

EXAMINERS' REPORT

June 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. Relative advantages of Surplus over Quota Share with reciprocity:

- Surplus will give ZX much more flexibility in terms of the size/variability of the risks it writes and retains.
 - This is of particular relevance for commercial property insurance where the sizes and risks of the policies can be quite varied.
- The well-established reinsurer will provide the more secure reinsurance arrangement.
 - This is because it is well-established and likely to offer greater financial security.
- The reinsurer would be able to provide more technical assistance to ZX (e.g. data, pricing, etc.).
 - The reciprocal insurer, being only recently established, would not be able to provide this.
- The reinsurer could also provide financial assistance.
 - This would not be available through reciprocity with a recently-established insurer.
- Brokers are likely to have more confidence in ZX if it reinsures through an established reinsurer.
 - This could help build market share.
- With the reinsurer, ZX will not need to take on exposure to the risks accepted by another insurer.
 - Such risks may be of lower quality (and profitability) than its own business.
- The arrangement with the reinsurer will not require ZX to spend time (and thus money) to understand another insurer's business.
 - E.g. its underwriting, contract terms, financial security, etc.
- The arrangement with the reinsurer will not involve any disclosure of market knowledge to another insurer.
 - This is relevant as the other insurer is a competitor to ZX.

ii. The fact that ZX did not use all 4 lines on Policy 1 implies that the minimum retention limit (R) came into effect.

The EML remaining after A was \$20m, and thus:

$$R = \$20\text{m} / (3 + 1) = \$5\text{m}$$

a. $(a) = 0.2 \times \$15\text{m} = \$3\text{m}$

b. Claim left after A = $\$15\text{m} - \$3\text{m} = \$12\text{m}$
Hence $(b) = 0.75 \times \$12\text{m} = \$9\text{m}$

c. ZX would like to use all 4 lines to retain as little as possible.

If it does it would retain:

$$0.8 (\$250\text{m}/5) = \$40\text{m}, \text{ which is above the minimum retention.}$$

Hence $(c) = 4$

- d. Claim left after A = $\$275\text{m} - \$55\text{m} = \$220\text{m}$
Hence (e) = $0.8 \times \$220\text{m} = \$176\text{m}$
- e. Claim left after A&B = $\$220\text{m} - \$176\text{m} = \$44\text{m}$
Excess Point for XL with D = $1.2 \times \$30\text{m} = \$36\text{m}$
Upper Limit for XL with D = $1.2 \times \$70\text{m} = \$84\text{m}$
Hence (e) = $0.75 \times (\$44\text{m} - \$36\text{m}) = \$6\text{m}$
(If, contrary to the standard operation of risk excess of loss layers of cover, it was assumed that C and D did not operate independently, there would have been a recovery of \$9.6m from C, leaving a net claim of \$34.4m before D and thus no recovery would be made from D.)

This question was generally well answered by most candidates.

The application in part (i) and calculations in part (ii) were fairly standard, with only the least prepared candidates scoring poorly.

Some candidates interpreted the excess of loss layers as operating consecutively, as opposed to the standard operation of risk excess of loss layers (which operate independently of one another). Marks were still awarded for this interpretation.

QUESTION 2

i. Benefits:

- Reduced chance of data being corrupted.
- Reduced chances of inconsistent treatment of information between products or over time.
- Better level of control over who may enter or amend info.
- Easier access to information, easier decision making.
- Minimise manual work requiring inputs, outputs and checks between different systems, thus minimising errors.
- No time spent on reconciling data from different systems.
- Claims information link to policy information seamlessly.
- Reduced cost as maintenance and training cost would be lower.
- Easier compliance with regulations as all data is accurately captured in one place.
- Scalability – easier to allow for growth.
- Better communication and collaboration between departments.
- Development and maintenance of a single system is easier and less costly than having different systems.

- ii. A re-opened claim is a previous claim (not a new claim) that has been regarded as settled that needs to be opened again.

