EXAMINERS' REPORT

June 2021 examinations

Subject F101 — Health & Care Fellowship Principles

INTRODUCTION

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

QUESTION 1

The question asked for candidates to think through the impact to a small insurer of offering a novel, and possibly risky, product concept to an existing market. Stronger candidates were able to identify that the concept would require considerations across the risk management spectrum and discussed impact on new business volumes, underwriting, pricing and claims management processes, among others. Many marks were available to candidates who were able to think generally and tie their answer to the specifics of the question.

A few candidates discussed at length customer need – the need is well established for CI products and therefore offering a CI product with multiple payouts would be considered to be acceptable to the market.

Overall the question was well-answered with many candidates scoring reasonably well.

(i)
Data – since small insurer and first time offering this benefit feature in market would have limited to no data to price.
Reinsurance – small insurer would not have appetite for claims volatility of unknown benefit feature. Source reinsurer to transfer claims risk as well as use expertise and data to assist with pricing. The impact of the cost of Reinsurance on the product's price will need to be allowed for.
Anti-selection – since only insurer to offer more likely to be selected against by people concerned about claiming. Use underwriting and product design (pre-existing conditions exclusion clause or waiting periods) to limit anti-selection risk
Impact on underwriting – the insurer will need to perform adequate underwriting at initial policy sale stage to onboard the types of risks they have assumed in their pricing. They will also want to do some form of underwriting at claims stage to ensure information given at sales stage ties in with what is happening at time of first claim and subsequent claims. They could also allow for the use of pre-existing conditions exclusion at sales stage which would require checking at claims stage.
Marketing – this will certainly be an attractive sales feature and could result in greater number of sales of new business policies than without the feature. This would impact on new business strain and the insurer may need to consider reinsurance financing or similar to help fund the strain
Definitions of claimable conditions – need to be clear and unambiguous as to what the policyholder can claim for especially for the second and third payouts
Impact on price – higher price since offering potential for greater payout. This would reduce marketability and competitiveness
Complexity – need to explain more complex product feature in marketing material (and train sales staff) and be able to administer a more complex product on IT system

(ii)
Stricter underwriting – would allow better risks onto the books, although this would increase underwriting costs, needs to be to the point that the increased underwriting cost is lower than the impact the underwriting has on claims cost
Reduced list of conditions and illnesses that can claim for, making the benefit less generous but this will be less competitive

Once claimed, reduce the conditions allowed to claim i.e. can only claim for unrelated claims up to 3x – for example cancer, then no further cancer-related claims can be claimed for
Reduce to lower than 3x (maybe 200% for example)
Include waiting period before allowed to claim – both at initial policy sale and in between claim events
Limit the maximum age the benefit can be offered so that younger lives tend to take up the benefit reducing the risk cost
Offer as a group product rather than individual offering requiring minimum take-up rates and saving on underwriting and sales costs

QUESTION 2

Part (i)

This question was generally well answered with candidates being able to identify needs met by LTCI products. Although it was sufficient to just mention these needs, better candidates were able to specify where the product needs did not overlap with PMI and CI products. Most candidates scored full marks for this question, or almost full marks.

Part (ii)

This part was particularly poorly answered. While it was encouraging to see that candidates could relay the basic outlines of the actuarial control cycle as it would apply to almost any insurance product, most candidates did not apply the cycle to the long term care insurance product and to the client context. Marks were not given for generic points as the question gave clear and specific context.

(i)

- The long term care product can be used to cover, or help to cover, the cost of care in old age when individuals are no longer able to look after themselves
- This might be home based care
- Or care in a nursing or residential home
- To pay for the costs of extra equipment
- Alternations to the insured's home to assist with their incapacity

(ii)
Commercial and economic context

- The actuarial control cycle (ACC) starts with an assessment of the market context in which RecoHealth and its group clients operate
- This includes understanding the size of the long term care insurance market, competitors, their products, pricing, distribution channels, and growth opportunities
- This includes understanding the size of the elderly population, their needs and costs and current insurance / care available

As this is a new product, the insurer would need to determine the initial assumptions to use in the pricing of the new product – this applies to the long term care transfer probabilities, mortality,

withdrawals, expenses and financial / economic assumptions (such as inflation, medical inflation) as well as product volumes that can be expected.

