EXAMINERS' REPORT

November 2025 examinations

Subject F103 — *General Insurance*
Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principal 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. The maximum recovery will be made when the maximum number of lines of cover is used.

If all 4 lines are used the insurer will retain:
(0.8 × $50m)/5 = $8m of the EML
As this is between the maximum and minimum retention limits it is acceptable.
Hence the maximum surplus recovery is:
0.8 × $75m (4/5) = $48m

The minimum recovery will be made when the insurer retains the maximum amount possible, i.e. $24m of the EML.
Hence the minimum recovery is:
$75 m × (0.8×$50m – $24m)/$50m = $24m
(or equivalently, 0.8 × $75m × ((40 – 24)/40) = $24m)

ii. The maximum recovery will be made when the maximum number of lines of cover is used.
If all 4 lines are used the insurer will retain:
(0.8 × $25m)/5 = $4m of the EML
As this is below the minimum retention the insurer will need to retain $5m.
Hence the maximum recovery is:
0.8 × $10m ((20 – 5)/20) = $6m

The minimum recovery will be made when the insurer retains the maximum amount possible.
The EML remaining after the QS is 0.8 × $25m = $20m, which is below the maximum retention limit.
Hence the surplus reinsurance is not used and thus no surplus recovery is made.

iii. The maximum payment will occur when the full Sum Insured is claimed, i.e. $150m.
For the insurer to have a maximum net payment of $30m, the claim will need to be split:
QS-$30m (20%), Insurer-$30m (20%), Surplus-$90m (60%)
i.e. 3 lines of Surplus cover.
The above split would result in the EML of $90m being split:
QS-$18m, Insurer-$18m, Surplus-$54m
As this is within the Surplus treaty limits, the above answer of 3 lines is acceptable.

iv. A working layer is a layer of excess of loss reinsurance where the excess point is at a low enough level for it to be likely to experience a fairly regular flow of claims.

Profit commission is the only type of reinsurance commission likely to be payable (if any).

This is commission which is dependent upon the profitability or claims experience of the business ceded during each accounting period.

v. $30m will be covered by the QS, leaving $120m of claim.
To limit the insurer's loss to $30m, the XL would thus need to cover (at a minimum):
$90m XS $30m

Overall, this question was reasonably well answered by the majority of candidates.

Parts (i) and (ii) tested basic understanding of surplus reinsurance, subject to maximum and minimum retentions. These parts were well answered by most candidates. Some failed to appreciate how the limits work and a few lost marks for inadequate workings or failing to include currency or units in answers.

In part (iii) very few candidates confirmed that the number of lines they suggested complied with the conditions of the surplus treaty.

In part (iv) several candidates could not adequately define what a working layer was and several suggested inappropriate types of reinsurance commission, e.g. ceding commission.

In part (v) many candidates gave reasonable answers, but several did not seem to understand what was being asked.

QUESTION 2

i. Uncertainty: Relating to general insurers, this is the inability to exactly predict projected financial outcomes when engaging in insurance.

Risk: The possibility of these uncertain financial outcomes being worse than expected resulting in adverse variations in the insurer's financial results.

ii. Risk perspectives and hence why a market exists:

- Both the insurer and individual would consider 'risk' as it relates to a negative outcome (damage/theft) of the phone covered under the policy.
- An individual would see 'risk' from a single, individual viewpoint. They view risk as the potential utility lost due to the negative outcome (damage/theft of phone) occurring in the future which is uncertain. This would be measured in a subjective way (as inconvenience associated with a damaged/stolen phone) and in an objective way (as the cost and time it would take to replace phone).
- An insurer is a company that would aim to view the 'risk' in quantifiable objective ways – on average how much would it cost to indemnify a person for damaged/lost cell phone. An insurer tries to objectively measure risk across multiple similar policies (a portfolio) and as such may consider it as it relates to possible negative financial outcomes due to uncertain claims being worse than expected in a portfolio of cell phone insurance policies.

