

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORTS

April 2020

Subject SP2 - Life Insurance

Specialist Principles

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.

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
July 2020

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

1. The aim of the Life Insurance Specialist Technical subject is to instil in successful candidates the principles of actuarial planning and control, and mathematical and economic techniques, relevant to life insurance companies. The student should gain the ability to apply the knowledge and understanding, in simple situations, to the operation, on sound financial lines, of life insurance companies. The life insurance products covered by this subject exclude health and care insurance products covered by the Health and Care Specialist Technical subject.
2. The Examiners' Report covers more points than would be expected to get full marks. This is so that alternative approaches to questions by different candidates can be accommodated. The Examiners may also award marks for valid points that are not included in the marking schedule.
3. Candidates are expected to show knowledge of the relevant content of the Core Reading, and be able to apply this knowledge where appropriate.

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

Questions that focussed on knowledge of the Core Reading, such as 2(i), 5(i) and 7(i), were generally well answered by well-prepared students.

In the higher mark application questions, stronger candidates generated the required breadth of points, using the specifics of the question, rather than focussing on a smaller number of themes, e.g. questions 5(ii), 6(iii) and 7(iv), and these proved to be questions which differentiated candidates.

C. Pass Mark

The pass mark for this exam was 56.

421 presented themselves and 182 passed.

Solutions

Q1

The formula for the dividend is:

$$(V_0 + P)(i'' - i) \quad [1/2]$$

$$+ (q - q'')(S - V_1) \quad [1/2]$$

$$+ [E(1 + i) - E''(1 + i'')] \quad [1/2]$$

Actual rate of mortality experienced q'' is

$$\begin{aligned} &0.005 * (0.95) \\ &= 0.00475 \end{aligned} \quad [1/2]$$

$$\text{Dividend} = (7500 + 600) \times (0.03 - 0.024) \quad [1/2]$$

$$+ (0.005 - 0.00475) \times (50,000 - 8,200) \quad [1/2]$$

$$+ 55 \times 1.024 - 50 \times 1.03 \quad [1/2]$$

$$= 48.60 + 10.45 + 4.82 = 63.87 \quad [1]$$

[Marks available 4½, maximum 4]

This question was well answered with most candidates including the elements of the calculation required. Stronger candidates set out their full working and stated the formula for the dividend to keep on track through the calculations.

Q2

(i)

- Alterations should be supported by the earned asset share at the date of conversion, on the basis of expected future experience; [1/2]
- At later durations paid up sums should be consistent with projected maturity values, allowing for premiums not received [1/2]
- Paid up sums should be consistent with surrender values, so that the surrender values before and after conversion are approximately equal [1/2]
- Methods adopted should be stable in that small changes in premium should result in small changes in benefit [1/2]
- The premium after alteration should approach zero as the sum assured approaches the paid-up sum assured. [1/2]
- The terms offered after alteration should avoid the option of lapse and re-entry. [1/2]
- The costs associated with carrying out an alteration should be recovered. [1/2]
- The company should take into account alteration terms on similar products [1/2]
- Take account of any regulatory or professional guidance [1/2]
- The alteration terms should treat customers fairly [1/2]
- Company profit before and after the alteration should be broadly consistent [1/2]

- The alteration should be simple to calculate, explain, and understand [½]
[Marks available 6, maximum 3]

(ii)

Alterations should be supported by the earned asset share at the date of conversion, on the basis of expected future experience;

- At early durations the post-alteration value is likely to be too high [½]
- as the policy will have high initial expenses [½]
- so will not be supported by earned asset share [½]

At later durations paid up sums should be consistent with projected maturity values, allowing for premiums not received

- At later durations the post alteration value is likely to be too low [½]
- as there is no allowance for investment return [½]
- so will not be consistent with projected maturity values [½]
- However moving to a standard approach from the previous case by case basis may introduce more consistency in a general sense. [½]

Paid up sums should be consistent with surrender values, so that the surrender values before and after conversion are approximately equal

- The method is unlikely to be consistent with surrender values [1]

Methods adopted should be stable in that small changes in premium should result in small changes in benefit

- This principle will apply - the method is stable [½]

The premium after alteration should approach zero as the sum assured approaches the paid-up sum assured.

