EXAMINERS' REPORT

October 2022 examination

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. Students should therefore note that this is considered a model answer and contains far more than the 100 marks shown for the exam.

Subject F203 — *General Insurance*

Specialist Applications
October 2022
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 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 very generic and students fail to bring the context of the question into play – choosing to rather take a generic 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 struggled to tailor the information given in the pre-amble to the question being asked*
- *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 will result in time wasting. Markers pick up the generic pattern of ideas applied and do not reward these.

Planning remains a very important part of the paper – but the majority of candidates do not train for 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.

Examiners Feedback on Questions:

***Overall**:*

- *The paper for the first time had 3 questions – testing a wider range of the syllabus objectives.*
- *Questions asked were not considered difficult at all – this was a comment throughout the exam setting process.*
- *The exam contained generous amount of bookwork with application of the bookwork following the question. The bookwork tested in this exam is not considered difficult or abstract, yet some students still struggle to answer the questions.*
- *The pass rate for the exam was in line with prior papers. The examiners purposefully tested a different structure to prior exams, containing more questions and hence tried to cover more of the syllabus.*
- *There is a fundamental difference between answering a F100 level paper and answering a fellowship paper. The fellowship paper focusses on commercial acumen in really applying your knowledge to the question – from the scripts received most students do not appreciate this when answering the paper.*
- *A number of students still answer questions by putting down sentences that make no sense on a stand-alone basis. For example:*
    - *Allow for trends*
    - *Reinsurance*
    - *Allow for tax*
    - *Allow for VAT*

The above is not only generic – but also open ended. For example: which trends should the marker allow for? What does the student mean when writing Reinsurance? Which portion of the VAT/Tax act is the student referring to here – what about the product/circumstances etc….

No point should be made leaving the marker with a so what/in what way… marks are not awarded for these statements.

QUESTION 1

You are an actuary working at a well-established, multi-national short-term insurance company with its headquarters based in South Africa. The insurance company writes significant business in both personal and commercial lines of business in all countries that it operates in.

The South African Insurance Association (SAIA) has recently formed a Climate Change Task Group to understand the potential impact of climate change on the short-term insurance industry. You have been chosen to represent your organisation on this Task Group.

i. Suggest potential impacts that climate change could have on your organisation.

[5]

<Very topical in General Insurance and the World>
<Generally, students gave good answers and expanded on the organisational impacts>

Potential impacts (other valid points acceptable):

- Increase in catastrophe claims (Motor and Property)
- Potential increase in crop insurance claims
- Reduced diversification benefit of being a multi-national insurer due to multiple catastrophes impacting many different regions around the world
- Reinsurance could become more expensive and difficult to obtain due to more frequent catastrophes
- Reinsurer defaults may occur if climate change is systemic
- All historical data, particularly relating to catastrophes, become invalid as frequency and severity of events rapidly changes (including regulatory models)
- Reduced market as individuals move towards driving less e.g. walking, cycling or even sharing vehicles
- Potentially higher cost claims if gasoline vehicles are replaced with electric vehicles
- Government may impose regulatory changes that could impact the company e.g. a green tax
- Reputation risk as more individuals become aware of climate concerns and would rather align with companies that are seen to be "green"
- Potential business continuity management risk depending on where offices are located as these may also be exposed to catastrophes
- Potential regulatory change requiring companies to invest a certain amount of assets in "green" investments or renewable energy initiatives
- Insurance may be required for new products such as solar panels and wind power systems

Any of the points above could be expanded and further explained. Further explanation – if required – generally results in better marks.

One of the first outcomes of the Task Group will be an industry wide quantitative impact study as SAIA would like to understand the monetary impact of climate change on different insurance companies. SAIA has asked that companies quantify the impact of climate change on their Solvency Capital Requirement (SCR) by using pre-defined stress and scenario testing as well as sensitivity testing.

ii. Recommend five **distinctly different** stress and scenario and/or sensitivity tests that could be prescribed (to all companies) to show the possible impact of climate change. Furthermore, then consider the impact of each stress on the standard formula.

The test here was really to see 5 distinctly different stresses. Some candidates still answered for stress 1 (10% increase in claims) stress 2 – (20%)… stress 5 (50%). Will be difficult to come up with distinct marks for this approach.

