

# INSTITUTE AND FACULTY OF ACTUARIES

## EXAMINERS' REPORT

September 2016

### Subject CA1 – Actuarial Risk Management

#### Paper One

##### 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  
December 2016

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

1. The aim of the Actuarial Risk Management subject is that upon successful completion, the candidate should understand strategic concepts in the management of the business activities of financial institutions and programmes, including the processes for management of the various types of risk faced, and be able to analyse the issues and formulate, justify and present plausible and appropriate solutions to business problems.
2. This subject examines applications in practical situations of the core actuarial techniques and concepts. To perform well in this subject requires good general business awareness and the ability to use common sense in the situations posed, as much as learning the content of the core reading. The candidates who perform best learn, understand and apply the principles rather than memorising the core reading.
3. The examiners set questions that look for candidates to apply the principles specific to the situation set out in the questions, having read the question carefully. Many candidates gain few marks by writing around the subject matter of the question in a more general fashion. Detailed specialist knowledge is not required and nor is very detailed development of particular points.
4. Good candidates demonstrate that they have used the planning time well to understand the breadth of the question and to structure their answer – this is a big advantage in making points clearly and without repetition. This also enables candidates to use the later parts of questions to generate ideas for answers to the earlier parts.
5. Time management is important so that candidates give answers to all questions that are roughly proportionate to the number of marks available.
6. The comments that follow the questions concentrate on areas where candidates could have improved their performance. Candidates approaching the subject for the first time are advised to use these points to aid their revision.
7. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.
8. In this diet the scoring for the exam was done out of 200 and therefore the mark scheme shows a total of 200 marks available for the paper.

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

1. The standard of the answers to this paper were consistent with previous sessions. Better candidates planned out their answers, particularly for the longer questions and were rewarded because there was less replication in their answers and ensured they thought widely enough to score well.
2. As per previous sessions the application questions were mixed in that those that were structured scored well, whereas those that weren't had problems getting sufficient depth into their answer.
3. Bookwork questions were answered well compared to the April 16 session, with most candidates scoring well.

**C. Pass Mark**

The Pass Mark for this exam was 58%

**Solutions**

**Q1** There is an apparent contradiction because:

A fall in total premium income implies a lack of demand for policies. [1]

This should lead to a fall in prices as insurance companies cut premiums in order to maintain business levels. [2]

Hence, in theory, premium rates should fall not rise. [2]

In particular, an economic recession will cause demand to fall because:

Fewer people will be employed hence less demand for vehicles to get to work. [2]

May also sell cars and use cheaper commuting alternatives e.g. public transport or car sharing. [1]

This may have most impact on company/fleet cars. [1]

Those who are still employed (and the unemployed, obviously) will seek to cut costs since their income may have fallen or be less secure. [2]

Hence they will seek to reduce insurance costs. For example:

Lower scope of cover – liability only or only that which is compulsory. [1]

Higher excesses. [1]

- Trend towards smaller, less powerful cars. [1]
- Delay buying new cars so average value falls. [1]
- Drive without insurance. [1]
- Cut down on “named drivers” e.g. children. [1]
- Cut down on number of cars. [1]
- Insurers may well reduce profit margins, expenses to try and remain competitive. [1]
- However, premium = cost of claims + expenses + profit and contingency loadings. [1]
- Despite the pressures outlined above, in a recession, claim costs are likely to rise. [2]
- More people will claim for minor things which, they may not have done so before – need money – despite the loss of NCD i.e. want cash now. [2]
- Fraudulent claims will generally rise significantly. [2]
- Especially for liability cases (hard to investigate). [1]
- Likewise, crime in general will rise e.g. more thefts. [1]
- Likewise there could be fraud/failure at the premium stage e.g. lying on application forms or defaulting on premiums. [2]
- More claims will mean more expenses e.g. investigating their validity. [1]
- Also lower volume of business implies unit costs rise so pushing up expenses. [1]
- A recession implies more uncertain times. This means higher contingency loadings e.g. how long, deep will recession be. [1]
- It may be that downward pressure on rates (or rising claims) has led to exits from the industry. That is the underwriting cycle is at a stage where companies are failing due to low profits. Hence remaining insurance companies can increase rates due to lower competition. [2]

[Maximum 16]

This question was answered well, the stronger candidates answered in more breadth.