- As insurers are able to make a business of measuring and managing portfolios of risk, they are able to arrive at the cost of risk an individual poses to an insurer Moral hazard, in particular, can be a significant risk for the insurer if this is not managed properly.
- As most individuals are risk-averse, they are willing to pay an amount to avoid the potential for lost utility.
- The amount individuals are willing to pay is more than the cost of risk (with an additional profit margin added) and as such an insurance market between buyers and sellers of commonly agreed upon but differently measured risks can exist.

iii. Areas of uncertainty:

- Uncertainty as to the outcome of the business already written – the ultimate claim amount is variable and may have a lag (delay) in its development relative to the related premiums.
- Uncertainty as to the premium to charge future policyholders – given that the true cost of historic policies is not always known when pricing future business, it is uncertain as to how much premium the insurer needs to charge in future to achieve a desired financial result.

iv. Sources of uncertainty:

- The insurer must ensure that premiums from future policyholders are more than sufficient to cover the cost of uncertain future cell phone policy claims. Generally uncertainty becomes a risk when the premium charged is insufficient and an adverse financial outcome is achieved. Examples of uncertainty and risk include:
  - Historic claim experience is different to future policyholders' experience. For example, if the premium was initially determined assuming that people have their phones stolen once every 4 years on average. If analysis of these rates (showing a doubling of this average time to once every 2 years) was only done after premiums in the new year have already been agreed upon, then the insurer would be at risk of making unexpected financial losses due to uncertainty in the true underlying rates driving risk events.
  - Uncertain future policyholder environment. The insurer holds part of the paid premium to pay future claims for lost phones. They aim to earn returns on this money held aside to improve profits. Premiums today were priced using an expected rate of return that may be different to what actually occurs as the cover of the policy runs. If returns are significantly below what was expected, this could result in the risk of adverse financial results as discussed above.
  - Uncertainty in true parameter values. Often premiums are arrived at by assuming that the claim frequency and severity of policyholders follow some theoretical fit distribution. These are estimates that assist the insurer in determining expectations for the future. The observed frequency and severity may adversely differ from the expected distributions and result in financial loss (and hence risk) to the insurer.

Overall this question was reasonably well answered.

Candidates with a poor theoretical grasp of risk and uncertainty in part (i) generally struggled to give well constructed answers in parts (ii) and (iii).

In part (iv) many candidates were unable to generate points on areas specifically related to future policyholders and many gave generic risks related to the general uncertainty in claims.

QUESTION 3

i. Thing to account for:

- Risk profiles of (as far as possible) individual assets and risks considered.
- Correlations between risks considered.
- Objective and measurable metrics relating to the insurer's business objectives (e.g. minimum desired credit rating).
- The ability to aggregate and disaggregate risks at a country and product

ii. A stochastic model is likely to be preferred for the following reasons:

- More robust validation: A stochastic model can run various scenarios including stress scenarios used in regulatory reporting. The output from these models can be compared for verification.
- Commensurate complexity: For the economic model to provide reliable results from a large complex insurer, proportionality would say that the solution will also need to reflect this complexity. A deterministic model is likely to be too simplistic to fully capture the dynamic complexity of the insurer.
- Flexibility - Given that it is a multinational, a stochastic model would be more flexible in its ability to reflect the various levels of adjustments and their resulting capital implications between countries and products.
- Accuracy – the insurer's true economic capital will need to depend on multi-country uncertainty resulting from unknown underlying risk profiles per country and business lines that aggregate up. A deterministic model is unlikely to capture the potential variability that such aggregation across uncertain underlying risk driver profiles would produce.

iii. Comments on the use of machine learning:

- Improved performance - An ML model may be able to improve the accuracy of models by better modelling underlying risk profiles of assets and liabilities in various countries. This may be particularly useful where there is little data around claims for a product or where asset returns in a country have non-linear interactions when modelling.
- Introducing additional complexity in the model may theoretically improve the accuracy via improved model performance but it may reduce accuracy in practice

if there are insufficient technical resources to build, validate and maintain the model.

- Given the potential accuracy benefits but potential technical scalability, the insurer could look to implement ML for parts of the model (as opposed to using it for the entire model) where stochastic modelling does not work well to model actual insurance performance.