- This principle will apply as paid up and premium reductions use the same formula [½]

The terms offered after alteration should avoid the option of lapse and re-entry.

- The terms offered after alteration do not reference the current experience or pricing basis [½]
- At short durations the method is too generous, so is likely to prevent lapse and re-entry. However this does not apply at all durations [½]
- So post-alteration terms could be better or worse than purchasing a new policy with a lower premium, so there is potential for lapse and re-entry. [½]

The costs associated with carrying out an alteration should be recovered.

- There is no allowance for the costs associated with carrying out the alteration [½]

The company should take into account alteration terms on similar products

- The approach may (or may not) be similar to other alteration terms [½]

Take account of any regulatory or professional guidance

- The approach may (or may not) be in line with regulatory or professional standards [½]

The alteration terms should treat customers fairly

- Difficult to say that terms treat customers fairly given comments on consistency with maturity and surrender values [½]
- .. or due to lapse and re-entry issues [½]

Company profit before and after the alteration should be broadly consistent

- This is difficult to determine (and will likely vary by duration) [½]

The alteration should be simple to calculate, explain, and understand

- This applies - the method is both simple to calculate and to explain/understand [½]

[Marks available 10 ½, maximum 5]

[Total marks available 16 ½, maximum 8]

Part (i) of this question was well answered with the majority of candidates scoring full marks, covering the main principles. Part (ii) was not as well answered with many candidates failing to link back logically to each of the principles identified in part (i). Stronger candidates did so well and correctly identified whether the approach met each principle or not.

Q3

- A Value at Risk (VaR) approach is normally expressed at a minimum required confidence level over a defined period of time [1]
- ... e.g. a 99.5% confidence level over a one-year period. [½]
- For regulatory disclosures the confidence level and period may be pre-defined [½]
- Alternatively the confidence level and period may be determined by the company's own risk appetite [½]
- The supervisory balance sheet is subjected to stress tests (shocks) on each of the identified risks [1]
- ... at the defined confidence level and over the defined period. [½]
- ... e.g. *sensible example of a shock (interest, market)* [½]
- The surplus is then recalculated at the end of the period... [½]
- ... and discounted back to time zero using an appropriate discount rate. [½]
- The supervisory balance sheet and the surplus are normally on a market consistent basis. [½]
- Other approaches to the defined confidence level over a defined period may exist such as a 'run off' approach. [½]
- A 'run off' approach looks at the amount of capital needed at outset to ensure a firm's ability to cover its liabilities until the last policy has gone off the books allowing for suitable stresses to the risk factors. [1]
- Applying stress tests to each different risk factor gives a capital requirement for each separate risk in isolation. [1]

- The individual capital requirements for each risk need to be combined in a way that reflects any diversification that exists between the various risks (i.e. the degree to which individual risks are correlated), [½]
- ... as the sum of individual risks will usually be greater than the diversified risk [½]
- This can be done through the use of correlations matrices.. [½]
- ... or by copulas [½]
- Correlation matrix may be specified by regulator [½]
- When using a correlation matrix it should be noted that under the extreme event conditions being tested correlations may differ from those observed under normal conditions. [½]
- Also, a combination of a certain subset of events happening at the same time may produce a higher capital requirement than combining all of the individual capital requirements (at the same probability level) using a correlation matrix. [½]
- This is caused by non-linearity and non-separability of individual risks, [½]
- where non-separability is the way in which risk drivers interact with each other. [½]
- Separate allowance needs to be made in the calculation for these effects. [½]
- Typically, stochastic models are used to quantify the capital requirements for economic risks. [½]
- The probability distribution used should properly reproduce the more extreme behaviour of the variable being modelled,. [½]
- ... both in size of the tail of the distribution and, where appropriate, in the path taken during the simulation period [½]
- A 'real world' asset model would typically be used for capital requirement projections and this should be arbitrage free. [½]
- It is generally appropriate to calibrate these models with reference to actual historical parameters, , [½]
- but advanced techniques may be required to ensure appropriate fit to the tail of a distribution [½]
- to ensure that the distributions do not understate the frequency of more extreme events. [½]

[Marks available 17, maximum 10]

This question was fairly well answered with most candidates able to cover the main points required. Stronger candidates expanded each of the core elements with the supplementary information and so increasing the depth of their answers.

