Actuarial Society of South Africa

EXAMINER'S REPORT

October 2024

Subject F203 – General Insurance
Fellowship Applications

INTRODUCTION

The main aim of this report is to assist candidates preparing for the F203 examination. The Examiners scrutinise the official syllabus, refer to the Core Reading, which elucidates the syllabus, for crafting questions. However, they are not strictly bound to limit questions to the Core Reading material exclusively.

For essay-type and open-ended questions, especially in advanced subjects, the report might include more discussion points than what would be expected for a top-scoring answer.

Using past exam papers and examiner reports as study tools requires careful consideration, as each exam question is distinct. Professional exams aim to evaluate advanced cognitive skills like the application of knowledge, synthesis, and analysis, and presenting informed conclusions or advice.

Successful candidates focus on responding to the given questions rather than merely reciting their knowledge.

Finally, this report is based on the legislative and regulatory framework relevant at the time of the exam's creation. Candidates using these reports for revision should be aware that circumstances might have changed since then.

General comments on the aims of this subject

F203 aims to equip candidates with the capability to apply their knowledge of the general insurance sector and actuarial practices in real-world settings. A candidate who passes this stage is expected to understand not just the technicalities of general insurance actuarial work, but also have a firm grasp of product knowledge, competitive market dynamics, regulatory frameworks, and operational aspects of an insurance company. They should be adept at integrating these various areas to provide comprehensive advice.

We offer two essential pieces of advice to candidates: (i) read each question thoroughly and (ii) organise your thoughts before writing. It's important to note that achieving a passing mark doesn't require addressing all the points mentioned in this report. The focus should be on accurately responding to the question rather than attempting to cover as many points as possible.

The phrasing of each question is intentional, and candidates should pay close attention to its wording. Common errors due to misreading questions are highlighted in the question commentaries. Writing about unasked topics wastes time and won't earn marks, though these broader responses might be relevant in a professional setting. An exam, with its limited marks, requires focusing on the specific scope of each question.

If a question explicitly mentions a particular aspect, it's safe to assume that there are marks allocated for that component. During the exam creation, any unnecessary content is removed, indicating that (for example) included numbers or data points are relevant for analysis and commentary.

Candidates should also consider the placement of each question section within the overall context. New information provided in between sections is pertinent to the subsequent sections. Avoid using information from later sections when answering earlier ones.

Regarding the second piece of advice, F203 is the critical paper where we assess deeper thinking skills. Successful candidates display independent and broad thinking. When reviewing past papers, remember that generic points typically score lower than insights showing professional acumen.

We recommend candidates take a step back and thoroughly consider the question's context, rather than just analysing numbers with standard techniques. This approach involves thinking about the practicalities of the business, stakeholder perspectives, wider impacts, regulatory or ethical considerations, the suitability of actuarial methods for the situation, and current economic factors. Such a comprehensive approach leads to a more nuanced understanding of the risks and dynamics, valuable in professional practice. Commentary on the current paper points out instances where this broader perspective was lacking.

More broadly, we advise employing basic exam techniques like structured responses and effective time management. The online exam format should aid in organising answers. Using bullet points can clarify answers, but ensure each point is distinct and avoid repetition. Tailor your answers according to the command words used in the questions.

Candidates providing well-reasoned, question-specific points, even if not in the marking scheme, will be awarded marks.

QUESTION 1

You are a member of the SafeGuard innovation committee, and a proposal has been put forth for a groundbreaking product—a unique form of liability insurance tailored specifically for digital assets.

Digital assets are electronic representations of value or ownership that exist in the digital realm, including cryptocurrencies, tokens, digital versions of traditional assets, intellectual property, and digital content. They leverage technologies like blockchain to enable secure, transparent transactions and ownership transfers without needing physical forms.

The policy will provide coverage against losses arising from the theft or unauthorised access to digital assets held in online platforms. This innovative policy will feature a dynamic limit that adjusts in tandem with the value fluctuations of digital assets.

i. Propose five factors that will affect the claims outgo for the product. Give a reason for your choice in each case. [5]

Value of the Cryptocurrency Fund: Theft and Ransom are higher risks for larger valued funds.