Most candidates obtained at least some marks on this question, with parts (i) and (ii) generally answered using standard bookwork.

In part (i), many candidates described generic features of the risk profile (assets, liabilities, correlations, business objectives), but very few engaged with the specifics of the scenario, such as the implications of the insurer being a large multinational composite and the associated need to aggregate and disaggregate by product and territory.

Similarly, in part (ii) candidates could usually state generic differences between deterministic and stochastic models, but rarely linked these to the diverse and evolving risk profile in the question or to the increased flexibility and complexity of a stochastic approach in this context.

Part (iii) was poorly answered overall. Many candidates focused almost exclusively on the drawbacks of machine learning (perceived "black box" nature, cost, and regulatory objections), with only a small minority offering a more balanced discussion of the trade-off between improved predictive performance and model risk, or suggesting targeted use of machine learning within components of the wider modelling framework.

QUESTION 4

i. Travel insurance indemnifies travellers against losses associated with booked and undertaken travels due to:

- Trip cancellations (due to ill-health).
- Trip delays (requiring additional costs to change travel arrangements).
- Baggage loss or damage.
- Medical expenses incurred (due to ill-health, injuries or accidents while journeying).
- Theft of items or money while travelling.
- Repatriation costs (if death occurs during travels).

Some benefits (e.g. for baggage loss) may not be for indemnity but are instead fixed.

ii. Nature of the liabilities:

- Most claims will be for indemnity (up to a limit) and thus inflation linked. As most claims are short-tailed, inflation should not have a large impact.
- Longer tailed claims are likely to be those relating to accidents leading to injury and illness and thus linked to medical inflation in the country of travel.

- Insurer expenses are linked to local inflation, mostly wage inflation.

Term of liabilities:

- Most claims are likely to be for trip delays and material losses, and these are likely to be settled quickly (within a few weeks) even if policyholders are only re-imbursed at the end of their trip.
- Claims for injuries and illnesses may take slightly longer to settle due to investigations to confirm extent of liability.
- Due to policy term being limited to trip duration, UPR and AURR will be short-tail.
- Insurer administrative expenses will be mostly short-tail.

Currency of liabilities:

- Foreign travel related claims are likely to be in foreign currency, unless claim amounts are fixed in local currency.
- Local travel related claims, travel to countries that use the same as the local currency and even some foreign travel claims may be met in local currency.
- Insurer expenses will be in local currency.

Uncertainty/volatility of liabilities:

- Accumulations can arise from catastrophes, natural events, airline strikes etc which increases potential claim volatility.

Matching assets:

- Cash deposits and short-term treasury bills, denominated in several currencies, including local currency, are likely to provide the most suitable match for most liabilities.
- Some local inflation-linked bonds may be suitable for insurer local expenses.

iii. Causes for the trends:

- Combined ratio (CR) shows a steady, but slow decline, suggesting:
  - Declining premium rates e.g. for competitive reasons / underwriting cycle.
  - Deteriorating claims e.g. claims higher than expected due to currency effects or inflation.
  - Deteriorating expenses e.g. higher than expected inflation or commissions.
  - The trend may be spurious.
- While the slowly deteriorating CR contributed to it, the sudden decline in profit margin (PM) in 2024 would have been caused by a decline in investment income on reserves. Possible reasons might include:
  - A default on an investment.
  - A sharp decline in interest rates.
  - Local currency appreciation (reducing the value of foreign income).

- Capital depreciation on assets if this is included in insurance profit.

- While the reduction of PM in 2024 will have contributed to it, the sudden decline in return on capital (RoC) may have also been caused by:
  - A reduction in other investment income (not supporting the reserves) or other income for the insurer.
  - An increase in taxes in 2024.
- The volatility of the solvency margin (SM) suggests that some volatility in the value of assets may be reflected in a revaluation reserve.
  Other possible contributors:
  - Volatility in dividends (and hence retained earnings) e.g. a special dividend paid in 2024 however this is unlikely given other information.
  - Rights issue in 2023.
  - Volatile new business volumes, e.g. a surge in 2024 impacting SM (free assets as % of net written premiums).

