EXAMINERS' REPORT

November 2018 examinations

Subject F103 — *General Insurance*
Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principle Examiner. General comments are provided on the performance of candidates on each question. The solutions provided are an indication of the points sought by the examiners, and should not be taken as model solutions.

QUESTION 1

i. Claim 1:

The maximum recovery will be made when the maximum number of lines of cover are used.
If all 4 lines are used the insurer will retain:
$(0.8 \times \$80m)/5 = \$12.8m$ of the EML
As this is between the maximum and minimum retention limits it is acceptable.
Hence the maximum recovery is:
$0.8 \times \$100m (4/5) = \$64m$

The minimum recovery will be made when the insurer retains the maximum amount possible, i.e. $40m of the EML.
Hence the minimum recovery is:
$0.8 \times \$100m \times ((64 - 40)/64) = \$30m$

Claim 2:

The maximum recovery will be made when the maximum number of lines of cover are used.
If all 4 lines are used the insurer will retain:
$(0.8 \times \$40m)/5 = \$6.4m$ of the EML
As this is below the minimum retention the insurer will need to retain $8m.
Hence the maximum recovery is:
$0.8 \times \$20m ((32 - 8)/32) = \$12m$

The minimum recovery will be made when the insurer retains the maximum amount possible, which in this case is $0.8 \times \$40m = \$32m$ of the EML (which is below the maximum retention limit).
Hence the surplus reinsurance is not used and thus no surplus recovery is made.

ii. The maximum EML for which all lines of surplus cover could be used is based on the maximum surplus retention limit ($40m).
$\text{Max. EML} = 5 \times \$40m / 0.8$
$= \$250m$

The minimum EML for which all lines of surplus cover could be used is based on the minimum surplus retention level ($8m).
$\text{Min EML} = 5 \times \$8m / 0.8$
$= \$50m$

This question was not particularly difficult, and was answered well by many candidates. The proportional split is generally determined using the EML, however, as the question did not specify this credit was given to candidates who did the split based on Sum Insured – provided they stated this as an assumption. Some candidates lost marks due to careless slips, not showing

enough working in places, working not being clearly set out (or illegible in handwritten answers) or omitting currency or units in their answers.

QUESTION 2

i. The burning cost is calculated as:

$$BCP = \left(\sum Claims\right) / Total\ Exposed\ to\ Risk$$

For the purpose of risk XL pricing, data on individual losses should be available. Aggregated data will not allow us to calculate the expected recovery on each loss.

We first need to trend the individual losses to get them in today's terms and develop them to ultimate. We also need to make an adjustment for IBNR claims.

The steps applied to the trended and developed individual losses are:

1. Apply the reinsurance terms to each of the trended and developed historical losses to calculate the reinsurance recovery on each loss.

2. Aggregate the recoveries by underwriting year or accident year depending on whether the basis of reinsurance cover is risks-attaching or losses-occurring, respectively.

3. Divide each year's recoveries by the corresponding exposure measure to get a burning cost for each year, (where the exposure measure is also trended to today's terms).

The most common exposure measure in reinsurance pricing is premium (earned or written premium according to the basis of cover), net of acquisition costs. However, this may not be the most accurate exposure measure due to rate changes over time. For example, if the premium rate as a percentage of sum insured has reduced from one year to the next, this will result in the loss ratio as a percentage of premium increasing, when in fact the claims experience as a percentage of true risk exposure may not have changed.

Thus, if we use premium as the exposure measure, we need information about historical rate changes plus an estimate of rate changes for the period of cover so that we can adjust all the historical premiums to be "as-if" they are based on rates for the contract year being priced.

In addition, if we apply the rates for the underlying direct business to an exposure base that is affected by inflation, then we expect premiums to change to the same extent as the exposure base without any change in the real exposure to risk.