- Q2** (i) The individual will have emotional and logical needs and will want to balance the two. [1]

**Emotional needs**

Providing enough capital for the two children to cover the deposits. [1]

The individual may want to cover any tax liability (e.g. inheritance) that the children may incur. [1]

Or the individual may want to enable them to buy larger homes than they actually need. [1]

Or the individual may want to give them a bit extra for luck or uncertainty. Or for another specific reason e.g. provide for grandchildren. [2]

The individual may want to take out life insurance cover to provide more for the children after death. [1]

The new home may also constitute an emotional need i.e. they may still want the comfort of a larger home than is strictly necessary. [1]

Other emotional needs could include using spare capital for a treat e.g. a long holiday, motorbike or a sports car. [1]

**Logical needs**

Clearly they will need enough money to buy the property. [1]

It is possible that the sale of the property would be tax free – no capital gains tax on the sale of a main residence – but some allowance may be needed e.g. for stamp duty on the purchase. [1]

That is they will need to provide for their living expenses pre-retirement. For example upkeep of property, bills, food or normal running costs cars etc. [2]

They may look to protect their income or property against illness, unemployment or accident. [1]

They will need to consider necessary income or capital in retirement. [2]

They will need to take into account existing retirement arrangements, this will include pension related to current employment and also any previous employment, any additional savings and any state pension benefit due. [2]

A mortgage on the new property may be needed. If so, the individual will need to allow for repayment (income and capital). They may also need to take out a decreasing term assurance policy to ensure that any balance outstanding is repaid on death. If not, there will be more disposable income and flexibility. [3]

Possible future care costs could also be considered. [1]

The individual may also want to accumulate capital i.e. save or invest for future needs. [1]

They may also have other debts or loans to service or clear. [1]

[Maximum 12]

(ii) In theory, the strategy will help the meet the needs since all types of needs are addressed. [1]

But this will depend on how the individual prioritises their requirements both within and between each of the options. [2]

It will also depend on how accurately the individual assesses the needs i.e. could over allocate in certain areas and so fail to cover other needs. [1]

The key will be what are the net receipts [1]

Some needs may be quite large and so it is unlikely that everything can be met. May have to work to cover living expenses. [2]

A smaller property may not be cheaper e.g. if in a better area. [1]

A large property implies that a significant amount of capital will be released. Hence there should be plenty of capital to make large inroads into meeting the needs. [2]

But a lot may depend on whether there was any debt attaching to the large property if so, paying that off could reduce the spare capital considerably. [2]

Likewise, expenses of selling (and buying) property could be high so reducing the funds available. [1]

In particular, a desire to help the children, may tempt the individual to overspend on emotional needs and so they may struggle to cover the more logical needs – particularly in a few years' time when the spare capital has gone. [3]

Likewise, the sale provides capital and so the income needs may not be properly covered unless the capital is used to guarantee income e.g. for retirement or care costs. [2]

To this extent, other savings or assets or income which, will provide flexibility in meeting the needs should be considered. [2]

Timing could matter here i.e. waiting to invest capital subjects the individual to the risk of changes in the costs of providing income. [1]

[Maximum 8]

[Total 20]

Part (i)	Generally well answered, although some candidates repeated a number of points which credit had already been given for.
Part (ii)	This was answered less well. Few candidates thought about the priorities or the relative values of the needs. Most candidates either expanded part (i) or repeated part (i) which got little credit.

**Q3 (i) Systematic risk**

Cannot be eliminated by diversification. [1]

The risk of the individual share relative to the overall market. **Or** the risk that affects an entire market or system, and not just specific participants. [1]

**Specific risk**

Can be eliminated by diversification. [1]

The risk of holding a share which is unique to the industry or company. **Or** the risk that arises from an individual component of a financial market or system. [1]

[Maximum 4]

(ii) The specific problems that need addressing are that a failure of a provider would mean that consumers could lose any funds held with the provider. Perceived risks may mean that consumers don't use financial markets and so don't make proper financial provisions e.g. for retirement [1]

The government would use legislation or regulation to set the framework within which the financial markets operate. [1]

The aim being to control abuses or behaviour that could jeopardise consumers' assets or confidence. [2]

For example:

To educate customers or institutions. [1]

To reduce information asymmetries. [1]

To impose fines and sanctions on transgressors. [1]

