



Institute
and Faculty
of Actuaries

EXAMINERS' REPORT

**SP7 - General Insurance and Capital
Modelling**

Specialist Principles

September 2023

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

For some candidates, this may be their first attempt at answering an examination using open books and online. The Examiners expect all candidates to have a good level of knowledge and understanding of the topics and therefore candidates should not be overly dependent on open book materials. In our experience, candidates that spend too long researching answers in their materials will not be successful either because of time management issues or because they do not properly answer the questions.

Many candidates rely on past exam papers and examiner reports. Great caution must be exercised in doing so because each exam question is unique. As with all professional examinations, it is insufficient to repeat points of principle, formula or other text book works. The examinations are designed to test "higher order" thinking including candidates' ability to apply their knowledge to the facts presented in detail, synthesise and analyse their findings, and present conclusions or advice. Successful candidates concentrate on answering the questions asked rather than repeating their knowledge without application.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Sarah Hutchinson
Chair of the Board of Examiners
November 2023

A. General comments on the *aims of this subject and how it is marked*

The aim of this General Insurance Reserving and Capital Modelling Specialist Principles subject is to instil in successful candidates the ability to apply, in simple reserving and capital modelling situations, the mathematical techniques and the principles of actuarial planning and control needed for the sound financial operation of general insurers.

Candidates who pass the exam are expected to analyse hypothetical situations, within the context of general insurance, including using judgement to assess the implications of possible actions and to develop appropriate proposals or recommendations relating to reserving and capital modelling.

Candidates who are well prepared generally appear to perform reasonably well on SP7, although a number of candidates do not appear to be adequately prepared and are unable to generate sufficient distinct points in their answers or show poor exam technique.

Candidates are reminded to carefully read questions to understand the specific scenarios given in the questions and tailor their answers accordingly, rather than relying on pre-prepared lists of generic points, which may not be applicable in certain scenarios.

Calculation questions will come up on a regular basis within SP7 papers. Candidates should always be prepared for such staples as balance sheet preparation, triangle manipulations and projections and reinsurance layer calculations (along with being able to carry out any necessary adjustments including inflation, exposure, earning distortion and time period issues). All workings and rationale should be clearly shown to allow credit to be given for workings even where the figures are incorrect.

Candidates should expect the examiners to set questions from all parts of the syllabus with a view to test as wide as possible a range of skills and, in particular, to achieve a fair balance between capital and reserving, including reinsurance. It is important to note that the questions are designed to be able to test how candidates can apply these concepts in a given scenario.

The depth and breadth of an answer needs to be in line with the command verb and marks allocated to the question.

While the marking schedule is discussed extensively to cover as many points as possible, candidates who give well-reasoned points not in the marking schedule are awarded marks for doing so.

B. Comments on *candidate performance in this diet of the examination.*

Most candidates attempting all questions and completing the exam within the time allowed. There was little evidence of candidates having insufficient time, perhaps due to minimal calculation questions on this paper.

Questions which proved challenging were those where candidates were examined on unfamiliar situations and products, such as those in Question 3 on parametric covers and Question 6 on climate change. Candidates are expected to be able to demonstrate higher order thinking in the emerging risks in general insurance, in terms of how such risks could influence the reserving and capital areas of an insurance company, which many candidates did not show.

Responses to knowledge-based questions were generally good. Question parts such as 1(ii), 2(iii), 8(ii) and 8(v) that tested application and higher order skills proved more challenging, and candidate responses to these questions often lacked the breadth and the detailed understanding needed to score well. A common theme that came through was candidates not being able to generate sufficient distinct points relevant to the specific information or situation given in the question.

The examiners and markers concluded that to demonstrate a minimum level of competence in this subject, candidates needed to score above 60 in this exam, and during the marking process it was clear that the appropriate pass mark was 64.

The comments that follow the individual questions below highlight the areas where candidates could have improved their performance. Candidates are advised to include these areas in their revision.

C. Pass Mark

The Pass Mark for this exam was 64.
372 presented themselves and 154 passed.

Solutions for SP7 - September 2023

Q1

(i)

Motor OD:

Claims will usually be capped at the sum assured value [1/2]

So, there is going to be limited volatility in the claims [1/2]

Hence a quota share reinsurance might be more appropriate [1/2]

The percentage ceded is likely to depend upon how much capital relief the company wants [1/2]

If the insurance company is writing a heterogeneous portfolio with some high value cars, it could also consider purchasing risk XoL cover [1/2]

Aggregate Excess of Loss covers could also be purchased [1/2]

e.g. in the event of a flood [1/2]

Motor TP:

It is not clear whether Motor TP liability is limited or unlimited [1/2]

Assuming it is unlimited, risk excess of loss covers will certainly be appropriate [1/2]

(Marks to be awarded for suitable arguments in case the assumption is that the TP liability is limited)

Aggregate Excess of Loss covers could also be purchased, [1/2]

e.g. for situations such as a motorway pileup [1/2]

This could be combined with a quota share insurance cover [1/2]

However, since they have been writing business for 10 years, they may have less need for proportional insurance, which is more commonly used by newer companies [1/2]

If the business is quite heterogeneous, the company could also consider stop loss reinsurance to limit its downside risk [1/2]

A CAT XoL reinsurance to cover both policy types might be necessary [1/2]

e.g. Floods, hailstorms, hurricanes [1/2]

Any other sensible reinsurance covers with justification (1/2 per point) [1]

(A maximum of 2 marks to be provided for OD and TP covers each.)