It is advisable to examine the individual years' exposure-adjusted losses to the layer / rates, in case there are upward or downward trends still remaining. These may be real (so we need to allow for them in our final selection of expected loss cost) or they may indicate that the inflation adjustment (say) used is inappropriate.

ii. A stop loss contract is priced using similar methods to those for other types of excess of loss reinsurance, but where the excess point and upper limit can be expressed as a loss ratio rather than a monetary amount. Stop loss will respond to the aggregate of losses in the year (rather than just, say, individual large losses or large catastrophic losses).

iii. A view of the loss ratio can be derived from historical experience, suitably adjusted. The reinsurer will need to assess the likely overall loss ratio for the account. The steps in doing this are similar to the aggregate burning cost approach. For each year of historical data, claims (aggregated by year) are developed to ultimate and trended to today's terms. Exposure for each year is also trended to today's terms. This allows us to calculate a loss ratio for each year in our historical data.

It is important to fit a distribution to the loss ratios in order to assess the volatility of the loss ratio and hence the likelihood (and extent) of large aggregate losses. The average on-level loss ratio may be below the stop loss excess point, but this does not guarantee that the loss ratio will be below the excess point in all years.

This may be taken a step further by modelling different types of loss separately to better capture the overall variability – for example, by splitting out attritional, large and catastrophe losses (or attritional and large/catastrophe).

- The catastrophe losses could come from a proprietary model (where applicable).
- The large losses could come from a frequency-severity approach.
- The attritional losses could be assessed using past historical attritional experience, suitably adjusted.

It is also important to consider:

- Meeting risk transfer criteria, i.e. any regulatory minimum transfer of risk.
- The particular terms of the stop loss in question.
- Any relevant reinsurance arrangements in place.

In part (i) the majority of candidates explained in detail how to calculate the burning cost risk premium rather than outlining the steps as asked in the question. Candidates also generally tailored their answers towards an insurance company rather than a reinsurer as specified in the question.

Part (ii) was generally well answered by most candidates.

Part (iii) was generally poorly answered, perhaps resulting from many having spent too much time on part (ii). Many candidates missed the second part of the question and did not outline the important considerations for deriving the stop loss risk premium.

QUESTION 3

i.   The main uses of reinsurance data to the insurer are:

- Preparing statutory returns
- Analysing reinsurance performance
- Monitoring outstanding reinsurance recoveries
- Management information
- To monitor the level of remaining reinsurance cover
- To assist with ongoing risk management
- Establishing reserves for recoverable reinsurance
- Monitoring delays in reinsurance recoveries
- Product pricing, which needs to factor in the cost of reinsurance
- Capital modelling

ii. Possible analyses include:

- Analyse reinsurance loss ratios by treaty/layer.
- Determine the utility of layers and the number of reinstatements needed.
- Determine how effective reinsurance is on reducing risk exposures.
- Compare the expected recoveries from the reinsurer to the price paid for the cover in order to determine whether the reinsurance is priced cheaply/expensively.
- Analyse the impact reinsurance has on capital relief/solvency.
- Analyse reinsurance recovery timelines/delays.
- Analyse the impact of reinsurance on company profitability.

iii. The main items of reinsurance risk are:

- Inadequate appreciation of the scale of the insurance risks being assumed by the insurer and hence of its reinsurance needs.
- As a result the insurer may not purchase:
  - ➢ The right amount of reinsurance; and/or
  - ➢ The right type(s) of reinsurance.
- Appropriate reinsurance may not be available when needed.
- There may be uncertainty relating to the cost of the desired reinsurance.
- It may be difficult to assess whether available reinsurance represents good value for money.
- Whether catastrophe reinsurance will prove satisfactory with regard to such features as the size of the excess point, the reinstatement provisions and the upper limit of cover.
- There is the potential for reinsurers to default.
  - ➢ This is particularly so following catastrophes or poor claims experience for the industry as a whole.
  - ➢ In such circumstances finding replacement cover may also prove difficult.

- Failure to comprehend the true coverage/limits of a reinsurance arrangement and therefore being exposed to risk in areas that were thought to be reinsured.

In part (i) many candidates got confused with using external reinsurance data to supplement internal data, which was not relevant to the question.

