EXAMINERS' REPORT

May 2021 examinations

Subject F203 — *General Insurance*

Fellowship Applications

INTRODUCTION

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

The intention of the report is to be used as a study guide – as such parts of the report have been colour coded:

- Examiners thoughts are marked in this colour
- Feedback on the question marked in the colour
- Question in this colour.

Subject F203 — *General Insurance*

Specialist Applications
May 2021
MEMORANDUM

Overall

Candidates should note that F203 is the key paper at which we test candidates' broader thinking. This is generally the final paper before qualifying as a professional, and we consider a capacity for broader thinking to be one of the best indicators of a candidate's suitability to act as a qualified actuary. As such, we aim to design exam papers that are difficult to pass without displaying some capacity for independent, broad, and commercial thinking.

As with the majority of F203 papers, students failed to show the commercial thinking that is required to pass the exam. Most answers remain too generic and students fail to bring the context of the question into play – choosing to rather take a scatter gun approach.

Markers heavily reward instances where these skills are displayed. When reviewing past papers, candidates should assume that the marks available for generic points are substantially less than those awarded for the more challenging points that would be the mark of high-quality professional insight. Marks available for list items from bookwork are lower still.

For this exam in particular:

- *Candidates answered calculation type questions very poorly showing a clear lack of planning and understanding the feedback required.*
- *Candidates continue to undermine themselves by providing generic or off-topic answers. Specific observations are provided by question throughout this report.*
- *Candidates also did not exhibit much higher order thinking and questions were generally poorly answered considering the number of marks that were available.*

Candidates that planned their way through the exam did not appear to be under time pressure. Taking a scatter gun approach to the questions results in time wasting. Planning remains a very important part of the paper – but the majority of candidates do not train how to plan in an exam environment.

In conclusion, we would offer candidates two key pieces of advice – read the question properly and take the time to think about what is going on. Time spent making sure that you are answering the question that is asked is therefore more valuable than a panicked rush to put down as many points as possible / incorrect calculations, regardless of whether they are relevant.

QUESTION 1

This question had 4 main parts with the background of you being the actuary of a medium sized short-term insurer in South Africa writing 4 lines of business (Motor; Property; Motor Warranty & Engineering). – Take the time in the exam to think what this means.

- *The likely mechanics of the operation…*
- *The commercial pressure that you might face in day to day operations*
- *The question provided you with a lot of information on the company – how you can use this to your advantage and tailor your answer to address the points in the question. Be very careful of going down rabbit holes – I urge you to specifically keep asking yourself if you are answering the examiners questions or are you answering your own question?*

Questions were set so as to test candidates' ability to apply actuarial techniques and showing sound business acumen across these different lines of business

i. *The first part required candidates to describe how to perform Cashflow projections for the engineering product as well as the underlying assumptions that would be required to perform these calculations.*

   Candidates seemed to perform relatively well in this question. With the majority of candidates passing the question.

ii. *Part ii started with a bookwork question on the Unallocated Loss Adjustment Expense provision. The question then required candidates to comment on the viability of a new industry proposal to set technical provisions.*

   Candidates performed relatively well with the bookwork question.
   For the remainder of the question - majority of the candidates could not comment sufficiently on the possible implications of the proposal on the insurer. Answers in the majority of cases were not well structured and generic answers were applied that did not convince the examiners of the higher order thinking required.

iii. *Candidates were required to respond to the CFO on the possibility of holding less reinsurance so as to save on company expenses and improve the company performance.*

   A small number of candidates had a well-planned out answer to the 13-mark question. The majority of candidates ignored the request of the CFO and rather discussed other places where profitability could be enhanced.

   This question is probably one of the key examples why students keep failing the exam. A very specific scenario is given with the CFO addressing you directly about increasing the reinsurance retention levels yet the majority (approximately 2/3rds) of candidates decide to rather talk to the CFO about other issues.

   I am not sure as to why candidates do this – but hopefully you won't to do this in a real-life scenario if the CFO asks you a very specific question. Furthermore, a lot of information is given in the question which was not used?

If the question was posed in a more informal setting, I am confident that the majority of candidates would appreciate the impact of reinsurance on

- *UW Profit*
- *Investment Income*
- *Assets & Liabilities*
- *The SCR.*

iv. *Section iv required candidates to consider the professional considerations of adjusting provisions to release profit. The first scenario required candidates to comment on the inherent uncertainty when setting provisions and the likely changes that could be made to release some of the technical provisions. Part II required candidates to comment on whether they believe the same process could be followed for a company with much smaller provisions.*

The first part of the question was relatively well answered but the majority of the candidates again did not plan their answer. The audience (i.e. the CFO) was not considered in most of the answers.

Part II was answered poorly by the majority of candidates by not considering the professional implications of the question. We are trying to gauge your comfort levels when being subjected to a real-life scenario – how you would feel reducing the provisions by 10% vs reducing them by 2%. I again believe that talking about this around the water cooler would produce better answers than what was witnessed in the exam.