1. **Impact of a large reinsurer defaulting following a catastrophe or series of catastrophe events globally:**

- Depending on the cession, this could cause liquidity problems for the company.
- Free assets likely to be low which will affect the capital coverage ratio.
- Furthermore, the SCR is likely to increase because of reinsurance cover not being immediately available to replace current defaulted player - this will cause the net retention to be higher increasing the NLUR charge and thus the SCR.
- Could also impact the market risk module, especially the concentration risk charge as there are fewer reinsurers on the panel

2. **Catastrophe events in different locations (internationally and locally):**

- The impact will depend on the type of reinsurance currently in place.
- May be liquidity constraints depending on the type of cession.
- Lower surplus assets decreasing the capital coverage ratio.
- May impact exchange rates depending on location of event and subsequent market impact, impacting currency risk and market risk.
- May be difficult/expensive to place reinsurance in future, potentially increasing retention and the subsequent NLUR charge and SCR
- Higher reinsurance recoveries could impact market risk module due to increase in counterparty risk and concentration risk.

3. **Market failure following systemic event:**

- The impact will differ depending on the asset portfolio of the company.
- Overall asset portfolio will be lower valued.
- Will lead to lower overall shocks
- This will lead to lower Market Risk and SCR requirements
- Will still need to check the capital coverage ratio due to assets being lower overall.
- Capital coverage ratio is likely to decrease.

4. **Impact of lower take up of all policies due to fewer cars and drivers:**

- Will affect the underwriting risk module in the form of a lower volume measure (initially premium volume but then potentially also reserve volume) being applied.
- The effect of this will likely be a lower NLUR resulting in a lower SCR requirement.

- As part of this stress, we will need to test the effect on profitability as ultimately fixed expenses become a greater percentage of earned premium which could adversely affect profits and retained earnings.
- Could also potentially affect the operational risk charge.
- Overall SCR may reduce but may have lower surplus assets depending on the line of business affected and relative profitability.

5. Significant increase in crop *(any other line chosen from above)* insurance claims leading to the ultimate loss ratio of this line of business increasing:

- Will affect the NLUR module by increasing the reserve volume measure ultimately leading to an increase in the SCR.
- The impact will also depend on if there is applicable reinsurance cover in place.
- Could also lead to lower take up of policies affecting the SCR downward.
- Will need to test the effect on profitability by considering the profitability contribution of the agriculture line of business.
- Could also affect the overall diversification achieved between the different portfolios.

[15]

A colleague, in the Task Group, notes at one point that he does not believe most insurance companies will be impacted by the physical risks of Climate Change given that SASRIA will cover these claims.

iii. Discuss whether you agree with your colleague's point of view, explaining what is covered by SASRIA and what is excluded.

[2]

<Pure Bookwork>

- No, SASRIA is specifically intended to cover loss or damage due to riots and strikes, which is unrelated to climate change risk.
- SASRIA provides protection against defined events including politically motivated acts, riots, strikes, terrorism, civil commotion, and public disorder.
- SASRIA provides cover for loss or damage cause by non-political riot, strike and public disorder.
- SASRIA cover is offered for: material damage, business interruption, money, goods in transit, motor, and construction risk with the basic pre-condition that an underlying fire policy must be in place.
- SASRIA specifically excludes war and associated perils as these are considered uninsurable risks and the responsibility of the government.

The chief actuary of your organisation believes that climate change also represents an opportunity to potentially develop new insurance products and would like to explore the possibility of selling insurance specifically for electric vehicles.

iv. Provide reasons as to why the claim experience for electric vehicles may differ compared with traditional motor insurance.

