



Institute  
and Faculty  
of Actuaries

# EXAMINERS' REPORT

SA1 - Health and Care  
Specialist Advanced

September 2022

## **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.

Sarah Hutchinson  
Chair of the Board of Examiners  
December 2022

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

The aim of the Health and Care Specialist Applications subject is to instil in the successful candidates the ability to apply knowledge of the health and care environment and the principles of actuarial practice to the provision of health and care benefits in complex situations.

Candidates who approach the questions, especially the more substantial elements of each question, in a methodical and detailed manner are far more likely to satisfy the Examiners and receive a pass in the subject. Candidates will gain few marks if they do not address the question asked or tailor their answer to the scenario detailed in the question but merely write around the topic of the question. When undertaking past papers for exam preparation, candidates should be providing answers which use the context of the question.

The mark allocation for each question part gives an indication of the relative length of answer or number of points to be made to gain full marks. 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.

It is often helpful to use subheadings when answering long part questions.

Candidates who give 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.**

Well-prepared candidates scored well across most of the paper. Most of the questions required an element of analysis or application of knowledge to a particular situation. For these questions, candidates did not always provide a sufficiently broad range of points to score well. For these questions the better prepared candidates made points that related to the specific scenario set out in the question rather than just generic points, and consequently demonstrated that they could apply their knowledge to the situation outlined in the question.

It is encouraging to see many candidates using headings in their answers to the longer part questions and setting out their answers in a methodical manner which helps the candidate maximise their score in the exam, and also aids the examiners in marking scripts.

The comments that follow the questions concentrate on areas where the candidates could have improved their performance.

**C. Pass Mark**

The Pass Mark for this exam was 57  
59 presented themselves and 26 passed.

## Solutions for Subject SA1 - September 2022

### Q1

(i)

Lower premiums:

MME would have lower premiums which would help meet any affordability need of the consumer [½]

Low expectation of need:

PMI may cover more than is considered necessary by younger/healthier lives [½]

Affluent society:

Individuals may prefer to cover minor health care costs, but want insurance for more costly treatments. Hence MME is preferable as it is more suitable for their needs than PMI [½]

Complexity:

The policyholder may prefer MME if they didn't understand that PMI was more comprehensive. [½]

This may be due to a lack of advice, e.g. if the policyholder was buying online [½]

Simpler sales process:

MME may be more convenient sales channel and process (e.g. online) given the lower premiums and fixed sum benefits [½]

Less underwriting than PMI so less processing time needed [½]

Fewer exclusions:

For people with previous medical conditions, PMI underwriting may have exclusions whereas MME may not have as less stringent underwriting [½]

Simplicity:

For those not familiar with insurance products the simplicity of the terms of MME may be preferred [½]

[Marks available 4½, maximum 3]

(ii)

Insurer A

Demographics:

The distribution channel of online is likely to appeal to younger ages [½]

There may be a bias toward less financially sophisticated younger ages [½]

There may be a bias toward less wealthy younger ages as less able to afford paying for advice [½]

May include older lives who are comfortable using the internet and social media with a bias to the less wealthy [½]

Product:

If younger ages, then likely to be MME [½]

Without advice the simpler products are more likely i.e. MME [½]

The underwriting will be simplified online so more likely to be products with less complex underwriting i.e. MME [½]

The PMI sold may include moratorium/exclusion underwriting to keep the underwriting simple online.	[1/2]
Any ACI on younger ages is likely to be for lower sums assured:	[1/2]
As premiums are likely to be kept low as higher price sensitivity online	[1/2]
As premiums likely to be kept low as higher lapse risk with customer-initiated sale	[1/2]
Given the crossover of cover between ACI and MME and the cap on acceptable age for MME	[1/2]
Likely ACI is skewed to older ages where there are sales	[1/2]
However, sales of ACI may be high amongst younger ages in relation to mortgages	[1/2]
Unlikely to have LTC given the need for financial advice	[1/2]
Unlikely to have LTC given high premiums if underwritten at older ages	[1/2]

Insurer B

Demographics:

Likely to be older ages as may be less technical minded than younger people	[1/2]
Likely to be wealthier groups: may be more used to using advisors and willing to pay for advice	[1/2]
May include younger wealthier ages to provide wider cover	[1/2]
Likely to be in better health than the average person of their age as their higher wealth may be related to less physically arduous occupations (or allows them to purchase better medical care)	[1/2]

Product:

More likely to be PMI than MME as premiums will be more affordable to the target group	[1/2]
Accelerated CI likely to be sold, with higher premiums	[1/2]
Likely higher sum assured due to wealthier market	[1/2]
With advice, pre-funded LTC is more likely	[1/2]
May be from age 50 onwards if this is where savings are accumulated in life	[1/2]
<i>(Maximum 4 marks per insurer. Credit was given if a reverse point was made under the other insurer but marks were not awarded twice if a point and its opposite was made under both insurers)</i>	

[Marks available 12½, maximum 6]

(iii)

Rates (mortality, morbidity, average cost):

Morbidity rates may differ given the different target markets	[1/2]
For example, Insurer A will be more exposed to diseases that predominantly affect the young.	
Insurer B may be better diversified across the ages	[1/2]
Mortality rates may differ given the different target markets	[1/2]
Insurer B may have wealthier policyholders than insurer A who are likely to have lower mortality rates than insurer A policyholders	[1/2]
The younger age profile of Insurer A may mean a lower claim rate and so a higher risk of random fluctuations (each extra claim has a proportionately bigger impact if the number of expected claims is low)	[1/2]