The proposed memo for Q1 is set out below: For essay-style questions, the marking schedules contains open ended marks for other sensible suggestions. Overall, there are more than 50 marks available.

QUESTION 1

You are an actuary working for a medium sized general insurance company writing the following lines of business in South Africa

- Motor
- Property
- Motor Warranty
- Engineering, primarily contractors all risk products.

The finance director is concerned about the new IFRS 17 standard and asked you to model the cashflows of the current cohort of the engineering product using net present value techniques.

For the engineering product you can assume that a single premium is received in advance and that each contract is valid for 5 years from inception.

i. a) List the key assumptions required for modelling the cashflows of the product.

b) Briefly describe the analyses you would perform to determine the underlying assumptions for the cashflows.

(Your answer does not need to refer to or include any of the IFRS 17 standard terminology) **– some candidates chose to deliberately ignore this**

[10]

So, this is a list question – the rule being single word answers get 0.25 marks with others providing context getting 0.5 marks.

So, saying *reinsurance* – 0.25
Saying –*reinsurance with the possible lag in pay outs and recoveries* – 0.5

- Likely Premium Income
  - Considering the strategic initiatives
  - Retention rates on old business
  - Economic environment & the insurance cycle
- Earnings pattern derived by considering the claims over the term
  - Engineering claims typically show an increasing pattern of risk (Split by:)
  - Paid claims
  - Outstanding Claims
  - Incurred but not reported provisions
- Expenses related to the product
  - Acquisition expenses.
  - Claims expenses
  - Indirect expenses together with likely expense inflation
- Investment Return
- Reinsurance premium payments – quarterly or in advance
- Reinsurance recoveries (lagging the claim payments)
- Reinsurance commission (if applicable)

Due to this being a list question – 4 marks were initially proposed, but if candidates expanded and included more points – examiners awarded up to 6 marks for the question.

Describe the analyses you would perform to determine the value of these assumptions.

Premium

- Review the class of business History - for the engineering class
- Consider the Business Plans & strategic initiatives for the class
    - Consulting Sales Managers and budget plan
    - Any plans for acquiring new portfolios

Claims

- Performing claims analysis by underwriting year - to determine the incidence of risk
- Determine the likely loss ratio by both underwriting year and accident year to determine the likely ultimate loss ratio
- Split Claims into development cohorts to determine the required split between paid; outstanding claim provisions and likely IBNR

Reinsurance

- Consider current arrangements and likely future changes to the structures
- Determine the likely lag between receiving premium and paying RI premium. Consider the nature of the reinsurance contracts (Treaty QS, XL vs Facultative QS & XL)
- Reinsurance structure would also stipulate whether we will receive reinsurance commission.

Expenses

- Commission payouts as % of Written Premium
- Staffing Plan - for directly allocated expenses
- Indirect expenses might require finance department input (Activity Based Costing)

Investments

- Projected Investment return
- Checking the constraints of the investment policy
- Investment funds available - likely capital backing of the product

Other

- To allow for future inflation consider:
    - Future Interest rate predictions – changes in the yield curve
    - Current economic environment
- Take account of current position in the underwriting cycle - likely future movements

The following industry wide procedure has been proposed:

- Calculate the best estimate for the undiscounted claims reserves
- Estimate the future cashflows of these provisions
- Discount these payments using gross redemption yields available from the financial regulator (assume these are available monthly)
- Determine the unallocated loss adjustment provision
- Apply an additional risk margin to the provisions

ii. a) Describe what is meant by the unallocated loss adjustment provision and describe possible ways of calculating this provision. **[5]**

b) Discuss the implications of the proposal on:

- Profitability
- Capitalisation
- The insurance portfolio **[7]**

c) Describe some of the practical difficulties of implementing the industry proposals.

[4]

Part a) – Bookwork – majority of candidates did well. Some candidates did not know what ULAE is which demonstrates that pitching up for the exam without any studying might not be a great idea.

- Unallocated loss adjustment expenses (ULAE) are costs incurred by an insurance company that cannot be attributed to the processing of a specific claim.
- ULAE expenses are more general and may include overhead and salaries.
- Because unallocated loss adjustment expenses do not apply to a specific claim, there's no loss date or report date for them. This makes calculations tricky. Any of several methods are available for calculating ULAE:
    - use a percentage of an average year's ULAE paid out. This method does not account for growth or changes to how often claims are made.
    - Some insurers add a justified ratio to the OCR and IBNR claims.
    - "Classical Paid-to-Paid Ratio Method – By reviewing the ratios of calendar year paid ULAE to calendar year paid losses, the actuary estimates an ULAE-to-loss ratio. To reflect the assumption that half of ULAE is incurred when new claims are set up, and the remaining half is spent closing them this ratio is applied in full to the incurred but not reported (IBNR) loss reserves, plus half of case reserves.