The company has no past experience for this product and the assumptions will need to be assessed using any existing data from current health insurance products, supplemented by published financial data and the assistance of the reinsurer

As the insurer currently has a portfolio of PMI and CI products, the insurer can identify which elements of the experience could be useful (for example mortality and claims experience of elderly policyholders)

The product would then be profit tested to determine an appropriate charging structure for the chosen product design (e.g. definition of claim event trigger, levels of cover and how these increase over time, immediate needs or pre-funded, etc.) which delivers an acceptable profit to the insurer and premium rates competitive in the market

Unless in the unlikely event that the insurer has intentionally decided to sell the product as a loss leader, as the insurer would be a new entrant to this market, the insurer would want to ensure that its product pricing is not going to attract undesirable risks

After launch, experience would be monitored regularly to see how it compared with the assumptions made

If experience differed markedly from the initial assumptions or there were other reasons to believe that past assumptions were no longer valid then revised assumptions would be formulated based on this experience and reasoning

Changes in the market place would also need to be monitored to ensure the product did not become uncompetitive such as other long term care insurance products being launched or revised, changes to state provision of elderly care, etc. These would be taken account of in revised assumptions or product design in order to control risks to the company

The product would then be profit tested again to see whether the profit levels were still acceptable or whether the product's charging structure required adjustment

The strategy may need to be revised if sufficiently profitable rates and sales volumes cannot be achieved – given the long term nature of the product, it is important that the profitability is sustainable and achievable based on required sales volumes.

The updated pricing would need to be reviewed against market rates for other long term care insurance products for competitiveness

The insurer may also want to review its underwriting and claims management as key risk management features for this product. These would be important aspects in understanding performance and competitiveness for future improvements to service and product.

QUESTION 3

This question was well answered by many candidates. Those scoring well were able to apply the specifics of the question in both parts of the question. Candidates who struggled to score well, were unable to generate sufficient points or failed to adequately link their answers to what was being asked. For part (i) some candidates got lost in the detail of the attributes of a model rather than thinking about the wider picture and the purpose. For part (ii) some candidates spoke more about considerations to allow for as opposed to the risks. Candidates also needed to indicate clearly that risks arise where the experience is different to what was expected or allowed for.

(i)

- Collect claims and exposure data…
- …ensure sufficient volume for credible results
- …apply appropriate adjustments i.e. IBNR, inflation adjustments, high-cost claims
- Build a GLM model to predict both claims severity (Gamma model) and claims frequency model (Poisson model)…
- …GLM will need to predict severity and incidence for those with the new premium rating factor and those without…
- …GLM may need to adjust for other factors such as age, gender, chronicity, benefit level to ensure no bias…
- …sensitivity test results and back test on different groups of data to ensure consistent results…
- If the experience differs significantly…
- …determine the adjustment to premiums for those with and without new rating factor
- …compare this to the premiums offered by competitors
- Establish what data needs to be collected through the underwriting process to validate new rating factor…
- …is this easily collected
- Consider current regulations and industry practice viability
- Use data from other sources with appropriate adjustments

(ii)

- Reputational risk…
- …some policyholders may feel they are not being treated fairly
- Claims experience and anti-selection risk…
- …if premiums are not adjusted then on average ABC's premiums may be more expensive for some and cheaper for others relative to competitors
- …this may cause a shift in which policyholders stay and which lapse…
- …risk that not as many low-risk lives leave as expected (business mix risk)
- …which will mean a higher claims experience than expected…
- …which may lead to losses and the need for a higher premium increase
- Data risk…
- …it may be harder to price the change in experience with the new factor introduced

- …risk of underpricing and losses occurring
- …risk of mispricing and driving volume of new business sales down
- Reinsurance…
- …reinsurers may not adjust premiums until enough experience has emerged that indicates a lower risk pool
- Need to monitor how competitors respond and the impact on business mix…
- Risk that regulators may not approve new rating factor
- May be no additional value from new rating factor
- Additional costs associated with adding new premium factor – system changes, updating policy documents etc.

QUESTION 4

The question was intended to test candidates' understanding of MME and PMI products as well as general understanding of product development and pricing. Most candidates demonstrated some understanding of the anticipated change in claims experience but failed to fully articulate what a change from MME to PMI would entail. The average candidate did not achieve a passing mark for this individual question.

Key to this question was recognizing and stating the effect of changing from a fixed benefit to an indemnity (and unlimited) benefit and identifying how this would affect the insurer and policyholders. Candidates that scored well on this question demonstrated strong exam technique and clearly explained how the changes would affect the various elements of the product for both these key stakeholders.