Investment:

Insurer B may have a higher proportion of policyholders of long-term products and/or with higher sums assured	[1/2]
Long term products such as LTC and ACI have premiums invested over time	[1/2]

So there is likely to be more investment risk than for short term products or those with lower sums assured [1/2]

Selection:

Online sales may leave insurer A more at risk of anti-selection risk given the simplified underwriting [1/2]

Online sales may leave insurer A more at risk of selective lapsing given the consumer initiates the sale [1/2]

Financial advisors' business - more robust underwriting is undertaken to reduce the risk [1/2]

An existing business portfolio only from online sales may therefore be more risky [1/2]

However, financial advisors may expose insurer B to a higher risk of churning [1/2]

Competition:

Online sales are heavily price sensitive with the use of comparison websites so a new entrant could disrupt new business and cause lapses for insurer A [1/2]

Financial advisors are also highly competitive, but this may be not just be on premiums but also on terms and conditions. A new entrant could disrupt new business and cause lapses for insurer B [1/2]

Inflation:

PMI is more exposed to inflation risk than MME as the latter is fixed amounts [1/2]

Pre-funded LTC may be exposed to inflation risk if comprehensive cover rather than fixed benefit amounts [1/2]

ACI is a fixed sum assured; however, this may be linked to inflation. [1/2]

Overall, insurer B is more likely to be exposed to inflation risk than insurer A [1/2]

Persistency (early selective lapses, withdrawals):

Insurer A is more exposed to selective lapses [1/2]

Policyholders of Insurer A haven't received the levels of advice given to the policyholders of Insurer B, so policyholders of Insurer A may be more likely to lapse if they later find that the contract doesn't meet their needs. [1/2]

Depending on the commission structure Insurer B could be more exposed to the risk of churning of policies [1/2]

Options and Guarantees:

Insurer B is more likely to provide Options and Guarantees given advice is provided and market are financial sophisticated. Online is kept simple [1/2]

New Business:

The volume of business may be more variable for online business which would affect insurer A more. [1/2]

Data (policy and other data):

There will be more control over data provided through online sales than through financial advisors [1/2]

E.g. online may have compulsory fields [1/2]

With financial advisors as a distribution channel, there is less insurer control over the data for insurer B [1/2]

Expenses:

Lower premiums on online sales may mean that the expense loading is smaller and so more exposed to risk of variation for insurer A [½]  
However, expenses may be higher due to commission with financial advisors for Insurer B [½]  
Per policy expenses depend on new business volumes (and these could be more variable online as mentioned above) [½]

Non-disclosure:

This may be higher for insurer A because of online sales where no advice is given, so the consumer is unaware of the consequences of non-disclosure on entitlement to benefits [½]

Counterparty risk (distributions, provision medical services, investment):

Insurer A is expose to fewer distributors than B [½]  
Insurer B may have higher investments so higher exposure to failure of investment providers to meet return needs [½]  
Or poor medical services from providers [½]

State benefits:

If the government decided to provide free public health services, the market for MME and PMI may plummet; this may leave Insurer A without a market [½]  
If the government decided to provide long term care; this may create mass lapses on pre-funded LTC which may be more likely to affect insurer B [½]

Catastrophes:

Risks may be different, e.g. an internet outage would hit insurer A because of its high amount of online sales [½]

Aggregation & concentration of risk:

The geographical distributions of risk might be similar as online sales are accessible widely as are credit card consumers [½]  
Insurer A is more at risk of aggregation and concentration risk with the weight of younger ages [½]

Reputational risk & Customer services shortcomings:

There is an increased risk of mis-selling or misunderstanding of term of the policy where advice is not given. Insurer A could have more reputational risk [½]  
Insurer A may be exposed to greater reputational risk due to its use of social media, e.g. in connection to privacy and use of data [½]  
Using a network of financial advisors may diversify the risk of mis-selling for Insurer B [½]

[Marks available 21, maximum 10]

(iv)

Rates (mortality, morbidity, average cost):

Increase the diversity of products offered to offset mortality and morbidity risks [½]  
E.g. selling LTC includes exposure to longevity - paying as long as living, which can offset the mortality exposure on ACI - paying out on death [½]

Where the insurer is not internally diversified it can seek reinsurance to protect against adverse experience [½]

It can also use reinsurers to provide advice on rates setting [½]

Investment risk:

Asset Liability Matching techniques can be employed to reduce the investment risk from having short- and long-term liabilities [1/2]

Selection:

A moratorium underwriting or waiting periods could be employed for online sales to reduce anti-selection [1/2]

Introduce commission clawback for financial advisors to reduce the risk of early lapses [1/2]

Competition:

Company should pay market rates for commission where financial advisors distribute products to ensure products remain competitive and reduce churning [1/2]

Regularly monitor competitors' prices and reprice where necessary to remain competitive [1/2]

Inflation:

The exposure to inflation could be reduced with reviewable premiums [1/2]

Persistency (early selective lapses, withdrawals):

Terms could be adopted to minimise selective withdrawal, such as penalties on pre-funded LTC products [1/2]

Options and Guarantees:

Adverse experience and capital strain arising from these can be managed by reducing how generous the terms under which they can be exercised are [1/2]

Or options and guarantees may not be offered [1/2]