This method has several implicit assumptions, including that the

- company's ULAE-to-loss relationships have achieved a steady state (such that the ratio of expenses to paid has not changed significantly in the past. You are medium sized so you would have achieved some stability already)

- ULAE to paid losses provides a reasonable approximation of the relationship of ultimate ULAE to ultimate losses); and that the relative volume and cost of future claims-management activity will remain stable with the run-off"

Discuss the implications of the proposal on the profitability, capitalisation, and competitiveness of the insurance industry and also on your company

Here the main points need to be considered. Numerous candidates did not use the prompts to their advantage and chose to rather structure their own ideas. This approach makes it difficult to generate sufficient marks.

7 Mark question – so you require about 14 distinct ideas. Be mindful of repetition and plan your answer.
Also note the distinction between parts a and b of the question.

Profitability

- A change in accounting standards will not necessarily affect the eventual profit, but will affect when the profit can be recognised
- In future - the Discounting will lead to lower provisions, which would increase the profit before tax position. This will cause an acceleration to the tax payments for the year.
- This will be especially true of longer tail classes where currently the reserves are not discounted
- The addition of the explicit ULAE and risk adjustment will increase provisions. The extent of this will depend on the tail length of the provisions, the current costs, and the inherent volatility of the projections
- Important to note that introducing discounting accelerates the profit ONCE, thereafter it results in additional source of volatility into the profit profile, as the difference between actual and expected invested return needs to come through (although mentioned in the competitiveness piece)
- When comparing the results in the year - the brought forward profits could lead to volatile profits from one period to the next - this will also need to be highlighted and the effects disclosed in the financial statements

Capitalisation:

SAM in South Africa is already on a prescribed basis. Most students completely ignored SAM. It is important to show that you know what is going on – if you were specifically asked to ignore SAM then it is fine to not mention the current regulation – however you are a short term insurance actuary and therefore need to be on-top of what is happening in the regulations affecting your industry.

- In South Africa, SAM already requires provisions to be discounted using the redemption yields from the financial regulator
- SAM further requires the addition of a risk margin and includes an explicit ULAE calculation

- There will not be a significant impact to the solvency regime
- The new standard will be more closely aligned to the SAM basis with regards to the above
- Own funds will therefore be more closely aligned depending on the company's tiering of funds

Your company – majority of candidates do not mention this.

- Specifically, the Engineering & Warranty classes will be most affected - as these have the longest term
- Typically, an Engineering policy is active for 5 years with the majority of claims being expected at the end of their term
- This means discounting could have a significant effect on the portfolio. i.e. reducing the reserves

Industry& Overall competitiveness

- IFRS 17 requires a lot more disclosures and detail be shown than under IFRS4, this may impact competitiveness in the industry if competitors have more detail
- General: For companies writing long tail business there will be a significant tax liability arising from a restatement of the reserves in respect of past business, as the provisions will decrease, and the profits will show an increase
- Actual implementation of new methods and process could have cost implications which affect profitability.
- For companies writing short tail business the effects noted above will apply but to a much-reduced level.

The way the question above has been answered is exactly the level of detail required in the exam. Do not list generic points which have nothing to do with the question in the hope of getting marks. You are wasting time.

Describe some of the practical difficulties of implementing the above proposals.

- Additional administrative burden for companies, regulator, and analysts (Auditing the results also increase the complexity)
- Expected payment pattern and assumptions may be difficult to derive for some classes.
- To what extent should classes be combined (best estimate for the sum of classes may not be equivalent to sum of best estimates).
- Companies with significant amounts that are not invested (broker balances, reinsurance balances) would need to allow for the effect of delays when modelling the cashflows. The company runs the risk of additional asset-liability mismatches as the assets will not generate the returns the liabilities assumed
- Unless the discount rate can be adjusted to reflect this

- If discounted reserves are used for accounting purposes and the bond yield is higher than the actual asset yield then the provisions could be understated, and the investment return will not match the liabilities
- Subjective nature of what is "best estimate; The proposals do not consider the uncertainty around the best estimate that exists: latent claims; impacts of court decisions; reinsurance counterparty default; currency and claims inflation & Investment risk
- Method to determine risk margin not prescribed, may be difficult to decide how this should be done.
- System constraints and run-time implications need to be considered

Whilst some of the points can be seen as generic – they still apply to the question and you need to list these. For example: *System constraints and run-time implications need to be considered – whilst this can apply to a range of questions – it is relevant in this instance as by implementing a change you reveal particular constraints that you did not have before… but listing something like reinsurance and tax in this question is unlikely to gain marks unless you have a good explanation.*

Make sure however that you are first addressing the main points of the question and then revert to generic answers to fill the void

In the past year the company has not made an underwriting profit and relatively poor growth has exacerbated an existing expense problem. The CFO is suggesting that in order to save money the company should increase its reinsurance retention levels on the Engineering and Property business.