Age of the Cryptocurrency Fund: A more established fund may be less of a risk

IT security (Security practices of wallet holder: A company could choose to secure their own servers, which should be compared with industry standards. Or outsource storage to well-known cloud service providers with proven track record for security.

Storage of private keys/passwords: If an individual's private keys are stored via an offline media, either through paper or as a memorised key and not stored on internet-connected servers, then they can only be accessed by compromising either the individual with access to the key or the physical security surrounding the key.

Multi-signature or single key access: Some cryptocurrencies can be linked to multiple private keys, each separately stored, all of which are needed to complete a transfer, reducing the risk of theft.

Geographical Location and Regulatory Environment: The risk of crypto wallet theft can vary significantly based on the wallet holder's location, due to differing levels of cybercrime, regulatory protections, and the legal framework for cryptocurrency in various jurisdictions. Areas with high rates of cybercrime or lax regulatory environments might be considered higher risk.

Type and Volatility of Stored Cryptocurrencies: Different assets have different levels of risk associated with them, based on their market volatility, security features, and susceptibility to theft or hacking. Insurers might rate policies higher for wallets storing highly volatile or less secure cryptocurrencies.

Comments: The intention of the question was to test the candidate's ability to come up with rating factors that could be used in a premium setting context. The words "claim outgo" resulted in wider answers being accepted. Better candidates spotted the link to premium setting and set themselves up for better answers in the subsequent question as well.

ii. Describe how you would calculate the office premium for this product. [10]

Premium should allow for:

- expected claim costs
- expenses e.g. commission, policy admin, contribution to fixed costs, claims handling,
- investment income
- reinsurance costs
- contingency loadings
- profit margin to provide required return on capital
- Tax implications.

Claim costs (Risk premium)

SafeGuard's internal historical data is likely to be the best data source for estimating expected claims costs because the new products benefits are similar to what could be provided under cyber insurance.

Because SafeGuard is the largest cyber risk insurer, it should have a significant amount of historical data.

Although there may be reasons why SafeGuard's data cannot be used e.g. poor data quality and cyber risk insurance is relatively new.

Need to adjust for differences between existing portfolio and assumed policyholder and claims mix under the new product.

Required adjustments may include:

- More private individuals rather than companies as policyholders.
- Allow for historical changes in exchange rates if applicable

The sum insured will fluctuate with the value of the cryptocurrency.

Estimated probability of claims could perhaps also be obtained from:

- reinsurer benchmarks
- industry statistics
- if sold by other companies (unlikely) this could provide a benchmark for the premium

Expenses

Need to consider how the product is to be distributed, may be commission implications if through an intermediary.

Estimated associated costs for other channels as appropriate. For example, to develop website and online sales capability, advertisement /marketing costs should considered.

Determine the amount of overhead / fixed costs that will be allocated to this product line.

Need to estimate sales volumes and typical premium sizes in order to spread fixed costs appropriately.

Need to allow for estimated claim handling expenses. Need the ability to manage claims occurring overseas, for example, an overseas investigation.

Other

Reinsurance availability and cost needs to be considered, high cost due to uncertainties.

May require higher contingency loadings as new product and data may be limited.

Other commercial considerations, e.g. low competition permitting higher margins, loss leader to ensure successful market share

Comments: This was a standard pricing question. Better candidates tailored the information given from the context of the question to create an answer that is tailored to the question. Majority of candidates wrote down generic points, typically those covered in the notes. These statements did not score as well as more tailored answers.

iii. *Discuss the potential challenges SafeGuard might face in underwriting and claims management of this dynamic liability insurance policy. Include considerations related to market volatility, regulatory changes, and technological advancements.* *[10]*

Underwriting

- Cryptocurrency prices are highly volatile, making it challenging for Safeguard to predict and set stable premiums. Dynamic premium adjustments would also need to be adequately communicated, with any retrospective adjustments to premium adhering to TCF principles.
- Evolving regulations in the cryptocurrency space may impact underwriting rules, requiring constant adaptation.
- Cryptocurrency operates globally; Safeguard must navigate varied regulatory landscapes and legal frameworks
- The rapid pace of technological change may introduce new risks, demanding continuous updates to underwriting models.
- Obtaining accurate data on cryptocurrency transactions and market trends is crucial for precise underwriting and pricing.
- Competing insurers may introduce similar products, intensifying pressure on pricing strategies.
- Cryptocurrency is complex; ensuring policyholders understand their cover is going to be potentially challenging.
- Managing and safeguarding sensitive cryptocurrency-related data may pose challenges due to privacy regulations.
- Ensuring operational resilience in the face of potential disruptions, such as exchange outages or blockchain network failures.
- Underwriters need to understand and assess risks associated with evolving blockchain technologies that underpin cryptocurrencies, finding that specific skillset may be difficult

