and flair, where they get appropriate recognition and reward and where the environment is minimally dysfunctional.

An efficient policy regarding client contact can be desirable so that a good balance is struck between having the key investment decisions makers mainly doing their jobs rather than spending too much time meeting clients

The hedge fund needs to be able to attract and retain key individuals – these individuals are comparable to high performance athletes and need to be managed accordingly.

The size of the hedge fund can be a consideration – if it is too big, it can have the problems of diseconomies of scale, or if too small can lack the benefits of economies of scale.

Other factors

What fees will be charged? How do they compare to other hedge funds? Will the fee structure be based on the '2 and 20' rule – 2% and 20% of out-performance?

Brand name – does the hedge fund have a good brand name? This may help take-up of its products.

Administration – has the hedge fund got efficient accounting systems and administrations processes? Or does it outsource this?

Past performance

An investment manager claiming to be capable of high performance will find it difficult to convince investors if they cannot present some evidence to back this up, which typically involves demonstrating strong historical performance.

However, past performance, on its own, is not necessarily a good guide to the future. The factors influencing the past performance need to be determined, to distinguish between performance achieved through an element of luck and performance achieved from skill .

Despite past performance having a tenuous link with future performance, it is still one of the few objective facts available about the hedge fund.

Difficulties

The factors above are difficult to assess as they are likely to vary over time. Comparative advantages can vary over time also.

A further difficulty of manager research is that teams presenting to researchers are likely to be well rehearsed both in terms of their message and the researcher's assessment process, so as to maximise the likelihood of a successful rating.

This was the least well answered question. Many candidates failed to notice that the fund was a savings plan, rather than a pension plan, which led to the second part of the question being poorly answered as they misunderstood the investors' objectives.

END OF EXAMINERS' REPORT