Currently the retentions have been set at:

Engineering: Net Retention R7.5m buying cover up to R750m. Facultative cover is placed in excess of R750m.

Property: Net Retention R5m buying cover up to R500m. Facultative cover is placed in excess of R500m.

A snapshot of your company's performance over the last two years is given below:

	2019	**2020**
GWP	R2.0bn	R1.9bn
Underwriting Profit	R5.0m	-R1.5m
Investment Income	R100m	R100m
Total Assets	R1.8bn	R1.75bn
Total Liabilities	R1.1bn	R1.05bn
Own funds	R650m	R680m
SCR Requirements	R550m	R585m

iii.

Describe the factors you would consider when formulating your response. **[13]**

Current situation

- Commenting on the details of existing reinsurance arrangements & Appropriateness of existing reinsurance arrangements. Majority of students did not consider this??
- Medium size, low underwriting profit - volatility measured to both underwriting profit and total profit
  - Currently the company retains R7.5m and R5m of large claims in the engineering and property lines of business respectively. The company only showed an underwriting profit of R5.0m in the previous year – one large claim would have wiped away underwriting profits. The relative size of our risks vs the earnings could be too big and further increasing this would further increase the potential for wiping out our u/w profits.
  - Current retention limits set above the underwriting profit in total (Showing Calculation + 0.5 Marks)
- You would need to consider the past claims experience (as much as possible but at least 5 to 10 years depending on company history and reinsurance coverage offered in the past)
  - Both the property and engineering class give rise to the possibility of having very large claims. Will need to perform an exposure analysis to determine the probability of having large claims on the largest portfolio to determine the impact.
  - Need to consider the type of portfolios held (i.e. Small - Medium Enterprises vs Large Commercial Risks)
  - Important to consider the independence of risk types and your portfolio for making these changes.
- Align with Shareholders requirements to stabilise results unless there is another strategic objective of which you are not aware.
- You need to raise the awareness that additional financial support and capital injections might be required following large losses.

Company performance

- Perform an analysis showing the effect on profitability of higher retention levels
- Need to determine the Earnings at Risk or nearer term losses that the company would be happy with – this should align with your risk appetite metrics.
- Consider the current Solvency margin / free assets – commenting and showing calculations for the current low solvency coverage.
  - Increasing the retention would increase the SCR (decreasing the counterparty default risk)
  - further portfolio considerations like the Geographical spread of business would affect the Accumulations of risk
- Will need to consider the current Dividend policy – again alignment with shareholders expectations and the strategic intent are important considerations.
- Consider what the changes will mean to the ROI

Other considerations

- Availability of reinsurance should you increase the retention – would reinsurers still want to participate?
- Cost of reinsurance, value for money of changing the retention. Consider what the financial impact of increasing our retention would be in terms of the rate on line charged?
- Consider current Reinsurance security – important for regulatory capital requirements and the likelihood of making recoveries. Consider our current Facultative cover requirements – is it profitable to still underwrite these policies – or are we being charged too high rates on these arrangements.
- The question does not consider Catastrophe risk – however increasing our retention would increase our retention in a catastrophe scenario. This would have further effects like increasing the capital requirements and therefore lowering our ROI.
- Investment freedom - holding more money will lead to greater cash provisions, which could result in greater investment return. However, further effects like the increase in capital requirements would also need to be considered.
- Explore alternatives to purchasing reinsurance – for example can we rather partner or co-insure some risks – really generic points at the very end…

You have recently completed the calculation of the technical provisions for the year-end accounts, and the technical provisions for the company in total are R900m. The table below shows the provisions broken down into the different components:

	R'm				
	Motor	**Property**	**Warranty**	**Engineering**	**Total**
Earned Premium	650	500	350	500	
OCR	90	110	120	200	520
IBNR	40	85	10	110	245
ULAE	4	7	4	10	25
URR	**0**	**0**	**0**	110	110
Total Liabilities					**900**

This then allows for a company profit of R 98.5m. Your chief executive has requested that the calculation of the reserves be reviewed with a view to showing a total profit of R115m million in the accounts.

iv. a) Discuss the aspects of the reserving process that give rise to uncertainty, and how you might review your estimates in light of the chief executive's request. **[8]**

b) Explain how your answer to (a) might change if the company was much smaller with total claim provisions being R150m instead of the R790m held currently. **[3]**

- The decision on what to publish in the accounts rests with the Board of Directors.
- The actuary's role is to provide the necessary advice to the Board in order to make an informed decision.
  - In framing the advice, the actuary will make a number of assumptions regarding the model and parameters used.
  - Both of these sets of assumptions are subject to varying degrees of uncertainty.
  - The quality of the data has to be relied upon - but if there are data concerns, this will increase the uncertainty and should therefore increase the provision
- Each of these assumptions may contain margins of prudence - the SAM and IFRS 17 standard requires reserves to be set at Best Estimate level including a risk adjustment.
- Such margins include the discount rate, reinsurance recoveries, inflation, tail factor and treatment of future premiums.
- Due to the degree of uncertainty regarding the "true" model and parameters there is a range of values which can be considered reasonable and prudent
- Provided that assumptions made remain above the lower end of their respective reasonable and prudent level then their use is adequately justified