New Business:

Regular monitoring of new business by volume, mix, nature and size will help both insurers manage against pricing terms [1/2]

Data (policy + other):

Regular spot checks of data and staff training could mitigate risk through financial advisers. [1/2]

Expenses:

Clawback terms on commission may reduce risk of expense charges not being adequate [1/2]

Surrender penalties on policyholders in the event they surrender early and the company does not have time to recoup initial expenses would also reduce the risk of expense charges not being adequate [1/2]

Regular experience analysis on expenses will help to ensure that the expense loading is adequate given lapses and loading by sum assured. [1/2]

Non-disclosure:

Improving transparency in why the question is being asked may mitigate this risk, however it may increase complexity [1/2]

Counterparty risk (distributions, provision medical services, investment):

A diversification of distributors and providers may reduce risk [1/2]

Investment default risk could be reduced by only investing in assets with good credit rating [½]

State benefits:

Insurer A could diversify its product offering to be less exposed to loss of sales if state benefits or healthcare are introduced [½]

Both insurers should keep abreast of policy developments [½]

For LTC, the impact of mass lapse could be limited if withdrawal charges are levied [½]

Catastrophes:

This could be mitigated in various ways, e.g. with a support telephone sales distribution centre [½]

Aggregation & concentration of risk:

This may be mitigated with the use of reinsurance [½]

Reputational risk & Customer services shortcomings:

For Insurer A, the product terms and conditions should be kept as simple as possible Potentially with access to a sales team who can answer further questions [½]

For Insurer B, the advisors can also be trained on a regular basis [½]

Ensure policy wording is clear and unambiguous to reduce risk of unexpected claims [½]

Conduct consumer satisfaction surveys to identify areas for improvement [½]

[Marks available 15, maximum 5]

(v)

A requirement to purchase more reinsurance to limit the exposure to adverse experience [½]

This would protect policyholders where the terms of the reinsurance are not overly expensive, but may cause liquidity issues [½]

A requirement to hold additional capital to provide a cushion against adverse experience [½]

This may be possible but would require the insurer to raise capital. This may not be available on good terms [½]

Revoking the ability of certain managers to hold senior positions in a health & care insurer [½]

A change in senior positions may cause adaptations to the sales and distribution channel strategy. However, this may not be necessary to remedy the situation. There may be disruption in services with a change to personnel which may affect policyholders detrimentally [½]

Requiring the insurer to pursue a merger or acquisition [½]

There could be an argument for requiring Insurer A to pursue a merger with Insurer B (or B to acquire A) as Insurer B has a more diversified portfolio and may be able to better protect policyholders [½]

Other possible actions that the regulator could take include:

Pricing restrictions so that policyholders are protected from high prices [½]

Restrictions on rating factors to protect disadvantaged groups [½]

Regulating terms and conditions, e.g. claims definitions, so that policyholders receive the benefits they need [½]

Restrictions on the sales process, e.g. disclosure requirements so the policyholder is fully aware of what they are buying	[½]
Restrictions on underwriting, e.g. restricting the use of genetic tests	[½]
Restrictions on investments, e.g. limiting exposure to high risk assets	[½]
A requirement to treat customers fairly, e.g. in relation to premium reviews	[½]

[Marks available 7½, maximum 3]

(vi)

The independent expert's (IE) role is to give their independent view on whether the interest and benefits of policyholders are suitably protected if the transfer was to occur	[½]
The IE must be approved by the regulator in Country X	[½]
The IE's duty is to the appropriate body within the Country X concerned with approving the transfer	[½]
The IE is likely to consult with actuaries at a) Insurer A, b) the branch in Country Y, c) the regulatory in Country X, and d) the regulator in Country Y	[½]
A report will be written by the IE appointed	[½]

The IE will consider the likely impact that the transfer will have on:

The transferring policy holders from Insurer A	[½]
The remaining policyholders in Insurer A (if only part of the business portfolio is transferred)	[½]
The existing policyholders in the receiving insurer in Country Y	[½]

The IE is likely to be concerned with:

Policyholder benefits and benefit expectations	[½]
Security of policyholder benefits	[½]
Wider TCF issues	[½]
Would need to ensure the other regulators requirements are at least as protective as the current regulators	[½]

[Marks available 6, maximum 3]

(vii)

The criteria to choose a transfer method are likely to include the relative costs	[½]
And time required to make the transfer	[½]
And any regulatory requirements	[½]

Two common methods are Indemnity reinsurance	[½]
And Assumption reinsurance	[½]

Indemnity reinsurance:

One insurer reinsures its liabilities within another insurer - the global insurer may have an insurer in one of its branches in mind	[½]
The original issuer of the policy remains liable to the policyholders – hence no need to dissolve Insurer A	[½]
Requires regulatory approval - this may slow things down	[½]
Policyholder notice is not generally required - this would speed things up as no need to issue communications or respond to queries	[½]
Policyholders do not have the right to object - this would remove any legal disputes	[½]

Assumption reinsurance:

Involves transferring the actual policies from one insurer to another - this may cause issues with ease of administration systems between both insurers involved	[½]
This may also require the transfer of assets which may cause issues if transferring the current assets held (rather than in cash)	[½]
Generally requires the approval of policyholders - this may slow things down substantially as there is likely to be queries. There may also be issues in ensuring communications reach policy holders and in ensuring their response	[½]
If policyholders reject, this may take time to rectify, or it may prevent the transfer occurring in time	[½]
The insurer may choose the more common approach as regulatory familiarity with that method may speed up the time required	[½]
Overall indemnity reinsurance is likely to be more timely	[½]
<i>(Credit was given for any reasonable conclusion here)</i>	