Market

- Assess competitors in the market and their ability to adapt to the new regulation
- And needs to understand costs of treatment and managing/negotiating costs
- Including operational capacity to process indemnity claims

Claims

- PMI cover is indemnity-based and therefore the cost of claims events will no longer be subject to maximum limit (equivalent to the lump-sum).
- The insurer may see an additional increase in claims cost as well, as policyholders may opt for more expensive treatments under indemnity cover as opposed to lump sum benefits.
- This means that the expected cost of claims per policy will increase.
- There will be an increase in the frequency of claims per policy as a result of new benefits being offered under the indemnity-based policy.
- This means that the expected claims cost per policy will increase

Premiums

- The insurer will need to increase premiums to cover the higher expected claims cost per policy.

- The premiums for higher risk lives will increase by a larger margin in order to account for the additional expected claims cost under indemnity benefits.
- The insurer may need to consider cross-subsidies between high-risk and lower risk lives to ensure that cover remains affordable.
- The insurer may include a margin in the premiums to allow for the risk of higher than anticipated claims costs.
- However, given that premiums are already likely to increase substantially there may be limited scope for additional margins or cross-subsidies.

Policyholders:

- There will likely be a significant increase in lapses on account of the increase in premiums
- Another portion of the policyholder base may lapse as they did not want comprehensive PMI cover.
- There will likely be an element of selective lapsing, with policyholders remaining on the books being unable to obtain cheaper cover elsewhere.
- The product will likely attract a different mix of policyholders due to the more comprehensive set of benefits offered. Which will in turn have an effect on the required premium.

Expenses:

- The insurer will experience an increase in the claims-related expenses.
- This is a result of having to pay healthcare providers directly rather than paying the policyholder
- The re will also be an increase in claims-processing costs as the insurer will need to capture more information related to a claim.
- Similarly, there will be an increase in claims management costs as the insurer needs to verify the services performed and whether the amount charged is appropriate, whereas in the past the insurer simply needed to verify that the policyholder underwent surgery.

Reserves

Possible increase in reserves as both premiums and claims are expected to increase

QUESTION 5

This question was fairly answered, overall, with candidates scoring reasonably well on Part i which required the identification of reasons for the worsening trend in solvency cover level. Part ii required candidates to identify a breadth of investigations and to describe them in detail to score well. Most candidates managed to identify the various investigations (aided by Part i), but the description of the investigations and what to look out for tended to be very generic, costing marks for the application to the specifics of the question.

i)

- Random fluctuation – unlikely
- Greater utilisation of benefits – consumer/provider behaviour/supply increases

- Increases lower than claims inflation – marketability/grow market share
- Medical inflation may be persistently higher than expected – new diseases, technological advances, etc.
- Growth in business – greater new business strain
- Investment returns lower than expected
- Expenses higher than expected
- Changes in underlying demographics – ageing population; incidence of chronic conditions; selective lapsing (for any example)
- Errors in pricing basis – claims incidence/frequency being under-estimated
- There may be increasing levels of anti-selection – policy wording not adequate
- Fraud, wastage or other inefficiencies resulting in losses
- Regulatory changes on minima/maxima, reserving requirements, etc.
- Healthy policyholders lapsing their policies in favour of competitor offerings
- If the solvency capital levels have been historically very high, a conscious decision by management may be to gradually reduce this to a more capital efficient level by utilising the capital to grow the business or pursue other more lucrative opportunities

ii)

- Would need to analyse the experience w.r.t. the various items that could drive the observed trend
- It is likely that it is the conflation of multiple items that is driving the experience – some more so than others, and potentially in opposite directions.
- Need to collect the data over the past five years
    - internal data for claims, membership, expenses, investments
    - external for general market trends, economic data, etc.
- Make sure all claims data are fully run off or allow for IBNR, outstanding claims where appropriate
- Data should be grouped following a similar methodology as per the pricing/reserving bases in order to identify the risk cells that may be driving the observed trend (or partially driving the trend)
- Investigate any significant changes to the bases over the past 5 years that may be contributing to the observed trend
    - Changes to regulations – prices, reserving requirements, etc. may have had an impact.
- Membership data should be analysed on a per beneficiary per month basis, and similarly the claims data
- Any large one-off events that could have contributed should be noted, for example, mergers and acquisitions should be taken into account as these may have an impact.
- There may have been a large number of unusually large claims eating into the reserves over the period – these should be taken into account
- Consider the following investigations:
    - Claims, per category – hospital, medication, day2day, etc.
        - There may be a particular category of claims that is significantly higher than expected
        - May indicate loopholes in policy wording or area open to abuse/anti-selection