Q4

(i)

Profitability

- As outlined in the question the profitability of both contract designs is the same under the given profit measure [1/2]
- ..on day 1, but profitability over time will differ between the two contract designs. [1/2]
- The company may want to consider other profitability measures [1/2]
- ... (e.g. IRR, Payback Period) [1/2]
- ... and will need to consider aggregate profitability allowing for expected volumes of business written. [1/2]

Sensitivity of profitability

- The company should carry out sensitivity tests on the major assumptions to assess the company's exposure to changes in experience. [1/2]
- The design with the lower sensitivity will be preferable. [1/2]
- Both designs will be highly sensitive to investment returns, as the only income is from the fund based charge and this depends on the size of the fund. [1/2]
- However, Design B will be more sensitive due to the embedded guarantees which will cost more if investment returns are poor. [1/2]
- The difference in sensitivity could be material [1/2]
- And may depend on whether charges can be increased sufficiently [1/2]
- And even if charges can be increased this may simply not be recovered if everyone exits on their guarantee date [1/2]

Competitiveness and Marketability

- The main feature affecting the marketability of both options are the benefits provided to the policyholder, [1/2]
- and the level of charges being applied [1/2]
- The relevant benefits are the surrender and guarantee values. [1/2]
- The simplicity of design and comprehensibility of literature will also be relevant features. [1/2]
- In order for the two designs to have the same profitability, Design B would have the greater annual fund based charge, due to the cost of the guarantees [1/2]
- ..and the cost of capital to support the guarantees [1/2]
- Design A has a higher surrender value due to lower charges, unless the guarantee is in the money [1/2]
- The preferable design will depend on the importance attached to guarantees by the policyholder. [1/2]
- This will depend on the customer's needs - customers may value guarantees and be prepared to pay higher charges, or may be more interested in the death benefit. [1/2]
- The level of guarantees used by other companies will need to be considered, it might be easier to sell a contract that is more clearly in line with other companies. [1/2]
- Conversely, different levels of guarantee may lead to a marketing advantage. [1/2]
- This is a new market for the company, and this may factor into the choice of design to lead with. [1/2]

Financing Requirement

- Design A will have a lower capital requirement until 20 years have passed. [1/2]
- If the life insurance company's capital is limited, the higher capital requirement of Design B will be an important issue. [1/2]

- Since it could be onerous... [½]
- ..., depending on the company's regulatory reporting requirements. [½]
- Need to also consider set up costs [½]

Risk Characteristics

- Mortality is likely to be of negligible importance. [½]
- Both designs are exposed to losses from early surrenders, when initial costs have not been recouped. [½]
- However, Design B is exposed to lower surrenders when the guarantees are in the money. [½]
- There is a second-order expense risk due to poor investment returns. [½]
- The expense risk depends on how easy it is to vary the charges when investment returns are poor. [½]
- Design B is heavily exposed to poor investment returns due to the guarantees [½]
- ..and underlying investment assumptions used to value the guarantees [½]
- The charges will have to cover the cost of guarantees... [½]
- ..the total value of charges will increase when investment returns are good [½]
- ...however the total value of charges will decrease when investment returns are poor [½]
- ...which is when the guarantees are more likely to bite [½]
- ...creating a mismatch between the charges and costs [½]
- Design B may suffer from poor sales due to high charges [½]
- .. leading to inability to recoup initial costs [½]
- Due to complexity of Design B there may be misunderstanding of product by customer [½]
- ... leading to potential misspelling [½]
- There may be a risk that whilst charges are reviewable they may not be able to be applied due to competitive or regulatory issues [½]

[Marks available 23, maximum 12]