This could arise if:

- Closure definition has changed.
- A further liability for payment (possibly for a cost), has come to light.
- Recovery against a third party involved has been made
- An error was made originally when the claim was closed

- iii. Policy movements:

- Lapses or renewals – Not renewing or renewing annual existing motor policy.
- New business – inception of a new policy e.g. bought a new car and insurance is required for loan.
- Quotes not taken up – Quote is given, but motor policy is not incepted due to a possible better quote elsewhere.
- Mid-term cancellation – where a policy is stopped mid- term e.g. car is written off or policyholder moves car insurance elsewhere.
- Endorsements – where a policy is amended during the year (also “mid-term adjustment”) e.g. insured added a tracker on vehicle or moved address or ‘overnight’ address needs to be amended.

This was a relatively easy question that was well answered by those candidates that knew their bookwork. For part (iii) a number of candidates lost marks by not answering the question completely due to not providing examples as required.

QUESTION 3

- i. Creditor insurance:

- Provides cover to insureds who are subject to obligations to repay credit advances or debt.
- Most policies are made to individuals to cover personal loans, mortgage loans or credit card debts.
- The cover is usually against sickness/disability and unemployment, on the basis that these perils may prevent the insured earning an income.
- The policy will pay the regular loan payments until the borrower is recovered or obtains new work or until the loan is fully repaid or a maximum number of payments are made.

- ii. Most likely distribution channel:

- The bank / lender providing the loan:
 - The bank is incentivised to sell the cover in order to reduce loan default experience.

- Simpler for the borrower (insurance sale will be treated with the loan application process) and take-up may be higher (e.g. borrower may trust the bank more than any other intermediary).
- Simpler for InFin to obtain and verify loan details.

iii. Appropriateness of the investments:

- For the liabilities: the nature of claim payments is linked to interest rates on loans taken out by borrowers:
 - Most loans will be variable-rate linked to the benchmark short-term rate (which is linked to CPI inflation).
 - Some loans (e.g. personal loans) might be fixed-rate.
- Returns on cash deposits are linked to the benchmark short-term rate, while treasury bill returns are fixed, and hence the assets appear to be an appropriate match for the liabilities.
- Most loans are likely to be short-term (e.g. credit card and personal loans) hence the term of investments match the term of the liabilities.
- Mortgage loans will be for many years and investments held are too short for these liabilities – a term mismatch may exist if there are any such liabilities (there might not be).
- Loan defaults from unemployment can be uncertain, making liquid assets such as cash and bills suitable to meet unexpected claim outgo.
- Assets appear to be an appropriate match for the currency of the liabilities.
- Insurer's expenses are inflation-linked, and assets will not be suitable for these.
- Appropriateness of assets for the liabilities will also depend on:
 - The level of free assets available can enable an insurer to pursue riskier (non-matching) investment strategies to obtain higher expected returns.
 - The insurer's risk tolerance.
 - Regulations may restrict investments (but current assets held by InFin are unlikely to be a problem).
- For the free assets: good liquidity (needed to fund strong business growth), the stable nature of asset values and loose link with inflation should make the assets suitable.

iv. Merits and drawbacks of using an ALM:

- A stochastic ALM approach is more sophisticated than the current approach, producing useful information to enable better decisions about the investment strategy e.g.
 - Probability of insolvency and/or insurance losses for a given strategy.
 - Probability of cashflow shortfalls by duration.
- As creditor insurance claims may be affected by economic conditions (e.g. unemployment rising during a recession), an ALM is a suitable and necessary approach for investigating the interaction between assets and liabilities.
- A stochastic ALM considers a very large number of different scenarios compared to a deterministic approach that can only consider a limited number.
- Implementing stochastic ALM models can be difficult, e.g.

- Models are difficult to build, calibrate and run, requiring expertise.
- They can be costly to obtain (build and purchase) and maintain.
- The output may be difficult to interpret, explain and understand.
- An ALM model can be useful for other purposes e.g. to investigate reinsurance strategies, business strategies, and to determine risk-based capital requirements.

