Institute and Faculty of Actuaries

EXAMINERS' REPORT

SA7 - Investment and Finance

Specialist Advanced

September 2023

Introduction

The Examiners' Report is written by the Chief 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.

For some candidates, this may be their first attempt at answering an examination using open books and online. The Examiners expect all candidates to have a good level of knowledge and understanding of the topics and therefore candidates should not be overly dependent on open book materials. In our experience, candidates that spend too long researching answers in their materials will not be successful either because of time management issues or because they do not properly answer the questions.

Many candidates rely on past exam papers and examiner reports. Great caution must be exercised in doing so because each exam question is unique. As with all professional examinations, it is insufficient to repeat points of principle, formula or other text book works. The examinations are designed to test "higher order" thinking including candidates' ability to apply their knowledge to the facts presented in detail, synthesise and analyse their findings, and present conclusions or advice. Successful candidates concentrate on answering the questions asked rather than repeating their knowledge without application.

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.

Sarah Hutchinson
Chair of the Board of Examiners
November 2023

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

The aim of Investment and Finance Advanced (SA7) is for the student to develop a broad working understanding of financial and investment markets, across all major areas of investment expertise. The intent is to achieve expertise up to a level that allows for critical analysis of others, rather than up to the level of full specialist expertise in any particular area.

Candidates should 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.

Candidates who make relevant and well-reasoned points, not in the marking schedule, are awarded marks for doing so.

B. Comments on candidate performance in this diet of the examination.

Most candidates made reasonable attempts at all four questions, with questions 2 and 4 generally less well answered. Candidates scored less well on parts of questions requiring in-depth analysis, evaluation and synthesis (creation of new solutions) such as the solutions required to be generated by a qualified actuary in practice. Typically, candidates scored better on those questions only requiring them to state their knowledge or apply it to a set of facts in more familiar situations. To achieve a pass mark at the Specialist Advanced level, candidates will need to demonstrate their ability to analyse, evaluate and create new solutions.

Well prepared candidates were able to score highly across all four questions demonstrating their ability to apply their SA7 knowledge and techniques to a range of familiar and unfamiliar scenarios.

Candidates are reminded to ensure that their answers are relevant to the question and the scenario. Candidates are also reminded that to score well on longer questions, a broad range of points will need to be made.

With the computer based format candidates benefit from the ability to carry out calculations in Excel. It is important that assumptions are stated, and intermediate steps or formulas for calculations are shown so that maximum credit can be given.

C. Pass Mark

The Pass Mark for this exam was 59.
113 presented themselves and 51 passed.

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Solutions for Subject SA7 - September 2023

Q1

(i)

When central banks are dovish, that is inclined to think that having an accommodative monetary policy is appropriate, this has mostly been bullish for markets.

(or similar comment that demonstrates understanding that this strategy would have worked well in the past) [1]

When a recession might be on the horizon, central banks are likely to be inclined to increase an accommodative monetary policy, which has been similarly bullish for markets.

(or another reasonable comment that demonstrates understanding that this strategy would have worked well in the past) [1]

In recent years, both bond and equity prices have risen under accommodative monetary policies. [1]

Conversely, when central banks turn hawkish (the opposite to dovish), the opposite is likely, and this has been bearish for markets in recent decades. [1]

This has been the case for both bond and equity prices. [1]

Maintaining low inflation is usually directly part of the mandate of major central banks [1]

so when inflation is elevated, central banks need to tighten monetary policy which is relatively bearish for asset markets. [1]

When monetary policy changes are anticipated these four terms tend to become more frequently used in market commentaries. [1]

Consequently, measuring them has at least some validity in terms of indicating whether to go long or short the market. [1]

(Other reasonable comments that demonstrate understanding of the strategy or relevant aspects will receive credit)

[Marks available 9, maximum 6]

(ii)

A recession is likely to be problematic for corporate earnings and might be bearish for equity markets [1]

The strategy is dependent on the impact of any monetary policy response on financial markets being greater than the underlying economic conditions. [1]

The strategy is the same for both equity and bond markets [½]

while in recent times, these markets have been quite correlated [½]

where both either see higher prices as a result of a 'risk on' atmosphere in the markets and vice versa for 'risk off'.