The government would want to ensure that regulators were suitably qualified and had extensive, practical market knowledge. [2]

There will be a balance between quality and quantity of regulation. [1]

Too much box ticking as opposed to getting an understanding of the underlying issues will exacerbate potential problems. [1]

The effectiveness of any market depends on the people working within the markets. Hence on the qualifications and competence of participants. [2]

The government will authorise particular professions split along functional lines e.g. actuaries, accountants, lawyers, fund managers, bankers etc. [1]

The members of these professions will have specific statutory duties and responsibilities e.g. whistleblowing designed to control how markets operate. [2]

Their professional bodies reduce risk by setting professional conduct standards, technical and ethical standards. Multiple professional organisations reduces risk due to failures within one profession or professional organisation. [2]

The government could set standards for public disclosure (amount). [1]

For example in relation to clarity, ease of understanding, small print (nature). [1]

Disclosures provide a level of assurance over security of a particular market participant. [1]

For example disclosure could be required in relation to:

- levels of fees and charges.
- commissions paid to 3<sup>rd</sup> parties.
- positions held by providers (ownership of shares).
- nature of the products offered and risks involved.
- connections with other participants.
- terms and conditions of investments.

[3]

If there is a failure of a financial provider there is public information to provide a means for assessing the position of other providers. This can avoid a lack of information causing a run on a bank scenario even on the financially strongest companies which in the extreme could be self-fulfilling in causing further failures. [3]

Requiring the auditing of public disclosures helps reduce risk. Providers are less likely to “lie” in disclosures due to an independent audit. [2]

The government could ensure that financial institutions hold higher levels of capital (or reserves, free assets). [2]

The government could ensure that financial institutions hold higher quality of capital e.g. liquid assets, highly-rated bonds or assets appropriate to investors’ expectations. [2]

Requiring financial institutions to hold higher or better capital would reduce the impact from an event, since they could absorb the loss rather than fail. [2]

In extremis, the government could make capital and hence liquidity easily and cheaply available to financial institutions. [2]

The level of any intervention by the government could be linked to the precise capital position of an institution. [1]

Alternatively, the government could set up compensation schemes to provide redress to victims of failed providers. This would also boost consumer confidence about investing in the first place. [3]

The governments may also control takeovers and mergers. [1]

If individual providers become too large as a proportion of the sector there is a much greater risk attached to individual failures. [1]

This can lead to the “too big to fail” scenario and an obligation for government rescues or bail-outs. [1]

Conversely, the government may force (encourage) providers to merge i.e. a strong player taking over a weak one. [1]

The government could vet the appointment of individuals holding important positions within financial institutions. A fit and proper persons test. [1]

The government would want to co-operate with other governments to ensure that problems in one market do not spiral to contaminate other markets. [2]

[Maximum 18]

[Total 22]

Part (i) Most candidates scored full marks on this bookwork question.

Part (ii) Also well answered with a good breadth of answers.

**Q4** (i) (Note: There is a maximum of 8 marks available for headings.)

**Political** [1]

There will be the risk that any government subsidies currently available are reduced or withdrawn. Or

There may also be a risk that planning permission for new plants is more difficult to obtain. [1]

**Regulatory** [1]

New regulation e.g. environmental may make future and/or current plants more expensive or unviable. [1]

**Financing** [1]

Such plants will be capital intensive particularly at the initial stages or if upgrades are needed. There is a risk that finance may become more expensive or more difficult to access. [1]

**Market** [1]

There is a risk of a decrease in oil prices making renewable energy less attractive. Or

Fluctuations in overall demand or supply of alternatives may reduce prices available. [1]

**Business** [1]

There is a risk that costs are greater than expected (e.g. components, labour). Or

Technological advances may mean more expenditure is needed to keep up with other generators. [1]

**External e.g. Natural** [1]

There is a risk of long term changes to weather/climate so that output is not as expected making projects less attractive. Or

Natural disasters e.g. floods, storms or landslides may damage the facilities.[1]

**Operational** [1]

Breakdowns, technical faults, incompetence, fraud or labour unrest may mean production stops or losses arise. [1]

**Currency** [1]

There is likely to be a currency risk if plants are in different countries to where the power is supplied to or components are manufactured abroad. [1]

**Credit** [1]

Users of power e.g. large industrial companies may default on payment. Or Subsidies may not through on time. [1]

**Liquidity** [1]

Income is likely to be a lot more “lumpy” than outgo hence there is a risk that expensive emergency finance is needed. [1]

**Crime** [1]

As large strategic installations, plants may be targets for terrorism. Or

Attempts by customers to avoid payment for supplies e.g. siphoning off could be significant. [1]

**Reputation** [1]

Failure to ensure continuity of supply may seriously damage the company’s credibility and so jeopardise future contracts. [1]

[Maximum 12]

- (ii) It is necessary (where the solution gives it) that candidates say which sort of risks will be managed by each action.