Overall the question well answered, however there was a large variation in the quality of answers.

Most candidates knew what a creditor policy was for part (i) and gave the most sensible answer for part (ii), although if other valid alternatives were given and justified, credit was given. Only the first answer given (if more than one was given) for part (ii) was marked.

A number of candidates did not answer the question asked for part (iii), describing the characteristics of the assets, and then separately the characteristics of the liabilities, without any attempt to link the two, and hence not discussing the appropriateness of the assets – this resulted in no credit.

Part (iv) was reasonably well answered, but many answers were superficial and fell short of the “discuss” instruction. A number of answers revealed a fundamental lack of understanding of stochastic asset-liability modelling, or how it might be constructed and used.

QUESTION 4

- i. Extended warranty insurance is a type of property insurance that will cover financial losses arising from the need to replace or repair faulty parts in a product (in this case, imported high-end appliances) beyond the manufacturer's normal warranty period.

Goods in transit insurance is a type of commercial property insurance that financially covers the insured against loss of or damage to goods (produce) whilst being transported in ships globally. The periods of loading and unloading are usually covered in addition to the journey. The sum insured is likely to be the value of the goods.

- ii. Short-term effects:

- In the short-term we would expect to see these economic policies have an (immediate) effect on the cost of claims (increasing) and hence a decrease in profitability for both products.
- These policies will have the effect of increasing the cost of goods for people in Group A (imported goods are now more expensive). Increasing the cost of goods in these large countries will see knock-on impacts that increase general inflation rates experienced globally in the short-term which will make the cost of claims (for both products) higher and reducing profitability:
 - The appliances covered under extended warranty will be effected by an increase in the cost of any replacement parts and reduce the products profitability.

- The insurers exposure to risk naturally increases as the cost of produce covered under goods-in-transit (GiT) is likely to be affected by the tariffs and general increase in inflation and also reduce the product's profitability.
- The delay at ports may increase the risk of claims from the GiT insurance.
 - While GiT insurance generally does not usually cover losses due to business interruption (e.g. ports having longer wait times due to more inspections), there is likely to be an increased administrative burden from claims for spoilage of produce.
 - Additionally, delays at the ports and increased inspections may result in general damage to the produce that do in fact result in unexpected claims and lower profitability for GIT products.
- Due to increased investor uncertainty there will likely be increased volatility in capital and equity markets. This results in increased market risk that, if it materialises because of short-term liquidity needs, could result in reduced investment returns below what is expected resulting in decreased product profitability.

Medium-term effects:

- In the medium-term, profitability is likely to decrease further but the full extent will depend on management actions taken at the insurer and their ability to financially withstand a squeeze in profit margins.
- If the insurer is able to increase premiums at the next policy renewal, the insurer may see increased lapse rates from existing policyholders and lower than expected take-up rates from new business. The increase in premiums may be able to negate some of the reduction in profitability due to claims inflation .
- The premium increase may result in a reduction in the number of renewing and new policyholders to the point where lost premium income and the resulting increase in marginal fixed costs being spread across fewer policies results in decreases in per policy profitability for both products.
- As reinsurers also increase their premiums to compensate for inflation and profit margins are squeezed, general profitability in the insurance market is likely to decrease as the insurance cycle begins to harden.
- Increasing delays at the port are likely to increase reporting and settlement delays. as transporting goods slows down delivery of the produce covered under GiT insurance. Similarly, settlement delays for extended warranty insurance are likely to increase as replacement parts take longer to arrive. All of this will increase delays and reduce profitability for both products.
- If uncertainty persists, increased systemic uncertainty may translate to increase capital costs to compensate for this extra uncertainty. This increases the cost of funding these products and reduces profitability on a product level.

iii. Operational risks that are likely to worsen:

- Compliance risk: If increased administration effort is needed in order for products to pass inspection, this would result in increased compliance risk. The risk of being

fined or of losses arising due to issues in compliance are likely to increase as the complexity of tariffs would be expected to increase.