- Where the assumptions fall below a level deemed reasonable and prudent by the actuary then they should not be used in framing advice.
- General accounting and actuarial guidance also indicates that arbitrary changes should not be made to assumptions.
- Any proposed changes should be for reasons indicated by past experience or known future changes.
- In practice, good reasons will exist to justify small changes to any assumptions made. There will undoubtedly be small margins in some of the assumptions which can be adjusted to produce the desired result.
- With claim provisions currently sitting at R790m, a change in profit of R17.5m could be deemed relatively immaterial
- However, in the unlikely event that all margins have already been set at the lowest level deemed acceptable then any further review of the calculation should make that conclusion clear

Explain how your answer to (a) might change if the total insurance reserves were R150m

- In the case where the level of reserves is only R150m a change in profit of R17.5m becomes material
- It is unlikely that that the calculations that produced the profit will contain sufficient margins to increase the profit by R17.5m
- Therefore, you will probably not be able to perform the calculation to show the desired level of profits
- Recommend if possible to seek a second, independent, opinion.
- Even if we are comfortable with the approach taken, the auditors might not share this view - and we might not be able to sign off the provisions.

QUESTION 2

Question 2 examined a range of actuarial topics related to a general insurance company underwriting personal lines motor and property business. Further information stated that the company is interested to enter into an agreement with an aggregator website to increase market share.

The question had 6 parts with candidates required to comment on the assumptions and process that would be required in the budget setting process of the organisation as well as performing a few simple calculations.

i) The first part examined the factors that may impact the business forecast including the following:

   i. Potential differences between taxable income and actual operating profit
   ii. Financial soundness regulation
   iii. The economic environment
   iv. Improvements in technology

The question was not answered well due to most candidates struggling to mention sufficient distinct points when considering the above. The majority of candidates displayed a lack of commercial acumen in their consideration of the above points required to do well in the question.

ii) Part ii required candidates to comment on factors that could influence growth rates as well as the possible model choice used to forecast the business.

The question was relatively well answered but a lot of candidates struggled to apply the required tailoring of their answer to the question – again opting for more generic type answers and not really getting into the details of the question. Candidates also answered the question very narrowly, focusing exclusively on the Aggregator projections and ignoring the rest of the business.

iii) Question 2 part iii tested candidates' ability to make the required assumption to move from the gross loss ratio to the net loss ratio given various different bases of reporting.

This section was poorly answered with very few candidates attempting to get to the net loss ratio position and rather listing generic points for the examiners to consider.

iv) Part iv required candidates to outline different methods of allowing for expenses in the forecasted position.

This exact concept was tested in the 2020 exam year. The average score however for the question was 43% in the session, highlighting the general poor preparation of a 1/3 of the students.

v) Question v required candidates to forecast the 2021 position based on all the information given in the prior parts of the question as well as a table showing the performance of the previous 2 years.

A lot of marks were available for simple calculations. About half of the candidates merely copied the 2020 results for 2021 without applying any ratios and a good proportion of candidates did not perform any calculations and rather focused on the assumptions – thereby missing out on "easy" marks.

vi) Question 2 part vi required candidates to then consider the information from part v together with new information to consider whether the company should declare a dividend.

The majority of the candidates mentioned that dividends should not be paid but failed to use the information to substantiate their answer.

QUESTION 2

You are the Chief Actuary of a **new** South African direct insurer focussing on personal motor and property insurance. New business is obtained through internet and telesales. The business has been operational for 3 years and you have been tasked to present the 2021 budget to the Board of Directors.

i. Outline factors that may impact the budget considering:

a. Potential differences between taxable income and actual operating profit
b. Financial soundness regulation
c. The economic environment
d. Improvements in technology

[15]

Potential differences between taxable income and actual operating profit

- Determination of technical reserves e.g. unexpired risk provisions are not allowed as deductions for tax purposes
- Dividend income - Local dividend income is exempt from tax while foreign dividends are taxable. Any expenses incurred in respect of local dividends received cannot be deducted for income tax purposes as no deduction can be claimed against exempt income.
- Disallowed expenditure or exempt income in terms of the Income Tax Act
- Assessed tax losses (previous losses incurred by the company and allowed as set-off against future profits by the South African Revenue Services)
- Unrealised gains or losses on assets due to fair value accounting adjustments
- Any IFRS adjustments included in operating income or expenses