        - Investigation into the claims experience by provider type and particular providers (to identify potential fraud/abuse, or where policy wording is inadequate)
    - The overall profile of the membership should be analysed as well as the changes during the period under investigation
        - Look at the age profile over the period
        - Consider the chronic incidence over the period and whether there was a noted increase in chronicity
        - Consider the M/F split over the period
    - The profile of the lives who terminated their membership also needs to be considered to discern whether there is a selective lapsing effect
        - Age, state of health, reason for exit, etc.
    - Business volumes and mix, including persistency of new beneficiaries
        - May highlight selective behaviour
        - Especially if older, sicker individuals are joining, and younger, healthier lives are lapsing
        - There may be an effect per distribution channel, hence consider the volumes and mix and lapses per channel
    - Expenses – actual vs loadings over time
        - Impact of large one-off capital expenditures over the period
        - Perform a detailed expense analysis and determine whether the loadings are appropriate or resulting in a significant under-recovery
        - Where mix of business has significantly changed over time, this may have a large impact
    - Investment returns, investment strategy and allocation to various asset classes
        - Actual investment returns vs those expected in the reserving/pricing bases
    - An investigation into general levels of chronicity and new diseases and the industry level of medical inflation may indicate where our bases are out of line with reality.
    - Considering the position in the underwriting cycle or the general economy may also yield insights into the levels of profit that can be made (or realistically set aside as reserves over and above the minimum solvency requirement).
    - Specific management actions and decisions over the past 5 years impacting the solvency capital should also be investigated.
- Understanding the factors driving the trend can assist in taking corrective action and to prevent the trend from further biting into the solvency reserves.

QUESTION 6

Overall the question was reasonably well-answered.

Part i was bookwork, and surprisingly many candidates did not know the formula (or left out important components) for the risk premium of a standalone CI product with a survival period

For Part ii, most realised that the impact would serve to reduce claims, but few noted that over time, and with medical advances, the effect hereof is likely to reduce

Part iii was well-answered. Some candidates lost marks for only focusing on individual policyholder data

Part iv was well-answered for the most part, but candidates lost marks for overly generic points and not taking the scenario into account. Poor exam technique, e.g. simply listing risks also cost some marks.

i)
$RP_x = SA*i_x*r_x$ Where:
SA = Sum assured, RP_x = Risk premium for a life aged x
i_x = incidence rate across all conditions (sum of individual incidence rates) for age x
r_x = probability of surviving the survival period; i.e. the 28-day survival rate given a diagnosis of a CI for age x

ii)
- Total claims are expected to reduce
- By the proportion of people expected to die within 28 days of diagnosis
- However, with the improvements in diagnostic technology and treatment,
- It is expected that fewer and fewer people will die over time within the survival period

iii)
- Incidence rates at each age for each covered condition
- 28-day Mortality rates for diagnosis at each age (modelled?)
- Risk margins
- Expense loadings
- Commission
- Contribution to profit
- Discount rate
- Solvency capital requirements
- Cost of capital
- Assumptions around volume of business (for spreading overheads)
- Assumption around mix of business (where cross subsidies exist)

iv)
- Incidence rates
    - May increase over time, resulting in more claims than expected

    - Greater awareness; early detection; diagnostic technology improvements
    - Particularly a problem if rates offered are guaranteed, which is often the case,
        - and the product is long-term, exacerbating this risk
- Survival rates
    - Higher than expected, resulting in more claims than expected
    - Mortality and treatment improvements over time
    - Again problematic when guarantees have been offered/long-term
- Competitive risk
    - Risk that competitors design and market a similar product which is found more attractive,
        - resulting in low business volumes (difficult to cover overheads)
        - or lapses (which is problematic if the asset share is negative) resulting in losses
- Low marketability of product
    - Not found attractive by target market – low demand
    - Low appetite for intermediaries to market
- Mis-selling risk if commission out of line with that of competitors
    - i.e. higher. May sell to persons for whom product does not meet needs in order to get commission
- Reputational damage if product does not meet needs and found to have been mis-sold.
- Claim disputes around the survival period may also cause reputational damage if policyholders utilise social media for complaints
- Selective lapses
    - Healthy lives lapse policies, leaving the insurer with a greater concentration of policyholders who are more likely to claims
- Anti-selection – insurer's underwriting may be inadequate to pick up on certain forms of anti-selection/moral hazard – results from genetic tests, family history, other risk factors
    - May be exacerbated for a stand-alone policy such as this
- Large initial outlay (product design, systems development, training, etc.)– may not be recouped if product fails to sell well
- Regulatory risk if regulation changes or prohibits certain forms of underwriting or imposes maximum premiums, commission, etc.
- {no marks for investment risk – small reserves}

QUESTION 7

This question was poorly answered, with many candidates not able to perform well on the calculation questions. This was disappointing as the calculations are a core part of the bookwork required and are included in the course material. Some candidates also appeared to have had poor time management.

