INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2018

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.

Mike Hammer
Chair of the Board of Examiners
December 2018

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, 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 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 reasonably 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 where more detailed application skills were being assessed or in applying theoretical principles to an unfamiliar scenario. Candidates generally made good attempts at parts of questions testing higher order skills.

C. Pass Mark

The Pass Mark for this exam was 58.

Solutions

Q1

(i)

Private debt is an asset class comprising debt capital market transactions that have payment profiles similar to bank loans. [1]

It will be marketed to a small number of long-term investors, [1]
unlike a syndicated loan which would have a larger number of investors and have an active secondary market. [1]
Due to the lack of an active secondary market, private debt is illiquid. [1]

Issue sizes typically can range from $20m to $500m [½]
and maturities tend to be 3-10 years. [½]
Some issues are amortising whereas other will have a bullet profile. [½]

Issues will not carry a rating [½]
although there may be covenants to improve security for investors. [½]
Issues are typically floating rate but there are some fixed rate issues. [½]

There are a range of underlying asset types including corporate direct lending, [1]
mortgages, leases and private placements, CRE debt, infrastructure debt.
[1, two asset classes to be named]

Private debt will typically trade at a higher spread than comparable public or listed debt due to its lower liquidity [1]
[Max 5]

(ii)

As there is no liquid secondary market, market information on prices is limited. [1]
There are several challenges to valuation:

- **Uniqueness** – each debt issue will have specific covenants to provide additional security, and these need to be allowed for. [1]
- **Illiquidity** – private debt trades at a higher spread than senior unsecured debt due to its illiquidity, and the illiquidity premium required by investors will be a subjective decision. [1]
- **Comparators** – as there is limited public domain information about comparable issues, it is not straightforward to value issues by reference to comparators. [1]
- **Subjective valuation required** – investors will need to form their own view on the credit quality by undertaking financial analysis, since there won't be a credit rating from an agency. [1]

[Max 4, credit given for other relevant comments]

(iii)

Expected return – will increase since private debt has a higher expected return than investment grade credit. [1]
This is true even for senior private debt of similar credit quality to investment grade bonds. [1]

Volatility – potential losses could be higher depending on credit quality [½]
and any covenants that improve recovery rate. [½]
However observed volatility may be lower as private debt has no secondary market. [1]
Where overseas private debt is not hedged to sterling, currency risk will increase volatility. [1]

Liquidity – the fund's liquidity will be reduced [½]
as private debt may be impossible to liquidate prior to expiry. [1]
In contrast investment grade bonds have good secondary market liquidity and can be sold prior to expiry. [1]

Asset management fees – these are likely to increase [½]
as private debt mandates will typically have an annual management fee between 50-75bps for larger mandates. [1]
Investment grade bonds can be managed for 10bps or less if passively held, with active management fees of up to 25bps depending on the process.
[1, full description not required]
[Max 7]

(iv)

Since private debt can typically only be acquired via the primary issuance market it would take time to build up a portfolio. [1]
Even if some issues can be sourced via the secondary market it is unlikely to allow a well-diversified portfolio to be constructed, [1]
so these would need to be supplemented with additional issues. [½]

A £500m allocation to private debt is large, and it would take time to source a suitable range of assets that are diversified [1]
by asset type, credit quality, maturity, geography and sector.
[1, 3 examples required]
Depending on the nature of the mandate, there may be a wide range of permitted assets or a narrow range. [1]
A narrow mandate will take longer to build. [½]

It is also important to ensure that where there is more than one manager that the managers won't be bidding up the price of the same target asset. [1]

Overall a £500m mandate may require 9 – 18 months to build up. [1]
A longer period may be required if the manager has a large queue of incoming investors and is allocating capacity across investors. [1]
[Max 6]

(v)

	Credit quality vs inv grade	Liquidity vs inv grade
Investment grade credit	*AAA to BBB*	*Good*
High yield debt	BB to C	Good
Emerging market debt	AA to B	Good
Senior ABS	AAA to A	Good
Mezzanine ABS	BBB to B	Low
CLOs	AAA to BB	Low
Infrastructure debt	AAA to A	Very low
Real estate loans	AAA to BBB	Very low
Leveraged loans	BBB to B	Low

[Max 4. 1 mark per asset class. Credit given for other distinct asset classes]

(vi)

The private debt assets will be relatively short-dated in nature and have a mix of floating rate and fixed rate assets. [1]
Additionally, only some of the fixed rate exposures will be sterling denominated. [1]
Therefore it will not provide much contribution to the interest rate hedge. [1]

Conversely the investment grade credit will contribute to the interest rate hedge. [1]

From a collateral management point of view, the Fund's portfolio will now be significantly less liquid [1]
as the private debt is unlikely to be possible to sell to meet a collateral or liquidity requirement. [1]
Therefore if the leverage ratio in the LDI mandate needs to be reduced, the DGF allocation will need to be scaled back [½]
or the hedge ratio reduced. [½]
[Max 6]

This question was well answered by the majority of candidates. Those who were unfamiliar with the characteristics of private debt scored less well, both in knowledge and application parts of the question.