- Event risk: The risk of an external event (e.g. financial system crisis or issue in the global logistics system) causing wide-spread losses increases the longer the policies are in place and potentially weaken the strength and connectedness of the global economy.
- Strategic risk: The insurer's product strategy does not align with these policies and as such the risk of the insurer being unable to execute on originally set business plans and having to shift business strategy will increase the longer the policies are in effect.

Part (i) was, as would be expected for a straightforward bookwork question, generally well answered. Some candidates were, however, unsure about what was covered and some even missed the point (despite the name of the product) that the period for "extended" warranty insurance is after the original warranty.

Part (ii) was poorly answered by candidates that struggled to understand how changes in the economic environment would translate to profitability implications. Many candidates lost marks through working with implications in the long-term (the question asks for short- & medium-term); and confusing the concepts of price, value, and claim amount in their comments.

Part (iii) was poorly answered by many candidates generally related to misunderstanding what constitutes operational risk and providing points around insurance risk; not explaining what the risk is and how it could become more significant; and not stating the relevant risk that is then explained.

QUESTION 5

- i. Attritional losses are from smaller claims that are expected to occur regularly over policy lifetimes and that can be modelled more effectively than large losses which relate to claims above a certain threshold, and which are often due to an infrequent but severe risk event.

They are modelled separately as they have distinct statistical properties. Attritional losses are modelled using traditional frequency-severity methods, but large losses often require modelling over sparse data sets and require the use of extreme value theory.

- ii. The criteria for insurability include:

- Policyholder insurable interest: Policyholders must have an interest in the insured event not taking place. Climate change should not remove the insurable interest that people have in not having their property being damaged due to fire.
- Financially quantifiable: The increased cost in fire related claims should be able to be quantified. However, climate change by definition will make it more difficult for insurers to quantify the likelihood or severity of fires. Additionally, when quantifying the risk financially. Increased severity and frequency will result in

higher premiums which may make the insurance unaffordable to some who live in higher at-risk areas.

- Commensurate loss: The amount payable by the insurer in the event of a claim should bear a relationship to the financial loss incurred from the fire. Climate change does not delink the loss to the claim amount. However, if the intensity and frequency of fires increase then the cost of claim may begin to increase as housing needs to be built back more resilient and the general cost of reconstruction is then also likely to increase which slightly strains this criterion.
- Independent risk events: Risks are made more 'ideally' insurable if separate risk events (potential claim events) are independent of one another. Climate change will negatively affect this point as policyholders become less independent. Climate change will likely increase, above historically expected levels, the size and frequency of fires and increase the likelihood that previously geographically-independent policyholders are now exposed to the same risk event.
- Small probability: Probability of the risk event should be relatively small. Similar to the point above, climate change has a particular negative effect on this criterion when considering large risks. Climate change could increase the probability of large losses from fire-related damages to a point of unaffordability. This also impacts the availability of reinsurance as increases in the frequency of large losses is likely to result in reinsurers pulling out of the market.
- Law of large numbers: With a large number of enough similar and independent policies, an insurer should be able to manage the volatility and uncertainty in claims as the law of large numbers allows the insurer to pool potential risks. However, if climate change continues to increase claim costs for houses in at-risk areas then similar to the point on the risk being financially quantifiable, insurance may become unaffordable for many thus negatively impacting this criterion.
- Limit moral hazard and anti-selection: As the cost of property insurance against fires rises with increasing claim costs due to climate change, policyholders may be more incentivised to select against insurers where possible to try and maintain insurance; they may also be more likely to become desensitised to fire losses and be less cautious to protect their fire against property damage (moral hazard).

iii. Possible suggestions include:

- Investigate alternative product design: Parametric insurance and other adjustments to traditional insurance products could be considered. Here benefits are not related to the size of loss but, rather, are fixed amounts that payout when a threshold or condition is met (e.g. be based on a trigger around proof of damage due to a fire) is an example of where insurers may tweak elements of traditional insurance products so that people in affected areas can still afford some level of cover.
- Proactive fire warnings: Insurers could improve the automated methods they use to monitor and track fire risks and get better at providing warnings to policyholders that are projected to be in the way of a fire. Through spotting new potential risk events early, insurers could help reduce the overall loss the event could pose.