(or another reasonable comment demonstrating understanding of the behaviour of financial markets) [1]

But historically equity and bond markets are not always positively correlated which is a potential flaw in the strategy [1]

or one that requires the strategy to be modified either in relation to equities and/or bonds. [1]

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For the strategy to be successful, market commentary phrases need to be a leading indicator of price movements.
(Other reasonable comments that demonstrate understanding of the strategy or relevant aspects will receive credit) [1]

[Marks available 7, maximum 4]

(iii)
The team need to back test the strategy using historical data. [1]

In order to do that they need to gather:
Historical data on the use of the four words 'dovish', 'recession', 'hawkish' and 'inflation'. [1]
They need to decide which websites and which market commentaries they want to survey. [1]
and over what historical time period. [1]
and whether they want to weight any part of the historical data. [1]
Some of these might have paywalls and they might need to create subscriptions where they don't already have them. [1]
They need to categorise the word count data in a manner that it can be compared to market movements. [1]
They will need to determine over which time period to use, e.g., daily or hourly. [1]
and to determine which particular asset markets to investigate. [1]
They will need to determine the specific narrative underlining the strategy [1]
For example, it might be that if the word count for say 'dovish' goes above a certain parameter, they will add to long positions by a specific amount, along with other logical operations in response to different degrees of movement in the word counts. [2]
They may investigate various investment narratives to determine which one was most profitable in the past [1]
and which ones seem most intuitive based on the investment strategy.
(Other reasonable comments that demonstrate understanding of the strategy or relevant aspects will be awarded credit) [1]

[Marks available 14, maximum 7]

(iv)
The narrative for the strategy needs to be clear and precise to be implemented as an algorithm trading strategy. [1]
This includes the choice of instrument, trading venue and other parameters. [1]
It will likely have limits for risk management purposes. [1]
Market orders are likely to be used [1]
albeit they may be conditional upon minimum levels of market liquidity. [1]
The hedge fund will need some form of direct market access to route their orders. [1]
Stop loss orders will be needed to manage downside risk. [1]
It would be important for the strategy to have low latency [1]
particularly if the hedge fund considered that other market participants might have similar strategies. [1]
The strategy is likely to be subject to on-going review, particularly if performance is less than expected from the back-testing. [1]

[Marks available 10, maximum 5]

(v)

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Reasons why the performance might have slipped:
Others may also have adopted the approach and may have better latency in the implementation of their algorithms, resulting in them getting their orders in ahead of this hedge fund. [1½]
Others may have adopted the approach but also improved upon it or evolved it in Some way, again getting ahead of the orders of this hedge fund. [1]
It could be random variation. [½]
(Other reasonable comments) [1]

[Marks available 3, maximum 2]

[**Total 24**]

This question was not very well answered.

Parts (iv) and (v) were the best answered, whereas parts (i), (ii) and (iii) were less well answered. Credit was given for points made in answers to other parts of the question, where relevant.

In part (i) a number only well-prepared candidates fully outlined the rationale for such a strategy, and focused instead on implementation issues. Similarly in part (ii) many candidates did not discuss the correlation between equity and bond returns in different regimes, which is an important consideration.

In part (iii) only well-prepared candidates commented on the practical difficulties in constructing reliable trading signals from text based data.

Q2

(i)

Over the next 10 years it is possible that there are secular trends in the wider economy that create large profits that are captured by a small number of companies. [1]
This could include the technology, energy, healthcare or other sectors.
(Two sectors to be named) [1]

Such an outcome would be difficult for most active managers to benefit from, except for growth managers with sector or stock level insights. [1]

Rising interest rates alone would result in falling PE ratios [½]
however growth rates also need to be considered. [½]
This effect could offset the change in valuation from interest rate movements. [1]