Q2

(i)

- **Term and nature of liabilities**. An insurance company with longer dated liabilities and hence a longer time horizon may have a higher risk appetite [1]
- **Cash flow position**, is the company still writing new business or predominantly in run-off, cash flow positive insurance companies may be able to take more risk [1]
- **Uncertainty in timing of payment of liabilities**, for example due to change in regulation or member options [1]
- **Regulatory requirements**, Solvency II, including impact of risk taken on required reserves and accounting requirements [1]
- **Presence of an insurance guarantee scheme**, including impact of risk level on any levies paid to the scheme [1]
- **Strength of insurance company** including credit rating, balance sheet, reserves and profitability, stronger insurance companies may be able to take more risk [1]
- **Competitive market environment**, an insurance company may be encouraged to accept more risk in a highly competitive market [1]
- **Corporate structure** (e.g. is the company listed or part of a larger group structure) [1]
- **Investment beliefs**, including the outlook for achieving positive risk adjusted returns in different asset classes [1]
- **Historical experience of risk events** unfolding and current volatility of investment markets (equity, credit, property, bonds etc.) [1]
- **Governance structure** in place, for example ability to diversify and ability to react quickly would be better should the company have a strong governance structure in place [1]
- **Return desired or required** to meet objectives may influence risk appetite [1]
- **Industry norms** whilst external to the insurance company can also influence appetite [1]

[Maximum 10]

(ii)

- The policy might differ due to the regulatory regime being different, [1]
- for example IORP and Solvency II have different requirements [1]
- and particular asset classes may receive different treatment (e.g. ABS being treated more punitively under Solvency II) [1]

- and the investment strategy will impact required reserves (if any) differently. [1]
- Levies payable to any relevant guarantee schemes may differ [1]
- Taxation may differ [1]
- Both operate in a different competitive environment [1]
- Peer group behaviour and reputational risk influences differ [1]
- Presence of a sponsoring employer for a pension scheme has a strong impact [1]
- as the sponsoring employer may be able to repair any shortfall and this may result in a higher risk appetite for a pension scheme and [1]
- the sponsoring employer may also influence the investment policy to reduce the cost of the pension scheme, reduce risk or smoothen contributions [1]
- An insurance company the stakeholders are predominantly their shareholders (with more direct profit motive operating in a competitive environment) [1]
- while for a pension scheme the stakeholders are the members, represented by the pension scheme representatives and the employing sponsor (together seeking to balance security for members and providing a cost-efficient pension provision)[1]
- Insurance companies and pension schemes tend to adopt different governance models [1]
- due to the nature of the institution, for example with more in-house and full-time investment professionals employed by an insurance company [1]
- Treatment of excess investment returns tends to differ [1]
- for example, for an insurance company excess returns typically benefit the shareholders whereas excess investment returns for a pension scheme may be shared between the members and the employer for example to enhance pension benefits, provide discretionary increases in benefits or reduce employer contributions. [1]
- Industry wide standards, practice and influence of relevant bodies tend to differ[1]

[Maximum 8]

(iii)

- Government bonds [½]
- Corporate and other non-government bonds [½]
- Interest rate swaps [½]
- Futures (e.g. on government bonds or on interest rate swaps) [½]
- Repurchase agreements (allow bonds to be purchased in an unfunded manner) [½]
- Fixed rate private debt [½]
  including for example mortgages [½]
  or Infrastructure debt [½]
- Forward agreements (e.g. on government bonds) [½]

[Max 3 points]

(iv)

- Market risk / leverage. [1]

- When interest rates move significantly, the insurance company may need to make more funds available than invested [1]
- and this may lead to a fire sale of other assets at inopportune times [1]
- Counterparty risk [1]
- Although swaps are typically collateralised [1]
- there will always be some residual counterparty default risk. [1]
- Floating rate generation risk [1]
- e.g. when swaps reference LIBOR or EURIBOR than there will be the risk that this reference rate increases, potentially beyond the return generated on the backing investments [1]
- Legal risk [1]
- Swap contracts can be complex and have clauses that pose risk to the insurance company, such as for example termination clauses or counterparty options [1]
- Regulatory risk [1]
- Changes in regulation may impact the insurance company, for example changes in banking regulation or a LIBOR review [1]
- Best execution risk [1]
- Swaps are typically traded over the counter and execution risk is therefore typically larger partly due to information asymmetries [1]
- Liability or modelling risk. Adopting a LDI strategy will require more detailed analysis of the annuities and any model errors or subsequent changes in the liabilities may be more costly to adjust once a LDI strategy has been adopted as swap unwinds can be expensive [1]
- Liquidity risk. Mark-to-market may build up within a swap contract which may be difficult or costly to realise [1]
- Operational risk [1]
- Using swaps introduces the operational risks involved with managing the swap cash flows, collateralisation, valuation and resolving of any disputes [1]
- Basis risk [1]
- The value of the swap may move different compared to the valuation basis of the liabilities to be hedged. [1]