Claims

- Any claims mismanagement or high-profile incidents could impact Safeguard's reputation
- Verifying cryptocurrency-related claims may be challenging, requiring advanced forensic capabilities and expertise.
- Cryptocurrency transactions may be susceptible to fraud, necessitating robust fraud detection mechanisms.
- In periods of low liquidity, crypto assets may experience exaggerated price movements, affecting policy liabilities. Potentially increasing fraud risk
- Assessing the long-term viability of the cryptocurrency market and its impact on the insurance product's sustainability.
- Public perception and acceptance of cryptocurrency insurance, influencing demand and market adoption.
- Reinsurance may be unavailable or costly resulting in underwriting risk being wholly retained by Safeguard

Comments: This question was poorly answered mainly because of candidates not using the structure given in the question to formulate their answer.

iv. *Analyse the impact of the proposed dynamic limit, which adjusts with the price changes of digital assets, on the overall risk exposure and risk management strategies for SafeGuard. Consider both the advantages and disadvantages of such a feature.* *[6]*

Advantages

- Increased customer satisfaction. Policyholders benefit from enhanced coverage during periods of increased crypto asset value.
- Such a feature can provide a competitive edge and differentiate SafeGuard's offering, attracting customers seeking adaptable coverage.
- Adjusting limits helps manage exposure by aligning coverage with the exact risk exposure.
- Offering a dynamic limit can position SafeGuard as an innovative and responsive player in the cryptocurrency insurance market.
- Dynamic limit changes in response to market conditions, which may provide diversification for SafeGuard in relation to other insurance products sold

Disadvantages

- A dynamic limit introduces complexity in policy and claims administration
- May be challenging for policyholders to understand, which could lead to issues at claims stage
- Frequent adjustments necessitate robust administrative systems, increasing operational complexity
- Frequent adjustments make it challenging to accurately estimate future claims costs, impacting pricing stability.
- Frequent limit adjustments may introduce uncertainty in reserving, making it difficult to estimate future claims.

- Regulators may scrutinise dynamic features, potentially impacting compliance and approval processes.
- There may be increased fraud risk as the limit increases.
- There may be potential moral hazard with policyholders knowing that their cover adjusts dynamically and the value of their crypto assets will always be covered in totality
- Risk of adverse selection with policyholders taking out insurance when assets have significantly increased in price and potential claims amounts are higher
- The dynamic limit ties the policy performance to financial markets, exposing SafeGuard to external economic factors beyond its control.
- The dynamic limit may make this be a difficult product to reinsure, making reinsurance cover expensive or unavailable.

Comments: Candidates struggled to come up with sufficient marks to cover the advantages and disadvantages required to score well. This could also just be read as an extension of question iii, with this question more considering the wider implications from the dynamic limit and the reduction in basis risk for the customer and the simultaneous increase in basis risk for the insurer.

You have been given the task of estimating the risk premium for this product. The risk premium is defined as the amount of money that needs to be charged to cover the expected losses and loss adjustment expenses without considering the operational and capital costs.

To assist in your calculation, you have been provided with the following frequency and severity table for potential cyber liability claims:

Annual Claim Frequency Probability	***Number of Claims (Frequency)***	***Probability (%)***
Very Low	*0-1*	*80.00*
Low	*2-5*	*18.50*
Mediumrap	*6-10*	*1.00*
High	*11-20*	*0.50*

Claim Severity Level	***Claim Amount Range (R)***	***Probability (%)***
Minor	*1,000 - 10,000*	*65.00*
Moderate	*10,001 - 50,000*	*30.00*
Major	*50,001 - 100,000*	*4.00*
Catastrophic	*100,001 - 500,000*	*1.00*

v. Calculate the expected number of claims per policy per year based on the provided frequency table. *[2]*