Financial soundness regulation

- An insurer must at all times maintain its business in a financially sound condition, by holding eligible own funds that are at least equal to the minimum capital requirement or solvency capital requirement, as prescribed, whichever is the greater
- This may influence dividend distributions or need to raise additional capital
- An insurer must hold assets or invest those assets in accordance with any prescribed requirements, limitations, or conditions in the Financial Soundness Prudential Standards
- This will influence planned investments and assumed returns on those investments
- An insurer must provide for its technical provisions or other liabilities in accordance with Financial Soundness Prudential Standards
- These reserves may be higher than IFRS reserves effectively reducing own funds compared with equity on the statutory basis to cover the capital requirement

- The regulator also has the power to require insurers to hold additional capital
- Overall uncertainty around the capital requirement and how that will be influenced by the growth in the business
- The valuation of assets mainly follows International Financial Reporting Standards (IFRS) and the main requirement is that of market consistency and an economic (or fair value) valuation approach.
- In the statutory accounts (SAM), there are some minor deviations from IFRS with the intention of bringing the treatment of assets and liabilities, excluding technical provisions, closer to an economic valuation approach, including:
    - Goodwill should be valued as zero.
    - Other intangible assets should only be included to the extent that a fair value can be placed on them.
    - Property should be valued at fair value.
- Under SAM, reinsurance assets (i.e. recoveries expected from reinsurance in future) are shown as an asset on the balance sheet. Reinsurance assets should also allow for expected losses due to default of the reinsurer.
- Asset valuation will also have a direct bearing on own funds versus equity on the IFRS basis

The economic environment

- Future exchange rate expectations and the impact on claims cost due to import of parts or replacement items
- Future wage inflation expectations influencing labour costs on repairs as well as staff salaries influencing expenses
- Yield expectations given state of the country and international markets influencing investment returns
- Weighted average cost of capital and hence required shareholders return on capital expectations
- General state of the economy and average disposable income influencing affordability of insurance and hence impacting new business volumes and persistency
- ….also further reducing the purchase of new cars/property leading to lower average premiums.
- Level of competition in the market and ability to grow market presence influencing ability to grow
- Level of competition to obtain advertising space influencing the cost of marketing which is key for a direct insurer
- Potential increased claim costs as a result of higher fraudulent claims in tough economic environments

- Trends in products people buy, e.g. with people working from home more and potentially being cash-strapped, there may be a move away from comprehensive motor insurance to third party only.

Improvement in technology

- As cars become more autonomous, the probability of accidents reduce which should reduce average premiums
- As cars become more autonomous, the fitted sensors lead to more expensive vehicle repairs increasing premiums
- As the use of early warning devices to alert of fires, or water leaks become more popular, property premiums will reduce
- Automation of processes and the use of machine learning models can reduce expenses as less human manual processing will be required
- Cyber risk. As more insured items are online and information becomes more accessible risk will increase and require more security and legislation increasing compliance cost
- The Investment the company has to make in new technology would have to be considered for budgeting - or related points

The Chief Marketing Officer is very excited about a new deal with a well-known aggregator website. Following the presentation provided by the owner of the aggregator, she expects that the earned premium will effectively double due to the increased internet traffic volumes on their website.

After reviewing the presentation, you feel that a growth rate of 66.6% may be a more realistic estimate.

ii. Discuss the approach you will take to model future premium volumes considering

  a. Factors influencing future premium volumes
  b. Model choice considering available data and stakeholders involved in the budget approval process

[7]

Variables influencing future premium volumes

- For each product type (personal motor and personal property) and also each channel (existing and new aggregator source) consider:
  - Current active policies/risks
  - Expected lead volumes and resultant conversion to sales considering factors mentioned in previous question.
  - Expected persistency/retention rate of current book ito of volume in addition to renewal premium achieved.
  - Expected average office premium including future premium inflation considering factors mentioned in previous question.
  - Mix of business from aggregator leads which may be different from current book leading to different average office premium assumptions for this channel.
- Need to consider the position in insurance cycle which influences rating strength.
- Although not directly linked to premium volumes, allowance should be made in expenses for any lead generation fee which will differ between sources and potentially product.
- Cost of reinsurance considering new lead source potentially impacting insurer risk profile.

Model choice considering available data and stakeholders involved in budget approval

- Depending on the volume of data available for existing sources and supplied by aggregator a stochastic model may be useful to test for potential variability in budget numbers.
- However, since the budget needs to be presented to a non-Actuarial audience, it may be better to stick to deterministic model that is easy to explain and not overly complex to validate.
- The deterministic model can still allow for stress and scenario testing to illustrate sensitivity in model assumptions.
- The reliance on external data may render a deterministic model more practical as independent checks can be performed.
- Given the many potential factors influencing premium volumes, it will be best to limit the data to more recent periods probably not more than 1 year
- Also, it will be better to use smaller incremental periods to project premium volumes given the strong growth of the business and to be able to accurately allow for the aggregator source - at minimum monthly but even weekly.
- Although the budget is only for 2021, it will be good to project for more than 1 year to test for reasonableness of the expected growth in the different channels. It may be a good idea to reduce the growth rate over time as some saturation of the business source is reached.