[Marks available 8, maximum 4]

**[Total 34]**

*Most candidates scored reasonably well though relatively few candidates compared the complexity of the 2 products or that PMI underwriting may have exclusions whereas MME would likely not have as stringent underwriting.*

*Part (ii) was very well answered with most candidates providing a good range of points as to the likely profile of each insurer's business and demographic profile.*

*Part (iii) was generally well answered. However, few candidates discussed data issues, the potential effects of financial advisors competing on areas such as terms and conditions or the effects of new competitors entering the market, aggregation of risk or the possible introduction of state benefits.*

*Credit was given for examples of other relevant key risks not given in the marking schedule.*

*Part (iv) was generally well answered. As indicated in the question, the better candidates considered the risks identified in part (iii) and discussed ways of mitigating each of these. Credit was given for other relevant examples or risk mitigation not given in the marking schedule.*

*Part (v) was reasonably well answered. No marks were awarded for possible actions that a regulator might take but which were not relevant to the situation described in the question, such as:*

- Refusal to approve a transfer of liabilities between insurers*
- This action has not yet been sought by Insurer A so is not relevant*
- Criminal prosecutions*

*It does not appear that Insurer A has broken the law, therefore this option is not relevant.*

*Part (vi) was well answered with most candidates being able to give a reasonable description of the potential role of an Independent Expert.*

*Although the answer to part (vii) could be derived from the Core Reading not all candidates scored well on this part. Few candidates noted that Company C was based in a different country; hence the Independent Expert would need to ensure that that country's regulator's requirements were at least as protective as those of Country X's regulator. Candidates did not always provide a final assessment of which of the two main ways was likely to be preferable to company C or provide reasons for their choice.*

**Q2**

(i)

If this information was not gathered during upfront underwriting, then there is potential to improve reserving by better locating lives with higher and lower risk of claiming within the book of business - untangling historic risk margins used in pricing population segments [½]

The starting point for deriving assumptions for reserving purposes is best estimate Reserves for internal management accounts - this could give more clarity on expected claims in the future - which may allow the insurer to reinsure effectively [½]

Reserves for published accounts - margins may be incorporated - there may be additional clarity and precision on where margins are required in the business mix [½]

Reserves for solvency accounts - margins used will be appropriate to the regulation; however, better understanding of historic risk will improve precision of reserves - could potentially free capital for further investment [½]

The sick pay data would provide a greater understanding of how many illnesses there were [½]

And how long they last for and hence improve the estimation of: [½]

IBNR reserves by estimating the proportion of people that have recently fallen sick [½]

Claims in the deferred period reserves by estimating how many of these sicknesses would go on to complete the deferred period and become payments [½]

Claims in payment reserves by estimating how long the sicknesses would continue to last [½]

By analysing the data on drug prescriptions the insurer may be able to make better predictions for trends in claim rates [½]

Disability/Morbidity risk:

Those with both drug and above average sick days are more likely to claim [½]

Those with the drugs may have the risk factor but where this is not associated with an increase in sick pay data then those in the geographical area may be showing resilience [½]

With this information the insurer will have an improved understanding of the risk posed in each geographical region that policyholders reside [½]

Lapse risk:

The data may improve the lapse assumption used for reserving [½]

E.g. identifying lives who were charged a premium that is greater than the risk posed who live in area of lower than average sick absence [½]

[Marks available 8, maximum 3]

(ii)

Areas of concern:

The collection and use of new types of data

The data is publicly available by geographical regions [1/2]

The insurer will already have the postcode of the policy holder to administrate the policy [1/2]

No new data is being collected; the public data is being mapped [1/2]

Data by postcode is often used to understand risk so this may not constitute a new use of data [1/2]

The appropriateness of using the data would depend on how accurate, credible and up to date it was [1/2]

Ethics of using the data:

The chief actuary would be concerned that using data that was unethical or not in the public interest would lead to negative consequences for the insurer such as regulatory fines, reputational damage and loss of business [1/2]

The data is publicly available so it may be considered acceptable to consumers [1/2]

The use of the medical data can be used to better understand the risk posed during underwriting so it may be acceptable to consumers [1/2]

The insurer could make an announcement or undertake customer surveys to test acceptability [1/2]

The insurer could keep the use of this data under review with customer acceptability focus group research [1/2]

The level of cross-subsidy between policyholders could decline [1/2]

This could lead to less healthy policy holders being unable to find health and care insurance at an affordable cost" [1/2]

This may be an issue as healthy and less healthy lives are better found in the data. However, this is only on the existing business. [1/2]

It will therefore depend if the insurer uses the information to review premiums or in future pricing [1/2]

There may be issues with regulatory approval [1/2]

This could give rise to TCF issues [1/2]

E.g. under lack of fairness between guaranteed and reviewable premiums [1/2]

[Marks available 8½, maximum 4]

(iii)

Data:

The new data may be incorrect, incomplete or biased; this could invalidate the results of any assessment of trends or associations in the data [1/2]

E.g. some geographical areas may include homes for those in society who require care or are currently experiencing employment issues [1/2]

The data may not be helpful for self-employed people who may not contribute to absence record data if they are not entitled to those state benefits [1/2]

This information may have been gathered for other purposes such as government funding.