[Marks available 9, maximum 3]

(ii)

Depends upon how big the changes to the reinsurance covers have been [1/2]

Motor OD is usually a short-tailed line of business [1/2]

It is likely the company has only purchased proportional covers for these policies [1/2]

So if a company is using a chain ladder method, change in % ceded should not impact the IBNR estimation [1/2]

Although there is always going to be some element of operational risk where the personnel apply an incorrect RI program [1/2]

However, if a combination of XoL covers has been used on this line, a change in attachment points over the years will likely be the development patterns [1/2]

resulting in an incorrect application of methods that rely on historical development patterns and loss ratios [1/2]

Where apriori loss ratios are being used for IBNR estimation, they will need to be changed suitably to allow for this change in attachment points, [1/2]

else it can result in an incorrect IBNR estimates	[½]
Although the OD portfolio will reach to an ultimate position quite fast, so the impact may not be as significant	[½]
For TP claims, it is going to be more complex due to the long tail of development	[½]
More likely that XoL covers have been purchased for this cover	[½]
The later developments periods are more likely to be attaching to the working layers of the XoL programs	[½]
So, the incurred loss ratio development on the older years might not be reflective of the future years if the retention has changed	[½]
with an enhanced risk of wrong tail factor being selected	[½]
Equally the loss ratios could vary each year depending upon the cost of reinsurance	[½]
Due to its impact on the NEP	[½]
As well as due to the heterogeneity in the claim sizes.	[½]
There is an operational risk of the netting down not being done correctly due to the RI programs changing so often	[½]
Marks available for other sensible comments [½ per point]	[1]
	[Marks available 10½, maximum 4]
	[Total 7]

Part (i) was generally well answered with candidates able to suggest a number of distinct reinsurance covers. Better answers related the examples to the different coverages. Some however did not score more marks by not giving appropriate reasons as to why the covers would be suitable.

Most candidates did not score well on part (ii) and were not able to identify sufficient points focussing on the risks of performing IBNR estimation on net triangles.

Q2

(i)

In theory, a chain ladder projection of paid and incurred triangles should give the same ultimate loss estimate. [½]

However, the chain ladder projections between paid and incurred data could be different due to a different settlement speed of the paid vs incurred data. [½]

As seen in how the individual and weighted link ratios develop between the paid and incurred triangles. [½]

this is due to the incurred data containing the case reserves information in addition to the paid data [½]

Any changes in the company's case reserving philosophy over time can impact the ultimates arrived at using the incurred chain ladder triangles [½]

e.g., a change in claim personnel resulting in more conservative case reserving [½]

Depending upon the line of business, paid triangles may have sparse data in early development years, resulting in high variability in the earlier link ratios. [½]

Slower development of the paid triangle would result in a subjective tail factor that can result in further divergence in ultimate loss projections if using a tail factor [½]

Trends in the later development years where a small number of the remaining open

claims in an incurred triangle will not be visible in a paid triangle [1/2]
 This could result in differences between the projected development patterns, and hence the paid vs incurred ultimates [1/2]
 Disputed claims can be slow to settle and subject to change, keeping the case reserves high or causing movements whereas nothing shows up in the paid triangles. [1/2]
 There might be errors in the data in either triangle. [1/2]
 Or the two triangles could be on a different basis, e.g. AY basis vs UWY basis [1/2]
 The paid patterns for large and complex claims can be quite different to the incurred patterns due to their nature [1/2]
 Marks available for other sensible comments [1/2 per point] [1]
 [Marks available 8, maximum 3]

(ii)

Negative Paid amounts:

Salvage recoveries [1/2]
 Which is common in Marine insurance [1/2]
 Payments from third parties/subrogation [1/2]
 Errors in paid amounts [1/2]
 Exchange rate movements [1/2]

Negative Incurred amounts:

Could be driven by negative paid amounts [1/2]
 Overestimation of outstanding amounts [1/2]
 Complete cancellation of claim due to:
 Rejection by insurer [1/2]
 Favourable court decision [1/2]
 Error in outstanding amount [1/2]
 Marks available for other sensible comments (*1/2 per point*) [1]
 [Marks available 6, maximum 3]

(iii)

Generic points:

The intention of these controls is to prevent possible under-reserving from inaccurate negative IBNR projections due to the recent negative incremental developments [1/2]
 The CRO's concerns could be well-founded if these negative incremental claims are due to a one-off reason and not a trend [1/2]
 and holding a negative IBNR may lead to an underestimation of reserves [1/2]
 The CRO could simply being prudent in their approach, which is not completely unexpected of the Risk function [1/2]
 Possible that the case reserving was prudent in the first origin period where the incremental negative developments are coming through [1/2]
 And the case reserving has since been re-calibrated based on more updated information from the loss adjusters [1/2]
 The CRO should considered the initial case reserving philosophy to check if they were prudent before deciding upon such a measure [1/2]
 Especially since the company only started writing marine business only 3 years ago so the claims team could be more prudent when writing a new LoB [1/2]
 But this reasoning doesn't hold true for negative incremental paid amounts [1/2]
 Alternatively, benchmarks and industry patterns could be used to check the extent to which the occurrence of negative incremental paid and incurred is common for Marine business [1/2]

Will also need to consider if the negative incremental incurred amounts are driven solely by the negative incremental paid amounts	[½]
Inappropriate application of these levels of the controls can result in over-reserving	[½]
Perhaps it is the industry practice not to hold too much negative IBNR	[½]
Keeping the negative IBNR amounts to 10% of case reserves by origin period:	
There should be limited OS on the Marine Cargo and Marine Hull insurance as these are generally a short-tailed line of business	[½]
However there could still be significant OS on Marine Liability business	[½]
Should consider how the 10% limit compares to the current level of negative IBNRs as estimated by the actuarial team	[½]
Should consult with the underwriting to understand if such negative incremental amounts are reasonable	[½]
The absolute amount at 10% can be small or large, and should be considered in addition to the % cap	[½]
Will also be influenced by how fast the claims are settled, e.g. marine hull and cargo claims might be settling very fast that the OS amounts might be too less to make 10% any significant amount	[½]
This could be different for longer-tailed marine liability line of business	[½]
Tax authorities may not like holding much negative IBNR, so the CRO's action might be looked at favourably by the tax authorities	[½]
Loss development factor not to go below 1.00 from the 8th development quarter:	
The control might not be effective as it is unlikely a chain ladder is being used	[½]
Since the business has already been written for only 3 years	[½]
This control should not be too early if there is a natural run-off hump in the development pattern...	[½]
Which could be common for the marine portfolios from the salvage/subrogation recoveries	[½]
But will depend upon the usual timing of such recoveries	[½]
Hence the 8th development quarter needs to be chosen based on the run-off studies, and not be arbitrary.	[½]
Equally, the negative link ratios later than the 8th development quarter might be good to ignore if they are due to one off events and not expected to impact the development of more recent quarters	[½]
However this needs to be backed up by evidence	[½]
And could possibly be implemented by adjusting the outstanding claims amounts	[½]
Marks available for other sensible comments [½ per point]	[1]

[Marks available 16, maximum 6]

[Total 12]

Many candidates answered parts (i) and (ii) well, with better prepared candidates scoring full, or close to full marks, in part due to part (ii) including some knowledge-based questions.

Part (iii) was not as well answered with candidates not generating enough relevant points by linking their answers to the information in the question preamble. Many candidates could not fully appreciate the implications of the CRO's proposal, while the better prepared candidates picked up obvious marks around the rationale on why such measures would be adopted from a risk perspective.

Q3

(i)

Advantages:

Under parametric pay-out is based on a pre-defined trigger which is simple to understand and verify compared to indemnity based	[½]
Could result in less claims disputes compared to indemnity based	[½]
Therefore it can be quicker for the funds to be paid to the government	[½]
Indemnity insurance will require loss adjuster and inspection before money can be released	[½]
Quicker payment can then be used to repair the damage faster which could in turn result in faster relief efforts	[½]
Also reduces loss assessment costs borne by the government	[½]
With pay out based on a pre-defined trigger there could be events which trigger pay out but cause little damage to government infrastructure providing funds for future use	[½]
Less chances of an inflated claim	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

Disadvantages:

Parametric covers are less established than indemnity-based insurance so it could be difficult to place the cover	[½]
Basis risk: There is the possibility that an event causes damage to government infrastructure but does not trigger pay out under the parametric policy	[½]
However, no guarantee an insurer would agree to chosen trigger and may prefer other mechanisms	[½]
It could take much more time to structure the product compared to traditional indemnity based	[½]
There is likely no standard wording to use as there is in traditional insurance	[½]
This could lead to more disputes which could lead to unpopularity	
Likely rely on a third party to assess the trigger which comes with risk of error or not provided in a timely fashion	[½]
There may not be a suitable trigger for all types of claims, e.g. damage caused due to government's negligence in maintaining the property	[½]
Country D could be exposed to climate change, which may make the triggers chosen under parametric insurance obsolete	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available 10, maximum 5]

(ii)

Insurance Risk:

Overall reserve risk will increase as Company B is writing more risk	[½]
The increase will depend on any correlation with risks already present in Company B's portfolio:	[½]
Increase in the underwriting risk will depend upon the premium being charged for the cover	[½]
They don't have any past data for such claims	[½]
Potential higher concentration of risk would increase capital requirements further	[½]