Part (ii) was generally well answered.

In part (iii) candidates generally struggled to generate a sufficient number of ideas.

QUESTION 4

i. Funded accounting is a method of accounting whereby premiums, claims and associated expenses are related to the underwriting year in which the policies start. The recognition of any underwriting profit is deferred until a subsequent accounting period, but provision is made for losses as soon as they are foreseen.

It is used where the underwriting year is of fundamental importance, for example:

- at Lloyd's (determines who is on risk);
- for reinsurance contracts that operate on a policies incepting basis because for some classes considerably more information is available after three years compared with after only the first year regarding premium payment, claims settlement and making reinsurance recoveries;
- marine and aviation insurance; and
- non-proportional reinsurance.

ii. The Accident Year Revenue account is based on earned premiums, claims and expenses incurred rather than amounts received and paid.

Earned premiums (gross of DAC) = Written premiums – UPR c/f + UPR b/f
= R120m – ½ × 120m + ½ × 100m = R110m

Claims outstanding on an Underwriting Year basis includes provision for all claims related to business written in the year, whether claims have occurred or not, hence some adjustments are necessary for calculating outstanding claims for Accident Year accounting.

Outstanding claims b/f (Accident Year basis) = claims not reported or settled by Dec 2016 i.r.o. accidents in 2016. For policies written in 2016 (assumed to be written mid-year) accidents occurring in 2016 are assumed to occur 3 months after policy inception (as risk is even over the policy year), and 50% of claims arising are reported and settled within 3 months (i.e. by Dec 2016), while 50% remain outstanding.

Hence Claims Outstanding b/f = ½ × (80% of R100m) × 50% = R20m

This is an approximation of ½ × R80m × $\int_0^1 t.dt$ where increasing function "t" relates to the proportion of claims outstanding at the end of the accident year for accidents occurring in 2016 (i.e. nil claims outstanding for claims occurring immediately after policy issue, and 100% claims outstanding for claims occurring at year-end). This assumes that the rate of reporting and settlement is uniform over the six month period following an accident.

Similarly, Claims Outstanding c/f = ½ × (80% of R120m) × 50% = R24m

Claims Incurred = Claims Paid + Claims Outstanding c/f – Claims Outstanding b/f
= R60m (i.r.o. 2016 claims) + R24m (i.r.o. 2017 claims) + R24m – R20m.

DAC b/f = ½ × 5 = 2.5
DAC c/f = ½ × 6 = 3

Hence the Revenue Account on an Accident Year basis for 2017 is:

		R millions
Premiums Earned (gross od DAC)		110
Premiums written	120	
+ UPR b/f	+50	
- UPR c/f	-60	
Claims Incurred		(88)
Claims paid	84	
- Claims outstanding b/f	-20	
+ Claims outstanding c/f	+24	
Commission paid		(6)
Increase in DAC		0.5
- DAC b/f	-2.5	
+ DAC c/f	+3	
Other Expenses		(6)
Underwriting profit		10.5

iii. Personal accident insurance provides a fixed pre-defined benefit when the insured suffers a specific injury e.g. the loss of a limb or other specified injury, or on accidental death.

As benefits are not linked to inflation, they can be best matched by assets that provide fixed returns e.g. conventional instruments.

Given the very short-tail nature of claims in this case, fixed-interest money market instruments of up to 6 months should be adequate for matching liabilities.

© Actuarial Society of South Africa

Index-linked bonds are not a suitable match for the claim liabilities due to the real nature of these assets.

As bonds typically have maturity dates extending beyond a year, bonds (whether conventional or index-linked) would expose the insurer to a term-mismatch.

Some of the insurer's liabilities (relating to its expenses) will be real in nature, and these could be matched by index-linked bonds.

The extent to which the insurer can adopt a mismatched position depends on its solvency position. If the insurer is strongly solvent, then there may be scope to invest most or all assets in index-linked bonds if this is done to maximise returns.