**Diversification** [1]

Diversifying will help in managing many of the risks:

Having plants in many different countries will help with political, natural, regulatory and currency risks for example. [2]

As will having plants in many different places within a country. [1]

Supplying to a range of users will help with credit and liquidity risk (also possibly currency and political). [2]

Having different sources or types of finance will help with financing risks. [1]

Having many different individual plants will help reduce the impact of operational, crime, business (to a degree) and natural risks. [2]

Having a balance between hydro and tidal will help with business and market risks. [2]

However, the scope will be limited by the scale of individual plants – each one will be large so not many can be owned at once. [1]

Control measures that reduce the likelihood of the risk event occurring. [1]

This could involve discussions and maintaining good relationships with regulators/experts/people with influence to help manage political regulatory and operational risks. [2]

Using hedging or other cashflow control methods e.g. securitisation could manage market or liquidity risks. [1]

Ensuring that the company is up to date with current management and technological developments could manage business risks. [1]

Choosing suitable locations for each site could help with natural risks. [1]

Researching the features of suppliers, users and financiers could help with credit, business and financing risks. [1]

Adequate security, vetting and supervising of staff and detailed operating procedures e.g. training, auditing, testing or supervision could reduce the chances of crime or fraud or indeed operational risks. [2]

Control measures to mitigate the consequences of a risk event that does occur [1]

Insurance could be used to cover natural, operational, credit and liquidity risks, amongst others. [3]

Derivatives e.g. futures or swaps could be used to manage market, financing risks or even natural risks. [2]

Sharing risks with other suppliers or users e.g. joint ventures, profit sharing pricing or sub – contacting may help with market, or business risks for example. [2]

Disaster recovery planning should help deal with the consequences of large risk events e.g. crime, natural or operational. [2]

Employing reputational management or PR consultants could help with reputational risks. [1]

Entering into long term fixed price contracts (e.g. with consumers) could help with business or market risks. [2]

Likewise, government could assist or provide subsidies to cover these risks  
e.g. as part of a commitment to green, renewable energy. [1]

Control measures to ensure that the price paid for the risk is fair. [1]

This will apply to all the risks in relation to the other three methods i.e. in all  
cases, balancing cost against benefit. [1]

Research and shopping around e.g. get lots of quotes will be needed. [1]

Analysing past activity, what competitors pay or do or using consultants  
e.g. brokers will help. [2]

[Maximum 18]

[Total 30]

Part (i) Most well prepared candidates scored full marks.

Part (ii) This had a mixed set of answers. Those candidates that thought  
pragmatically about possible solutions rather than constraining  
themselves to the standard risk management tools did well.

**Q5** (i) The standard points all apply but need tailoring to this scenario.

The past may not be a good guide to the future. That is not representative of  
future mortality. [1]

The data available may not be sufficient or of the right sort to be credible. [2]

The data might contain errors or be of poor quality. [2]

For example, deaths split by amount may be best but we only have a by lives  
split. [1]

The credibility of the data the company has will depend on how much  
business it has sold and over what timeframe [2]

If it has been a short period of time then experience may not be credible. [1]

Even if there is a lot of data, the insurance company needs to consider whether  
3 years of experience is sufficient to make decisions on long term mortality  
assumptions. [2]

Also need to consider if this trend is specific to the business it has written or  
more a general issue across the country. [1]

In essence, is this experience an abnormal fluctuation (or subject to abnormal events) or is it a real trend. [1]

The insurance company may simply be too small to attach any credibility to its own experience. [1]

Are the results within statistical tolerances both in terms of the business that the company has written along with the countries experience generally [2]

The main issue will be whether data has been captured at a sufficiently detailed level. Annuities are often not underwritten implies a lack of data. [2]