Domestic household exposures may be concentrated in other areas compared to the government infrastructure	[½]
Which could result in the capital requirement not increasing as much due to the benefit of diversification	[½]
Market risk will increase as the additional premium is invested	[½]
It is likely that the company will need to purchase reinsurance (if available), If the current reinsurance program is unable to cover the increased exposure for the government infrastructure	[½]
The additional reinsurance cover will reduce the capital requirement	[½]
However, credit risk will increase	[½]
Credit risk from premiums debtors may not increase by much if the government has a good credit rating	[½]
Correlation across risk types may be impacted by providing this new insurance: For example the risk of a nat cat event damaging office space also impacting government infrastructure	[½]
Operational Risk could increase because of adding a new line of business	[½]
Liquidity Risk is also likely to increase since the catastrophe losses could be large in size, requiring large sums to be paid at a short notice	[½]
Reduced capital requirement as a result of purchasing reinsurance, but then additional credit risk	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]
	[Marks available 9, maximum 5]

(iii)

Change in capital requirement will depend on the parametric trigger and how likely it is to provide a payout:	[½]
As well the size of payout provided by the new insurance:	[½]
And how this compares to limit provided under the indemnity insurance	[½]
Reserve risk may increase if parametric cover is not covered in Company B's reinsurance cover but indemnity cover was	[½]
Underwriting risk may increase as it will be more difficult to price a parametric policy	[½]
Increase in operational risk	[½]
Operational risk is likely to increase as well e.g. stemming from reliance on the third party assessing providing data for the trigger	[½]
Credit risk from reinsurer default may be less affected if Company B's reinsurance programme does not provide cover for parametric losses:	[½]
Or increase if separate reinsurance is needed	[½]
Liquidity risk could increase as payment is required faster compared to indemnity based	[½]
Having a clearly defined basis of how much claims will be paid in different circumstances might reduce the volatility in the claims, reducing the insurance risk	[½]
This might also impact the investment policies of the company which could increase/decrease the market risk (e.g. allows them to invest in more risky assets)	[½]
There are likely to be less volatile claim expenses since liability will be established quite objectively	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]
	[Marks available 7½, maximum 3]

[Total 13]

This question tested the candidate's ability to think broadly about parametric insurance products and was answered relatively less well.

Part (i) was answered well by prepared candidates, but many did not tailor their answer to parametric insurance and mentioned advantages/disadvantages which are also applicable to indemnity insurance.

Part (ii) was answered generally well with good responses covering all capital risk types even though impacts to operational and market risks and to the correlations across risks were missed. Part (iii), requiring candidates to demonstrate higher order thinking, was answered less well with most candidates not producing answers specific to the impact on capital from the parametric cover.

Q4

(i)

Having an underwriting loss is within the underwriting risk appetite of the insurer. [½]

Loss is immaterial overall and is offset as well by underwriting result from other parts of the business that Company E writes. [½]

In line with management objectives over a limited time period. [½]

e.g. it might be the company's strategic decision to write loss making business to grow in the market [½]

Loss is due to a conservative IBNR reserving approach, the results based on the reported losses are still showing a profit excluding the IBNRs. [½]

Expenses are high from the initial acquisition costs to enter the market. [½]

And need to pay higher commissions to attract new agents or join new channel. [½]

This is a short-term impact for learning and gaining experience [½]

Expense items are expected to stop soon, short to medium term impact. [½]

Loss is initial case reserves is conservative due to it being a liability line [½]

Company E has strong investment approach able to generate high investment income consistently [½]

especially for liability portfolio, there could be significant gap between when the company gets the premium and when it pays it as claims [½]

it will also depend upon the return on investments available in the market it operates in, which could be high in this case [½]

Company E is part of a Group with strong capitalization to support [½]

Deliberately done as a loss leader to gain top line for competitive reasons [½]

or there could be a possibility to cross sell more profitable business to the same customers in the future [½]

Underwriting cycle was in the soft phase when they started writing the business so needed to launch at a lower pricing [½]

Could be the industry practice or experience [½]

or any regulatory restrictions [½]

Other sensible comments (*½ mark per point*) [1]

[Marks available 10½, maximum 4]

(ii)

If the high combined ratio is driven by a decision to have a high loss ratio, then it can attract low quality risks as well	[1/2]
and low-quality risks can result in an overall risk of insolvency of the company if they all go bad at the same time	[1/2]
There is the opportunity cost of missing out on good risks if the underwriters know they can write more loss-making business	[1/2]
A higher conservative loss ratio can restrict growth plans	[1/2]
resulting in more capital tied up from the higher reserves.	[1/2]
There is the risk of over-reliance on investment returns to keep the company in profit and risky assets may be invested into to make up returns to produce profits overall	[1/2]
It would be further exposed to uncertainties from inflation and interest rate uncertainties.	[1/2]
Higher mismatching risk between the assets and liabilities, depending on the investment strategy.	[1/2]
Risk of regulatory breach if need to hold assets in line with prescribed requirements for insurance firm.	[1/2]
Risk of not having sufficient liquidity as more money is being paid out in losses than coming in	[1/2]
although it can depend upon the settlement lag observed for this book	[1/2]
Reputational Risk to the company it is writing loss making business only	[1/2]
The company's credit rating could be affected it is a loss making entity due to this strategy and other sources of income do not result in a overall profit	[1/2]
Risk of not being able to obtain reinsurance at favourable terms	[1/2]
The regulator may not accept this strategy in the long-term	[1/2]
The shareholder may stop buying into this idea and challenge it if it becomes a long-term strategy	[1/2]
Other sensible comments (<i>1/2 mark per point</i>)	[1]