Overall this question was not answered well

Part (i) was bookwork, and was generally well answered.

There was a wide spread of marks for part (ii), with a number of candidates scoring full (or near full) marks but a larger number scoring no (or close to no) marks for this part of the question. A large number of candidates did not appear to appreciate that claims outstanding in underwriting year accounts represents something different from claims outstanding in accident year accounts, and proceeded to use the claims outstanding given in the question for the accident year accounts. Many of those who tried to make adjustments did so incorrectly.

Part (iii) was generally well answered, however, a number of candidates missed the need to match real expenses and the ability to mismatch depending on the solvency position.

QUESTION 5

i.   Advantages:

- This is a simple and quick approach which requires very little effort.
- The formula may produce reasonable results if the insurer's claims run-off is similar to the market average and there are no distortions in the data.
- The IBNR is related to the level of earned premium and outstanding reported claims reserve to some extent. A change in either of these should generally result in a change in IBNR which the formula allows for.
- The use of the maximum of two calculations provides additional prudence which might be justified given the simplicity of the formula.
- It is easy to verify that the formula has been correctly applied due to its simplicity.
- Limited information is needed to perform the calculation compared to more complicated methods.

- IBNR should be stable between years provided there are no significant changes to the business.
- Formula should work better for short-tailed business where the IBNR is a small proportion of the total claims reserves.
- For immaterial classes a more complicated approach may not be justified.

Disadvantages:

- If there is a catastrophe or large claim then the formula will result in an increase in IBNR even though the majority of the claim(s) may have been reported.
- The formula may not provide reasonable results if the insurer's run-off patterns are materially different to the market average (on which the percentages in the formula were based).
- The formula does not adequately distinguish between classes of business which generally have different reporting delays and thus should have different levels of IBNR.
- The formula does not allow for the use of actuarial judgement which may be necessary in light of changes to the internal or external environment, distortions in the data etc. which may affect the IBNR.
- The formula does not allow for diversification between classes of business which will reduce the overall level of IBNR.
- The formula depends on the level of margin in the premium rates which may not be related to the level of IBNR.

ii. Key considerations when using the Chain Ladder method:

Suitability of data:

- The Chain Ladder method (CL) requires that there is sufficient data to form credible, consistent and homogenous reserving classes.
- This is likely to be the case for Motor and Property which form the majority of your client's book, but will not be the case for Marine where re   serving will need to be based on other methods.
- The historical development of each cohort should show a similar pattern of development.
- The lowering of underwriting standards for the Accident and Health class will likely imply that the mix of claim types is not consistent. This could be an issue to the extent that different claim types have different claims run-off patterns.
- All data used in the application of the Chain Ladder method should be complete and accurate. This can be verified by reconciling the data to an independent source, e.g. financial accounts.
- You will need to consider how data will be grouped by territory/currency/class of business.
- You will need to decide whether quarterly/semi-annual/annual claim cohorts and development periods are used.
- Should aim to use accident year claim cohorts since we are calculating an IBNR for an insurer.

Seasonality:

- You will need to consider if there is any seasonality in the claims data for each class of business and whether this will need to be allowed for.
- This will likely be the case for Motor and Property due to hail storms typically occurring in the last 3 months of the year.
- Care needs to be taken when using quarterly claims triangles due to the possible occurrence of seasonality in the data.

Large and catastrophic claims:

- The claims development of catastrophes and large claims will likely differ from that experienced for attritional claims.
- You will need to decide on how to treat large and catastrophic claims, minimising the distortion these claims may have on the attritional IBNR, whilst ensuring that they are adequately reserved for.
- An additional IBNR (i.e. not resulting from the CL method) will need to be held for the hail storm occurring two days before cut-off since the majority of these claims will not be included in the claims data.

Paid versus incurred modelling:

- You will need to consider claim projections to ultimate using both paid and incurred claims data. The use of judgement will be needed when deciding on which projections are most suitable.
- For early development periods the paid claims data can be very sparse and so unreliable, thus incurred claims projection may be more suitable
- The release of case estimate margins in the last year will impact the latest diagonal of the incurred claims triangle. This will need to be adjusted for in the data as similar releases are not expected to occur in the future. Alternatively, more reliance can be placed on the Chain Ladder applied to paid claims data.

