

# **EXAMINERS' REPORT**

*November 2018 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

*This question was reasonably well answered. For part (i) a surprising number of candidates did not start with the need to assess the validity of month of birth as a risk factor. Candidates needed to apply the points made to information in the question. For example, credit was only given for referring to such a factor being permissible if it was noted that the competitor had already implemented. Part (ii) was well answered but candidates needed to make sure they referenced the volatility reduction requirement. For part (iii) candidates needed to explain the concept of the contingent loan and loadings to cover commission rather than just referring to financial reinsurance.*

- (i) Need to conduct analysis to see whether experience difference by birth month is not significant.
- Unlikely to be a significant factor on its own
  - It may not have a significant impact on premiums.
  - It may be a proxy (alternative) to other rating factors already used.
  - Consider if it is expected to have a significant impact on business volumes e.g. materiality.
  - Consider if volume of data on which the analysis was based was credible.
  - It may have been a temporary phenomenon that is not expected to continue in future.
  - The company may want to see effect on ABC change on experience coming through before considering implementing this change.
  - The company needs to justify the investment based on the return/profit it will generate i.e. costs incurred due to changes to admin systems and changes to process (pricing, underwriting) and additional queries that people have as a result of this (or the need to do additional training of customer services).
  - It may be difficult to explain / justify this differentiation to policyholders.
  - Customers or distributors may see this as a marketing stunt which could discredit the company (reputational damage).
  - Other competitors in the market have said they are not going to make the change/ wait to see what other competitors do.
  - The company can take advice from a reinsurer
- (ii)
- The insurer could use proportional reinsurance on risk premium basis to reduce volatility
  - Individual surplus would be suitable
  - Set at a retention per life in line with insurer's risk appetite
  - Quota share could also be used with suitably low proportion retained, however, this would then be transferring a significant proportion of the insurer's profits to the reinsurer, and the risk of large numbers of claims of high amounts (and hence volatility) still exists.
  - In addition, aggregate XoL reinsurance can be used to place an upper limit on total claims and smooth the volatility across the book, but may be prohibitively expensive given the current strain on the insurer's capital position.
- (iii)
- Commission payments from the reinsurer to the insurer on each policy sale via financial reinsurance would be useful in reducing new business strain

- The insurer could use the upfront commission to offset upfront acquisition expenses
- The commission would need to be repaid via loadings applied to the reinsurance premium
- Since these are contingent on the policy still being in force, they are not treated as liability on the insurer's balance sheet and so the net capital position of insurer improves
- The insurer could also reinsure a selected block of in force policies if the book is large enough and the reinsurer would pay an amount for this block equal to the expected future profits
- The insurer has replaced the expected future profits of the block of policies for a known cash injection to alleviate upfront expenses on new business
- And to reduce liabilities on its books for which it needs to set capital aside
- Reinsurance reduces the volatility of claims experience, and as such should result in lower capital requirements for the reinsured business

## QUESTION 2

*This question was reasonably well answered. Some candidates failed to recognise that the NHI benefits that would be provided by the State would not include non-emergency hospitalisation. Some candidates also did not recognize that primary care benefits do not include hospitalisation but often also includes basic dental and optical benefits. Many candidates confused critical illness cover with medication for chronic conditions. This resulted in them not recognising the different benefit structures between the two products and the different needs for the two types of insurance.*

### PMI

- Healthier customers significant portion of their health care costs covered by state provision
- PMI might be reduced to meet the need for non-emergency hospital cover and chronic conditions not covered by the NHI
- Cover for non-NHI benefits
- Restriction to allocated clinics might be seen by some customers as limiting consumer choice
- Thus consumers might use PMI to obtain greater freedom of choice of primary care provider
- Consumers might want to avoid queues and waiting lists at clinics
- Geographical spread and accessibility to care
- Technology, expertise and resource availability within the State facilities
- The need for PMI might be a function of the perceived quality of outcomes from the state system
- Customers might forgo state services if they are perceived to be of low quality
- Provision of emergency care may reduce need for PMI
- Employers might see PMI as attractive benefit to attract and retain talent
- Non- Citizens and temporary resident might not be covered by the state scheme
- Increase in tax = lower disposable income = affordability constraints