[Marks available 9½, maximum 4]

(iii)

Since it is a relatively new line of business for the company and they might want to hold an additional buffer for the uncertainty	[1/2]
General Liability is an inherently volatile line of business, prompting the company to hold an additional IBNR at a company level	[1/2]
There is unlikely to be sufficient credible data to lead to accurate IBNR estimates by UWY	[1/2]
General liability line of business can be a long-tailed and having an extra buffer might be a good idea	[1/2]
This could be an industry practice to hold additional buffer at a company level	[1/2]
The management wants to hold this additional buffer as a safety net	[1/2]
There may be precedents of events impacting many UWYs for which the reserves at UWY level were insufficient	[1/2]
For example a court decision impacting business sold across many years	[1/2]
Higher reserves may show prudence and help to improve customer/market confidence in paying claims	[1/2]
So might be favoured by the regulator	[1/2]
Or the company's Board may prefer it	[1/2]
Company E has an underwriting strategy to write business with a COR of between 105% and 110%, which might include this additional IBNR	[1/2]

This could be with a view to build up the reserves for the future	[½]
General Liability line may have a potential for latent claims	[½]
Risk Management practice of the Company	[½]
Credit Rating Agencies may view it favourably	[½]
The company might be wanting to defer paying taxes	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available, 9½, maximum 3]

(iv)

An IBNR loading at the total level can make the companies less likely to follow the best practices in setting up the IBNR.	[½]
IBNR releases can hide the underwriting performance on a best estimate basis for individual UWY's	[½]
Making it difficult to assess changes to the company's underwriting performance over time.	[½]
Prevents deliberate smoothing of results using IBNR releases on older years to show the overall profitability of the portfolio.	[½]
This could be a way for the regulator to gauge the strength of underwriting discipline.	[½]
Especially for long-tail lines where the IBNR can build over many years.	[½]
This could be in line with accounting standards (e.g. IFRS) requirements for reserves to be at the best estimate and not to be overly conservative with implicit buffers.	[½]
It might help to bring more consistency and comparability between different insurers without the extra loading in place which can be quite subjective.	[½]
Best practice elsewhere in any other jurisdiction	[½]
Such a regulation will encourage better risk management	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available, 5½, maximum 4]

(v)

The additional buffer would be released, resulting in a higher profit for the transition reporting period	[½]
The higher profits can either be released as higher dividend payment	[½]
Reducing the assets on the balance sheet	[½]
And hence higher taxes	[½]
Or the released reserves could be held as higher retained earnings on the balance sheet	[½]
Resulting in lower profit than if the reserves were released as profits	[½]
Hence lower taxes	[½]
Could help improve the solvency if the release of reserves is not paid out as dividends	[½]
Alternatively, there might be no impact on the P&L if the actuaries simply re-distribute the IBNR loading within UWY	[½]
Also, since the movements in IBNR by UWY must be disclosed, the company may end up holding more IBNR within individual UWYs than before when the loading that was removed since offsetting of IBNR releases is not allowed anymore	[½]
Perhaps higher expense to meet this requirement	[½]
Investments could be more liberal now that they have to hold fewer regulatory reserves	[½]
Resulting in higher investment income	[½]

Other sensible comments (*1/2 mark per point*)

[1]

[Marks available 7½, maximum 3]

[Total 18]

Overall, this question was generally well answered by most candidates.

The question is split into manageable parts and candidates scored very well on parts (i), (ii) and (iii). The final two parts were less well answered with some candidates making generic points on the aims of regulation and, for the final part, not focussing on the components of financial statements. Better prepared candidates also pointed out that the impact could depend on changes to the reserving approach and might still be offset.