A market capitalisation approach will only hold a small amount of small cap equities, which will include companies that grow strongly in the next few years. [1]
Whilst this is correct, the index will continually increase the proportion held as these stocks increase in value relative to the index. [1]
An active manager may be an early investor or a late investor, so it is not clear that an active approach will necessarily achieve greater participation in these high growth stocks. [1]

[Marks available 8, maximum 6]

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(ii)
General:
Even if one or more of the above arguments is correct, it is not clear that active managers on average would outperform a market capitalisation index. [1]
Active managers would only outperform if their active management process is able to identify stocks that will outperform in advance, [1]
and they act on this insight. [½]

Specific:
Successful active management also relies on the investor being able to select managers who are likely to outperform their benchmarks in the future. [1]
Even if some managers outperform consistently, if an investor cannot pick outperforming managers they will not benefit from active management. [1]

Costs:
An active approach will have a higher management fee and will often incur higher transaction costs. [1]
These costs will act to diminish outperformance from active management. [1]
Style bias:
When constructing an actively managed equity portfolio, it is important to consider the balance between different styles. [1]
If there are material biases, then it is possible for the active managers to outperform relative to their style or benchmark, whilst in aggregate underperforming the index. [1]
(Other reasonable comments) [1]
[Marks available 8½, maximum 6]

(iii)
Pros:
ETFs will in general have lower costs than most active equity styles. [1]
ETFs may also have lower entry/exit costs due to greater liquidity. [1]
This approach would allow the foundation to monitor the active allocation and style or sector characteristics more easily than under a traditional active approach. [1]
Where the foundation wants to tilt the equity allocation towards particular sectors or styles, this would be a good approach. [1]

Cons:
Active managers could have lower costs, particularly if the foundation has an existing relationship or is seen as a desirable investor by the manager. [1]
ETFs will tend to have a more narrow approach, where they do not vary the approach based on market conditions. This removes a method by which active managers could add value. [1]
Active managers will likely exert greater influence on stocks owned via stewardship activities than an ETF manager would. [1]
Active managers will typically have better developed ESG policies, since they will have greater discretion in their management approach. [1]
Under an actively managed separate account, an investor could have bespoke guidelines to reflect their preferences. Such an approach is not possible under an ETF. [1]
(Other reasonable comments) [1]
[Marks available 9, maximum 8]

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[**Total 20**]

This question was not very well answered. Candidates generally answered the three parts of the question similarly well.

In part (i) only well-prepared candidates addressed the specific arguments made by the Chief Investment Officer in full, some instead commented on other issues.

Similarly in part (ii) candidates often focused on more general differences between active and passive management, such as costs or diversification, rather than narrative explanations for why an active return might be different from a passive return over the next few years.

In part (iii) only a small number of candidates considered the governance complexities involved in an Investment Committee expressing views on style and sector tilts for a portfolio.

Q3

(i)

Has covenant features like a bank loan and often used as an alternative to bank funding. [1]

Marketed to small number of investors, typically 6 to 12. [½]

Issue size can range from $20m to $500m. [½]

Maturities can range from 3 to 10 years. [½]

Does not trade on a primary market. [½]

There is a range of underlying asset types [½]

which can include corporate direct lending, mortgages, etc

(½ mark for an example - credit given for other relevant features) [½]

[Marks available 4, maximum 3]

(ii)

Borrower doesn't require credit rating in order to borrow which saves time and money. [1]

Borrower will likely borrow at lower rates, especially if they would have received an unfavourable credit rating from a rating agency. [1]

Private debt is an alternative way for start-ups and companies at the early stage of their lifecycle to get access to significant funding. [1]

Borrower has increased ability to restructure loans in a variety of ways given they will have a closer relationship with the lender. [1]

There is scope for much higher yields than public debt for buy to hold strategies or investors who are concerned by available yields only. [1]

There is scope for higher risk-adjusted returns in the private debt market. [1]

Private debt markets will provide a good level of diversification to investors for their portfolios. [1]

Prepayments are usually subject to early repayment penalties, enhancing returns. [1]

[Marks available 8, maximum 5]

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(iii)
Rating agencies aim to determine a company's ability to repay their debt by assessing various aspects of a company which include: [1]

