

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2017

Subject 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 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.

Luke Hatter
Chair of the Board of Examiners
July 2017

A. General comments on the *aims of this subject and how it is marked*

1. The aim of the Investment Specialist Applications subject is to instil in successful candidates the ability to apply knowledge of the United Kingdom investment environment and the principles of actuarial practice to the selection and management of investments appropriate to the needs of investors.
2. Candidates are reminded to ensure that their answers are sufficiently detailed to demonstrate understanding. The model solutions are intended to reflect the level of detail that a high scoring candidate might be able to produce. For many questions there are more marks available than the question requires to achieve full marks. This reflects that the examiners will give credit for valid alternative solutions, particularly in questions focussed on higher level skills.
3. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.

B. General comments on *student performance in this diet of the examination*

This paper was well answered. Candidates in general demonstrated a good grasp of Core Reading and were able to apply this knowledge in familiar situations. Candidates overall scored less well in parts of questions where higher order skills were being assessed or where the underlying scenario was less familiar to them.

C. Pass Mark

The Pass Mark for this exam was 56.

Solutions

Q1 (i) Questions could be asked to assess the investor's requirements under the following headings:

1. Needs
 - a. Objectives
 - b. Current and future needs / liabilities
 - c. Logical and emotional needs
 - d. Required investment return
2. Circumstances
 - a. Amount of existing assets
 - b. Composition of existing portfolio of assets
 - c. Current income
 - d. Expected future income
 - e. Risk appetite
 - f. Level of expertise

- g. Family or other dependents
- h. Other relevant circumstances (e.g. tax)
- i. Additional regulation information

[½ mark for each heading, other reasonable headings also given credit]
[Max 5]

(ii) **Potential difficulties and practical problems**

Investing overseas means that investors with domestic liabilities are accepting a currency mismatch, at least in the short term. [½]

Furthermore, currency movements lead to extra volatility of the total returns. [½]

These problems can sometimes be wholly or partially overcome by hedging the exchange risk. However, given that the individual is wealthy he may have excess assets over his future liabilities so may be willing to accept this risk. [1]

A further problem of overseas investment is the cost of the increased expertise required. [1]

It may also be necessary to appoint an overseas custodian to deal with settlement, voting rights issues, receipt of dividends and holding stock certificates etc. [1]

Costs will be further increased by any need to hire additional expertise and set up new administrative procedures to deal with a number of issues such as accounting for foreign currencies and repatriation of funds. [1]

Taxation varies from country to country. [½]

It may not be possible to recover withholding taxes imposed on overseas investments. [1]

As the investment is in an unquoted equity, valuation will be subjective prior to the IPO. [1]

Further problems that may be encountered with overseas investment include:

- Different accounting practices making it difficult to interpret the accounts of the Chinese company. [1]
- Less information may be available than in the home market. [½]
- Language problems – although many of the larger overseas companies publish accounts in English. [½]
- Time delays – timing differences have presented difficulties in the past, but advances in communications have made this much less of a problem. [½]

- Chinese market regulation might be considered poorer than in some more developed countries. [½]
- Risk of adverse political developments [½]
- Liquidity – private equity holdings in Chinese companies are likely to be less liquid than similar companies in more developed markets. [1]
- There may be restrictions on the ownership of shares in this company by non-Chinese residents. [1]
- Currency Risk – a deterioration in the value of the Chinese currency will have an adverse impact on the performance of the investment in domestic currency terms. [1]

Sensible comments regarding current developments in the Chinese stock market are also given credit along with other reasonable comments. [Max 8]

(iii) **Factors to consider**

The current market valuation of the Chinese company needs to be assessed. [½]

How does it compare to the valuation levels of its peers and the Chinese stock market as a whole? [1]

How do Chinese market valuations compare to other international markets? [½]

How do they compare with long term average valuations? [½]

What are the expectations for economic growth in China? [½]

Similarly expectations of future currency stability and strength? [½]

How marketable is the investment likely to be? [½]

Is this likely to increase and by how much after any IPO? [½]

How likely is the IPO? What factors might mean it becomes more or less likely? [1]

What is the likely degree of political stability in China and its relations with other countries? [½]

What is the competitive advantage of the company? [½]

Is the advantage likely to persist? [½]

What are the main risks facing the company? [½]

What level of diversification will the investment likely provide for the investor's existing portfolio? [1]

Sensible comments on Chinese stocks along with other general sensible factors to consider were also given credit. [Max 6]

- (iv) Investment in multinational technology companies based in Europe with significant operations in China and/or exposure to the Chinese market. [1]