(ii)

- A stochastic approach allows a probability distribution to be assigned to one or more of the unknown future parameters. [1]
- This will be important for Design B due to the guarantees [1]
- ..since positive cost of the guarantee can be calculated where a deterministic approach might otherwise produce a zero cost [1]
- ..and the model may need to allow for dynamic lapses [½]
- ..i.e. the model may need to allow for changes in lapse assumptions depending on whether the guarantees are biting or not [½]
- ...and this needs to be at years 10,15, and 20 [½]
- The company may have little control over the investment mix if the policyholders can choose from a number of asset mixes. [½]
- This would be hard to value deterministically [½]
- Due to these points, it is unlikely that the possible outcomes form a symmetric distribution. [½]
- It is unlikely that a single deterministic result — using average assumptions — together with a series of further deterministic calculations on amended assumptions, could help [½]

- Due to the complexity of having more than one guarantee date [½]
- Hence it is likely that a stochastic model should be used [½]
- Or to use option pricing techniques - e.g. Black Scholes - to allow for uncertainty without requiring full stochastic simulation [½]
- Need to also consider availability of expertise to conduct stochastic modelling [½]
- ...and any additional costs of additional setting up and operating the model [½]

[Marks available 9, maximum 4]

[Total marks available 32, maximum 16]

Neither question part was particularly well answered, part (i) more so than (ii). Stronger candidates covered a breadth of points under each factor in part (i) and used the detail in the question to compare the specifics of the two designs rather than produce generic points. The basic marks in part (ii) were covered by most candidates but only the strongest developed them into the depth required for higher marks.

Q5

(i)

- To develop earned asset shares [½]
- To update assumptions as to future experience [½]
- To monitor any trends in experience [½]
- To monitor actual compared to expected experience [½]
- ... and take corrective actions as needed [½]
- To provide management information [½]
- ... which will aid understanding of the business, and aid business decisions [½]
- To make more informed decisions about pricing [½]
- and about the adequacy of reserves [½]
- To feed into industry studies (e.g. CMI) [½]
- There also may be regulatory requirements around regularly reviewing experience [½]

[Marks available 5 ½, maximum 3]

(ii)

Basic experience analysis

- The assumptions should reflect the best estimate expected experience... [1]
- ...and they may also include a margin for adverse experience depending on the basis of the reserves. [1]
- The company would normally base their future assumptions on the experience from the past few years for this product. [1]
- This will come from an experience analysis investigation... [½]
- ...though this will not include any allowance for the expected temporary increase in withdrawals [½]

- However, the company are likely to still use this experience as the starting point for their assumptions. [1]

Allowing for additional withdrawals

- The company may then look to increase their assumptions for years 3 onwards to allow for this expected increase in withdrawals. [½]
- They will need to estimate how large the increase in withdrawals is going to be... [½]
- ...how long it will last for, [½]
- ...and whether the long-term rate after the temporary increase will change. [½]

Short term impacts

- There may also be an adjustment made to years 1 and 2 if the company believes that knowledge of the regulation changes may change customer behaviour before the change come into force. [½]
- e.g. if customers will get better withdrawal terms after the change then those that would normally withdraw in years 1 or 2 may wait until year 3. [½]

Data sources

- To estimate both of these things the company will need data to base this on. [½]
- There may be data internally from a previous time regulation changes have happened. [½]
- If not this product then another product or other country experience [½]
- This data will then need adjusting to reflect the actual changes happening this time... [½]
- ...and any difference in customer profile or product this time. [½]
- Alternatively there may be some industry data or estimates that could be used as it is likely other companies are affected by these changes... [1]
- ..the company should also consider internal expertise and views of any intermediaries [½]

Prudence / additional margins

- Assumptions at all durations may be increased for reserving prudence depending on the reserving rules. [½]
- An additional margin may be added to those assumptions that have been increased from the experience analysis for error in estimating those [½]
- The choice of assumption could depend on how much data was available to estimate the increase from and the overall quality/accuracy of the data. [½]
- Alternatively the company could make no allowance in the assumptions for the expected increased withdrawals and could hold a separate reserve/provision explicitly for these increased withdrawals. [1]
- This may be done if the assumptions are set by duration in force rather than year and so an increase to actual assumptions would not have the right effect. [½]
- This would be calculated in a similar way to the increased assumptions above, looking at any relevant data etc... [½]