Claims	Probability	# of Claims
0.5	80.00%	0.4
3.5	18.50%	0.6475
8	1.00%	0.08
15.5	0.50%	0.0775
		1.205

vi. Calculate the expected claim amount per claim based on the provided severity table. *[2]*

Severity	Probability	# of Claims
5500	65.00%	3 575
30000	30.00%	9 000
75000	4.00%	3 000
300000	1.00%	3 000
		18 575

vii. Combine the results of questions (v) and (vi) to calculate the pure premium for the cyber liability insurance product. Clearly state any assumptions you make. *[3]*

1.205 x 18 575 = R22 382.88

- *The number of claims and the claim amounts are independent*
- *The claim amount within each severity level is uniformly distributed across the specified range, allowing the use of the midpoint for expected value calculation.*
- *The midpoint of each frequency and severity range accurately represents the expected value for that range, which simplifies the calculation but might not capture the actual distribution's nuances.*

Comments: Easy calculation question.

During the product development phase, you encounter significant pressure from senior management to adopt optimistic assumptions about future claim frequencies and severities to show the product as highly profitable.

These optimistic assumptions are not fully supported by available data or industry benchmarks. Considering the Actuarial Society of South Africa's (ASSA) professional guidance, particularly the Standards of Actuarial Practice (SAPs) and Advisory Practice Notes (APNs), address the following:

viii. Identify the ethical issues involved in this scenario. *[4]*

Professional Integrity and Objectivity: You are faced with a situation that tests your professional integrity and objectivity. Yielding to pressure to adopt optimistic assumptions for future claim frequencies and severities, without solid data or benchmarks to support such assumptions, compromises your duty to provide impartial, honest, and thorough analysis.

This scenario basically challenges your adherence to the core principles of actuarial practice, which demand that actuaries apply their knowledge and skill in a manner that is fair and in the best interests of all stakeholders.

Public Interest and Duty of Care: You have a professional duty to consider the broader public interest. Overly optimistic assumptions could lead to the underpricing of the new cyber liability insurance product, potentially endangering the insurer's financial stability and the ability to meet future claims. This could have wider implications for policyholders and the market, raising ethical concerns about your responsibility to ensure that your work does not contribute to actions that could harm the public or undermine trust in the actuarial profession.

Transparency and Disclosure: The scenario highlights ethical concerns regarding transparency and the duty to disclose professional judgments. If you were to comply with management's directives without disclosing the optimistic nature of the assumptions and their potential implications, it would contravene the principles of transparency and full disclosure mandated by professional standards. This lack of transparency not only affects the decision-making process within the company but also impacts stakeholders who rely on your work to make informed decisions.

ix. Discuss how SAPs and APNs guide actuaries in maintaining professional integrity and objectivity in their work. *[3]*

- SAPs are binding standards that members must adhere to, with any material breach potentially constituting unprofessional conduct.
- In this scenario SAPs would require actuaries to use assumptions that are reasonable, not overly optimistic, and supported by data
- Any deviation from these standards must be fully disclosed and justified in the actuary's report.

- APNs offer guidance to help actuaries apply best practices in their area of work. Although not strictly binding like SAPs, adherence to APNs is considered in any disciplinary procedures related to professional conduct.
- APNs would guide the actuary in establishing technical provisions and making assumptions that reflect the true risk profile of the insurance product.

x. Propose actions you would take as an actuary to ensure compliance with ASSA's Code of Professional Conduct in this scenario. *[3]*

Objective Analysis and Reporting: Conduct an independent analysis of the assumptions to be used, relying on available data, industry benchmarks, and actuarial judgment. Prepare a report that presents findings transparently, including any concerns about the sustainability of the product under the optimistic assumptions proposed by management

Professional Dialogue: Engage in discussions with senior management to explain the importance of adhering to professional standards and the potential long-term consequences of underpricing the product, emphasising your role in safeguarding the company's financial health and reputation

Disclosure and Justification: If there is a deviation from standard actuarial practices or if optimistic assumptions are ultimately used, ensure that these deviations are fully disclosed and justified in the actuarial report, citing the relevant SAPs and APNs. Additionally, communicate the potential risks and uncertainties associated with these assumptions to stakeholders.

Comments: Responses were varied, with many candidates failing to comprehensively cover ethical considerations when making assumptions, highlighting a need for better understanding of actuarial assumption setting frameworks.