Investment in European technology companies with a substantial export trade to China. [1]

The advantages are that it is easy to deal in the familiar home market [½]
while the companies will have expertise and tend to conduct their business in the most profitable areas overseas, [1]
including areas where direct investment may be difficult. [½]

The disadvantages are that such a company's earnings will be diluted by its European earnings [1]
and that the investor will have no choice in where the company transacts its business. [½]
Also, if investing in a large multinational, this may not be a highly targeted investment. [½]

Investment in collective investment vehicles [½]
specialising in Chinese technology company investment. [1]

In general, indirect investment is particularly suitable for smaller investors, [½]
although even larger investors can sometimes benefit from vehicles investing in specialist areas which are outside the individual investor's own areas of expertise. [½]

Other sensible comments were also given credit. [Max 6]

- (v) The full precise circumstances and needs of the individual need to be assessed, for example under the headings in (i). [1]

Given the modest size of the individual's fund, they are unlikely to have much investment freedom so investing all of their fund in this investment is very unlikely to be suitable. [1]

The individual is unlikely to have the expertise for such an investment. [½]
Investing a smaller proportion of their fund might be suitable. [½]

The risk appetite of the individual needs to be considered and their level of risk aversion. The greater their level of risk aversion, the less suitable would be even a small investment in this company. [1]

The taxation of the investment should be considered, in particular any problems with withholding taxes. [½]

The composition of the individual's existing assets should be considered in relation to any potential diversification benefit, [½]
or concentrations of risk. [½]

The income profile of the asset may not be suitable for the individual. [½]

The investor is likely to have their future liabilities denominated in their domestic currency so this investment would create a currency mis-match at least in the short-term. [½]

Overall, it is unlikely that this investment would be suitable for an individual with a modest sized pension fund. [½]

Other sensible comments were also given credit. [Max 5]

Question 1 was the best answered question on the paper. Parts (i) and (ii) were well answered. Parts (iii) and (iv) were the least well answered parts, as many candidates failed to make a sufficient number of relevant points.

Q2 (i) Interest rate swaps

In a "plain vanilla" interest rate swap, company B agrees to pay company A cash flows equal to interest at a predetermined fixed rate on a notional principal for a number of years. [1]

At the same time, company A agrees to pay company B cash flow equal to interest at a floating rate on the same notional principal for the same period of time. The currencies of the two sets of cash flows are the same. [1]

Note that the notional principal is used only for the calculation of interest payments. The principal itself is not exchanged. [1]

The swap contract has the effect of transforming the nature of the liabilities. [½]

Forward rate agreements (FRAs)

A forward rate agreement (FRA) is an over-the-counter agreement [½]
designed to ensure that a certain interest rate will apply to either borrowing or lending a certain principal during a specified future time period. [1]

A FRA only has a single balancing payment at expiry, whereas under a swap there will be regular exchanges of value. [1]

[Max 5, credit also given for swaptions or bond futures]

- (ii) Interest rate risk arises in a bank due to mismatches of its exposures to interest rates of different maturities that arise when the bank aggregates together all its expected future cashflows. [1]

The bank could use interest rate swaps or forward rate agreement (FRAs) to change its exposures to interest rate risk at different maturities. [1]

FRAs are typically used for managing short-dated interest rate risk (out to 1 year) [½]
and IRS are used for managing longer-dated interest rate risk. [1]

Most banks will have very low net interest rate sensitivity to minimise capital requirements, and FRAs and IRS are key tools to achieving this. [1]
[Max 3, credit also given for swaptions or bond futures]

(iii) **Credit default swaps**

Credit default swaps – A contract that provides a payment if a particular event occurs. [1]

If the credit event occurs within the term of the contract a payment is made from the seller to the buyer. [1]

The party that buys the protection pays a fee to the party that sells the protection. [½]

If the credit event does not occur within the term of the contract, the buyer receives no monetary payment but has benefited from the protection during the tenure of the contract. [1]

Credit default swaps are available on individual issuers and broad market indices. [1]

There are two ways to settle a claim under a credit default swap: [½]

Cash settlement – a cash payment representing the fall in the market price of the defaulted security. [1]

However, the market value may be difficult to determine. [½]

Physical settlement – the exchange of both cash and a security. The protection seller pays the buyer the full notional amount and receives, in return, the defaulted security. [1]

This avoids the scenario of a disputed valuation since the seller of protection will receive the defaulted security and hence will receive any value attaching to it. [1]

[Max 5]