### CI

- Most conditions covered in typical CI policies are still not covered i.e
- Still a need for cancer cover and specialised hospital procedures
- CI policies might still be needed to replace income and

- To cover large hospital accounts and
- Cost of adoption to living with the condition
- Cover for Rehabilitation and recuperation
- The level of benefit needed (lump sum or annuity) might be reduced due more 'welfare' from the state
- Some costs of managing the critical illness might be covered by the primary care benefits – i.e. the healthcare expenditure
- Greater access to primary care and chronic management might reduce incidence of critical illnesses

#### LTC

- Unlikely that government will cover cost of frail care by nurse or nursing home
  - Risk that people requiring care end up in acute (covered) facilities receiving inappropriate/costly care interventions
- Some age-related conditions such as dementia and alzheimer's might be covered by the mental illness benefit
- Medication for chronic conditions that are largely prevalent in old ages might also be covered in the list of 25 conditions – these may reduce the need for LTC (?)
- Level of costs of care required may be reduced due to some of needs being covered by state provision
- Greater access to primary care and chronic management might improve mortality and increase life expectancy = increase in need for LTC

### QUESTION 3

*Students performed adequately for part (i) of the question, and most were able to touch on the key points related to CI being more expensive than GLA. However, poorer candidates failed to articulate the risk costs and pricing margin issues well, and spoke about expenses related to selling or administering the product. Part (ii) was answered poorly. Most of the candidates identified the easier points related to reducing sum assured or disease coverage. While many students touched on changing the product to an accelerated cover, most failed to articulate how this would reduce costs. Part (iii) was not answered well - many students incorrectly mentioned reinsurance as an option - or they did not make a proper attempt at the question in order to earn the requisite marks.*

#### (i)

- The CI benefit pays out on diagnosis of any of the 4 core illnesses, and as such will have a higher expected incidence rate than the death rate for most ages
- The cover for CI commences immediately so there is a large risk of anti-selection where employees who are currently experiencing symptoms / ill with a CI could claim and receive benefits. This risk of anti-selection is higher for CI than for death benefit. The insurer would need to load a margin in the rates to account for this risk.
- The CI benefit is voluntary which further increases the risk of anti-selection if staff at higher risk of CI event take up the benefit therefore a margin is required, whereas all staff have the GLA benefit.
- Additionally, greater uncertainty with CI compared to life (in general) [technology/advances, new cancers/CI's, etc.] – needing additional margins
- May also have more experience with GLA than CI requiring more margins (however, not sure I would make this point the owner!)

(ii)

- The CI benefit could be made compulsory to all staff, or set minimum take-up rates of 75% for example, to reduce anti-selection risk
- The FCL could be set lower so that the majority of higher earners and older members (usually correlated) fall above the limit and are therefore subjected to further underwriting. These are the riskiest members who would affect the rates the most
- Make the CI benefit an accelerator to the GLA benefit which would reduce the total cost of GLA and CI benefits as any claim on the CI would reduce the sum assured on the GLA
- Insurer may seek to cross-subsidise the CI with the GLA by making the CI cheaper and loading the GLA but the total rate would be unaffected for individuals with both benefits
- Reduce the sum assured to less than 2 X annual salary or place a max Rand amount
- Reduce the benefit coverage to Cancer only for example; or increase the severity level at which the benefit pays out
- Full cover only after a waiting period, example 6 months or phase in cover over a period (50% after 6months and 100% after 12months)

[Max 6]

(iii)

- Requiring employees to be actively at work
- Requiring employees to have worked at business for a minimum period (for example at least 6months) before being admitted to scheme
- Using Declaration of Health forms or answer a short medical questionnaire
- Having pre-existing conditions exclusion clause in policy to limit anti-selection
- Minimum take-up rate for voluntary scheme e.g. 75% of staff before cover commences

[Max 3]