Allowance for reinsurance:

- Expected reinsurance recoveries will need to be allowed for.
- Using the CL to project reinsurance recoveries or projecting a net of reinsurance claims triangle assumes that the reinsurance structure remains stable. This is not the case and the CL will likely not appropriately allow for reinsurance.
- A suitable approach to calculate the reinsurers' share of the IBNR would be to use broad brush techniques e.g. gross to net factors.

Other considerations:

- Volatile inflation means that the inflation adjusted CL may need to be used. This depends on having a suitable inflation index available.
- You should consider using the inflation-adjusted CL method to deal with the volatile level of inflation.

- You will need to consider an appropriate allowance for salvages & recoveries and for direct and indirect claims handling expenses.
- You will need to convert claims to your clients country's currency. Given the weakening exchange rate reserving will likely need to be done in original currency, provided claims triangles have sufficient data to be credible, and then converted at the latest exchange rate to your client's home currency.
- The CL is particularly sensitive to data in the latest cohort, whilst the latter development factors are based on less information.
- You should apply the principle of proportionality in terms of the amount of time and effort spent calculating the IBNR.
- You will need to consider if the CL assumptions hold.
- You should consider the use of external benchmarks when calculating the IBNR for the Marine class where there is limited data.

iii. Another generally accepted method is the Expected Loss Ratio method:

- Applies an assumed loss ratio to a measure of exposure, typically premium, to estimate the level of ultimate claims.
- This method could be used where there is insufficient or anomalous data, for example on the Marine class of business.

iv. Possible implications:

- Higher reserves will delay the emergence of profit, the true profit is not directly affected by the size of the reserves, though there may be indirect effects, e.g. less investment income due to a more conservative investment strategy.
- Higher claims reserves will reduce solvency due to a lower level of capital available to cover the capital requirements.
- A lower level of solvency implies that there is less capital available for investment or to sustain premium growth. The regulator may intervene if the solvency reduces to below the minimum requirement. If the solvency level is comfortably above the minimum requirement then there will likely not be any regulatory intervention.
- A comparison of the claims reserves under the new approach compared to the current approach should be done over multiple years to better understand the possible implications of the new approach. It may be the case that the current approach produces higher claims reserves in other years.
- If the regulatory basis is used for tax calculations then higher reserves will reduce the amount of tax payable.
- The impact on the income statement depends on whether the opening values are restated based on generally accepted actuarial principles.
- More time/effort/expertise will be required to calculate the IBNR.
- The IBNR will likely be more accurate which may mean that certain stakeholders e.g. policyholders, credit rating agencies, regulatory have more confidence in the company's financial results.

In part (i) the candidates who did well were those who considered both aspects of the formula, i.e. outstanding reported claims and earned premium, in addition to practical

aspects. In order to score well candidates needed to think of specific instances where the formula did not provide a reasonable IBNR.

Part (ii) was generally well answered. In order to score well candidates needed to discuss a wide range of considerations with reference to the information given in the question. Candidates also needed to provide a clear justification for each key consideration provided.

In part (iii) marks were awarded for any reserving methodology applicable to a class of business covered in the question. A number of candidates did not provide actual examples from the question of a class of business where their selected methodology could be applied.

Part (iv) was not well answered. Marks were awarded for implications, besides the higher IBNR, of using generally accepted actuarial principles to estimate the IBNR. For example, the need of actuaries to perform the calculations and the additional cost and complexity of using generally accepted actuarial principles.