After a discussion with the pricing and reserving actuary, the following information was provided:

- Reinsurance premium for 2020 was 6% of gross premiums
- Reinsurance recoveries for 2020 were 2% of gross incurred claims
- The gross loss ratio in the management accounts for 2020 was 55%
- The net loss ratio in the companies act accounts (published financial statements) for 2020 was 67.5%
- The net loss ratio in the statutory accounts for 2020 was 57%
- The head of actuarial control function recommends that the IFRS4 margin be set at 10% of the central claims reserve estimate (calibrated at 75% sufficiency).
- The cost of capital derived risk margin as calculated by the Financial Soundness Prudential Standards was 3% of the central claims reserve estimate.
- After a rating review, premium rates were set to target a gross loss ratio of 50% for 2021
- Reinsurance premium rates for 2021 are expected to increase by 10%
- Only 80% of reinsurers on the panel are approved by the Prudential Authority

iii. Explain the implications, including calculations where necessary, that the information provided will have on your net loss ratio budget assumption for 2021 as well as highlighting other potential considerations.

[7]

- The net loss ratio assumption for the budget should be for the Companies Act Accounts basis
- The net loss ratio for 2020 Companies Act Accounts of 67.5% was for
    - best estimate gross loss ratio from management accounts @55%
    - reinsurance premium @ 6%
    - Risk margin from IFRS4 @ 10% of best estimate = 5.5%
    - Reinsurance recoveries @ 2% of gross incurred claims = 1.2%
    - net loss ratio in current year = 63.1%
    - Claims development on prior years (before 2020) = 4.4%

- The expected loss ratio for 2021 Companies Act Accounts will be
    - best estimate gross loss ratio from premium rates target @50%
    - reinsurance premium @ 6.6%
    - Risk margin from IFRS4 @ 10% of best estimate = 5%
    - Reinsurance recoveries assumed to remain @ 2% of gross incurred claims = 1.1%
    - net loss ratio in current year = 57.7%
    - Assuming a strengthening of the reserve given the previous year's negative run-off and pricing review

  The following statements were also allocated marks:

- Not using the net loss ratio in the statutory accounts as it influences the view of solvency but not operational performance.
- Not using the cost of capital margin in the calcs as it influences the view of solvency but not operational performance.
- Not using the approved reinsurance ratio as it only affects the solvency calculations and not operational performance
- The management accounts may allow for discounting which is currently not allowed for in IFRS4. This is part of the planned IFRS17 framework
- Both management accounts and companies act accounts should allow for claims handling expenses - just need to make sure the consistent treatment of allocated and unallocated expenses

iv. Outline the expense allocation approaches that can be used to better inform the expense allowance in the budget.

[7]

- Expenses need to be allocated to each such subgroup in as realistic a manner as possible to ensure that they accurately reflect in projections especially if mix of business is expected to change.
- Subgroups include product/risk as well as lead sources that will now include internet, telesales, and aggregator website.
- Direct expenses may arise from a department dealing purely with one class of business, in which case the expenses relating to that department can immediately be allocated to the relevant class.
    - For example, if there is a dedicated team dealing with internet leads or telesales leads.
- Other direct expenses, however, may arise from departments dealing with more than one type of business. The expenses of such departments need to be allocated in some way between the relevant classes.
    - For example, the retentions team when clients call to cancel
- Time Sheet Analysis: Salaries and related costs of staff are allocated between classes on the basis of time records.
    - For example, if it takes more effort to make a sale from an aggregator lead vs a normal internet lead, you will allocate more sales charges to aggregator source
- Functional costing: work study practices whereby standard relative unit costs are established for the various identifiable functions performed for each class
- The total number of operations carried out by the department is summed, separately for each of the functions identified, and multiplied by the appropriate relative unit costs.
- The indirect expenses pose different problems. By definition, the departments concerned are not related directly to any particular class of business, but form a support function for the insurance operation
    - For example, the finance, risk, and actuarial departments
- "For the purpose of analysing profitability by class, there are two main options:
    - * Exclude indirect expenses altogether from the revenue account result for each class and bring them at the end as a single total for the whole company account.
    - * Allocate indirect expenses to the relevant classes by some approximate method, so that the measured profitability of each class then reflects its share of all expenses."
- In many cases it may be necessary to allocate the costs to a direct department initially, so that they can be included in a functional costing allocation to the classes.
- Indirect expenses may often scale as the business grows and it will show in projections as the mix between direct and indirect expenses change

- This is particularly observable with new businesses that start with high levels of indirect expenses to get the business going and then only later scale the business with direct expenses growing in line with business volumes but not indirect expenses

The high-level financial statements since launch are presented below. You may assume that there are no differences between the operating result and taxable income.