(iv) Banks are in the business of taking long-term credit risk, primarily through their lending activities. [1]

Once a significant loan is made there is often little the bank could do to change its mind about wanting exposure to the loan, [1]
unless conditions of the loan were breached. [½]

CDSs allow the bank to have more control over their credit risk (or regulatory capital), [½]

by allowing an exposure to be hedged. [½]

Diversification is also possible by buying protection against an existing exposure and selling protection against a new credit issuer. [1]

However there may be basis risks between the existing exposure and the CDS protection. [1]

This is particularly the case if a proxy is used for protection. [½]
[Max 5]

- (v) By receiving a fixed interest rate at a longer duration and paying floating interest rate at a short duration, the bank effectively creates additional interest rate duration risk. [1]

This is similar to the risk created by additional general lending and the payoff is similar too. [1]

It could be considered to be increasing the size of the bank's balance sheet if it was not hedging an existing duration mismatch. [1]

Interest rates are typically higher at longer durations than short durations and longer-term interest rates are typically more volatile. [1]

Receiving fixed in an interest rate swap typically means the receiver is earning "carry" on the trade due to the higher long term rate. [1]

Such a trade can also be used to gain exposure to reductions in term interest rates. [½]

This is equivalent to a "long" bond position. [½]

Receiving fixed in an interest rate swap could be considered to be a form of synthetic lending, albeit without the principals being exchanged. [1]

Similarly, by selling protection on a CDS, a bank receives a payment but becomes exposed to additional credit risk. [1]

This is comparable to when the bank lends money to a counterparty and charges a credit spread for the credit risk but is exposed to default if the lender defaults. [1]

Again this could be considered to be increasing the size of the bank's balance sheet [½]

Other relevant comments were also given credit. [Max 6]

- (vi) If the bank was to build up a large portfolio of derivatives it would need to extend its capabilities, both in its front office and back office teams. [1]

Within the front office, there would be traders and portfolio managers who would be responsible for pricing new derivatives activity and transacting [1]
with external market participants or clients of the bank. [½]

Sales people may assist the traders in this process. [½]

Within the back office, there would be teams covering the following activities:

- Settlement – ensuring that derivative transactions are correctly recorded in the bank's front office and back office systems, so that the bank has a detailed understanding of its portfolio.
- Collateral management – many derivatives are collateralised, often daily, and this team will need to verify collateral balances against mark to market valuations. Where collateral needs to be posted to counterparties or requested, this team will ensure that this takes place.
- Product control / accounting – this team is responsible for valuing the derivative portfolio on a daily basis, independently of the front office, for risk and accounting purposes. They would also need to approve valuation models for new derivatives.
- Credit risk – whilst this team will already exist, it will now need to monitor credit risks arising from derivatives transactions (counterparty risk).
- Legal – this team will have additional activity and agreements to monitor, given that derivatives documentation is highly specialised.
- Market risk – this team will need to monitor risk exposures, and is likely to need to expand to monitor the wider range of risks that these derivatives could give rise to.
- Compliance – this team will ensure that the bank is dealing with suitable counterparties and is satisfying any relevant laws or regulatory requirements.

[1 mark per function, including a brief description of role]
[Max 6, credit given for other relevant comments]

Question 2 was reasonably well answered. Parts (i) and (iii) were well answered. Part (iv) was poorly answered, perhaps reflecting a lack of familiarity with using credit default swaps for hedging purposes.

- Q3** (i) ABS are secured bonds backed by specific asset pools where coupons and principal have direct recourse to the assets. [1]
- These bonds can be backed by highly granular asset classes such as residential mortgages, car loans, credit cards and SME loans. [1]
- The assets will sit within a segregated, bankruptcy remote vehicle [1/2]
that protects them from outside events that might impact the creditworthiness of the bank that originally issued the loans, [1]
- The assets within the pool are transparent, [1/2]
with regular reporting and external credit ratings. [1]