QUESTION 6

i. Persistency is a measure of the probability that a policy will remain in force at renewal, rather than lapse.

ii. Advantages:

  - The insurer should be able to attract more business, which over time has the potential to become profitable. In order for profitability, the company will need to be earning a margin on each policy and the number of policies will need to be large enough to cover fixed expenses. This strategy will first deal with getting enough policies onto the books.
  - Having more motor policies will open the door for cross-selling to the household book. The household premiums can be offered at a discount due to the expense saving, allowing premiums to be more competitive while still being profitable. Alternatively, the company may leave household premiums at normal levels, allowing the insurer to recoup some costs of selling the motor policies at low premiums, initially.

Disadvantages:

  - Policyholders paying low premiums in early years may switch insurers after a few years when premiums start going up. This will result in the loss not being recovered. Such moves may be selective in nature, leaving the insurer with a poorer risk pool.
  - Policyholders may realise what is happening, potentially resulting in reputational risk as policyholders may feel they are being penalised for being loyal.

- Competitors may retaliate with a similar strategy, resulting in all insurers in the industry writing loss-making business on policies at short durations, with policyholders regularly switching between insurers in order to get lower premiums. Over time this may result in the insurance industry being unsustainable.
- The strategy will eat away at the capital of the insurer, especially until it has managed to increase the average duration of policies on the books. In the early stages of the strategy, there will not be enough loyal policyholders to subsidise the newer policyholders. Furthermore, the low premium rates may attract large volumes of loss-making business, exacerbating the capital depletion.
- The strategy may result in the insurer losing focus on innovation that genuinely separates it from competitors. In the long-run, if competitors retaliate in the price war, the company may lose business to more innovative insurers.

iii. Risk-based capital is the assessment of the capital requirement for a general insurer by considering the risk profile of the insurance business written and of any other operations. Regulation around the world, including SAM in South Africa and Solvency II in the EU, are moving toward a risk-based regime, where insurers' capital requirements are dependent on the risk inherent in their business's operation.

iv. Effect on free capital:

- If the new business premium is at such a low level as to be loss-making on a per-policy basis, then the assets of the company will be used up to cover the losses in the early stages of the policies before premiums have increased enough to be profit making. This will reduce assets and hence available and free capital.
- If the business is still slightly profitable in the early stages, the capital will build up slowly (depending on dividend policy). However, the greater volume of business will also increase the capital requirement disproportionately as capital is based on tail events, thus still reducing excess capital.
- The longer it takes for the premium renewal increases to result in profitable premiums, the more adverse the free capital depletion will be.
- Furthermore, persistency is of prime importance. If the insurer does not maintain the policyholders for a long enough period, it will continue to be loss making (reducing free capital) as the balance of policyholders is weighted towards early duration (loss-making) business.

Part (i) was bookwork, and was generally well answered.

In part (ii) most candidates managed to generate good ideas, but a very common shortcoming was to not provide sufficient detail (the question asked candidates to "discuss").

Part (iii) was bookwork. Most candidates had the main point of capital being linked to risk, but almost no candidates had learnt the glossary definition in its entirety.

In part (iv) the main point of greater uncertainty resulting in more capital generally came through, but usually this was not fleshed out enough by candidates to score well.

QUESTION 7

i. Advantages:

- The ease of access and brevity of the quote process should encourage more people to get a quote.
- Premiums can potentially be lower than competitors' because of reduced expenses related to call-centres and/or brokers.
- Together, these two things could result in good uptake, which is particularly important in the competitive environment.
- The innovative nature of the product may create awareness in the market and could help the insurer attract business.
- Furthermore, since updating the policy and cancelling cover are quick and easy, this may encourage more people to try the insurance as they will not feel locked in.