Overall disappointing performance.

In part (i) candidates lost marks by not answering the question e.g. by writing about underwriting, risk and rating factors, distribution channels and claim characteristics. Many answers were too vague.

For part (ii) a surprising number of candidates suggested equity and property for such a short-tail class, and even gold and cryptocurrencies. Some did not answer the question asked e.g. by writing about investments for the free assets.

In part (iii) answers were very disappointing, with most being contradictory in making suggestions for one metric that were non sensical given the values of other metrics e.g. confirming stable claims and expense experience only to suggest a few lines later that the volatile profit margin, return on capital and solvency margin were due to volatile claims and/or expense experience; or suggesting that the drop in solvency margin was due to increased liabilities forgetting that this should also affect the combined ratio and profit margin. Very few distinguished between investment income on reserves and other investment income, and almost no-one mentioned the revaluation reserve. Some wasted time by putting into words what the metrics are showing and added no insight on possible causes for the trends. It was unreasonable to interpret the combined ratio as being based on the underwriting year (as some candidates did) and other metrics on the accident year. Some did not answer the question asked and commented on the absolute values rather than the trends as asked for.

QUESTION 5

i. Possible reasons for ABC introducing the product:

- Increased sales if the product is perceived as attractive / meets particular needs.
  - ABC may have noted its success in other markets.
- The claims process is more transparent and efficient as it by removes the need for subjective claim underwriting decisions.
  - It should lead to faster claim payments (attractive for policyholders), and
  - Reduced need for claims underwriting staff and associated costs for ABC.
- It should result in less litigation and associated costs for ABC.

- It may reduce moral hazard risk because the payout is based on an objective, pre-defined trigger.

ii. Key difference in pricing:

- For traditional insurance, the pricing involves modelling both the frequency and severity of loss events. This requires detailed data on past claims, including the number of claims (frequency) and the cost of each claim (severity).
- For "parametric" insurance, the pricing focuses almost entirely on estimating the frequency of the trigger events. Since the payout amount is fixed, the severity of the event is not relevant to the pricing. Data is needed on the occurrence of trigger events and use statistical models to estimate their frequency. The premium is set based on the likelihood of these events occurring and the predetermined payout amount.

iii. Collecting data:

- Gather data related to the trigger events on the policies.
- Ideally need data for several years e.g. 5 years or longer.
- Utilize internal data from ABC Insurance, including past claims and relevant exposure measures.
  - This is likely to be available because ABC is an established insurer with much history.
  - Internal data will likely include relevant past claims and relevant exposure measures.
  - May be more readily available for claim trigger events that have happened frequently in the past, but less likely to be available for catastrophe type triggers.
- Supplement with external data.
  - Many parametric trigger events may be emerging risks for which the insurer may not have experience data.
  - Can provide additional insights and increase the credibility of the analysis.
  - Consider data from other countries to enhance the robustness of the dataset, especially for infrequent events.
  - For natural catastrophes, the company is unlikely to have sufficient internal data - weather bureaus, climate research groups, brokers and reinsurers will likely have useful data.
  - The reinsurer(s) providing reinsurance cover for the product, may be prepared to supply data and other information about the market as a whole, without giving away competitive information of any of their cedants.
  - External data may take the form of aggregate market statistics.
  - The company may not have from the ground up data for claims from external data.

Adjusting data:

- Check for anomalies and mistakes.
- Ensure claims data is as recent as possible without compromising credibility.