There may be a lack of precision on the definition of smoker. [1]

For example the experience is mainly due to smoker related illnesses, was this information collected at the time of purchase. [1]

Or is this information only coming to light at death. [1]

If the information was collected at inception then the insurance company can consider whether its remaining book has an expected prevalence to smoking or whether that population has now died and hence a healthier population remains. [2]

Also need to consider whether the business dying over the period is representative of likely future business and hence whether the assumptions can be used for new policies. [1]

In particular, social and other changes e.g. medical advances may mean that new policyholders won't have the same exposure to smoking or their health may not suffer as much even if they do. [2]

Has there been an increase in the amount of medically underwritten annuities where smoking conditions have been taken into account in the pricing? [1]

Has the insurance company sold on this basis? [1]

That is, has the insurance company already made allowances explicitly or implicitly i.e. have rates changed over the period of the investigation. [2]

Need to consider the underlying reasons on why the experience has trended the way it has and whether it will continue i.e. the pattern over the period. [2]

For example, has this been due to one 6 month period or more seen as a trend over the 3 years. Or were the differences greater at the start of the period i.e. trending back towards expected? [1]

Need to consider whether the smoking related illnesses are specific to parts of the country or particular groups of policyholders (age, sex, class, occupation). [2]

If so, how credible is this sub-data? [1]

[Maximum 16]

- (ii) If the insurance company has sufficient data in its back book of policyholders with very large annuities then they could use these as a starting point. [1]

As could large policies of other business is has. But need to consider whether the business is similar enough e.g. term assurance may not be. [2]

But need to consider whether the way business is priced has moved on, e.g. enhanced annuity information. [1]

Does depend on what is meant by large annuities, and in particular whether it is dominated by a few key lives [1]

That is, has the definition of large changed, is it consistent? [2]

It is highly likely that there is not enough data within the insurance company's back book to enable a credible set of data on which to group the experience. [1]

There may be national/industry/standard table information that could be used to assist on the assumption [3]

But this depends on whether the information is split in the required way and to a granular level. For example are the lives covered the same or is the correct data stored. [2]

Does depend on what is meant by large benefits, and in particular whether other sources define large in the same way. [2]

Overseas data could be used. But a lot of care will be needed as different countries have different smoking cultures. [2]

Could use reinsurance data if available [1]

Again only if held at sufficiently credible and consistent levels [1]

But could ask for information from a number of reinsurers to try and get consensus. [1]

Consider using postcode/location or income as a proxy and then applying that to the data held on the back book, but again this may not have been collected at point of sale. [2]

Could consider using other sources e.g. DB pension schemes may share the information and may have more data [1]

[Maximum 10]

- (iii) There is probably sufficient evidence to suggest that those who have larger annuities live longer [2]

For example large annuities imply wealth, better education, ability to afford healthcare, eat better, less physically demanding job or live in a healthier area. [1]

However the differential is difficult to quantify without credible data to back it up [1]

Need to consider both the base assumptions and the likely improvements in the future and if this will make a difference as medical advances work through to other income levels i.e. will differences erode over time. [2]

Also need to consider where to cut off in terms of benefits, maybe a scaling assumption may be more suitable [2]

Need to consider what other providers are doing and whether this would price out of the market, accepting that the risk should be priced accordingly so this might not be a bad thing [2]

Lighter mortality assumptions would make policies less attractive – are these policies profitable on current assumptions? [2]

Profits in this section of business are very sensitive to the mortality assumption used (and can have large swings) – so it might be cost-effective to use a different assumption i.e. it matters. [2]

Need to look out for large annuities being split into a number of policies i.e. some non-large annuities may exhibit large annuity mortality. [1]

It could be argued that using lighter mortality assumptions for large annuities should imply using heavier assumptions for non-large annuities. So maintaining the existing average – if appropriate. [2]

[Maximum 6]

[Total 32]

Part (i) Was well answered by most candidates.

Part (ii) Again quite well answered by most candidates – those that did really well considered a number of points.