(Capped at 1 mark)
Financial strength [½]
Operating performance and [½]
Market profile. [½]

Quantitative evaluation will typically look at performance over at least five years. [1]

Agencies will look at these metrics (*capped at 5 marks*):
Financial strength:
Operating leverage. [½]
Financial leverage. [½]
Asset leverage. [½]
Capital structure. [½]
Liquidity - various ratios are used to assess liquidity. [½]

Operating performance:
Profitability. [½]
Revenue composition. [½]

Market profile:
Market risk. [½]
Competitive market position. [½]
Spread of risk. [½]
Event risk. [½]

Rating agencies will also look at qualitative factors such management experience, future business plans, management objectives etc. *(½ mark per factor)*
[Marks available 8, maximum 7]

(iv)
An issuer credit rating measures the ability of an issuer to stay solvent and repay their debt. [½]
A credit rating for a financial instrument - such as a bond- measures the likelihood of a default on payments for that particular instrument. [½]
A higher or lower credit rating for the bond of an issuer means that the likelihood of default on payments for that bond is lower/higher than the issuer. [1]

The reasons for this difference could be due to:
Additional covenants or security; [1]
Differences in definition of default. [1]
(Other reasonable example) [1]

(v)
Construction Infrastructure loans: *(capped at 5 marks)*
The construction risk will add complexity in determining the events which can impact

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on the likelihood of default. [1]
A single rating for the loans would require the construction and operational phases to be considered together. [1]
This would require complex quantitative models to perform projections of various scenarios. [1]
The financial performance of the project will impact on the strength of the balance sheet of the small government entity. [1]
Where the small government entity is in default, it is likely that the loan would also be in default even if the asset is performing. [1]
In addition to default, there are various events that can lead to delayed loan repayments. [1]
This could include events during the construction or operational stage. [1]
Estimating the conditional probability of losses from such sources as well as the default of the authority is difficult. [1]

Commercial real estate loans:*(Capped at 6 marks)*
It is difficult to forecast the trend in financials for the retail sectors, due to changing shopping demand patterns. [1]
Retail parks are sensitive to the tenants and location. [1]
This is particularly the case for anchor / major tenants. [½]
Whilst leisure spend is likely to be more stable, this is also dependent on location and the tenants. [1]
Will the funds be used for new or existing facilities? [½]
With a new facility there will be a high level of reliance on projections. [1]
This could also be an issue with a refurbishment of an existing facility. [1]
Are there alternative uses for the properties being purchased, if so the credit quality will be higher. [1]
(Other reasonable comments) [1]

[Marks available 15, maximum 11]
[**Total 30**]

This was the best answered question on the paper, with the majority of candidates achieving the pass mark on this question.

Parts (i) and (ii) were very well answered, and parts (iii), (iv) and (v) were reasonably well answered.

In part (iii) a number of candidates failed to provide sufficient detail on the process a ratings agency follows to determine a credit rating, including non-financial factors such as quality of management.

In part (v) only well prepared candidates recognised that the construction loans were issued to the government entity rather than the project itself.

Q4
(i)

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Local authority income strip:*(capped at 6 marks)*
Risk Identification:
Will the local authority rent out part of the offices and what level of rent could be charged to other tenants. [1]
Based on facilities and location, who are some of the likely tenants who would occupy the building and what is their risk profile. [1]
How will the local authority make income and how will this rise in line with CPI. [1]
In the case where the local authority defaults, would the country or regional government step in to make payment? [1]
Will the level of annual repayment be higher than the projected income for the local authority? [1]
What options are available to minimise risk for the investor. [1]
Will the investor have full autonomy to appoint contracts during the construction phase. [1]
What happens in the case where the development cost starts becoming larger than the current development budget. [1]
What is the likely value of the land if the construction of the building is abandoned, and would the investor own this land? [1]
Will the floor on annual payment increases lead to an increase in the likelihood of default and how does the floor compare to projected inflation rates. [1]
What options are available to mitigate and manage inflation risks if there are significant periods where the cap in payment increases is utilised. [1]