The aim of the question was for candidates to reference the professional guidelines (available from the APN's) to discuss: integrity & objectivity, professional competence & care, transparency & disclosure, accountability & the consideration of stakeholder interest.

Question 1 Total: 48

QUESTION 2

In a fictional town named Waterview in South Africa, a significant number of floods have occurred in recent years, leading insurers to be reluctant to provide insurance coverage for properties in that area and other flood areas. The government is contemplating the creation of an insurance levy, similar to SASRIA, to cover flood claims for all properties in South Africa.

You are part of the government task force assigned to design and implement this initiative.

i. Propose potential benefits that a government-sponsored flood insurance levy could offer to property owners in flood-prone areas, the insurance industry, the government, and the wider economy. *[8]*

Property Owners

- The levy can make flood insurance more affordable for property owners in high-risk areas.
- The levy facilitates the creation of a larger risk pool, spreading the financial burden across a broader base.
- Property owners benefit from reduced financial risk, as the levy helps cover potential flood losses, minimising out-of-pocket expenses.
- The availability of comprehensive flood coverage enhances property values by mitigating concerns related to flood risk.

Insurance Industry

- Government intervention can stabilise the insurance market by providing coverage for otherwise uninsurable risks.
- Reduced uncertainty in flood-related losses improves insurers' overall profitability, encouraging participation in the market.
- The levy ensures a level playing field among insurers, fostering healthy competition within the insurance market.
- With the levy in place, insurers may be more able to provide other types of coverage in flood-prone areas, expanding their market reach.

Government

- The levy reduces the government's liability for post-flood relief efforts, transferring some financial responsibility to property owners.
- A dedicated flood insurance levy facilitates better disaster planning and response strategies, enhancing overall emergency management.
- The levy provides an opportunity for the government to strengthen regulatory frameworks related to flood risk management and insurance.
- Potential for improved confidence in the Government should levy prove to be successful

Wider Economy

- Enhanced financial stability for property owners contributes to a more resilient local economy
- The levy contributes to economic stimulus by supporting property development and infrastructure investment in flood-prone areas.
- Economic growth in flood-prone areas generates employment opportunities, benefiting local communities and the wider economy.
- The levy minimises economic disruption caused by floods, ensuring more stable economic conditions across regions.

Comments: Decent answers, although candidates struggled to really note the advantages of a scheme like SASRIA were risks become uncommercial for insurance companies.

ii. Identify and analyse the key reasons why insurers may be hesitant to provide coverage for properties in flood-prone areas like Waterview, considering both financial and risk management perspectives. Additionally, explore how the absence of a government intervention scheme could impact the future of the insurance market, with particular attention to the challenges faced by both insurers and policyholders, such as unaffordable premiums and limited coverage availability. *[8]*

Financial Perspective

- High Claims Costs: Properties in flood-prone areas are at greater risk of frequent and severe flood damage, leading to higher and more frequent claims payouts. This can negatively affect insurers' profitability.
- Increased Reinsurance Costs: Insurers often rely on reinsurance to manage catastrophic risks. Reinsurers may charge higher premiums for flood-prone areas, increasing insurers' overall cost structure.
- Premium Adequacy Challenges: Calculating actuarially sound premiums for high-risk areas may result in premiums that are unaffordable for policyholders, potentially reducing the market size.
- Capital Requirements: Insurers must hold sufficient capital to cover potential catastrophic losses. High-risk flood areas necessitate higher reserves, tying up capital that could otherwise be used for growth.

Risk Management Perspective

- Uncertainty in Flood Risk Modeling: Climate change and changing weather patterns make it difficult to accurately predict flood risks, introducing uncertainty into pricing and underwriting processes.
- Moral Hazard: Policyholders in flood-prone areas might not implement sufficient risk mitigation measures if they rely solely on insurance to cover potential losses.
- Exposure Concentration: Insuring multiple properties in a flood-prone region concentrates risk geographically, increasing vulnerability to catastrophic loss events.
- Regulatory Pressure: Insurers may face stringent requirements to ensure solvency, which could make them hesitant to take on high-risk policies.