Part (i) was generally well answered. Some candidates were vague in their answering and repeated points in different words. Low scoring candidates could not think about the underlying statistical distributions that contribute to differences in modelling.

Part (ii) was generally well answered in terms of the bookwork. However, many candidates confused points, gave “criteria” that were not logical or could not apply the bookwork.

Part (iii) was surprisingly poorly answered. Many candidates displayed confusion in understanding that the question did not ask for alternative risk transfer/management techniques.

QUESTION 6

i. An insurer holds capital in order to meet capital requirement standards made by local and international regulators; and in order to meet its main business function – to be able to , with a high degree of certainty, meet future benefit obligations to policyholders – while trying to meet its own business objectives subject to external constraints.

ii. A Lloyd’s syndicate is:

- A collection of members (Names of Lloyd’s of London) who provide capital and accept (limited) liability for risks that are underwritten in return for their share of any profits that are earned on those risks.
- With a publicly owned insurer/reinsurer capital is made up of ordinary share capital raised from the sale of shares to the capital market.
- The publicly listed insurer and reinsurer may fall under different regulatory authorities with potentially different capital modelling standards.
- It is likely that they will have more similar capital modelling requirements when compared with that of the syndicate.
- The syndicate will have to ensure adherence to capital guidelines set out by Lloyd’s. Each Name will be required to prove they have sufficient funds to underwrite risks at a personal and at a syndicate level.

iii. Regional Insurer:

- Insurance risk – particularly catastrophe risk given the potential for accumulations of claims from geographic clustering and exposure to high severity, low-frequency natural disasters (e.g. hurricanes, floods and fires) leading to large crop damage.
- Operational risk – denial of claims, administration errors and failures of systems needed to manage real-time crop risks could cause unexpected financial losses or pose a reputational risk to the insurer.

Multinational Reinsurer:

- Market risk – given that property development is often attached to GDP and the need to have currency exposure across multiple developing countries’ currency

(which may be volatile), currency and market risk are likely to be large drivers of uncertainty and hence capital.

- Credit risk – the exposure to insurers in LMICs increases the risk of default (particularly if there are issues amongst the financial sector in the country) and as such is likely to be of particular interest in the capital model.

Lloyd's syndicate:

- Market risk – the long-term nature of these contracts will mean that investment returns may make up a significant portion of the insurance result, and the need to have a large amount in liquid assets in the event a large claim arises means this is a significant source of risk.
- Insurance risk – delays in reporting and settlement introduce uncertainty in long-term claim amounts will have a significant impact on the capital.

Part (i) was reasonably answered by most candidates. However, many answers were vague with no thought on the ultimate reasons for insurers holding capital. A shocking number of candidates thought that one of the main reasons is to “meet policyholder liabilities” or to “protect policyholders” – why then does an insurer then hold reserves? A more appropriate answer would be “to meet policyholder liabilities in times of adverse experience in order to protect policyholder interests”.

Poor conceptual understanding was clearly seen amongst many candidates in part (ii). Many candidates also misinterpreted the question as asking for ‘capital modelling’ and not the supervision of capital models.

In part (iii) many candidates lost marks by providing a risk without explaining why it is significant or by providing a generic explanation that showed no reference to the context provided in the question.

QUESTION 7

i. Components of the claim reserves:

- Outstanding reported claims reserve.
- Incurred but not reported claims reserve (IBNR).
- Allocated loss adjustment expense reserve (ALAE).
- Unallocated loss adjustment reserve (ULAE).
- Claims reserve for re-opened claims.

ii. Advantages:

- Using a higher percentile allows your company to use less reinsurance and thus self-insure due to the additional margin provided relative to the 75th percentile. This should increase the net underwriting margin since a portion of the reinsurers' profit will be retained.