[Max 8 points]

(v)

- Non-life underwriting risk [½]
- Life underwriting risk [½]
- Health underwriting risk [½]
- Market risk [½]
- Counterparty default risk [½]
- Operational risk [½]

[Total 3]

(vi)

- The main risk for the insurance company is interest rates falling [1]
- as the present value of the underwritten annuities rises when interest rates fall. [1]
- Swaptions could be used by purchasing options that rise in value interest rates fall [1]
- i.e. purchasing Receiver swaptions (where the buyer would receive a fixed rate). [1]
- Swaptions could be used by selling options that fall in value when interest rates rise [1]
- i.e. selling Payer swaptions (where the buyer would pay a fixed rate). [1]

[Max 4 points]

(vii)

- Option strategies can be more precise [1]
- and flexible compared to linear hedging strategies [1]
- Options can be used to match optionality within the liabilities [1]
- Design of the protection strategy can target the stress test risk events in terms of magnitude (strike levels) [1]
- and time horizon (expiry of hedging strategy) [1]
- These may allow the insurance company to retain more upside [1]
- Or retain more downside where desired [1]
- Including downside beyond the stress levels used. [1]
- Options strategies can be more cost efficient than outright reducing risk, for example improve expected returns given level of capital required [1]
- Examples include equity and swap option strategies [1]
- Options strategies can achieve greater capital efficiency than swap or bond based hedges [1]
- Options strategies can require less collateral than swap or bond based hedges [1]

[Max 6 points]

(viii)

Advantages of dynamic hedging:

- This may be **cheaper** (transaction costs for options may be higher than the underlying instrument) [2]
- **More flexible** – any option strategy can be replicated, including for example evergreen, whereas the underlying option may be hard to purchase [2]
- **More control** – easier to change over time (no need to unwind an option, the investor can just adjust the delta) [2]

[Max 4 points]

Disadvantages of dynamic hedging:

- The dynamic strategy may not work well under scenarios when markets suddenly jump, this is also referred to as gap risk [2]
- Governance – it may be more costly or time consuming to regularly adjust the delta of the dynamic hedging strategy by the insurance company and when outsourcing this there will be a new cost introduced [2]
- The cost of the dynamic strategy is unknown in advance as this depends on future volatility and future transaction costs of trading the underlying instrument whereas with an option there is more certainty around the cost at outset [2]

[Max 4 points]

This question was well answered by most candidates and was the best answered question in this paper. Some candidates struggled with the latter parts of the question dealing with swaptions and dynamic hedging strategies.

Q3

(i)

Note: This is application of section 13.3 of Unit 5 of the SA6 Core Reading

Progressive improvement of financial regulations has to contend with the same political economic obstacles as all other progress. [1]
These obstacles are:

1) don't shock the system [½]
2) protect the establishment [½]
3) don't disrupt the balance of power [½]

Each of these obstacles needs to be overcome in some way to achieve progress as all the obstacles mentioned encourage maintenance of the status quo. [1]

[Max 3, credit given for other relevant comments, including looking at different stakeholders' positions]

(ii)

If a substantial amount of investments were switched from existing asset classes, managed by existing investment managers, then this would likely create a shock to the managers. [1]
It would result in a big loss of income because their assets under management would fall noticeably. [1]
That is unless the investment manager could offer a fund to invest in agricultural land, but even that would create some significant internal changes that would be a shock to its system [1½]

Those controlling the investment industry would see their power come under threat if they could not adequately respond to it by creating mechanisms to manage the monies invested in agricultural land. [1½]
They are likely to react in a defensive manner to protect their interests [1]
Others will support them as they are relying on continued good favour of their superiors. [1]

The balance of power, or in this case the amount of assets managed by different managers is likely to change, as will the relative importance of various roles in the investment industry in different firms [1½]

Different individuals will react in a way that will attempt to defend their positions and their relative importance. [1]
In general, when it comes to making a change, those trying to do so will have typically lukewarm defenders of those who might do well under the new regime and ardent attackers of those who will lose out. [2]

[Max 7, credit given for other relevant comments]

(iii)

Restrictions on investment mandates [1]
Lack of expertise of investors [1]
Lack of expertise of advisors [1]
Inertia and fear of change [1]
Potential limited availability of investible agricultural land [1]
Rent control [1]
Agency risk arising from such investments [1]
Farming is a subsidized industry in many countries [1]
Trust issues about government interference [1]
Taxation [1]
Achieving a diversified exposure to this asset [1]
Low availability of pooled investment funds [1]
Lack of liquidity [1]

[Max 8, credit given for other relevant comments]

This was the least well answered question on this paper. To score well on this question, candidates needed to apply the theoretical principles in part (i) to the practical scenario and in part (ii) identify stakeholders' potential responses. Part (iii) was reasonably well answered.

END OF EXAMINERS' REPORT