Impact of Absence of a Government Intervention Scheme

For Insurers

- Without government backing, insurers may choose to avoid the market altogether, leading to a reduction in overall coverage availability.
- In the absence of universal coverage schemes, insurers might only attract the highest-risk policyholders, undermining risk pooling and making the business unviable.
- Insurers will struggle to maintain profitability while offering affordable premiums, leading to market exits and reduced competition.

For Policyholders

- Premiums for flood insurance in high-risk areas could become prohibitively expensive, leading to underinsurance or no insurance at all.
- Insurers may restrict coverage or include extensive exclusions, leaving policyholders unable to secure adequate protection.
- Increased Financial Vulnerability: Without insurance, individuals and businesses face heightened financial exposure, leading to longer recovery times post-disaster.

Comments: The responses were mixed. This question essentially just explored the difficulties posed to insurers from these uncommercial type risks and the long term impact from not having this peril covered.

iii. Identify and recommend risk factors that could serve as rating indicators for determining the appropriate insurance levy. In your response, consider the balance between accurate risk assessment and the simplicity required for effective administration of the government scheme. *[10]*

Flood Frequency and Severity

- Considering the historical frequency and severity of floods as a key risk factor.
- Areas prone to more frequent and severe floods pose a higher risk, justifying a higher levy to adequately cover potential losses.

Geographical Location

- Factoring in the geographical location of properties concerning water bodies.
- Properties situated in close proximity to rivers, lakes, or coastal areas may face elevated flood risk, influencing the levy level.

Property Elevation

- Evaluating the elevation of the land.
- Low-lying areas and regions with limited elevation are more susceptible to flooding, warranting a higher levy to account for increased risk.

Land Use and Urbanisation

- Assessing land use patterns and urbanisation trends.
- Increased urbanisation can alter drainage patterns, affecting flood risk. Areas with dense urban development may necessitate a higher levy.

Climate Change

- Integrating climate change vulnerability as a risk factor, potentially monitoring changes in percipitation.
- Regions vulnerable to climate change, including increased rainfall or sea-level rise, require a higher levy to address evolving flood risks.

Infrastructure

- Considering the resilience of local infrastructure.
- Areas with robust flood defenses and effective drainage systems may face lower risk, influencing a lower levy requirement.

Soil Composition

- Areas with impermeable soils may experience higher runoff during heavy rainfall, impacting flood risk and warranting a higher levy.

Community Preparedness

- Assessing community awareness and preparedness for flood events.
- A proactive and prepared community may reduce overall risk, potentially justifying a lower levy.

Property Value

- Evaluating the total value of insured properties in the area.
- Higher property values indicate increased exposure, necessitating a higher levy to cover potential substantial losses.

Age of Area/Properties

- Considering the age of the area and the general age of the properties.
- Older properties may have been constructed poorly which could lead to greater damage during a flood event, necessitating a higher levy.

Comments: Similar comments apply as for the rating question in question 1. The intention of the question is to gather information that is readily available so as to ensure sufficient rating at a scheme wide level. Answers were mostly generic and too high level to be appropriate for such a scheme.

iv. Evaluate the role of reinsurance in supporting the flood insurance levy initiative by discussing the advantages and disadvantages associated with using reinsurance to enhance the financial resilience of the government-sponsored flood insurance program. *[8]*

Advantages

- Reinsurance allows the government to transfer a portion of the flood risk to reinsurers.
- Reinsurance enhances the financial stability of the flood insurance program by providing an additional layer of financial support during large flood events.
- Reinsurance expands the capacity of the flood insurance program, enabling coverage for higher claim amounts.
- Utilising reinsurance provides access to the global insurance and reinsurance market, which may have experitse the government could leverage.
- Reinsurers often bring expertise and advanced catastrophe risk modeling capabilities, contributing to more accurate risk assessments within the flood insurance program.
- By having many reinsurance participants, concentration risk is reduced.
- Reinsurance could lead to stable premium rates, reducing the likelihood of significant premium fluctuations for policyholders.
- Reinsurance provides crucial catastrophe protection, ensuring the flood insurance program remains resilient against severe flood events.
- There may be financial incentives (like profit and commission share) depending on the type of reinsurance
- Having reinsurance backing may improve the perceived reliability and stability of the government led program.
- Reinsurance may reduce solvency capital required