- By proposing a range instead of a fixed percentile, there is additional flexibility regarding the level of claims reserves. Thus, should experience be worse than expected, claims reserves can be released, provided that these remain within the required range, to offset poor claims experience. This will ensure that profits are more stable year to year.
- Should be relatively easy to calculate if a full predictive claims reserve distribution is available.
- Increasing the claims reserve will reduce the company's tax liability for that year, provided that the tax authority accepts the higher reserves.

Disadvantages:

- The gap between the 75th and 85th percentile will need to be funded by the company. This increase in claims reserves will result in an initial reduction in the underwriting result, to the extent that the amount needed to fund the gap exceeds the savings on reinsurance premiums.
- Wide variations in the percentile may cause concern with the company's auditors, who may view the approach as a manipulation of results.

iii. Performing an analysis of emerging claims experience:

- The total movement in ultimate claims should be separated into the following components:
 - How emerging experience compares to that expected from the previous model. For the BF incurred method this consists of the difference between the actual and expected movements in incurred claims.
 - The effects of one-off, catastrophes or large losses should be removed from the actual data and analysed separately.
 - Changes in methodology. For the BF method this consists of changes in the selected development patterns, prior loss ratio and premium estimate.
 - Changes in assumptions. For the inflation adjusted BF method this consists of any changes to the inflation assumptions used.
- It is helpful to understand the reasons for the business developing differently to what was expected.

iv. Appropriateness of the reserving methodology:

- A summary of the calculated actual versus expected incurred claims ratios is given below:

Accident Year	2023	2022	2021	2020	2019
Actual	800	750	570	550	420
Expected	950	800	530	470	400
A/E	84%	94%	108%	117%	105%

- The projected claims incurred in the 2023 calendar year for the 2022 and 2023 accident years exceed the actual claims incurred. This suggests that the model may overstate the claims reserves for these accident years.

- Since the more recent accident years give greater credibility to the prior loss ratio estimates in the BF method, this suggests that the prior loss ratio used for these may be overly conservative.
- The actual claims incurred in the 2023 calendar year for the 2019-2021 accident years exceed the projected claims incurred. This suggest that the model may understate the claims reserves for these accident years.
- Since the older accident years give greater credibility to the chain ladder estimates, this suggests that the chain ladder estimates may be understated.

Part (i), was a book work question where candidates generally performed well. The question asked to list the components of the claims reserves, however most candidates listed reserves for unexpired risk e.g. unearned premium reserves, which did not score marks. Some candidates only provided the acronym of the reserve component, whereasthe full definition of the reserve component was required to score full marks.

In part (ii) candidates generally scored well. Candidates who scored best demonstrated a good understanding of how changing the claims reserves impacts the operations and various stakeholders of a general insurance company.

Part (iii) was a book work question but was generally answered poorly. Some candidates gave generic answers about how to calculate claims reserves which was not answering the question.

Candidates generally performed well on part (iv), with most accurately calculating the required percentages. Candidates who scored very well demonstrated an understanding of the mechanics of the Bornhuetter-Ferguson method and applied this understanding to interpret the calculated actual versus expected ratios.

QUESTION 8

i. Risk factors and associated proxy rating factors:

- Density of traffic where the car is driven: Insureds home and work address, use of vehicle.
- Ability of the driver: Age, gender, occupation of main driver, other drivers' details.
- Theft risk: Where the car is parked at night and during the day.
- Fire risk: Where the car is parked at night and during the day.
- Ease at which the vehicle can be damaged and the cost of repairing it: Make and model of the car, any modifications made.

ii. Mileage as a rating factor:

- Annual mileage would give an indication of how far the car is driven each year, and may give an indication of how much time is spent on the road.
- The more time spent on the road, the greater the probability of an incident occurring.