- Since the cost of claims is not important in parametric insurance, reserve and case estimate considerations are unnecessary.
- There might be certain parts of the existing portfolio which could be relevant for pricing purposes subject to suitable loadings and adjustments for differences in risk.
- Adjust the data to account for inconsistencies and expected future risks. Factors to consider include:
  - Underwriting levels: The level of underwriting for parametric policyholders may differ from existing data, affecting risk profiles.
  - Distribution methods: Parametric policies are likely sold through brokers, which may differ from other distribution channels used by ABC Insurance.
  - Claims settlement procedures: Parametric insurance involves simpler and more efficient claims settlement compared to traditional property policies.
  - Policy conditions: Differences between existing products and new parametric policies must be accounted for.
  - Inflation: unnecessary since claim amounts are pre-defined.
  - Policyholder profiles: differences in the risk profile of policyholders interested in parametric insurance.
- For data obtained from external sources or from third parties, we should compare with the corresponding details for the policies the insurer intends to write, as far as possible:
  - The terms of policy cover offered.
  - Levels of risk underwritten.
  - The loadings included for expenses and profit in the premium.
  - Socio-economic differences.
- Apply credibility adjustments to account for the randomness and limited quantity of past data.
  - For many parametric policies, the trigger events will likely be infrequent but significant further supports the requirement for a credibility adjustment.
  - ABC will have to decide how many past claims are needed in order to assign full credibility to ABCs own data. An example may be that ABC wants to be 95% confident that the estimate from the past data falls within 5% of the true mean.
  - The variance of the underlying process and the criteria chosen will affect the amount of data required for full credibility.
  - The credibility assigned to the observation (Z) must be between 0 and 1. The complement will be assigned to the external data point.
  - As more data is collected over time, the credibility assigned to ABC's own data will increase.

iv. Frequency-severity approach:

- Parametric insurance pricing will be focused on estimating the frequency of a specific event occurring since loss amount is predefined in the policy wording.
- Frequency = ultimate number of losses / exposure measure.
- Appropriate distributions are discrete, increasing distributions such as the Poisson or Negative Binomial distributions will be likely best choices.
- Common methods of fitting:
  - maximum likelihood estimation, method of least squares, method of moments.

- Use statistical goodness of fit tests to assess goodness of fit, for example:
  - Chi-squared statistic.
  - Kolmogorov-Smirnov statistic.
  - Anderson-Darling statistic.
- Need to run enough iterations of the model to ensure results are stable.

This question tested candidates' understanding of parametric insurance and its implications for pricing compared to traditional property insurance. While many candidates demonstrated familiarity with the concepts and steps behind traditional pricing, several struggled to apply this understanding to practical pricing considerations for parametric insurance. Common issues included lack of depth in reasoning, confusion between data requirements and modelling steps, and inclusion of irrelevant points.

Several candidates correctly identified that severity does not need to be modelled or priced for because the benefit would be fixed in parts (i) and (ii) but then discussed claim-size data requirements and modelling of severity in parts iii and iv. This indicated that candidates were unable to adjust their understanding of data requirements and modelling to the specific product in question.

In part (i) many candidates mentioned "lower premiums" without explaining why this might occur (e.g., reduced administrative costs or simplified claims process). The expected discussion on reduced costs (claims handling, loss assessment) was often missing.

In part (ii) candidates often described the difference in trigger events but did not explain how this affects pricing (e.g., parametric pricing depends on event probability rather than loss severity).

In part (iii) many candidates confused data collection with modelling considerations, indicating poor understanding of the distinction. Frequently mention was made of loss sizes and inflation adjustments, which are irrelevant for parametric pricing. This is despite some candidates correctly noting that severity is not applicable to parametric insurance in part (ii). Several candidates incorrectly suggested excluding catastrophic events, despite these being the primary focus of parametric insurance. Some candidates emphasized financial loss data rather than event frequency and trigger conditions. Comments saying that past claim amounts must be capped implies severity needs to be modelled.

In part (iv) many candidates incorrectly suggested modelling severity, which does not apply to parametric products. Few provided a clear explanation of how the approach simplifies to frequency × fixed payout.

QUESTION 6

i. Possible distortions/errors:

- Changes in claims handling procedures over time.
- Case estimate process changes over time.
- Changes in processing delays over time.
- Large and unusual claims.
- Claims inflation.