[5]

<Application type question – topical in any pricing department>

- Might be paying for claims not previously thought of: Home charging equipment leading to electrical surges/system failures.
- Reinsurance may be more expensive as a result of higher perceived risk of electric vehicle claims *(Although valid point – you will need to expand on the type of RI you are thinking about – likely XL cover)*
- Potentially higher claims costs due to specialised parts that may need to be imported
- Higher claims associated expenses due to fewer repair shops skilled to repair electric vehicles
- Extra safety precautions because of needing to ensure the vehicles battery is not damaged or leaking can drive up repair costs, the battery itself is also significantly more expensive
- Fewer parts in an electric vehicle may mean that if one part is damaged, the entire part needs to be replaced as it performs multiple functions in the vehicle
- Accidents more likely to result in a write-off of vehicle – (write off percentage might be easier to reach on electric vehicles)
- If car hire is offered, there could be an increase because of increased repair time due to fewer repair shops and waiting for original parts
- Risk profiles of individuals may influence claim likelihood – different profile of individuals buying electric cars which could impact frequency and severity of claims.
- Limited number of vehicles on the road hence cannot benefit from pooling large number of risks
- Theft risk could be very different - difficult to steal and hard to dispose of.

v. Identify and list both potential new and existing exclusions that would apply to these electrical vehicle insurance policies.

[2]

- Non-compliant home charging infrastructure
- Potentially exclude “breakdown” due to no electrical charge remaining and out of reach of electricity
- Could deliberately decide to include/exclude cover for the battery component
- Deliberate or negligent acts e.g., leaving the keys in the car or driving recklessly
- Fraudulent claims – generally not covered.
- Damage covered by other policies e.g., SASRIA
- Failure to notify law enforcement promptly in the case of theft or an accident
- Claims relating to prior damage
- Personal injury as a result of an accident (should be covered by RAF)

vi.

a. Firstly, describe how you would set the office premium for vehicle insurance (8)

b. Describe the adjustments you would make in the above to allow for factors unique to electric vehicles (4)

[12]

Question 6 had an a and b part. This is generally provided to students to allow for the correct structuring of the answer. Even though Office Premium was asked for in part (a) – majority of candidates went into explicit risk premium modelling and talked about different distributions for frequency and severity. Whilst that was marked – the candidate will not perform well on the question because in reality only 4 of the 8 marks were for risk premium setting – and the other loadings in the pricing process made up the remainder of the marks. The memo deals with part a and b as one question – this is also allowed in the exam.

Premium should allow for:

- expected claim costs
- expenses e.g. commission, policy admin, contribution to fixed costs, claims handling,
- investment income
- tax
- reinsurance costs
- contingency loadings
- profit margin
- cost of capital

May wish to allow for persistency on multi-year policies.
May want to consider a no claims discount or cash back element.

Claim costs

- The company's existing motor vehicle data is likely to be the best data source for estimating expected claims costs because the new products benefits will be like those offered for electric vehicle insurance
- Because the company is the well-established, it should have a significant amount of historical data.
- Although there may be reasons why this data cannot be used e.g. poor data quality and electric vehicle 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:
- Higher expected claim costs for electric vehicles.
- Potentially higher frequency of write-offs
- Allow for historical changes in exchange rates and inflation
- The sum insured and claim costs may even be impacted by currency risk should the spare parts be imported.
- Estimated probability of claims could perhaps also be obtained from reinsurer benchmarks or industry statistics (although unlikely).

Expenses

- Need to consider how the product is to be distributed, will it be using the same channels already used for traditional motor insurance or more niche.
- If distributed through intermediaries what are the current commission rates.
- Estimate associated costs for other distribution channels as appropriate.
- What is the marketing strategy and associated costs, will there be a need for website development and online sales capability.
- Determine the amount of overhead / fixed costs that will be allocated to this product. Or will another product line carry the costs initially in order to increase market share initially.
- Need to estimate sales volumes and typical premium sizes in order to spread fixed costs appropriately.
- Need to allow for estimated claim handling expenses which will most likely differ from the tradition motor insurance.
- Need to allow for policy administration expenses, will a new team be required or can the existing admin team be used.

Other

- Reinsurance availability and cost needs to be considered.
- Other commercial considerations, e.g. low competition permitting higher margins, loss leader to ensure successful market entry
- Need to consider how changes in the regulation especially relating to carbon emission might have an impact on the market in the future e.g. more individuals moving to electric vehicles

vii. Explain the data and reserving methodology factors you would consider when determining the year-end reserves for the electric vehicle insurance cohort at the end of the first year of sales.