Disadvantages

- Reinsurance premiums can be expensive, impacting the overall affordability of the government-sponsored flood insurance program.
- The availability and cost of reinsurance can be influenced by global market conditions, introducing an element of uncertainty.
- Reinsurers may impose limitations on coverage, potentially restricting the types of risks that can be ceded, leaving the government exposed to certain risks.
- Reinsurance arrangements may lead to potential coverage gaps if not carefully structured, leaving certain risks inadequately protected.
- The contractual terms and conditions of reinsurance agreements can be complex, requiring specialised expertise which the government may not have.
- Reinsurance introduces counterparty risk, requiring careful selection and ongoing monitoring.
- There may be delays between coordinating claim payments between insurers, the government and reinsurers, to the detriment of policyholders
- In periods of widespread catastrophic events, reinsurers may face capacity constraints, limiting their ability to absorb flood risk.
- It may be that the reinsurance program is not suitable for the standard formula and does not reduce capital required

Comments: Performance varied significantly. Many candidates correctly pointed out the usefulness of reinsurance to the scheme but in most cases generic answers were given – not considering the government of last resort in the case of a state scheme like this.

QUESTION 3

You are an actuary working for a large short-term insurer.

As part of a green initiative, the government of a country has introduced tax credits for insurance companies that replace electric geysers with solar geysers in residential properties.

The tax credits are designed to cover approximately half of the cost difference between a standard electric geyser and a more energy-efficient solar geyser. The remaining cost difference is to be recouped from policyholders over a 12-month period.

You can assume the following:

- The cost of an electric geyser replacement is currently R8,000
- A similar solar geyser will be R25,000
- The insurer replaces 2,000 geysers each month due to wear and tear.

You have been tasked with evaluating the financial and environmental benefits of this initiative for the insurer. You therefore need to consider the cost-benefit analysis, the impact on the customer and the regulatory and social implications.

Cost-Benefit Analysis:

i. *Calculate the expected cost for replacing electric geysers with solar geysers for the insurer over a 12-month period. For this calculation you can assume that 25% of clients will take up this option.* *[2]*

The initial cost outlay:

- 24,000 Geysers replaced annually (2000*12)
- Cost Difference is R17k (25k-8k)
- 17,000 x 24,000 = R408m
- 25% of Clients take up the option…
- Therefore cost outlay - R102m (R51m was also accepted as correct)

ii. *Given that tax credits will only be received at the end of the tax year of assessment and that the client will only pay back the remainder over 12 months, how much extra should the insurer charge the client to ensure allowance for the time value of money?*

- *The insurer has a weighted average cost of capital of 10%. This can also be used as the discount rate over the 12-month recoupment of costs.*
- *Upon lapse, the full amount of the unrecouped cost of the difference at time of lapse will be borne by policyholder*
- *You don't have to assume any further time delay in getting the tax credits at the end of the year.*
- *State all assumptions that you make.* *[6]*

Assumptions

- *Uniform 2000 p/month*
- *Assume tax year coincides with insurer's financial year.*
- *Assume six months for both or use a discount table for a more precise calculation.*a Few interpretations were taken as correct – the below shows just one:

- R102m discounted to the middle of the year:
- R102m/(1.1^(6/12)) = R97.25m
- R102m– R97.25m = R4.75m (Out of pocket due to discounting)
- R4.75m = 12*X*a(12) (Annuity Factor)
- X = R417 321
- R417 321 / (24000*0.25) = R69.55.

Comments: Question 1 was well answered with majority of candidates scoring near full marks for the very easy calculation. Majority of candidates failed in question 2 to even get to a starting point of the calculation – which is a concern. Better candidates identified and explained the time value of money approach they would follow and were rewarded in this case.

Customer Relations and Market Positioning:

iii. Discuss how this initiative could affect the insurer's relationships with its customers and its position in the market. *[6]*

Enhanced Customer Satisfaction and Loyalty

- By participating in this initiative, the insurer can offer its customers a valuable upgrade to solar geysers at a reduced cost, directly benefiting from energy savings and contributing to environmental sustainability.
- This proactive approach to incorporating green solutions can enhance customer satisfaction, as policyholders feel supported in making eco-friendly choices. Moreover, the initiative can boost customer loyalty, as clients see the insurer as a partner in their green journey, not just an insurance provider.