Q5

The main consideration is that the commutation payment should be at least adequate to cover the claims that would have otherwise been paid by Reinsurer R, if risks are left to run off	[½]
Company J should be seeking for the highest possible payment to be prudent	[½]
Company J may be willing to accept a lower payment if they believe claims Settlement and negotiations will be difficult once Reinsurer R is sold	[½]
Will also depend on if the Reinsurer R is in trouble	[½]
or if the new Reinsurer has a negative reputation for paying claims in a timely manner	[½]
Motor risks can be long tail and BI claims can go on for years	[½]
And quota share is written on RAD so exposure will take some time to run off	[½]
Consideration should be given to IBNR claims	[½]
By analysing past patterns and projecting into the future	[½]
Company J may want to be conservative on their IBNR claims projection as this can be uncertain	[½]
Investment return on reserves should be considered in calculations	[½]
Payment pattern to be used for discounting should be considered	[½]
Company J's risk appetite	[½]
Any claims amounts outstanding should be taken into consideration	[½]
May want to apply some credibility to the current outstanding claims estimates taking into account the likelihood of up and down movements	[½]
Which depends on how prudent the current outstanding estimates are	[½]
Effects of commissions including any profit commissions	[½]
Effects of any inuring reinsurance arrangements such as facultative covers	[½]
How good a deal does a certain commutation price offers to Company J	[½]
Expected claims inflation should be factored into any projections	[½]
The Tax implications of the commutation price should be considered	[½]
Company J should consider the extra claims handling expense they would have if the commutation is agreed	[½]
This could include loss of expertise from Reinsurer R although hard to quantify	[½]
Company J may have to seek reinsurance cover elsewhere so should consider cost and availability	[½]

Company J may have to hold additional capital after the commutation	[½]
Administration or other costs of the commutation agreement	[½]
Impact on their credit rating	[½]
The goodwill built up through it's transactional relationship with Reinsurer R	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available 15, maximum 7]

[Total 7]

A question on commutation considerations, from the perspective of the insurer commuting its reinsurance policy, gave the candidates an opportunity to demonstrate their knowledge of the broad range of considerations with many marks available.

Most candidates were able to generate a few relevant points, but many did not provide enough to gain close to full credit. In particular, less prepared candidates missed the key point on how the strength of the reserving basis would vary. However, well prepared candidates were able to think of many areas of consideration including the softer factors.

Q6

(i)

The impacts would arise from physical, transition and liability risks.	[½]
There would be impacts to its underwriting portfolio as well as its own operations.	[½]

Property:

Mostly physical acute risk impacts are in the near term	[½]
This would arise from increased frequency and severity of natural perils.	[½]
Changing or worsening seasonality patterns affecting at different times of the year.	[½]
Physical chronic risks act slowly over longer term.	[½]
for example, rising sea levels and increased risk of subsidence losses.	[½]
Transition risks from shifts in the population and how property occupancy is affected.	[½]
An increased risk of flooding can make the losses arising from the property portfolio worse	[½]
For example, shifting away from coastal regions inland will shift the insurance demand.	[½]

Environmental Liability:

Changing propensity on claims from tighter attitudes towards pollution and waste	[½]
Changing regulations supporting climate change increases liability exposures.	[½]
Increase in demand for coverage of plastics pollution.	[½]
More perils to be paid for arising from increased awareness around impact to the environment due to climate change	[½]
Latent claims could arise if the policy wording wasn't clear enough	[½]
Liability for damages to natural resources and biodiversity loss.	[½]
example, company found liable for causing deforestation or hunting for wildlife and being liable.	[½]

Public Liability:

Changing profiles of products sold by companies in transition towards climate friendly products mean liability claims profile would change.	[½]
Legal risk from climate reporting such as greenwashing would increase frequency of claims under those areas for their insureds.	[½]
For example, legal liabilities for making false statements on extent of sustainability efforts done when not actually done.	[½]
Legal risk would arise from all accounts when regulations on climate change are not well adopted.	[½]
Electric cars could lead to more/different nature of liability risk	[½]
For example, risks to the public from electric vehicles and the charging stations, insurance to protect should a member of public be injured from accidents from the charging station.	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]
<i>(A maximum of 3 marks to be awarded for each line of business)</i>	

[Marks available 12½, maximum 6]

(ii)

As climate change is a long-term condition, the challenge would be in applying stress and scenario tests to view the long-term impacts to the insurance portfolio.	[½]
When trying to estimate how the portfolio would look like over a long-term period, assumptions need to be made for the multi-year projections today which is a difficult task, e.g.	[½]
Portfolio mix changes need to be assumed, which is not an easy exercise.	[½]
Due to GI contracts being renewed annually.	[½]
Impact of the underwriting cycle will have to be factored in.	[½]
Uncertainty over the reinsurance capacity, pricing and terms over the long term.	[½]
Impact of climate change could increase reinsurance costs in some areas.	[½]
Uncertain nature of the climate parameters being projected	[½]
Climate pathways are meteorological projections based on climate science and do not have a clear link to insurance exposures	[½]
Requires estimation based on market-wide information, which can never be fully reliable.	[½]
Difficulties when translating climate projections onto the insurance liabilities	[½]
Difficulties when modelling the interactions between the portfolio variables	[½]
New business volumes is unknown (retention, premium volumes..)	[½]
Correlations are difficult to assess	[½]
Lack of data related to climate change (both within the Company and within the industry)	[½]
Time and cost of doing this	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available 9, maximum 4]

(iii)

Exclusions, e.g.:	[½]
Certain postcodes not being covered	[½]
Higher deductibles	[½]
Reduce the limits on cover	[½]
Certain times of the year not covered	[½]