[4]

Data

- This is a new product so there will not be historic loss development data to use
- Could use traditional motor insurance data (maybe higher sum insured vehicles) as a proxy of how the claims will develop
- Well established company should have a large amount of hopefully good quality data
- At the end of year one - it is expected that there will probably be only a handful of claims
- All claims will be relatively unique and high value, it will be important to get input from claims underwriters on how the claims could potentially develop

- Might be publicly available data, however unlikely

Reserving Methodology

- Likely to be few high value claims at the end of year one and hence statistical methods, unless supplementing with proxy data, may not be possible
- Most likely will use average cost per claim where the ultimate cost will need to be decided in collaboration with the claims department and where you are already aware of claims.
- With high value claims there is unlikely to be a delay in claims being reported
- Depending on the term/contract boundary of the policy, will need to consider an unearned premium reserve and whether a 365th method is appropriate or if the product has a completely different risk experience
- Need to consider whether an additional unexpired risk reserve is required which will be most likely given this is the first year of selling this product
- Potentially higher IBNER needed than traditional motor insurance perhaps due to claim settlement delays, increasing parts costs if imported and smaller accidents resulting in greater damage compared to traditional vehicles
- Claims may also tend towards write-offs more than traditional vehicles (which could impact settlement pattern – bank settlement quicker than repair)

QUESTION 2

i. Describe the requirements under IFRS 4 related to the valuation of liabilities. **[2]**

<Bookwork – also recently tested in an exam>

- IFRS 4 gives considerable latitude to insurance contracts accounting, implying that local guidance will be relied upon
- An insurer shall not recognise as a liability any provisions for possible future claims, if those claims arise under insurance contracts that are not in existence at the reporting date (such as catastrophe provisions and equalisation provisions).
- The insurer shall carry out the liability adequate test
- The insurer shall remove an insurance liability (or a part of an insurance liability) from its balance sheet when, and only when, it is extinguished-i.e., when the obligation specified in the contract is discharged or cancelled or expires
- An insurer shall assess at each reporting date whether its recognised insurance liabilities are adequate, using current estimates of future cash flows under its insurance contracts
- Premium revenue is recognised in the financial period in which it is earned
- The annual basis of accounting shall be used, as opposed to the fund basis. Under the annual basis of accounting, the underwriting result in the period reflects the profit or loss from providing insurance cover during the period
- Provision is made at the balance sheet date for the expected ultimate cost of settlement of all claims incurred in respect of events up to that date, whether reported or not, together with related claims handling expenses, less amounts already paid

ii. Detail the best practice guidance (under APN 401) on the calculation of liabilities for statutory and financial reporting purposes.

[5]

<More Bookwork>

- The member is required to take all reasonable measures to ensure that the data used for a valuation of technical provisions are appropriate and sufficient for the specified purpose of the valuation
- The data are to be subdivided into groups of claims exhibiting similar characteristics, finding a balance between homogeneity and statistical reliability.
- The experience should normally be analysed first on a gross of recoveries basis
- Explicit allowance for reinsurance and other recoveries, such as third-party recoveries, salvage and subrogation needs to be made. Only equivalent jurisdiction reinsurance may be used to reduce the gross technical provisions for statutory purposes.

- Selection of the most appropriate valuation model to estimate the liabilities is the responsibility of the member. The member may investigate more than one model before arriving at an estimate
- Actuarial judgment is involved when setting margins, therefore the purpose of the valuation should be considered when determining margins
- If the method chosen allows for the margin to be estimated at a particular level of sufficiency, that level should be disclosed (e.g. 75th percentile)
- Technical provisions should include an allowance for the impact on future claim payments of wage inflation, price inflation, court decisions or other economic or environmental causes
- Discounting should be applied if it will have a material impact on the central estimate result or if prescribed by regulation
- Claims reserves should incorporate an allowance for future claims handling expenses. This allowance may be separated into allocated and unallocated expenses

You are the Head of Corporate Actuarial of a large short-term insurance company that underwrites as part of its portfolio a motor line of business. As part of the reserving exercise, you know that there is seasonality in the claims triangle - specifically the September to November origin periods showing higher claims frequency due to the rainy season.

iii. Outline possible methods that could be used to allow for inherent seasonality in your claims triangle when setting your reserves.