Consumers may not consent to it being used for this purpose [1/2]

However, the data being publicly available may negate this [1/2]

The postcode information on the policyholders may be out of date on long term policies, such that the current public data may not be representative of insured lives [1/2]

Data may be available for multiple years. The quality of data may have improved

over time [½]  
 There may be bias in missing fields. Checks will be required [½]  
 Some of the drugs from the CMO's lists may previously not have been prescribed or approved for use, there may need to be a historical mapping to prescribing data [½]

Mis-selling:

Less of a concern as only considering the existing book where the purchase has been made [½]  
 The provision of additional services to those who are considered higher risk is in the best interest of the policyholder so less likely to be an issue [½]

Data security:

There is a risk that this data could be lost, corrupted or stolen [½]  
 The insurer may need to use new systems of storing the extra data [½]  
 It will need to ensure that these are secure. [½]  
 Linking public data to existing data may be perceived to be snooping or watching policyholders unnecessarily and result in poor PR [½]  
 The geographic regions have a limiting factor of granularity. However, there may be issues where a drug is only prescribed for certain ages - increasing the granularity of the total dataset to an unacceptable level [½]

Legacy systems:

If the insurer has been selling this product for many years, there may be many tranches of data on different systems to navigate [½]  
 The policy data may not be easily matched to lapse and claims data at the policy level [½]  
 Matching to the public data will require postcode to map to the geographical regions, this may not be available in lapse and claims data [½]  
 The processing time of matching the data may be too long on existing systems to make the project manageable [½]  
 The cost to upgrade systems may make the project unattractive [½]  
 The administration to upgrade to enable data science to be applied may not be appealing to management [½]

Staff skills:

The insurer may not have staff with data scientist skills to develop the project [½]  
 The insurer may be able to hire data scientists if there was wider application of these approaches such as in pricing [½]  
 However, this may be expensive [½]

[Marks available 12½, maximum 5]

(iv)

An analysis of surplus would indicate the amount of surplus arising [½]  
 broken down into its component sources [½]  
 Thus enabling appropriate decisions to be made about the distribution of surplus [½]

[Marks available 1½, maximum 1]

(v)

Corrections:

The data science approach may have caused a cleaning of the historic existing dataset [½]

Changes to the model point groupings:

By mapping the policyholder, claims, and lapse data to the public data, the insurer should be able to improve the risk segmentation [1/2]

Changes to methodology:

The public data may show trends over time which the insurer can now take into consideration, if historically these factors helped predict risk [1/2]

When assumptions setting for the future, prior adjustments methods for historic data may have been altered given new insights [1/2]

Assumptions changes:

The incidence might correlate to prescribing and absence data [1/2]

The recovery rate might correlate to absence data [1/2]

The lapse rate might correlate to absence data [1/2]

In each case, the insurer may create more granular assumption based on the risk by geographic region [1]

These changes may lead to lower reserves and hence a surplus [1/2]

[Marks available 5, maximum 4]

(vi)

Without-profits business - 100% may be attributable to shareholders [1/2]

If the block of business is securitised can repay loans as surplus arises - to investors or to the reinsurer under the terms of the treaty [1/2]

Proprietary company - available capital can be augmented by a surplus [1/2]

Prevents the need in the future to raise amounts from shareholders or invested through subordinated loan stock [1/2]

Use to build the business, e.g. the surplus could be used to cover the new business strain of new policies (or passed on to future policyholders through lower premiums

Or improved product features) and so help to expand the business [1/2]

Or used to increase investment freedom and so improve expected investment return [1/2]

Or used to reduce the use of reinsurance and so retain more profit [1/2]

Or to buy blocks of business from other insurers [1/2]

These uses of the surplus may provide a high return on capital and so be preferable to paying out the surplus as a dividend [1/2]

The insurer may decide to retain the surplus given that it has arisen due to changes in reserves following the introduction of the new data source. It may turn out that the new methodology is less accurate and the surplus will be removed when the calculation is corrected at a later date [1/2]

May give a proportion of the surplus to the parent company [1/2]

May use to offset likely upcoming losses on a book of business [1/2]

[Marks available 6, maximum 4]

(vii)

Treating customers fairly:

The insurer needs to ensure that the customer understands the difference between guaranteed insurance contract and reviewable premiums at the outset [1/2]