- ...and weighting any increased assumptions by the reserve or value of the policies at the relevant durations. [½]

Other considerations when setting rates

- Whether a surrender will lead to a release in reserves will need to be considered [½]
- If the product is immaterial or there is not enough data then the company may not do anything [½]
- Assumptions should reflect any management actions planned in response to the increase in withdrawals (e.g. use of surrender penalties) [½]

Regulatory / professional guidance

- Any assumptions will need to reflect regulations... [½]
- ...which may determine whether assumptions must be best estimate or prudent in nature. [½]
- Any professional guidance should be followed [½]

[Marks available 19, maximum 10]

[Total marks available 24 ½, maximum 13]

Overall 5(i) was the most well answered question on the paper with the majority of candidates covering sufficient reasons to score full marks. Part (ii) was a good differentiator with stronger candidates showing that they were able to think widely, generating sufficient points and also provide answers in depth by using examples to support a valid point. Some candidates focussed on how to set withdrawal assumptions rather than the question asked and spent time on factors that may impact the number of withdrawals, and how to group the experience data to derive assumptions which wasn't required by the question and hence did not gain any credit.

Q6

(i)

- Key people are individuals whose skills, knowledge, experience or leadership are important to a business' continued financial success. [½]
- Should something happen to one of these individuals it is likely that their loss will have a detrimental impact on the profitability of the business and will cause financial strain. [½]
- Examples of a key individual are: company directors, sales directors, IT specialist, managing directors and heads of product development [0.5 mark for each of up to two sensible examples] [1]

Key person cover may be needed to

- Cover temporary cover pending new recruit [½]
- Cover recruitment costs of a replacement [½]
- Pay off any business loans in name of individual [½]
- May want to cover any partnership/shareholder buy out [½]

- Protect profits [½]
 - Key person cover may be a regulatory requirement in specific circumstances [½]
- [Marks available 5, maximum 3]

(ii)

General comments

- The choice of distribution channel will depend on the financial sophistication of the target market... [½]
- ...and the level of remuneration required by the distribution channel [½]

Basic Term Assurance

- Basic Term Assurance is a very simple product, meaning it doesn't require a salesperson. [1]
- It is likely that applicants will be accepted on answering some simple standard questions [1]
- Straight through processing will limit costs [½]
- ... and no need for commission payments [½]
- ... and hence internet is good option [½]
- Competitive market [½]
- ... easy for consumers to look for best deal [½]
- Customers may want a quick and simple process and hence internet is appropriate [½]
- The age range is likely to be younger individuals, who are more likely to purchase cover over the internet. [½]

Standard Term Assurance

- Standard Term Assurance is more complex, and so requires a limited level of advice [1]
- Life company may have existing link with a tied agents [½]
- .. and hence selling straightforward product through that channel makes sense [1]
- ... limited training costs required [½]
- Tied Agent may be a bank or building society [½]
- ... and hence may sell term assurance alongside a loan [½]
- ... e.g. a mortgage [½]
- ... allowing the company access to a larger customer base [½]
- May have higher sums assured [½]
- ... and more stringent underwriting [½]
- Tied agent can only sell term products of this company (or a limited selection) [½]
- .. therefore competitive pressures may be reduced [½]

Key Person Term Assurance

- Key person Term Assurance may be more complex than a standard term product, and require more comprehensive advice which an independent intermediary can provide. [1]
- ... because beneficiary is a company rather than individuals [½]

- The higher costs of an independent intermediary will likely be of less consideration to an employer. [½]
- Target market is businesses and partnerships [1]
- ... more likely to use financial advisers [½]
- ... and in need of more specialist approach [½]
- ... rather than internet or direct marketing [½]
- ... will want best product for their business [½]
- ,... from across the market [½]
- May require additional underwriting [1]
- ... and hence making product more complex [½]