[5]

- Will depend on when the reserving exercise is being performed. If December 31st – there could be some remaining development and then the following could be done:
    - Reserve at a more granular level to allow for/capture seasonality in each class more appropriately.
    - Set separate development factors for cohorts that experience seasonality – this could be done manually by analysing prior seasonality patterns.
    - Use alternative methodology i.e., BF method with a higher apriori for those specific cohorts
    - If the backlog is seasonal, for example owing to holidays, then this may be a regular occurrence and statistical developments may not be distorted
    - Allow for seasonality adjustment using methodology like generalized cape cod
    - Can use regression-based techniques that explicitly capture the trend
    - Use current projection-based method and scale up results for those cohorts based on previous actual vs expected deviance
    - Use average cost per claim methods to standardize for higher frequency assuming severity remains similar
    - Use bootstrap to capture variability in the claims reserving process and select a higher sufficiency level

- If, however the request is for the end of June calculation– the seasonality would have already been reported and most of the claims settled. Smaller adjustments could be applied / depending on the length of run-off for the class - no adjustments and just noting why you feel the adjustments are not necessary.

At year end, you have noted that the link ratios have decreased in the first and second development periods. Upon further investigation, the claims function noted they have improved their claims process which results in faster settlement of damage claims.

You have historically used a paid triangle to set your reserves.

iv. Explain what the impact of the changed claims process would be on your reserving process?

[5]

<Poorly answered question> Candidates should realise that the majority of motor claims in South Africa (99%) are reported and settled within 3 months. The average car hire policy only holds for 21 days… Therefore annual cohort adjustments should be very minor.

The change in claims process challenges the underlying assumption of the BCL that past experience is representative of the future

- The development of the area where the claims process took place will be different to the upper part of the triangle
- The straight through process should speed up payments
- Actual versus expected deviations will be off due to the quicker payments
- Analysis of settlement delays will show quicker settlement
- Lower OCR will be expected to be held and First Notification Of Loss estimates may be incorrect
- The use of a paid triangle will distort the projected reserve
- Assuming payments in the upper part of the triangle were slower, the development factors would imply slower development and…
- This would thus over-estimate the reserves in the most recent cohorts, as the BCL would still assume slower development of those cohorts even though the claims payments and hence development has sped up
- The implied ultimate loss ratios from the most recent cohorts would also be high, therefore using these in any BF method to set the a-priori would also over-estimate the reserve
- A slower payment pattern would also over-estimate the impact of discounting for the reserves emerging from the most recent cohorts

- Change in process may require a change in the methodology until sufficient historical claims data has been built up with the new process
- Over-estimated reserves will also have a capital implication with higher reserve risk and hence risk margin if the cost of capital is used as basis to set risk margin

For the year-end reserves, you have calculated a best estimate view of reserves allowing for your assessment of the impact of the claims process changes. Your professional actuarial recommendation is to book these best estimate reserves with an additional risk margin for the inherent uncertainty. The management team opted to book a lower reserve amount, and has stated that this is for commercial reasons rather than as a result of disagreement with your analysis. Detail what your response would be to the management team, given the suggested release of provisions.

[5]

<Tested in prior exams as well. Basically remain professional, make sure you have the evidence to back yourself and understand the consequences of under-reserving as well as the governance that exists to ensure sound actuarial practices being followed>

- Ensure reserving is in-line with best practice APN 401
- Ensure all data checks and consistency checks have been implemented
- Document clearly all assumptions made, and methodologies adopted and make sure these are understandable
- Highlight areas on uncertainty and sensitivity of the results to these areas and communicate these
- Justify professional opinion to management team highlighting reasons for proposed action
- Indicate professional obligations including acting with honestly, with integrity, competence and due care, and in a manner that fulfils the profession's responsibility to the public.
- Indicate the implications of under reserving to the board – leads to incorrect pricing and capital decisions and if done consecutively will lead to the demise of the company.
- Have the work peer reviewed by the HAF
- Leverage HAF obligations to provide independent opinion to board where in agreement
- Where member is uncomfortable with ultimate management opinion then member can resign from the role and escalate this to the board/Prudential authority in-line with the whistleblowing explanatory note *(This is extreme – but it does depend on the extent of under-reserving proposed for commercial reasons)*
- This should be done in good faith and in a professional manner

QUESTION 3

You are an actuary of a medium-sized listed general insurer (with a strong capital base) that underwrites two lines of business and has recently launched a vehicle warranty line.