- The pool is typically structured into tiers [½]
 with the sponsoring bank and junior tranches acting as loss absorbers (bearing first loss) to the more senior tiers, [1]
 which is where the new fund would invest. [½]
 High credit quality for senior tranches results in improved secondary market liquidity, [1]
 although it is likely to be lower than that of non-government securities generally. [1]
- ABS are floating rate bonds, making them attractive to investors who don't want interest rate/duration exposure. [1]
- ABS can become illiquid at times of market stress, [½]
 however recovery rates have historically been high. [1]
 [Max 7]
- (ii) The current low interest rate environment is reflected in historically low money market and government bond yields. [1]
- This has led investors to consider a wider range of assets than previously in search of higher yields within their low risk portfolios. [1]
- Low volatility assets have lower uncertainty of outcomes than higher volatility assets [½]
 and therefore are attractive for investors with short to medium term time horizons [½]
 or for cash flow matching. [½]
- Historically investors seeking low volatility assets have tended to hold significant amounts of unsecured bank debt, money market instruments or deposits. [1]
- Whilst there have always been credit risks associated with these assets, [½]
 bank credit ratings have been falling since the start of the financial crisis [1]
 and investors have less confidence in the robustness of credit ratings than in the past. [½]
- The banking sector is also subject to uncertainty from future regulatory impacts [1]
 (e.g. increasing capital requirements) [½]
- Money market funds are also subject to changing regulation [½]
 (e.g. conversion of constant NAV funds to variable NAV, ban on future money market fund bail-outs) [½]
- The above factors are leading to reduced demand for unsecured bank debt, money market instruments and deposits [1]
 and therefore increased demand for other low volatility assets. [½]

Asset backed securities are one such investment within this category. [½]
[Max 8, credit given for other relevant comments]

(iii) Key terms to be included in the proposal for each fund:

- Fund objectives and guidelines
- Benchmark and target return
- Target investor market, expected demand for product
- Fund structure e.g. authorisation, listing, share classes, base currency, launch date (2 examples)
- Dealing frequency, distribution frequency
- Fees and administration / other costs
- Expected rating
- Administrator and custodian
- Full underlying model portfolio
- Investment process
- Proposed team structure, including existing personnel and new hires
- Competitor analysis e.g. similar funds and their sizes

[½ mark per point, max 5]

(iv) No existing portfolio of investments or dealflow

No existing team or resource

No prior investment track record

(Linked to the above) Need to build credibility with institutional and other investors

Need to build credibility with issuers and brokers to source assets

Need to develop market research and strategy process

Need to develop a portfolio construction and security selection process

Need to establish management information, monitoring and reporting

Asset manager will need to have a suitably long time horizon to allow product to grow and become profitable, given this is a new asset class

[1 mark per developed point, max 7]

(v) (a) Investment characteristics:

Nature of the investment – this is a loan asset, so will produce a cash plus spread return. [½]

The loan would fall into default if the rental income is insufficient to meet the required payments [½]

or if the loan to value ratio increases about the threshold. [½]

Term of the investment – assuming the loan continues to be serviced, [½]
this should be considered a hold to maturity investment. [½]

Currency of the investment – the loan is likely to be denominated in local currency terms. [½]

Certainty – rents from the underlying property are likely to rise over time, however there is also a risk of voids. [1]

This uncertainty is heightened if the excess of rents over interest payments belongs to equity owners, rather than being kept aside to pay the loan down. [1]

In the event of a default, the loan holders would end up owning the lease on the building. [1]

Depending on market conditions, [½]
due to uncertain rental growth and void risk, [1]
this may be a less valuable asset than the coupon and principal payments due under the loan. [1]

This is particularly the case if the lease were to be sold in a “fire sale” scenario. [1]

Liquidity / marketability risk – the liquidity and marketability of the loans is likely to be relatively poor, [½]
in particular at times of market distress (either credit or real estate, or both) [½]

when the Fund itself might need to dispose of the asset due to investor redemptions. [½]

This is likely to result in a significant loss of value to the Fund's investors, [1]

unless the price of the loan is depressed at outset. [½]

[Max 8]

(b) Appropriateness

A 10% allocation is a large allocation for a fund to make to a single asset
[½]
and will therefore present a concentration risk. [½]

This may be less of an issue if the fund is still growing [½]
particularly if investors expect it to grow through “lumpy” investors. [½]

The distressed nature of the purchase may also be an issue, unless property
markets and the
economy are generally healthy. [1]

If the fund does not have expertise in holding distressed assets, then it may
be a forced seller of the loan securities if the loan covenants are breached.
[1]

The loans have a longer maturity than the target for the shorter maturity
fund, but are within target for the longer maturity fund. [1]
Therefore the shorter maturity fund would not be able to invest in them.
[1]

The loans may be deemed too illiquid for the longer maturity fund, [½]
although this will be a subjective decision for the portfolio manager to make
allowing for the fund's other holdings. [½]
[Max 5]

Question 3 was the least well answered question on the paper. Part (ii) was
poorly answered as was part (v), which required candidates to make a
number of relevant comments about the securities from the perspective of the
two funds.

END OF EXAMINERS' REPORT