Differentiation in the Market:

- The insurer's commitment to the green initiative positions the company as a leader in sustainability within the insurance industry. This differentiation can attract new customers who prioritise environmental considerations in their purchasing decisions.
- As consumers become increasingly environmentally conscious, the alignment with green values can serve as a key competitive advantage, enhancing its reputation and attracting a broader customer base.

Increased Policy Uptake and Renewals:

- The offer to replace electric geysers with more efficient solar geysers, partially funded by tax credits, can act as an incentive for new customers to choose the product over competitors.
- Additionally, the tangible benefits of the initiative, such as reduced energy bills and the promotion of sustainable living, may encourage existing customers to renew their policies, leading to higher retention rates.

Corporate Social Responsibility and Brand Image:

- The insurer's participation in the green initiative reflects its commitment to corporate social responsibility. By actively supporting environmental sustainability, the insurer enhances its brand image and appeals to a growing segment of the population that values corporate ethics.
- This can lead to positive media coverage and word-of-mouth, further solidifying the insurer's position in the market as a socially responsible insurer.

Comments: Time pressure was becoming evident at this point – especially for scripts where candidates didn't plan their way through the exam with many wasting time on generic points. Overall this question wasn't badly answered and there was ample opportunity to score marks by just thinking through any new product's life cycle.

Regulatory and Social Implications:

iv. Discuss likely regulatory implications of adding this benefit to policyholders. *[4]*

Compliance with Green Initiatives:

- Participating in the government's tax credit program for solar geysers requires the insurer to adhere to specific regulatory standards and reporting requirements. This involves ensuring that the solar geyser installations meet certain energy efficiency and safety standards, as well as accurately documenting all installations to qualify for tax credits.
- Compliance demonstrates the insurer's commitment to regulatory standards, reinforcing its reliability and trustworthiness in the eyes of regulators and customers alike.

Product Approval and Compliance

- Offering a new benefit may require submitting product amendments or endorsements to the regulatory authority for approval, depending on the jurisdiction.
- Regulators may scrutinise whether this initiative aligns with principles of fair treatment. For instance, care must be taken to ensure the benefit does not unfairly disadvantage certain policyholders (e.g., those who already have solar geysers or cannot participate due to property limitations).
- Insurers must provide clear communication to policyholders about the benefit, including the associated costs and savings, the 12-month recoupment plan, and the impact on premiums or other charges.

Pricing and Reserving Considerations

- Since the remaining cost difference is recouped over 12 months, actuarial assumptions underpinning the recoverability (e.g., policy lapses, cancellations, or non-payment risk) must be robust and may require justification to the regulator.
- If this initiative leads to changes in premium structures or risk pools, regulators may require demonstration that premiums remain fair, adequate, and not discriminatory.
- The insurer may need to establish additional reserves to cover the upfront cost of the geyser replacement, particularly if there are risks that policyholder repayments might not materialise as planned.

Risk Management and Solvency

- Replacing geysers involves operational risks (e.g., ensuring installations are done correctly and safely) and financial risks (e.g., potential cost overruns). These risks must be incorporated into the company's risk management framework
- Depending on the materiality of this initiative, there may be an impact on solvency capital requirements, especially if the program introduces volatility in cash flows or claims patterns.

Environmental, Social, and Governance (ESG) Reporting

- Regulators may require reporting on how the initiative aligns with broader ESG objectives and contributes to sustainability efforts.
- The insurer may need to demonstrate how the initiative reduces environmental impact, including metrics like reduced energy consumption and lower carbon emissions.

Contractual and Legal Considerations

- Policy contracts may need to be updated to include the solar geyser benefit, which requires regulatory review to ensure compliance with legal and consumer protection standards.
- Clear communication about how tax credits are applied and ensuring compliance with tax laws is essential. Mismanagement of tax credits could attract regulatory scrutiny.

Consumer Protection and Complaints Handling

- The insurer must have mechanisms to address complaints or disputes, particularly if policyholders perceive the cost recoupment or benefit eligibility criteria as unfair.
- If the initiative fails or is discontinued, insurers must ensure policyholders are not adversely affected, potentially requiring regulatory sign-off on exit plans.

Comments: Again, quite a wide range of answers could be given as demonstrated above. Many candidates failed to understand wider implications of potential regulatory impacts.