Part (iii) Stronger candidates considered the wider impact onto the profits of the insurance company.
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**Q6 (i) (a) Expectations theory**

This theory states that the shape of the yield curve is determined by the economic factors, which drive the market's expectations for short term interest rates. [2]

Hence, this theory does not imply any particular shape. [1]

An expectation of interest rates falling in the future would imply a downward slope. Likewise, an expectation of rising rates implies an upward slope. [2]

The market's expectations of future inflation is a significant factor underlying expected future interest rates. [1]

**(b) Liquidity preference theory**

The liquidity preference theory is based on the generally accepted belief that investors prefer liquid assets to illiquid ones. [2]

Investors require a greater return to encourage them to commit funds for longer periods. [1]

Long dated stocks are less liquid than short dated ones. Hence, yields should be higher for longer dated stocks. [2]

In isolation, this theory would suggest an upward sloping curve. [1]

More generally, the theory predicts that a curve should have a greater upward (or lesser downward) slope than that based purely on expectations theory. [1]

**(c) Inflation risk premium theory**

The inflation risk premium theory is related to the level of uncertainty over the level of future inflation. [2]

Higher than expected future inflation will devalue the fixed returns on conventional bonds in real terms. [1]

It is generally accepted that investors require a greater return to compensate for greater uncertainty. [1]

Longer dated stocks are more vulnerable to uncertainty over future inflation than shorter dated stocks. Hence, yields should be higher for longer dated stocks. [2]

In isolation, this theory would suggest an upward sloping curve. [1]

More generally, the theory predicts that a curve should have a greater upward (or lesser downward) slope than that based purely on expectations theory. [1]

(d) **Market Segmentation theory**

Market segmentation theory says that yields at each term to redemption are determined by supply and demand from investors with liabilities of that term. [2]

Principal buyers of short term bonds are banks and general insurance companies which, compare their yields with short term interest rates. [1]

The major investors in long bonds are pension funds and life assurance companies. [1]

These two areas of the bond market may move somewhat independently. [2]

Hence it is not possible to say what the shape of the curve should be as a result of this theory. [1]

[Maximum 16]

(ii) The yields on any of the bonds and hence the pattern could be influenced by market segmentation. [1]

These effects could act independently on specific bonds or areas and so general conclusions cannot be drawn. [2]

For example, pension funds or insurance companies may be required to hold large amounts in government bonds so pushing down yields at longer terms.

Or, bonds may be being sold if retirees are taking more of their benefits in cash rather than pension so pushing up yields.

Or, short term liquidity concerns may mean an increased supply of short term bonds (companies and institutions need cash) so pushing up short term yields. [2]

### **General shape**

The conventional government curve slopes downwards from short to medium term and upwards (more gently) from medium to long term. [3]

The most likely explanation for this is that the market expects inflation and hence short term interest rates to fall over the short to medium term. [2]

The rise in yields over the medium to long term could well be explained by liquidity and/or inflation risk premium theories as outlined in (i). [2]

Hence, it would appear that the market expects stable inflation and short-term interest rates over the medium to long term. [1]

### **Level**

The level at the short end will be heavily influenced by very short rates set by the government or monetary authorities. [1]

It would appear that these rates are relatively high compared to what is expected longer term and also, possibly, to what has been experienced in the recent past. [2]

This could well be because the authorities have increased interest rates in order to constrain inflationary pressures, perhaps due to excessive economic growth caused by an earlier low interest rate environment. [3]

The downward slope indicates that the market expects this strategy to work. [1]

The relatively high short term interest rates could also be explained by a desire to support the exchange rate (prevent depreciation). Perhaps the authorities are worried about the inflationary pressures resulting from falling exchange rates e.g. via higher import prices (oil, food say). [2]

### **Same term comparisons**

The higher yield on the foreign government bond could be explained by: Worries about the relative credit/default risk of that government. [2]

A relative lack of marketability in their government bonds. [1]

Part of the risk premium could be currency related. If the currency of the foreign government is perceived to be relatively weak, the market may be worried about the ability of the government to purchase and hence repay in a stronger currency. [2]

This weakness could be due to relatively high inflation in that country. [1]

It is possible that the market does not expect default per se. But problems may mean some debt is rescheduled or written off, giving investors a haircut. [2]

The gap here appears to be quite high. [1]

Which would suggest that the foreign government has serious problems and hence implies greater risk for investors. [2]

The gap between yields on government and corporate bonds of the same term is explained by the bond risk premium. [1]

That is, generally, investors will require higher yields on corporate bonds to reflect their higher default risk and lower marketability/liquidity relative to government bonds. [2]

The gap here appears to be relatively low compared to what would normally be expected. [1]

This could be because:

The issuer is a large, stable company with good prospects (low risk). [1]

The issue size is very large. [1]

The outlook for the economy in general or the sectors the issuer operates in is very promising. [1]

The gap between yields on conventional and index-linked government bonds of the same term is generally a good approximation of the market's view of future inflation rates up to that term. [2]

In this case, ignoring inflation risk premium or other supply/demand issues, the market appears to be expecting future long term inflation of about 1.5%. [2]

[Maximum 20]

[Total 36]

Part (i) Well answered by most candidates.