Certain events not being covered, e.g. rainfall beyond a certain level	[½]
More reinsurance purchased covering the areas concerned	[½]
Not renewing the business	[½]
Commuting policies	[½]
Loss portfolio transfer to transfer the business to another insurer	[½]
Tightening the underwriting	[½]
Adverse Development Cover	[½]
Other suitable points (<i>½ mark per point</i>)	[1]
	[Marks available 7, maximum 3]

(iv)	
Extent of impacts depend how gradual the reduction of exposures are.	[½]
But otherwise, this would reduce its accumulation risk, coming from those risks concentrated in coastal areas	[½]
Thus reducing underwriting risk	[½]
And therefore a reduced required capital	[½]
Reduced reserve risk	[½]
Due to less volatile business being written (less exposed to weather)	[½]
An increase to liquidity risk due to loss of profitable business	[½]
Different and possibly more profitable asset mix could make up for the lack of liquidity due to losing the profitable business	[½]
Removing the exposures with higher deductibles and/or exclusions may reduce credit risk if reinsurance is no longer required	[½]
However, if exposures are reduced by using more reinsurance then credit risk may increase	[½]
The exposures make up a sizable portion of the company's premium and without them there may be less diversification credit to capital requirements	[½]
Increasing the capital requirements	[½]
Depending on the definition of capital, there might be no immediate impact if capital requirements are set for a one-year future planning horizon whereas the gradual changes take place in the subsequent financial periods.	[½]
However there might be an impact on the future capital projections.	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]
	[Marks available 7½, maximum 3]

[Total 16]

This was a topical question on climate change. Candidates scored better on the later parts of the question compared to the first two parts.

In part (i) most candidates did not mention the difference between physical, transition and liability risks, and did not give enough potential risks and focussed mainly on the increase in natural disasters.

Part (iii) was very well answered with most candidates demonstrating they can think of many different strategies to reduce coastal exposures. Well prepared candidates were able to link these strategies to capital impacts to score marks on part (iv).

Some candidates recognise the gradual impacts to capital. Candidates planning to work in general insurance are expected to be more familiar with climate change as part of an insurer's external environment.

Q7

(i)(a)

Across lines of business

Geographical accumulations where risks from multiple lines of business are concentrated in one area, such as across property and engineering [1/2]

These could be exposed to natural or man-made catastrophic events in the area [1/2]

Or a specific peril as, for example, a local economic downturn could lead to more claims across lines of business in a certain area [1/2]

Accumulation whereby policies from different lines of business cover the same insured event example EL and Property policies [1/2]

Claims from the same event could accumulate here e.g industrial accident [1/2]

Increased litigiousness in the country

Company P and Company Q were insuring the same client [1/2]

Other sensible comments (*1/2 mark per point*) [1]

(b)

Within individual lines of business

Geographical accumulations such as many insured residential properties in one area [1/2]

Catastrophic events could impact many property or engineering policies in the area [1/2]

Concentration within one industry where an event could impact all insureds in that industry [1/2]

For example, EL insurance in one industry which is affected by a harmful substance [1/2]

There can also be an accumulation within one policy where many risks are covered under the same policy [1/2]

For example, many employees under one employers' liability policy [1/2]

Other sensible comments (*1/2 mark per point*) [1]

[Marks available 8, maximum 4]

(ii)

Location of each risk, ideally the latitude-longitude information [1/2]

Policy inception and expiry dates	[½]
Policy limits	[½]
Excesses and deductibles	[½]
Including sub limits for any peril	[½]
Risk type - private dwelling, commercial property etc	[½]
Number of stories and if risk is located on a certain floor	[½]
Perils covered if listed	[½]
Any relevant business exclusions	[½]
Construction Type	[½]
Policyholder information	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available 6½, maximum 3]

(iii)

Encourage and support insurance risk management	[½]
Carefully and regularly monitor aggregations of risk in management information	[½]
Supplemented by purchasing specialist software/data such as that which models flood exposure	[½]
And when defined limits are reached stop underwriting	[½]
May need to non-renew or significantly increase rates if current aggregations too High	[½]
Purchase additional reinsurance that protects against aggregate events	[½]
Or enter into a quota share arrangement to reduce overall exposure	[½]
Consider amending terms, conditions and exclusions e.g. reducing policy limits for certain events	[½]
Increase diversification	[½]
By writing more classes	[½]
Or new geographical areas including overseas, new professions	[½]
Monitor live events as they unfold so that any risk of losses from aggregating event is spotted early	[½]
And mitigating measures implemented quickly such as providing support to policy holders early to limit cost	[½]
Sticking to underwriting guidelines	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available 8, maximum 3]

[Total 10]

Overall, this question was very well answered, particularly for parts (ii) and (iii) where most candidates were able to generate a sufficient number of distinct points. Candidates who only provided lists without any explanations were not awarded marks.