(R'm)	2018	2019	2020
Net earned premium	100	120	160
Net incurred claims	(65)	(80)	(108)
Net expenses	(50)	(45)	(50)
Net Investment Income	2	3	3
Operating result	(13)	(2)	5
Tax	-	-	-
Profit/Loss after tax	(13)	(2)	5
Shareholder capital	50	50	50
Retained earnings	(13)	(15)	(10)
Total Equity	37	35	40
Net outstanding claims	3	4	5
IBNR Reserve	2	3	4
Unearned premium reserve	6	8	11
Total Liabilities	11	15	20
Total Assets (in Cash)	48	50	60

v. Calculate the 2021 budget stating your assumptions and highlighting any key observations.

[10]

- NEP growth calcs and logical assumption **given previous question to get NEP**
- Loss Ratio calcs and logical assumption **given previous question to get NIC**
- Expense Ratio calcs and logical assumption **given previous question to get Expenses**
- Cash return calcs and **logical assumption to project return**
- Tax calc and realising that previous assessed losses can be offset from current profit
- Projecting Total Equity carrying over shareholder capital and cumulative retained earnings
- Logical way to project outstanding claims reserve
- Logical way to project IBNR reserve
- Logical way to project Unearned Premium reserve

	Actual	Actual	Actual	Budget
(R'm)	**2018**	**2019**	**2020**	**2021**
Net earned premium	100	120	160	267
Net incurred claims	(65)	(80)	(108)	(166)
Net expenses	(50)	(45)	(50)	(80)
Net Investment Income	2	3	3	4
Operating result	(13)	(2)	5	25
Tax	-	-	-	(4)
Profit/Loss after tax	(13)	(2)	5	21
Shareholder capital	50	50	50	50
Retained earnings	(13)	(15)	(10)	11
Total Equity	37	35	40	61
Net outstanding claims	3	4	5	8
IBNR Reserve	2	3	4	6
Unearned premium reserve	6	8	11	18
Total Liabilities	11	15	20	32
Total Assets (in Cash)	48	50	60	92.73

	Actual	Actual	Actual	Budget
	2018	**2019**	**2020**	**2021**
Growth		20.0%	33.3%	66.6%
Loss Ratio	65.0%	66.7%	67.5%	62.1%
Expense Ratio	50.0%	37.5%	31.3%	30.0%
Cash return	4.1%	6.1%	5.5%	5.0%
Tax Rate	0.0%	0.0%	0.0%	28.0%
Outstanding Ratio	4.6%	5.0%	4.6%	4.6%
IBNR Ratio	3.1%	3.8%	3.7%	3.7%
Unearned Ratio	6.0%	6.7%	6.9%	6.9%
Profit Margin	-13.0%	-1.7%	3.1%	7.7%
Return on Equity	-35.1%	-5.7%	12.5%	34.0%

Assumptions

- Assume growth rate will double allowing for the new source. (considering Question ii)
- Target loss ratio allowing for margin growth as the book grows (see question iii)
- Expense ratio Ass (see question iv)
- Assume investments to remain in cash and return to be similar than the past
- Tax rate of 28% after allowing for carried over assessed tax loss
- Assume relatively stable ratio of incurred claims
- Assume business is written uniformly over the year

Observations

- Profit Margin Calc
- Despite having to start paying company tax, the profit margin is expected to improve on the back of better expected loss ratio and expense ratio
- Return on Equity Calc
- Return on equity is also expected to improve as a result of improved profit margin despite having more working capital

Due to the nature of the calculation, marks were awarded generously for motivated assumptions

The actuarial team has performed the solvency calculations for 2021 as per the Financial Soundness Prudential Regulations:

- The solvency capital requirement (SCR) is R62m.
- The technical provisions are valued at R30m.
- The assets' valuation methodology remained unchanged.
- All equity is deemed to be tier 1 own funds.

Given that the insurer had its first profitable year, it was asked if a dividend was budgeted for 2021.

vi. State your dividend recommendation and substantiate your recommendation.

[4]

Calculation of surplus assets (Shown below)

Basic Own Funds	61
Total Liabilities	30
Total Assets	92.734
SCR	62.000
Surplus Assets	0.7

- An insurer or a controlling company must have procedures in place to identify deteriorating financial soundness that may cause a failure to comply with section 36.
- An insurer or a controlling company may not declare or pay a dividend to its shareholders or make a surplus or profit distribution to its members—
    - if it fails or is likely to fail to comply with section 36; or
    - if the declaration, payment or distribution would result in it failing or being likely to fail to comply with section 36."
- Therefore, the insurer being in a surplus could potentially declare a dividend however:
    - It is further recommended to keep a margin above the SCR as any unforeseen risk event could further reduce own funds which would mean that Basic Own Funds could go below SCR leading to supervisory intervention.
    - It would be my recommendation not to pay dividends until a sufficient margin above SCR can be maintained - typically at least 1.5
    - At this stage it would be necessary to inject more capital into the business
- This should hopefully not be a major concern to stakeholders since the primary driver of solvency concerns are due to fast growth and not lack of profitability

END OF REPORT