Credit tenant lease: *(capped at 6 marks)*
Risk Identification:
What is the length of the tenancy between the entertainment group and the landlord? [1]
What is the credit rating of the entertainment group as this would be a good proxy to assess their ability to make annual rental payments? [1]
How are the maintenance and insurance costs of the building covered? [1]
Does the income generated by the cinema increase in line with RPI? [1]
What are the alternative uses for the building if it stopped operating as a cinema? [1]
Would other entertainment groups rent the property if there was a default? [1]
Is there potential for pre-payment if the landlord sells one of the properties in their current portfolio? [1]
Is there a scenario where the current rental agreement in place is breached and there is no tenant upon completion? [1]

Infrastructure loan: *(Capped at 6 marks)*
Risk Identification:
Will the contract set a minimum annual payment? [1]
Are there events which could adversely impact mining activities - such as earthquakes, etc. [1]
How much does the price of the raw material being mined fluctuate? [1]
Is the price of the raw material being mined quoted in USD or in AUD? [1]
Will the currency risk be managed using derivatives? [1]
What are the contractual obligations and impacts if there is material damage to the transport network which impacts the level of raw material transported? [1]
Are there any additional tax considerations? [1]
How are payments impacted if the mining company goes bankrupt or if the mine gets sold? [1]

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(Other reasonable comments) [1]

[Marks available 27, maximum 18]

(ii)

Asset pricing and capital modelling capability:

Will the asset be priced internally or using an external vendor. [1]

Is there internal expertise to independently price the asset or will specific skills need to be sought. [1]

Do current pricing and modelling systems have the capability to perform the required calculations. [1]

Will new methodologies be required to calculate asset prices as well as regulatory capital requirements? [1]

Is there sufficient data on similar assets to help parameterise asset pricing and capital models? [1]

Is there potential for regulatory scrutiny on asset pricing and capital modelling methodology? [1]

Will additional or more complex tax treatments be required? [1]

Will complex risk factors be modelled more accurately or will a conservative but simpler approach be taken? [1]

Will derivative pricing capability be required if derivatives are used to manage some risks such as currency risk? [1]

Local Authority Income Strip:

What data is available to understand and model UK CPI? [1]

What alternative methods can be used to model UK CPI if there is a lack of data? [1]

How reliable are the projections within the model up to 45 years? [1]

Credit tenant lease:

What data is available to understand and model UK CPI? [1]

Are there additional risk factors to consider when modelling the likely risk of default? [1]

Will European credit expertise be required? [1]

Infrastructure loan:

Will separate models be needed to project the volume and price of the minerals? [1]

Dependence between the mineral price and events which could lead to default would need to considered as it is crucial in appropriately assessing the asset price. [1]

Projection of the USD/AUD currency pair will be required. [1]

[Marks available 18, maximum 8]

[**Total 26**]

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Candidates generally answered the two parts similarly well.

In part (i) only well-prepared candidates provided sufficient detail on the three assets and their specific characteristics.

A number of candidates did not answer part (ii) or provided very brief answers, however those candidates providing fuller responses scored reasonably well.

[Paper Total 100]

END OF EXAMINERS' REPORT

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Institute and Faculty of Actuaries

Beijing

14F China World Office 1 · 1 Jianwai Avenue · Beijing · China 100004
Tel: +86 (10) 6535 0248

Edinburgh

Level 2 · Exchange Crescent · 7 Conference Square · Edinburgh · EH3 8RA
Tel: +44 (0) 131 240 1300

Hong Kong

1803 Tower One · Lippo Centre · 89 Queensway · Hong Kong
Tel: +852 2147 9418

London (registered office)

7th Floor · Holborn Gate · 326-330 High Holborn · London · WC1V 7PP
Tel: +44 (0) 20 7632 2100

Oxford

1st Floor · Belsyre Court · 57 Woodstock Road · Oxford · OX2 6HJ
Tel: +44 (0) 1865 268 200

Singapore

5 Shenton Way · UIC Building · #10-01 · Singapore 068808
Tel: +65 8778 1784

www.actuaries.org.uk

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