Disadvantages:

- Some people value the security of being able to ask a person questions relating to the cover. Such people may not be attracted to this product.
- Certain unique traits of customers may not be catered for in the app. Without a broker/agent to negotiate, these customers will not be able to purchase insurance.
- As the insurer is new, it does not have a strong reputation/brand yet. Potential policyholders may be nervous about purchasing insurance through an app.
- The above factors may result in lower take-up and the insurer being unable to spread its fixed expenses / earn a suitable return on its capital outlay in developing the systems.

ii. Anti-selection is the preference of some insurance applicants for policies whose underwriting requirements are less stringent than others. Anti-selection occurs when a more profitable business is attracted away from an insurer by a competitor who has found a way of identifying the more profitable segment and offers more attractive terms.

iii. Extent of anti-selection:

- The insurer does not ask all rating questions asked by competitors. If these questions do indeed help quantify risk, then the insurer will be opened to selection from higher risk policyholders in categories for which questions are not asked. These individuals will benefit from a lower premium, which is a weighted average of the true premium for high and low risks.
- Over time, this will be exacerbated by lower risk policyholders preferring to insure elsewhere, so the risk pool as a whole will become higher risk.
- If the company is able to charge lower premiums to everyone due to their lower expense base, then they should attract more high and low risks, reducing the extent of anti-selection.
- As the company is new, they will not have accurate data on which to base premiums. It is thus likely that their rating structure is out of line with competitors, increasing the extent of potential anti-selection.

iv. Detecting anti-selection through conversion rates:

- As the company is new and uncertain about the validity of its premium rates, it will need to monitor conversion rates frequently in order to assess whether premiums are too low for certain groups (very high conversion rates) or too low for certain groups (very low conversion rates) relative to its own average experience.
- It should also monitor its conversion rates relative to industry benchmarks to assess if take-up is too high, indicating low premiums. However, this may not be due to anti-selection, but rather cheaper premiums due to lower expenses.

v. Risk: Take-up may be lower than expected, perhaps due to people not trusting an app-based insurer – resulting in not covering fixed expenses and achieving an adequate profit margin. Mitigation: Marketing will be particularly important to establish the brand and build consumer confidence. For example, advertising using customer experiences that people can relate to.

Risk: Operational risk if systems (not fully tested) systems are faulty, resulting in reputational damage. This is particularly significant as the insurer will be aiming to come across as tech-savvy/cutting-edge.
Mitigation: Thorough testing of the systems in the early stages, both in-house and with small select groups of policyholders, in order to iron out bugs before the product becomes more wide-spread.

Risk: Established competitors offering similar app-based services, while leveraging off their existing brands. This will result in lower take-up than expected.
Mitigation: The insurer should aim to include innovative features that are difficult for competitors to offer. As the insurer is new and has built its systems from scratch, it should be more flexible in terms of adding new features.

Risk: Claims experience may be worse than expected. There may be events or conditions causing unexpectedly high volumes of claims in early stages, while the insurer has limited experience and capital.
Mitigation: if it is not possible to secure enough investment to create a capital buffer, the insurer should reinsure a greater share of the risk to create more stability until the book is larger and better diversified. The insurer might consider pricing more prudently, but this is unlikely to be possible in the competitive market, depending on how much lower its expense loadings are relative to competitors.

Risk: Pricing may be inaccurate owing to the company not having sufficient data and experience in this market.
Mitigation: It may be possible to seek advice from a reinsurer. Reinsurers may have knowledge relating to similar products in other markets.

Risk: Expenses may be higher than expected. In particular this may relate to systems development. As the company is new, and is offering an innovative product, expenses will be difficult to estimate.

Mitigation: Adequate margins will need to be included in the pricing basis. A reinsurer may be able to assist in setting this assumption.

Part (i) was generally well answered, though detail was lacking for "discuss". The most common error was to comment on advantages and disadvantages not related to marketing, which was specified in the question.

Part (ii) was bookwork, but few candidates knew the entire definition correctly. A common omission was not mentioning the influence on anti-selection of competition.

In part (iii) most candidates made a good attempt at answering the question. Many candidates suggested that that reducing rates across the board will result in anti-selection, whereas this will actually attract more good and bad risks (not selective).

Part (iv) was poorly answered. Few candidates managed to provide a structured logical approach for how this might be done.

In part (v) candidates generally wrote too little to score well, not outlining their points sufficiently. The mark allocation made it clear that 1 full mark was available for each risk and 1 mark for each mitigation.

END OF EXAMINERS' REPORT