- System process/run errors causing duplicates or missing data.
- Fraudulent claims.
- Seasonality in claims data.
- Regulatory changes (litigation or new regulation may change how claims are processed).

ii. System checks:

a. Incorrect claim dates entered

- The system should automatically check that the policy was active/on-risk on the date of the claim.
- The system should automatically check that the date of loss is before the date reported.

b. Incorrect payment dates entered

- Automatically check that the payment date is after the reporting date.
- Automatically check that the payment date is after any prior payment dates entered.
- Only permit the entry of payment dates which are on, or before, the current date.

c. Incorrect amounts entered

- Identify very large or small claims for verification.
- Automatically check claim amounts to not exceed policy limit/sum insured.
- Automatically check that claim amounts are greater than nil.
- Automatically check currency against policy information.

d. Information entered onto the wrong claim record

- Check that the policyholder information on the claim record corresponds to that on the correct policy record.
- Check digits which are automatically checked by the system to eliminate mistakes through mistyping one digit.
- Check that claim type corresponds to the types of claims possible on the policy (product/peril).

iii. Possible consequences of data errors include:

- Incorrect accounts – incorrect claims can lead to incorrect financial statements, affecting profitability.
- Failure to make recoveries – insurer may miss the opportunity to recover if information is not captured correctly.
- General management mistakes – flawed data can lead to wrong strategies and decisions and response to market changes.
- Customer dissatisfaction and frustration– leading to reputational damage.
- Inappropriate reinsurance – either too much or too little or the wrong type of reinsurance may be purchased.

- Inappropriate investments – strategy may be based on projected claims outgo which may be incorrect leading to wrong asset choices.
- Increased operational cost – additional resources to investigate, corrections and reprocessing.

This question tested candidates' understanding of sources of data, how they can be validated/ checked and their understanding of the consequences when data are incorrect. The question was mostly bookwork with some higher order thinking and application required (given the specific exclusions mentioned in part (i) and part (iii)). Few candidates scored well on this question.

In part (i) candidates who gave a wide variety of reasons scored well. Many focussed on system -related reasons only and some did not seem to consider that the question stated "apart from those arising from incorrect data capture".

In part (ii) candidates who mentioned very specific automated checks related to the items in the question scored well. Generic answers such as "check dates are within a range" without specifying the range e.g. after policy inception date or payment date must be before reporting date, did not score marks.

In part (iii) candidates generally scored reasonably well. No marks were given for items related to premiums and reserves as the question stated "apart from incorrect premiums and reserves".

QUESTION 7

i. Categories:

- Loss of or damage to passengers' property, including luggage.
- Bodily injury and death of passengers either while boarding, on board or leaving the aircraft.
- Bodily injury to third parties caused by the aircraft.
- Damage to third party property caused by the aircraft.

ii. Comparison:

- Benefits:
  - Both are likely to have similar property benefits in terms of indemnifying the insured against theft/damage/destruction of the drone/aircraft and third-party liability benefits in terms of covering the insured against financial loss due to being liable in compensating a third party for bodily injury, death or damage to property arising out of operation of the aircraft/drone.
  - However, drone insurance will have smaller benefit limits due to the nature of the smaller craft and the damage that can be done.
  - Additionally, under traditional insurance a liability benefit related to 'bodily injury and death of passengers either while on board the aircraft or when

boarding or leaving the aircraft' may be provided. Given the unmanned nature of drones this will not be needed.
  - A drone product may have drone warranty extension.

- Exposure Measure:
  - Depending on the mix of aviation business, passenger kilometres; number of passenger trips; in-service seats on planes; number of planes may be considered as useful measures of exposure.
  - For drone insurance, kilometres flown may not be as useful as the claims relate more to property related claims. Hence, a sum insured (e.g. value of drones insured) may be more appropriate and more closely tied to the risk borne. Alternatively, number of drones per area/line may be used.