Could undertake policyholder research through focus groups to understand

if policyholders or consumers would consider the change within their reasonable expectations	[½]
The insurers need to ensure the communications to the reviewable premium policyholders are clear and concise	[½]
The insurer could offer additional support and signpost the client to independent advice before deciding if the change should be accepted or not	[½]
The insurer could discuss the changes with its risk board to see if the potential poor PR is worth the potential net change of the increased premiums and lapses overall	[½]
Must be in accordance with the contract's clear explanation of how the premium from a policy could be varied going forward	[½]
Those who can more afford a premium increase are now known to pose less risk. Those with increased risk are less likely to afford the premium. Overall, the portfolio may be adequately priced - so without decreasing the guaranteed premiums but adjusting the reviewable premiums - the existing portfolio would become more profitable. Can the insurer justify this?	[½]
However, if the portfolio is not profitable - this may be seen as safeguarding existing policyholders	[½]
The information given suggests that it would be fair to reduce the premiums for the higher socio-economic groups	[½]
And / or increase the premiums for the lower socio-economic groups	[½]
However, the insurer should conduct further analysis to consider whether the differences in profitability reflect the differences in risk taken on	[½]
This may require the consideration of different measures of profit (e.g. NPV, IRR)	[½]
The bigger benefit size and the guaranteed nature of the premiums of the higher socio-economic groups suggests that it would be fair for the insurer to have a higher net present value of profit as compensation for the higher risk	[½]
So after further analysis, the insurer may conclude to take no further action as the profitability differences are fair in relation to the differences in risk being taken on	[½]
The insurer needs to consider any element of cross-subsidising, e.g. charging more to larger policies to help cover expenses of smaller policies. If this was reversed, the insurer would need to consider if this was fair to smaller policies	[½]
The insurer may not take any premium review action, in order to be in line with TCF	[½]
Effectively the option to increase premium or lapse may be to the detriment of the consumer	[½]
The insurer may provide an alternative option of reducing cover e.g. extending the waiting period, reducing the replacement ratio, or making the occupational terms less generous	[½]
The insurer should take action to ensure the policyholder has adequate options to lapse without penalties	[½]
This may also include ensuring that commission clawback terms are not enforced	[½]
The health insurer may decide to take no action other than to monitor the business mix of the existing business and new business such that subsidies are not biased to an unprofitable level	[½]

[Marks available 11, maximum 6]

**[Total 27]**

*Part (i) was reasonably answered. The better prepared candidates discussed how the information might be used to improve best estimate assumptions, including morbidity and lapse risk.*

Part (ii) required candidates to consider the ethical concerns of using the data, whether the public and the regulator would find its use to be acceptable and whether it was in the public interest. The better prepared candidates considered each of these and provided relevant comments. Not all candidates noted that the data was already publicly available by geographical region and no new data was being collected so the use of the data may be acceptable to consumers. The acceptability of using the data could be tested through customer surveys.

Part (iii) was generally reasonably answered with candidates providing a wide range of potential operating challenges. Most candidates mentioned issues related to data storage and security, how the data might be linked to the insurer's data, the possible need to upgrade systems and the time required and cost and the potential need to hire staff with requisite data science skills. Fewer candidates discussed issues such as:

- whether the data might be incorrect, incomplete or biased.
- the quality may have changed over the years.
- that the insurer may have many tranches of data on different systems to link up.

Part (iv) was very well answered.

Parts (v) was not well answered. The scenario was that following the implementation of using the publicly available data a surplus had arisen and the question asked for potential sources of this surplus. Several candidates only wrote down a generic list of potential sources of surplus, and not on how the new approach may have caused the actual surplus. Many of these were not relevant to the scenario described and hence such candidates did not score highly.

Part (vi) was well answered with most candidates providing a wide list of potential uses of the surplus with reasons for their choices.

Part (vii) was not well answered with few candidates considering the effects the increased understanding of risk profiles might affect customers. It would be necessary to ensure that customers understood the difference between reviewable and guaranteed premiums and if the changes might be within their reasonable expectations. Other considerations would include:

- considering any cross-subsidisation between customers and the effects if this is changed (e.g. would this be fair on smaller policies);
- how changing premiums might affect profitability and whether that would be fair; and
- ensuring that customers had the opportunity to reduce cover or lapse without penalty if reviewable premiums were increased.

### Q3

(i)

Inconsistent premium collection may make it difficult to manage the expense base [½]

If insufficient premiums are sold the expense loadings may not cover the fixed expenses [½]

Microinsurance implies low premiums so this will need substantial scale to be commercially viable [½]

There may be little data available to price premiums [½]  
 Individual sales and the use of field agents will mean that distribution costs need to be carefully considered [½]  
 If agents earn commission based on premium received, it may be difficult to estimate expected incomes [½]  
 There is a risk that gaps in cover lead to poor customer experience if a claim event occurs when a customer has not paid a premium [½]  
 It is not clear what mechanism will be used to collect premium. Customers may not have bank accounts to allow for deduction of premiums [½]  
 If this is the case, repeat premium payment may be poor and lapse rates may be high leading to poor customer experience [½]  
 And an inability to recoup acquisition costs [½]  
 More policyholders may choose to pause their premium payments than expected [½]  
 The ability to stop and restart premium payments creates extra administration costs, so there is a risk of higher than expected expenses. [½]  
*(Maximum 5 marks for premium risks)*

Anti-selection will be a key risk that will need to be considered [½]  
 By allowing gaps in cover without a corresponding waiting period, there is a risk that the policy will be activated when a person expects to be hospitalised [½]  
 Selective lapses may be an issue as there is no penalty for gaps in insurance cover [½]  
 There may be concerns with fraud [½]  
 Claims may be difficult to validate [½]  
 The customer base may not be able to submit the necessary requirements [½]  
 The benefit does not appear to be related to the severity of hospitalisation [½]  
 There is a chance of windfall payments if the lump sum benefit is substantially higher than the cost of hospitalisation and/or the potential income loss due to hospitalisation [½]  
 Business mix may differ compared to expected leading to higher claims. For example:  
     Age  
     Gender  
     Health status  
     Occupation  
     Location [½]  
*(½ mark for 2 examples, maximum 1 mark for 4 examples)*