Part (ii) For an application question this was well answered, with most candidates structuring their answer well.

**Q7** (i) It is likely that the regulators would want to ensure that pension schemes are in a position to fulfil their obligations to members i.e. meet liabilities. Or solvent. [1]

The scheme may have been deemed to be insolvent by the regulator and hence forced to close. [1]

To that end, they will require schemes to hold sufficient assets and make sufficient contributions. [1]

This could lead to volatile contributions causing uncertainty. [1]

They will probably prescribe the bases to be used to analyse such sufficiency. [1]

In order to ensure, as far as possible, that assets comfortably exceed liabilities bases will tend to be conservative. [1]

In particular with regard to the key assumptions of mortality (low in retirement) and investment returns (risk free returns). [2]

This will mean that the employer will need to tie up a significant amount of excess capital in the scheme. [1]

If the scheme turns out to be underfunded on the regulatory basis, the employer may be required to make good any shortfall in a short period of time. [1]

Or the amount required may be large. [1]

Similarly, accounting regulations may distort profit and losses (or balance sheet) due to the treatment of pension costs. [1]

Putting a strain on resources needed elsewhere. [2]

Regulation must be paid for – hence contributions to a compensation or protection scheme may be required. [1]

Regulations may dictate the level and type of benefits to be provided by the scheme or the level of contributions. [2]

In particular in reference to leaving service and to increases in deferment and payment. [1]

Provision of these benefits may be costly e.g. if an inflation link is required. [1]

Regulation may restrict the investments of the scheme. [1]

It is likely that the scheme will be forced to invest in low risk assets e.g. government bonds, which will reduce investment returns. [1]

A requirement to match assets and liabilities (or hold mismatching reserves) will have a similar effect on investment returns. [1]

Regulations are likely to be complex and so costly and time consuming to comply with. [1]

Possible regulatory changes will introduce uncertainty – changes invariably imply extra costs or complications. [1]

[Maximum 10]

(ii) No support from the employer [1]

That is, since the scheme is closed to future accrual, no further regular contributions (employer or employee) will be received. [2]

As a separate entity, it will probably not be possible to use the resources of the employer i.e. staff, systems, premises etc. to assist with the scheme’s running. [1]

There is no scope to adjust contributions to cover rising expenses. [2]

Any higher than budgeted for expenses will therefore directly threaten the solvency of the scheme and hence members’ benefits. This could lead to further regulatory intervention. [2]

One-off contributions could be paid by the employer. [1]

But they may be unwilling, unable and are under no obligation to make such payments. [2]

Furthermore, as the scheme runs down, expenses will become more significant in relation to the resources of the scheme. [1]

As diseconomies of scale kick in. [1]

Given the circumstance, it is unlikely that the scheme will have much surplus to act as a cushion against rising costs. [1]

Likewise, uncertainty over benefits costs e.g. mortality experience will make expense control important – other less predictable risks take priority over controllable costs. [1]

[Maximum 6]

(iii) They should have considered recent expense levels. [1]

Relative to any relevant budgets or expectations. [1]

To get a series of useful budgets, the expenses should be broken down and categorised into significant distinct groups. [2]

For example; property related, staff costs, investment, technical costs (systems maintenance say), professional services etc. [2]

It may also be useful to subdivide these groups if large distinct items exist e.g. bills, rent, taxes etc. for property. [1]

A split between fixed and variable expenses may be useful. [1]

Expenses may be linked to membership and so a projection of membership movements over a relevant timeframe (life of scheme) will help. [2]

Large one-off items or abnormal events should be stripped out to give an idea of typical ongoing expenses. For example allow separately for closure costs. [2]

To this end, analysing against past expected expenses may help with identification. [1]

Likewise, from past data, it may be possible to spot trends and so help set future budgets. [1]