- Claim size characteristics:
  - While both products cover third-party liability claims, the size and 'type' of peril resulting in claim will be different,
  - The traditional insurance claims will be for larger amounts than the drone insurance similar to the reason given for the benefits.
  - Additionally, drone insurance claims may skew towards property related claims, whereas liability claims for aircraft can be large and more uncertain.
  - There may be more zero claims under drone insurance due to policyholders unknowingly flying in protected areas. i.e. zero claims due to claim rejection is likely to be higher for drone insurance.
  - Both will be affected by inflation (although potentially different sources).

iii. Strategy A – Intermediary through the drone seller.
Strategy B – Direct Sales.

iv. Short term:

- A:
  - Covered may be able to reach a larger initial customer base compared to B.
  - Given that the initial insurance offering may be presented in a store or via a non-insurance sales agent, there is a chance the product is marketed or sold incorrectly.
  - If drone sales continue to grow then more consumers are likely to buy drones and insurance in both the short and potential medium-term.
- B:
  - There is a smaller potential customer base relative to new drone customers which may lead to reduced market penetration compared to A.
  - Due to having policyholder information, Covered can target customers that are more likely to take-up the product.
  - This scenario is likely to be faster and administratively simpler than A as no agreements between companies would need to be reached.

Medium term:

- A:
  - Drone buyers that take-up insurance have their first month of insurance for free, this has a cost that may impact the viability of the product offering in the medium-term.
  - If the point of this product offering is to help acquire new policyholders and diversify their insurance portfolio, then selling this product as a potential loss-leader (given the 1-month free insurance and any administration costs with the drone retailer) may still be valuable to Covered.
  - If policyholders see the drone retailer and Covered as synonymous there is a risk of reputational contagion should there be issues with the retailer or the drones it produces.
  - Other than concentration in drone type/value, if the retailer only sells to commercial farms, then the commercial lines of the drone sales may result in accumulation of risk.

- B:
  - Product sales will be constrained by existing policyholder uptake which may remove any early mover advantage of having an early public offering as in A.
  - Covered can better monitor and project sales if it is all done in house through direct sales agents.
  - Relative to A, the brand recognition for this sort of insurance amongst drone buyers is likely to be reduced which may result in slower word-of-mouth quotations.
  - This strategy may provide more consistent and stable new business over the medium-term. Retail sales (and hence insurance uptake) may peak during certain times in the year. E.g. peak at the end of the year during Black Friday shopping through Christmas. While this will also still affect sales even if Covered uses Strategy B, the effect is likely to be less pronounced and growth will be more organic and stable.

v. Suggested strategy:

A direct sales method, strategy B, is recommended since: Covered can move faster in the short-term to be an early participant in the drone insurance market;
Covered has more control over distribution and product expansion in a new and uncertain market over the medium-term.

vi. An exclusion is:
An event, peril or cause defined within the policy document as being beyond the scope of the insurance cover; or
A clause in a policy that limits the circumstances in which a claim may be made.

Reasons for including an exclusion could be:

- When the policyholder is at an advantage through possessing greater personal information about the likelihood of a claim.

- Where the claim event is under the control of the policyholder.
- Where the claim event would be difficult to verify.
- When the loss occurs as part of the normal course of events and could be considered to be depreciation.

vii. Exclusions:

- Valid drone licence requirement. This should reduce anti-selection and reduce claim costs from risky novice drone fliers; these first-time drone buyers are more likely to take out insurance knowing that they may damage their first drone.
- Use of drone in restricted areas: This would exclude claims (particularly third-party liability) that may arise due to moral hazard and the drone operator not paying attention to where they are allowed to fly the drone. (A similar thing may be said about a time of day exclusion).
- Use of drone for some high-risk activities: This should reduce some anti-selection effects as policyholders that know they will be using the drone for riskier activities (e.g. use in difficult outdoor terrains, drone racing, surveillance).

Weaker candidates generally struggled with unique point generation throughout this question.

In part (i) many candidates gave answers that were not liability related perils, speaking to poor interpretation of the question.

Candidates with strong structure performed well in part (ii) where marks were awarded for being able to effectively compare the two products across all of the areas in the question.

Parts (iii) and (vi) were generally well answered bookwork questions.

Candidates struggled to put together coherent arguments in (iv) with many tending to focus too deeply on a specific point of view.

The same issue tended to pull through for these candidates in (v) where little attention was given to broader strategy; strong scoring candidates were able to show depth of consideration to not only short-term actions but also how this may develop in the medium to long-term strategy of the insurer.

Part (vii) was surprisingly poorly answered, with many candidates not mentioning how an exclusion may assist with the concerns of moral hazard and anti-selection.