Your CFO asked you to form part of the due diligence team that will validate the feasibility of a possible purchase of a portfolio of <u>single premium vehicle warranty</u> business including the transfer of management team and operations. These are 5-year warranty products that take-effect after the vehicle original warranty expired.

i. State the potential benefits of purchasing the portfolio of business?

[5]

- Newly established line hence seeking to establish scale for that line and accelerated break-even within the portfolio
- Acquiring the management and product development capabilities
- Acquiring the operational and claims management capability e.g., relationships with repairers to manage claims cost
- Diversifying the revenue stream away from the two concentrated lines
- Provide an integrated (motor, property, VAPS) insurance solution within one insurance company to the client *(assuming Motor and property being the other classes)*
- Strategic relationships with dealerships for sales
- Believe the business is underpriced and can extract additional value from it e.g., through cross-sell into base for motor and property
- Cost synergies that can be realized because warranty capabilities are being built internally and at the target
- Deploying excess capital (assuming the transaction is accretive to value i.e., ROE > cost of required capital)
- Obtain diversification benefits within standard formula calculation (premium and reserve risk) and lack of catastrophe capital requirements for Warranty
- Pressure from capital markets to show a growth/investment story
- Counteract a competitor move
- Target is seeking to exit the market and has approached your company through brokers to facilitate the sale

The CFO asked you to review the material aspects of the transaction to help validate the purchase price. This includes your views on the following:

- Projected Premium Volume
- Expected Performance
- Capital requirements and investment returns

ii. Outline the key data, methods and assumptions you would review to respond to the CFO's request.

[14]

Projected Volume

- Historical new business premium growth rates and whether future projections are at best, in-line with these
- Consistency of projected premium growth rates with historical rates and expected GDP growth levels especially the terminal value growth rate
- Number of second-hand cars that are being bought and the average length for which 2nd hand cars are being kept
- Validate lapse rates used in cashflow projections to understand attrition and survival rates and hence recurring monthly premium
- Frequency and severity of claims to ensure technical premiums charged are appropriate and won't require a rate review once transfer occurs
- Over-estimating the premium growth levels i.e., higher lapses than expected/lower sales than expected will result in a higher price paid than intrinsic value

Performance

- Adequacy of UPR through historical combined ratio analysis and hence the need for an AURR
- Earnings pattern of the UPR adequately reflects the risk pattern through triangulation techniques
- An inadequate UPR will result in future revenue recognition being unable to meet emerging claims and expenses which should have lowered the purchase price
- Historical actual versus expected analysis to understand historic sufficiency of the IBNR
- Ultimate paid amounts on closed claims versus First Notification Of Loss to understand adequacy of FNOLs and hence overall OCR
- Review methodology used to determine claims reserve to ensure appropriateness i.e., is BCL appropriate across all cohorts or should BF be used in less credible earlier cohorts (assuming methodology)
- Adequacy of the data used in the calculation i.e., is there sufficient credible historical data, does it reconcile to financials, date ranges
- Review of what the triangulation claims data incorporates i.e., parts, Labour, ALAE
- Determine whether an ULAE has been allowed for and review the expense allocation methodology which is used to allocated overheads
- Retriangulation of the IBNR to determine own estimate of the IBNR and hence have an internal view of the best-estimate and how that compares to calculated reserves
- Bootstrap of the claims reserve to understand the sufficiency level at which current claims reserve is calibrated and the inherent uncertainty in the reserve through the standard deviation

- Sensitivity analysis of key assumptions i.e., apriori loss ratio, development factors, part inflation rates, salary inflation rates to determine the range of reasonable outcomes
- Yield curves used for discounting and hence whether expected asset returns are not overstated based on historical returns analysis
- Recreate payment patterns to ensure discounting period is not overstated
- Review of the reserve adequacy impacts the price in that a higher reserve would lower the price and vice versa. Deterioration post purchase of the portfolio would mean there was an overpayment

Capital requirements and Investment returns

- Review asset-liability matching strategy and asset mix
- Analyze historical asset returns to ensure a through-the-cycle investment income is being utilised and is consistent with the discount rate
- Bootstrap historical asset returns to determine the confidence level of the investment assumption used and uncertainty
- Investment income increases profits which would increase the purchase price in a DCF method
- Analyze whether historical ROE and risk-adjusted ROEs exceed cost of required capital
- Terminal value growth rates are in-line with GDP
- Capabilities that the entity has that the organization really wants that are not necessarily captured in the DCF and the price the entity is willing to pay for these

As part of the transfer of the portfolio of business, there will have to be a capitalization of the business under the Financial Soundness Standards for Insurers

iii. Give an overview of the IFRS to SAM adjustments that you would expect to make prior to calculating the capital requirements?