- Time on the road may also have a positive effect on risk as more time spent on the road may indicate a more experienced driver and therefore less risky.
- Factors that contribute to the appropriateness as a rating factor:
 - Annual mileage is factual and would be easily measurable in the way described.
 - This does, however, require the installation and proper operation of a telematics device.
 - It is non-manipulable.
 - It is objective.
 - It may be potentially uncorrelated with commonly used rating factors such as make of vehicle, location etc.
 - However, it would be correlated to others, such as use of vehicle, driver age, vehicle age, etc.
- The use of mileage may thus help the insurer to better classify its risks and set more accurate premiums.
- Consideration would need to be given to the cost involved in purchasing and installing the telematics device and whether the market might show resistance to the use of such a device.

iii. Impact on regression:

- A key goal of regression analysis is to isolate the relationship between each independent variable (rating factor) and the dependent variable (level of risk).
 - The interpretation of a regression coefficient is that it represents the mean change in the dependent variable for each 1 unit change in an independent variable, holding all other independent variables constant.
- When independent variables are correlated, changes in one variable are associated with shifts in another.
 - The stronger the correlation, the more difficult it is to change one variable without affecting another.
- This makes it challenging for the analysis to estimate the relationship between each independent variable and the dependent variable independently, as the variables tend to change together.
- This correlation increases the variance of the coefficient estimates, making them sensitive to minor changes in the model or the data.
- While multicollinearity does not affect the overall predictive power of the model, it does affect the interpretation.
 - The model will have inflated errors and unstable estimates.
- Statistical Tests that can be used to test the significance of factors used: Chi-squared statistics, Akaike Information Criterion (AIC), and F statistics can also be used to test for correlation.
- Principle Components Analysis uses correlated variables and transforms them into a set of linearly uncorrelated variables.

iv. Potential impact on XYZ:

- The impact depends on the significance of the rating factor in explaining risk – if insignificant then there could be little impact on XYZ.
- If the rating factor is significant, then XYZ would need to decide on the level of premium, but if based on a weighted average based on business mix by gender:
 - This implies an increased premium for the lower risk gender, and a decrease for the higher risk gender.
 - The lower risk gender policyholders are likely to lapse and move to another insurer.
 - XYZ will attract more higher-risk gender policyholders from other insurers.
 - Existing policyholders of the higher risk gender may cancel and re-enter at a lower premium rate.
 - XYZ is unlikely to receive sufficient premiums to cover claims experience leading to insurance losses.
- Alternatively, if XYZ sets its premium to be adequate for the higher risk gender, it will experience lapses by lower risk gender policyholders.
 - It may not be able to cover fixed expenses if a significant number of policyholders lapse.
- This change may be in line with XYZ's strategy to target a particular group.
 - The market may view this as a progressive move, which could enhance the company's image on other business.
- If XYZ has identified good alternative rating factors to gender, there would be little impact on XYZ.
- Additionally, if the director's suggestion is based on anticipated regulation changes banning the use of gender as a rating factor, the impact on XYZ may not be significant.
- Other impacts include:
 - Implementation may be costly.
 - There may be implications for the underwriting process.

Overall this question was not well answered, which was not helped by candidates who failed to answer the question that was asked.

In part (ii), many candidates gave four rating factors (instead of four risk factors as asked for) and related these to risk factors, often resulting in multiple rating factors given for the same risk factor and consequently fewer than four distinct risk factors.

In part (ii), several candidates only discussed why mileage may be a useful rating factor and which risk factors it acts as a proxy for, while some only discussed why it may be suitable to use telematics for this purpose.

Part (iii) was poorly answered. Most candidates could not explain why correlation between rating factors may impact the analysis as asked. Several said that it would reduce the predictive power of the model instead of explaining the impact on interpretability. Often inappropriate tests for assessing the significance of the factors used in the analysis were suggested.

In part (iv), few candidates commented on the risk that policyholders of the higher risk gender may cancel existing policies and re-enter at the lower premium rate. Most candidates also failed to mention that the loss of lower risk gender policyholders may mean that the insurer may not be able to cover fixed expenses.

END OF EXAMINERS' REPORT