[Marks available 20½, maximum 10]

(iii)

General comments

- The level of underwriting may be dictated by reinsurance requirements, for any product. [½]
- The insurer (or reinsurer) may also specify stricter underwriting for policies with larger sums assured, regardless of produce type. [½]

Basic

- Likely to have just a few simple medical questions [1]
- ... which if answered “appropriately” yes/no will lead to acceptance [1]
- Underwriting is likely to be simple for competitive reasons [½]
- Given level of sum assured is limited then not likely to have any financial underwriting [½]
- If simple questions not answered appropriately then likely to reject application [½]
- There will probably be limited claim underwriting [½]

Standard

- Will use some simple medical questions [1]
- ... but application may also request further details on medical history [1]
- Use underwriting manual to offer terms [½]
- ... may increase premium [½]
- ... or restrict benefit payments [½]
- ... or have exclusions (e.g. pre existing conditions) [½]
- ... or decline [½]
- May have some limited financial underwriting [½]
- .. although this may be linked to level of loan offered by tied agent [½]
- Will probably have some claim underwriting [½]
- ... especially if there are restrictions from initial underwriting [½]

Key Person

- Similar initial underwriting process as “Standard” [1]
- .. although may have requirement for a company medical [1]

- ...especially if the sum assured is significant [½]
- Likely to have stronger financial underwriting [½]
- To assess impact of the individual on the employer [½]
- And the likely losses in the event of individual's death [½]
- Will have some claim underwriting [½]

[Marks available 16, maximum 9]

[Total marks available 41½, maximum 22]

This question was averagely answered which was disappointing given it was grounded in the standard concepts of distribution channels and underwriting. Stronger candidates covered the relevant elements of all three policy types and the differences between them for both parts (ii) and (iii).

Q7

(i)

- Internal unit-linked fund consists of a clearly identifiable set of assets [½]
- e.g. equities, property, fixed interest securities, deposits [½]
- Divided into a number of equal units [½]
- Of identical subsets of fund assets/liabilities [½]
- Usually daily pricing of units [½]
- Based on movement in asset values in the fund [½]
- Responsibility for fund pricing rests with Company [½]
- Subject to any policy conditions or regulatory requirements [½]
- ... and following the basic equity principle. [½]

[Marks available 4½, maximum 3]

(ii)

Setup costs

- There will be set up costs of the new fund, such as: [½]
 - Additional pricing work needed or pricing system updates [½]
 - New literature for products [½]
 - New literature for fund [½]
 - Policyholder communication costs [½]
 - Any systems updates to administration [½]
 - Any training required for staff [½]

Competitiveness and marketability

- Is there market demand? Conduct market research [½]
- Is the new fund being asked for by intermediaries? [½]
- Is the new fund sufficiently unique compared to existing funds? [½]
- Does it offer any additional features over and above existing funds? [½]
- Will it improve marketability of products? [½]
- Will it be available to all policyholders? [½]

- Are competitors launching similar fund? [½]

Profitability and business volumes

- Does the fund meet the firm's profitability criteria... [½]
- ...and will it generate sufficient volumes? [½]
- Are there any projections of future investment into the fund - are they realistic [½]
- What is the expected business mix? (e.g. size of funds per policy) [½]

Charges

- What will the annual management charge ("amc") be? [½]
- Will the amc cover the administration costs? [½]

Fund operations

- What is the likely asset mix of the fund? [½]
- Details of when priced, how frequent and who prices etc? [½]
- Does the company have sufficient investment expertise to manage the new unit fund? [½]

Impacts on existing funds

- Will it encourage more switching from other funds? [½]
- ... and associated extra administration costs [½]
- ... and potential administration issues [½]
- Will it mean an existing fund becomes unviable? [½]

Capital and liquidity considerations

- Are there any potential liquidity problems with the assets? [½]
- Does it give any issues for capital requirements? [½]

Reputational considerations

- Is it appropriate for policyholders and their attitude to risk? [½]
- Are there any ethical or brand considerations in terms of the funds investment choices to consider? [½]
- Does the fund represent a reputational risk for the company? [½]