[4]

(bookwork)

- Adjustment of UPR to premium provisions by realizing profits immediately into own funds
- Premium provisions = UPR x combined ratio
- Projected expected future cashflows with profits released into own funds
- Discount reserves where discounting has not been applied (as not an explicit requirement by IFRS 4)
- Remove all margins under IFRS 4 to have a best-estimate view
- Raise SAM risk margin
- Raise ULAE if expense reserve is not raised under IFRS 4
- Remove all DAC under IFRS
- Recognize only 20% of intangible assets if any exist on the balance sheet

iv. Discuss the need for a possible out-of-cycle ORSA in this instance as well as the factors you would consider in determining the need for one?

[5]

- If the transfer or other significant transaction could result in a material change in the risk profile of the acquirer the insurer must also provide to the Prudential Authority an out-of-cycle ORSA
- Definition of significant should be defined as part of insurer's risk appetite statements and be board approved. This should include the limits of breach that would trigger the requirement
- Considerations can include:
  - Percentage change in the SCR
  - Percentage change in the Basic and Eligible own funds
  - Percentage change in the SCR cover ratio
  - Percentage increase in the technical provisions
  - Whether the insurer has operating in the specific line of business previously
- Significant changes in the <u>expected</u> Loss ratios that the business is running at/segment that the product is being distributed to/car distribution profile of the in-force portfolio
- Purchase price as a percentage of total assets/NAV
- Percentage increase in operational risk increase
- Number of IT and systems changes required

The board has expressed concern that the company does not have much experience in the Warranty line of business and hence expressed uncertainty on the appropriateness of the capital requirements using the standard formula

v. Discuss whether the standard formula is appropriate to determine the capital requirements for this line of business and the analysis you carried out to assess its appropriateness.

[5]

<Tested in recent exams>

Assuming we use the standard formula to assess risks, we must justify to the Prudential Authority why we consider the standard formula to be an accurate reflection of our own risk profile, board approved risk appetite (and related risk limits), and business strategy

- Consideration should include whether the combined data on our new portfolio and target is sufficient to calibrate any economic capital requirements i.e., ISP requires 5-years of data
- Need to consider whether the portfolio is concentrated in any one specific location and vehicle type or has good spread across vehicle types as calibration of standard formula parameters would be across a fairly split distribution

- Would first express to the board the relatively low 1 in 200 level risk for a Warranty portfolio vs other insurance classes -showing lower volatility for the class. Further the class has relatively low payout limits, and strict terms and conditions.
    - Would highlight that the SF does allow for the warranty class and also how the SF does not require catastrophe capital for the class. If further evidence is required:
- Model the standard deviation of the claims development result to determine whether the standard deviation for reserve risk is materially different to the reserve risk standard deviation in FSIs
- Where sufficient credible data exists calibrate ISPs for premium risk to determine how different this is to the FSI premium risk standard deviation
- Apply sensitivity tests to the standard deviations within premium and reserve risk to understand the overall impact on total SCR of a change in the parameters given overall portfolio
- Analyse the size of the overall warranty portfolio relative to the overall portfolio size and hence marginal increase in SCR to determine whether the capital requirements of the warranty portfolio are material and warrant economic/add on capital based on principle of proportionality
- Apply stochastic simulation on the loss ratios of the warrant portfolio to model the UW result and hence implied UW risk
- Highlight the risk appetite limits on the SCR cover ratio (target SCR cover ratio) and how that provides buffer should the warranty capital requirements prove to be higher than implied by the standard formula in the 1-in-200-year event, this could be expressed in the ORSA.
- Analyse the limits in place for the warranty portfolio and compare these to the industry limits to identify whether product design and hence portfolio is consistent with broader market on which standard formula parameters would be calibrated

END OF REPORT