Are there factors that could influence hospitalisation incidence rates and invalidate claim assumptions? [½]  
 Claims rates could be very low which may raise risks relating to Treating Customers Fairly [½]  
 Or may lead to regulator intervention [½]  
 There may be more claims than expected [½]  
 Hospital stays may be longer than expected, e.g. there is a moral hazard that policyholders may pressurise hospitals to keep them in for at least 3 days or may leave hospital after 3 days and then returning shortly afterwards to claim again [½]  
*(Maximum 5 marks for claims risks)*

[Marks available 13, maximum 7]

(ii)  
 The company can ensure that premium rates are reviewable [½]  
 and benefit terms are reviewable [½]

This would ensure that the company has the ability to react to unfavourable experience	
The company could consider a group product structure	[½]
This could assist with premium collection if the group is responsible for collecting premium on behalf of individuals	[½]
This could assist with acquisition costs given the expected low premiums associated with microinsurance products	[½]
The terms and conditions should be set out clearly and be easily understood	[½]
The terms of the product might be set to appeal to the anticipated target market to try to obtain the business mix expected	[½]
The company could require a waiting period if the gap in cover exceeds a certain period of time, for example 90 or 180 days	[½]
The company could introduce cash back features or other loyalty-based rewards to drive consistent premium payment	[½]
The company could partner with private or public hospitals to identify claims processes which mitigate fraud risk	[½]
And to ease the claim process for customers	[½]
The company could introduce maximum (and minimum) ages for enrolment	[½]
And for provision of insurance cover	[½]
The company could review the term of the cover	[½]
And consider whether an annual product would eliminate some of the risks identified	[½]
The benefit could be structured as a payment per night as this would mean that the benefit may be more closely linked to the need	[½]
The definition of hospital stay could be adjusted if the claims ratio is low	[½]
For example, based on a minimum of 1 or 2 nights stay	[½]
Could limit the number of claims made per month to reduce the risk of moral hazard.	[½]
Selection risk could be reduced by requiring a statement of good health when taking out a policy or re-starting premiums	[½]
	[Marks available 10, maximum 8]

(iii)

IBNR (Incurred but not reported)	[½]
UPR (Unexpired premium reserve)	[½]
URR (Unexpired risk reserve)	[½]
RBNS (Reported but not settled)	[½]
Global reserves such as catastrophe reserves or equalisation reserves	[½]
	[Marks available 2½, maximum 2]

(iv)

IBNR:	
Need claims data	[½]
Including claims delays	[½]
If claims have been light, then may need to estimate based on premium data	[½]
May need assistance from reinsurer to estimate delays	[½]
UPR:	
Need premium and exposure data	[½]
URR:	
This would make use of claims data listed above	[½]

RBNS:

Need to know the number of outstanding claims	[½]
And whether the claimant has completed 3 days in hospital or has been in hospital for less than 3 days but is yet to leave	[½]

Catastrophe reserves/equalisation reserves:

Data on past claims	[½]
Data on average claims experience	[½]

[Marks available 5, maximum 2]

(v)

Data needed

Operational investigations:

Customer service queries	[½]
Claims process audit including	[½]
Declined claims	[½]
Claim turnaround time	[½]
Percentage of claims with all documents submitted	[½]
Whether claims are submitted but customers do not have cover	[½]
Complaints	[½]
Need to know the premium amount	[½]
The number of policyholders covered	[½]
And details of when they have stopped and restarted premium payments	[½]

Lapse investigations:

Percentage lapse during the waiting period	[½]
Duration of policyholders	[½]

New business mix and volume investigations:

Age	[½]
Gender	[½]
Location	[½]
Occupation	[½]
Other rating factors considered during pricing	[½]
Survey views of salespeople including consumer interest, understanding and conversion rates	[½]

These investigations will highlight:

Customer understanding of the product and cover provided	[½]
Any mis-selling	[½]
Areas where process improvements could improve the customer experience	[½]
Whether the product meet customer needs (e.g. are persistency rates high / do customers return	[½]
Take-up rates versus target market expectations	[½]
Customer profile versus expectation	[½]
This will also show if the distribution process failing to meet particular groups (by age, gender, location etc)	[½]
Are claims made meeting needs	[½]
Do products represent good value for money	[½]
Reason for claims (accident versus illness for example) versus assumptions	[½]

Length of hospital stays and whether the 3-night minimum is reached	[½]
How this compares to hospital data in country	[½]
Level of benefit versus	[½]
Costs of hospitalisation	[½]
Income lost due to hospitalisation	[½]
Additional outpatient / medical costs incurred	[½]

[Marks available 17, maximum 8]

(vi)

Increase the sum assured:

This will increase the claim ratio by increasing the claim amount	[½]
Customers will still need to be hospitalised for 3 days so this will not impact claim incidence	[½]
Policyholders may value the higher benefit amount and think the policy therefore offers better value for money	[½]
If the benefit level has been set at a low level, then it may not have met the customer's needs and so the higher proposed benefit would be more appropriate	[½]
The company may face increased fraud risk if there is a mismatch between the customer need and the benefit and/or the benefit provides a windfall payment	[½]
As the company has experience on claim incidence rates, increasing the sum assured may provide a mechanism for increasing the claim ratio with a low level of uncertainty	[½]

Amend the hospital definition:

This will enable claim payments to a greater number of policyholders	[½]
This may be welcomed by customers	[½]
Shorter stays in hospital would be associated with smaller costs for the policyholder and so now the benefit may be too big to meet their needs in some cases possibly leading to windfall payments, depending on how the benefits paid are defined	[½]
The company may not have or only have limited data to price the benefit extension	[½]
The additional claims would lead to greater claims expenses for the insurer	[½]
Given the microinsurance often targets a social good, expanding the benefit to more people may meet company objectives	[½]

Premium reduction:

This will increase the claim ratio by increasing the value of claims relative to premiums received	[½]
This will make the product more affordable. Customers from lower income groups may be more likely to take out the product as a result	[½]
This could also lead to an increase in the claim ratio if these customers come from a higher risk segment given occupation and/or income levels	[½]
Improving affordability helps the product meet the social benefit aim of the contract	[½]
As the product is a microinsurance product, the premium may already be at a low level. Reducing premium levels further may compromise the ability of the product to support operational expenses	[½]
If field agents are remunerated via commission, reducing the premium will require commission models to be revisited	[½]
However, this may lead to higher sales which would help the insurer to spread overhead and development costs over a larger number of policies and so may reduce per policy expenses	[½]
The company may have limited or no data to price the benefit extension	[½]

Education & awareness programmes / Process improvement:

These actions will aim to increase the number of claims submitted and therefore increase the claims ratio [1/2]

These programmes will enhance the customer experience. Customers may submit more claims if they are aware of the benefits and an easy / automatic claims process is in place [1/2]

From the company perspective, the company will aim to ensure that customers understand the benefit and are able to claim easily [1/2]

This may increase communication costs or require investment in processes [1/2]

[Marks available 12, maximum 8]

(vii)

Company:

The deductible/co-insurance payment could act as a deterrent in the event of moral hazard or fraud [1/2]

Data to price the addition might not be readily available [1/2]

Administering a deductible or co-insurance payment may be problematic given the likely low benefit levels [1/2]

And will increase the cost of claim administration [1/2]

A net benefit could be paid to reduce transaction costs, but this may not have the intended impact of the deductible/coinsurance payment [1/2]

It is unlikely to be viable from the insurer's perspective [1/2]

Customer:

Adding an outpatient benefit makes the contract more comprehensive and so better at meeting customer's needs [1/2]

This might help to increase sales enabling the insurer to spread its costs over more policies [1/2]

However, the premium is likely to increase, which may make the contract unaffordable and will reduce sales [1/2]

This may add a level of complexity to the product and may not be well understood. [1/2]

Adding an outpatient benefit may reduce complaints as the policyholder is covered to some extent even if they are not hospitalised for 3 days [1/2]

If the benefit level is low, as is likely with microinsurance, this will reduce the benefit level further which will reduce customer relevance [1/2]

Given the target market, customers may not have money available for coinsurance payments [1/2]

Introducing a deductible may reduce the ability of the contract to meet its social benefit aim [1/2]

It is unlikely to be viable from the customer's perspective [1/2]

[Marks available 7, maximum 4]

**[Total 39]**

*Part (i) was generally well answered with candidates providing a wide range of key risks. Whilst many mentioned risks, such as having an inconsistent stream of premiums and hence difficulties in managing expenses, potential lack of data for pricing, gaps in cover potentially leading to poor customer experience, difficulty validating claims and the potential for windfall payments, fewer mentioned the need for a substantial amount of*

*business required for the product to be commercially viable, given the low premium rates for microinsurance, and risks such as higher than expected expenses if customers started and stopped premium payments, potentially low claim rates leading to TCF concerns or regulator intervention.*

*Part (ii) was less well answered. Not all candidates mentioned that the question referred to possible design features that could be used to mitigate risks; some candidates included ways of mitigating risks that were not product features. Few candidates mentioned having a group product structure to aid premium collection, introducing a waiting period if the gap in cover exceeded a certain time, considering making the product an annual one or changing the definition of a hospital stay or limiting the number of claims per month to reduce the risk of moral hazard.*

*Whilst part (iii) was well answered, in part (iv) surprisingly fewer candidates could provide the data requirements for each reserve identified in part (iii).*

*Part (v) was reasonably well answered. Relatively few candidates mentioned data items such as customer service queries and complaints, duration of policyholders or surveying views of salespeople. The better candidates outlined the issues the investigation would investigate such as whether the product meet customer needs, areas where process improvements could be made, take up rates, income lost during hospitalisation.*

*Part (vi) required a discussion of whether the proposed actions would allow the product to better meet its social objective and treat customers fairly and, in particular, raise claim ratios. Whilst this part was reasonably well answered, not all candidates discussed how the various options might raise claim ratios*

*Few candidates noted that as the insurer has experience on claim incident rates, increasing the sum assured would provide a mechanism for increasing the claim ratio with a low level of uncertainty or that there may be little data to price decreasing the hospital stay requirement.*

*Similarly, there was little mention that premium reductions may lead to more customers from higher risk populations or that as premiums were already low reducing them further may mean expenses would not be covered unless there were higher sale.*

*Part (vii) was not well answered. Few candidates mentioned that having deductibles/co-payments might reduce moral hazard or fraud but would reduce benefit levels which are likely to already be low and lead to higher claim administration costs. Similarly, there as little mention of that the outpatient benefit may lead to fewer complaints as cover is provided to some extent even if the customer is not hospitalised for 3 days or that the target market may not have money available to meet any co-payments.*

**[Paper Total 100]**

**END OF EXAMINERS' REPORT**



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