When setting budgets based on recent experience, it will be necessary to allow for future inflation of expenses. [2]

It will be important to allow for the correct inflation measure e.g. salary or price or “tax” linked. [1]

Some allowance should be made for future one-off expenses e.g. repairs, redundancy costs as staff numbers decline etc. Any planned projects etc. should be covered. [2]

A further contingency margin to cover unexpected issues e.g. higher inflation should also be included. [1]

However, past expenses may not be a good guide especially as they should decline as the scheme winds down. So more detailed projections will be needed to allow for predictable developments. [3]

Even then, the past expenses used as a basis may be inaccurate e.g. if some subsidy from the employer was present – shared staff etc. [1]

It is possible that controls were lax in the past i.e. actual expenses should in reality be a lot lower. [1]

Advice should be sought from other administrators or consultants to determine what expenses should be for a scheme like this. [2]

Even then, resources might be so stretched that the Trustees require further cuts so as to reduce expenses even further – i.e. an overall resources constraint. Alternatively, a significant surplus may imply a laxer approach [2]

Availability of outsourcing could give an idea of costs (and would be the cost if done). [1]

[Maximum 14]

(iv) **Why happened**

A significant factor could be issues surrounding the closure of the scheme. [1]

The process may have taken a lot longer and been more complex than assumed when budgeting for the expenses involved. [1]

For example, significant research and consultation may have been needed in developing new investment strategies and tactics. [1]

Buying and selling individual stocks may have cost more i.e. rearranging the portfolio. [1]

Likewise more legal, actuarial or accounting/auditing work may have been needed. [1]

For example, regulatory issues or communicating with and determining amended benefits for members may have been more messy than expected. [1]

It is possible that expenses that should have been met by the employer have been charged to the scheme – e.g. advice to them explicitly. [1]

Ongoing investment expenses could exceed budgets if managers are trading too much and so incurring dealing costs. [2]

Or if managers are paid by performance and performance has been good. [1]

One off unforeseen jobs e.g. changes in legislation could have had an impact on professional fees. [2]

Membership movements not being as expected e.g. lots of transfers, deaths or options exercised could mean higher investment, actuarial or legal costs – must link this to these costs not just general expenses. [1]

There could be an element of overcharging e.g. the professional advisers were in a stronger bargaining position if the scheme hadn't researched properly what fees should be or unnecessary work done. [2]

Likewise, the "A" team might have been used e.g. expensive consultants and expensive staff within each consultancy. [1]

Ongoing work should be routine and hence doesn't really need top flight advice. [1]

Market forces of supply and demand may mean that inflation of professional fees has been higher than expected. [1]

### Control

Clearly many of the issues have gone – water under the bridge so scope could be a bit limited i.e. look at ongoing issues – likewise the unforeseen can't really be controlled. [1]

Clear and transparent charging is essential with strong auditing of bills. [2]

Regular monitoring of expenses will help. [1]

Advisers could be paid fixed fees, with negotiations for extra work, rather than on a time cost basis. This should include specifying the level of staff and scope of work required avoids mission creep. [2]

Try to obtain cheaper advisers/managers e.g. competitive tendering for work and regular reviews, renewals could help a lot – don't just focus on high profile "name" advisers. [2]

It may be possible to employ professional staff directly – especially if part-qualified or junior people could do the work in terms of ability and legal requirements. [2]

Using tracker funds or passive investment strategies would cut down on costs. [2]

As would close matching of assets and liabilities – easier in a non-accruing scheme. [2]

To this end, the Trustees may consider outsourcing some functions to a third party. [1]

This could lower budgets and also provide more certainty and hence less need for margins. [2]

The Trustees should ensure that only work directly for the scheme should be charged for and that there is no padding e.g. most cost effective staff have been used no extravagant expenses travel, hotels etc. [2]

[Maximum 14]

[Total 44]

As a general point this question was poorly answered with few candidates considering it in sufficient depth to score really well.

Part (i) Most candidates just focused on the scheme, with the better candidates considering the impact on the employer as well.

Part (ii) This was answered OK – but most just got the first few points and did not expand sufficiently to score really well.

Part (iii) Few candidates approached this from an expense base, i.e. those who scored well started with a general expense setting context and then expanded and this approach scored well.

Part (iv) As per (iii).

## **END OF EXAMINERS' REPORT**