However, some candidates did not realise part (ii) was only referring to the property class and incorrectly listed data relating to the other classes. Some candidates also did not focus on exposure related policy information. This highlights the importance of reading the question thoroughly.

Part (i) was answered well but some candidates did not give enough different types of accumulation examples and did not think through all the valid areas of uncertainty from the external environment that affects the portfolio.

Q8

(i)

Latent claims arise from perils that were unforeseen when policy was signed.	[½]
These claims can emerge and be reported many years after the cause of loss.	[½]
Example of latent claims from diseases caused by products or industrial processes, faulty construction of buildings	[½]
Asbestos / pollution / toxic mould (any suitable example)	[½]
Calendar year development effect	[½]
Usually from liability insurance	[½]
Although can be silent from property classes	[½]
Difficult to establish date of loss	[½]
Can result in sudden accumulation, for example in a class action	[½]
Suitable explanations	[1]

[Marks available 5½, maximum 2]

(ii)

Frequency Severity approach	[½]
Projecting the number of claims and average cost of claim separately	[½]
Adjust severity for impacts of inflation	[½]
Suitable for high frequency type of claims	[½]
Projection based on the origin period or aggregated by reporting period	[½]
Statistical approach and relies on sufficient data	[½]
Bottom-up approach	[½]
Individual reserving for each policy from bottom up.	[½]
Consider individual policy limits and deductibles	[½]
Estimate damage ratio, or assume full policy limit loss impact	[½]
Requires input from claims and legal experts given complexity of latent claims	[½]
Operationally intensive due to need to review each claim	[½]
Can be subject to individual bias and inconsistent treatment between claims	[½]

Top-down approach	[½]
Estimating company's market share of the total loss to the industry	[½]
And the impact to each policy.	[½]
Can be subject to variability due to changes in the market view of the loss	[½]

Benchmark approach	[½]
Applying a benchmark factor to the portfolio of latent claims	[½]
Survival ratios are a common benchmark	[½]
Derived from the insured's history or from the market	[½]
Ratio is applied to the average annual paid	[½]
Other latent claims (at the potential stage)	[½]
Win factors to be accounted for	[½]
Marks available for other sensible method (<i>½ mark per point</i>)	[2]
<i>(A minimum of two methods are expected and no more than 3 marks to be awarded for an individual method. Not to award marks for more than 3 methods as the question specifically asks for only 3 methods.)</i>	

[Marks available 12, maximum 6]

(iii)	
Inflation would be a key driver due to the delays in assessment and settlement	[½]
Inflation can be complicated due to	
Inflation from changes in the judicial process	[½]
Inflation from changes in how PSLA is assessed	[½]
General inflationary impact from the economy as seen in the CPI	[½]
Accumulation risk arising from class actions	[½]
Consider similar previous claims that have happened in the past	[½]
Perhaps the same drug sold by other firms	[½]
Or the same firm with other similar drugs	[½]
Whether the claim would be covered by Company N's reinsurance	[½]
Jurisdiction where the drug is sold	[½]
How many people use the drug and the likelihood of causing health issues	[½]
Scale of contamination and the source of it	[½]
Industry or market or regulatory requirements around such claims	[½]
Change in litigiousness of the society	[½]
Possibility of win factors, coverage defences	[½]
Distribution of the severity of the disease ranging from minor effects to permanent disability	[½]
Structured settlements regulations, if any	[½]
Marks available for other sensible comments [<i>½ per point</i>]	[1]

[Marks available 9½, maximum 5]

(iv)	
Paid amount = \$12m	
Reserves = \$200m	
Survival ratio = $\$200/\$12 = 16.66$ years	[2]

(v)	
This is a liability class of business, which can be quite long tailed	[½]
And the company doesn't have a lot of historical data given that it started writing this book only 5 years ago	[½]

Survival ratio benchmarks for similar products in the market could be used	[½]
However, it will depend upon how accurate the company's paid information to date is	[½]
As the reserves calculated based on survival ratios will be very sensitive to the paid amounts	[½]
Applying a benchmark survival ratio to the paid claims would estimate the reserves for Company N	[½]
If the average settled paid amounts over past 3 or 5 years are available for such Claims, then they could be used as a benchmark for the current set of claims	[½]
Other sensible comments (<i>½ mark per point</i>)	[1]

[Marks available 4½, maximum 2]

[Total 17]

Latent claims is an area which has been examined regularly in the past and it would be expected candidates are well prepared in this area. As such, part (i) was very well answered with most candidates scoring full marks.

Part (ii) was less well answered with some candidates unable to describe three relevant methods. Strong candidates demonstrated familiarity with the core reading and were able to provide good answers. Some candidates did not know the common approaches or did not explain the approaches in sufficient detail the approaches.

Part (iii) was well answered with most candidates relating their responses to information provided in the preamble.

Most candidates scored full marks for calculating the survival ratio in part (iv), but part (v) was not well answered showing the majority of candidates were unfamiliar with how survival ratios are used in practice.

[Paper Total 100]

END OF EXAMINERS' REPORT



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