Regulatory / tax

- Is there a need for regulatory approval for new fund... [½]
- ...or are there any other regulatory considerations (e.g. asset restrictions)? [½]
- Are there any tax implications as a result of holding new asset classes [½]

[Marks available 17½, maximum 10]

(iii)

- To aid in the management of the fund [½]
 - By avoiding the need to invest or redeem small amounts each day [½]
 - And hence avoid incurring lots of dealing costs [½]
- It is a small investment to help with the setting up of the fund [½]
- It has free assets available [½]

- ... and may wish to benefit from the investment return [½]
 - ... and it may be in line with the investment policy of the free assets [½]
 - It enables the fund to gain a price history [½]
 - ... which may help with marketing of the fund [½]
 - It helps test the processes involved in pricing the fund [½]
 - ... and avoids early unit pricing errors which may involve policyholder compensation [½]
 - ... and test investments into the asset categories [½]
- [Marks available 6, maximum 4]

(iv)

Policy and other data [½]

- There will be additional risk in maintaining records of box investments in unit funds [½]
- A risk that the valuation of assets is incorrect [½]
- Potential risk for pricing errors due to additional administration of box assets [½]

Investment Performance [½]

- There is an increased investment risk, depending on the assets in the underlying fund [½]

expenses, including the effect of inflation [½]

- Higher expense risk due to additional work for administering the box assets [½]
- The annual management charge may have been set to only cover policyholder administration rather than extra work for box management [½]
- Once the fund reaches \$1m the loss of the box will require the company to buy/sell small amounts [½]
- which will incur extra dealing costs [½]

Volume of new business [½]

- If new business into the fund(s) is lower than expected the fund(s) may never reach the \$1m and hence box will remain for ever [½]
- Which will incur additional cost of administration [½]

Liquidity [½]

- The assets held in management boxes may represent a liquidity risk, as these assets are effectively 'locked in' (and may also be in illiquid assets). [½]

Competition [½]

- Competitors may copy the fund(s) and hence new business volumes may fall below initial projections [½]
- Other funds may be launched by competitors that draw policies and funds away [½]
- Increasing expense risk [½]

Actions of distributors [½]

- The setting up of a new fund may be a specific request of a distributor on the basis of optimistic projections [½]
- It may materialise that funds do not get invested as projected, leaving the company with a dormant (or very small) fund [½]

Failure of appropriate management systems and controls [½]

- There is a risk that the unit pricing process does not have appropriate controls and systems to identify box management [½]
- The company may not correctly separate policyholder units from shareholder units
- Counterparties [½]
- Failure of potential outsourcers who do unit pricing [½]

Fraud [½]

- Potential for fraud of staff administering funds unless controls are in place [½]

legal, regulatory and tax developments [½]

- Regulatory risk - the fund may not be permitted by regulation.. [½]
- ..or there may be regulatory restrictions, e.g. on the use of specific assets [½]
- Potential risk to capital requirements if underlying assets attract higher capital [½]
- There will now be a mismatch between assets and liabilities in the unit funds [½]
- Which will require the actuarial asset/liability models to include these assets and stress them appropriately [½]

Aggregation and concentration of risk [½]

- If there are a number of new funds, or small funds, then the aggregation of box investments may lead to solvency issues (if free assets limited) [½]
- Similar aggregation of other risks if there are a number of small/new funds [½]

[Marks available 19, maximum 9]

[Total marks available 47, maximum 26]

Part (i) was well answered with most candidates covering the required points. Part (ii) was fairly well answered with good candidates covering a decent breadth of issues and was a differentiator for stronger candidates.

Box management proved to be a challenge for many with parts (iii) and (iv) not being well answered by most. Many candidates missed marks on the 'operational' side (e.g. the expenses of maintaining the Box, the possible errors of pricing/unit allocations etc.). As with other higher order mark questions, stronger candidates covered the required breadth and depth of points in these later question parts.

END OF EXAMINERS' REPORT