Most candidates did well for part (i). However, for part (ii), (iii) and (iv) many candidates failed to recognize that comparisons can only be made using costs on a per life basis rather than on an absolute amount basis. Many candidates were unable to use the correct approach for part (iii) and (iv).

Candidates who performed well on part (v) were able to reference CPI increases and the claims increases of ImpiloMed, clearly indicating WHY there would be concern. Part (vi) was answered reasonably well by most candidates, with only a few appearing to have misread the question.

(i)

	Total annual claims	Average policyholders per month	Average number of months a policy is in force over the year	Average claim per policyholder per month	Claims increase YoY	Average annual claims increase over two years
2018	99,500,000	15,000	11.20	592.262		
2019	103,800,000	15,200	10.90	626.509	5.782%	
2020	113,500,000	15,140	11.00	681.518	8.780%	7.271%
2021 expected				731.070		

(ii)

	Total annual claims	Average policyholders per month	Average number of months a policy is in force over the year	Average claim per policyholder per month	Claims increase YoY	Average annual claims increase over two years
2018	99,500,000	15,000	11.20	592.262		
2019	101,300,000	15,200	10.90	611.419	3.235%	
2020 adj	113,500,000	15,140	11.00	681.518	11.465%	7.35%
2021 expected				731.6096		

Note that the above does not include provision for recurrence of extreme event

(iii)

Final proposed monthly premium = 731.6096 / (1 - (0.05 +0.02 + 0.015)) = 799.5733

Assuming that margin includes provision for extreme events.

(iv)

Total policyholders = 21,800 * 11.2 = 244,160

Total claimants = 0.75 * 244,160 = 183,120
Total claims = 183,120 * 845 = 154,736,400
Expected claim per person = 154,736,400/244,160 = 633.750
Expected claim per life for 2021 = 633.750*1.053 = 667.339

The claim projection for ImpiloMed is much lower (-9.541%) than for TopHealth.

(v)

- TopHealth's claims cost is much higher than ImpiloMed….
- TopHealth's claims increases year on year are much higher than ImpiloMeds'
- …..on average 7.27% for 2019 and 2020 on TopHealth versus 4.65% for ImpiloMed over the same period
- Claims costs for TopHealth are much higher than CPI…
- ….claims costs increasing even though CPI is relatively flat
- ….claims costs increasing by a larger amount year on year than ImpiloMed
- TopHealth's claim increases are sensitive to high-cost claims…
- …not clear if TopHealth have any claims management in place to assist with this risk
- May be a concern of anti-section or fraud
- Higher claims costs mean higher premiums
- …may impact competitiveness
- …premiums may be too low and thus threaten the long-term sustainability

(vi)

Ways to manage claims costs:
NB: question stated unlikely to approve introducing any new benefit limits, exclusions, co-payments or deductibles

- **Approved provider networks…**
- …which restrict the choice of provider policyholders can access care via
- …and where TopHealth can have an arrangement with the provider to allow for better quality and cost of care
- **Treatment protocols**…
- …TopHealth can specify the prescribed treatment procedures they will cover for different conditions
- …This ensures lower utilization of high-cost treatments that are not needed and use of a cost-efficient approach if available.
- **Negotiated fees and fixed payments**…
- …this allows TopHealth to negotiate fee discounts, or introduce incentives to limit cost or allow for some risk-transfer to providers
- **Pre-authorisation**…
- …procedures need to be approved by TopHealth before they take place…
- …this allows TopHealth to ensure the treatment is necessary and complies with any protocols and/rules
- **Case management**…
- …will assist with monitoring high-cost cases which TopHealth's claims are sensitive to

- **Utilisation reviews**…
- …assist with identifying if there are certain procedures or providers that are driving the high cost increases
- **Preventative measures**…
- …if TopHealth can improve the general health of their policyholders this should lead to lower future claim incidence…
- …which will see lower claims costs and thus lower claims increases.
- Methods to identify high-risk policyholders that are joining, for example underwriting
- Attracting younger and healthier lives with a low propensity to claim
- ….Thus reducing the overall claims cost of the book
- …this may not be possible if it is a risk-rated product