QUESTION 8

i. Accounting principles:

- Going concern: Reserves should reflect the enterprise continuing in operational existence for the foreseeable future.
- Accruals basis: Costs are recognised as they are incurred, not as money is paid.

- Consistency: Consistency of accounting treatment of like items within each accounting period and from one period to the next.
- Prudence and realisation: Provision is made for all known liabilities, whether the amount of these is known with certainty or is a best estimate in light of the information available.
- Separate valuation of assets and liabilities: When determining the aggregate amount of any item the enterprise must determine separately the amount of each individual asset or liability that makes up that item.
- Materiality: Information is considered material if its omission, misstatement, or obscurity could reasonably be expected to influence the economic decisions of financial statement users.

ii. Possible reasons:

- The published and solvency basis may differ in method and/or assumptions used for example:
  - Whether the claims reserves are discounted, and the discount rate used.
- The approach used to calculate any margins that are required to be added to the best estimate, and the actual level of confidence selected for the overall margin i.e., the quantum of the margin.
- Claims reserves calculated on the published reporting basis are influenced by the reserving cycle, where reserves are reduced when premium rates are soft and increased when the market hardens.

iii. Suitable reserving methodologies:

Commercial property:

- The chain ladder method based on incurred claims should be suitable. Since the company has over 30 years of claim experience, there should be sufficient data to apply the chain ladder method.
- The mix of properties insured, and policy conditions have been consistent over the last 10 years, which implies that the claims data should be consistent, which is a requirement of the chain ladder method.

Travel insurance:

- Due to the very limited claims data available, the loss ratio method should be used.
- The loss ratio selected could be a weighted average between the company's own experience, based on underwriter's loss ratios, and market loss ratios.

Employers' liability:

- For the two most recent accident years it should be suitable to apply the Bornhuetter-Ferguson method or the loss ratio method. This is because of the limited data available, so using these methods will reduce reliance on limited data which is likely to produce volatile results.

- For older accident years, the chain ladder method on incurred data should be suitable, for similar reasons as provided above.

iv. Proposed adjustments to the data, methodology or assumptions:

Commercial property:

- Remove catastrophe claims arising from the flood from the claims triangles and analyse them separately. Since catastrophe claims have a different claim run-off pattern compared to attritional losses, they will distort the claims development patterns.
- Decide whether large losses will be left in the claims triangle or removed.

Travel insurance:

- Loss ratios should be adjusted both for the increase in premium rates, and the reduction in claims due to the updated policy conditions.
- The loss ratio selected could be a weighted average between the company's own experience, based on underwriter's loss ratios, and market loss ratios.

Employers' liability:

- The claims development patterns should be adjusted to reflect the speeding up of the processing of claims, and an adjustment should be made to reflect the lower direct claims handling costs, either in the data or the projected ultimate claims.
- Due to the negative incurred claims, the credibility weights used in the Borhuetter-Ferguson method may need to be adjusted or based on the paid claims development.

In part (i) candidates scored very well on this book work question. Some candidates stated that a true and fair view implies a best estimate however this is not necessarily the case and depends on the auditor's opinion.

Part (ii), an application question, was generally not well answered. Some candidates stated that reserves calculated on a published reporting basis are equivalent to a best estimate basis, however this is generally not the case. Candidates that only stated that the purpose of claims reserves calculated on a published reporting basis differs from reserves calculated on a supervisory basis, without detailing reasons for differences e.g. discounting approach or prudence in reserves, did not score marks.

Part (iii), an application question, was generally well answered. Some candidates suggested using stochastic reserving methods which was not appropriate given that the question asked for methodologies suitable to calculate a best estimate. Candidates who proposed a methodology and provided reasons for selecting this methodology scored better than those candidates who listed which methodologies would not work, as the latter approach was not directly answering the question.

In part (iv), an application question, candidates generally did not score well. The question required candidates to use the information provided in the question to propose adjustments to the data, methodology or assumptions to improve the calculation of the claims' reserves. Candidates who systematically used the information provided in the question generally scored well.

END OF EXAMINERS' REPORT