#### QUESTION 4

*This was a straight forward question and was reasonably well answered. Candidates who did poorly on part (i) did not limit the risks they identified to operational risks. No credit was given for non-operational risks, for example currency, longevity etc. There was a wide range of possibly risks and credit was given for any sensible operational risk. Part (ii) was well answered. Part (iii) required that candidates expand on the management strategies for the risks identified in parts (i) and (ii) so candidates who had scored poorly in part (i) by not limiting their responses to operational risks, would have also lost marks in part (iii).*

(i)

Operational risk

- The failure of systems, people or processes
- The dominance of a single individual over the running of the business
- Reliance on third parties to carry out various functions for which the organisation is responsible
- Reputational risks: Potentially bad publicity resulting from not being seen to treat the elderly well e.g. due to claim declinatures or due to poor care home standards or from
- increasing premiums materially at a review date (or big discrepancy between premium increase/cover increase)

- Control failures in relation to underwriting or claims management
- Control failures in relation to accounting and reporting
- Data input errors
- Errors made in pricing products
- Incorrect amounts being paid to policyholders e.g. due to inappropriate administration
- Failure to apply the 5% p.a. increase at the correct time
- Fraud by staff or by policyholders e.g. money laundering
- Non-disclosure at outset
- Data protection/security failure or breach
- Litigation – policyholders taking action against the company if they feel they should have received a claim but didn't
- Regulatory or compliance breach
- Conduct/TCF risks; may result in a fine
- Loss of key persons
- Issues arising due to poor policy wording e.g. greater number of claims accepted than was originally intended, or misunderstanding of the policy wording resulting in reputational damage when claims are made and subsequently declined – especially given the long-term nature of the product
- Mis-selling of the product e.g. policyholder may be unhappy if they did not realise that there was no value payable on surrender. Mis-selling may result in compensation being paid to policyholders
- Risks relating to regulatory/legislative change or changes to tax, including the risk of an unfavourable decision on outstanding tax computations or specific open issues with the tax authorities
- Business interruption due to physical risk e.g. fire, flood
- Outsourcing risk
- Risk of theft, e.g. computer equipment

(ii) Credit or counterparty risk

- The risk that a third party will not meet its obligations (to an acceptable standard)
- Downgrades to corporate bonds
- Defaults on corporate bond coupons or on corporate bond capital repayments
- Defaults on cash holdings
- Defaults on reinsurance contracts where monies due may not be paid
- Defaults of providers of any derivatives used as part of the company's investment strategy
- Defaults of firms providing outsourced services such as administration and investment management, auditors, underwriters (if external), etc. or poor service provided by these outsourcers
- Brokers (as counterparties) causing churn, mis-selling – exacerbated if independent
- Defaults of care homes providing services
- Care homes delivering poor quality service/treatment – especially ones with whom the insurer is associated
- Defaults of insurance brokers (if used), e.g. not passing on premiums owed
- Downgrades to reinsurers

(iii) Operational risk

- Staff: ensure sufficient number with appropriate experience and provide training, where necessary
- Train sales staff and distributors
- Provide clear and comprehensive sales literature
- Review policy wordings and terms and ensure all processes are consistent with them
- Improve claims management/underwriting to manage risks around nondisclosure and policyholder fraud
- Systems: fully tested and well documented
- Processes: review and fully document, including for outsourcers
- Monitor outsourcing agreements on a regular basis
- Have automated data checks and reconciliations
- Have robust premium acceptance checks
- Carry out customer satisfaction surveys
- Keep abreast of regulatory and tax changes and lobby against them if necessary
- Implement a business continuity plan
- Insure premises etc.
- Have good data security protection/cyber insurance
- Take out key persons insurance
- Make staff take a 2-week break to reduce the risk of over reliance (and fraud)

Credit or counterparty risk

- Invest in higher grade bonds or just in government bonds
- Have a clear policy for dealing with defaults and downgrades for corporate bond portfolio
- Diversify bond holdings across sector
- Hold cash deposits in banks with high credit ratings
- Ensure exposures to individual counterparties or bonds are diversified and within risk tolerances
- Purchase credit insurance
- Hold credit derivatives
- Hold collateral
- Use reinsurers with high credit ratings
- Diversify across several reinsurers
- Only use derivatives which are cleared through a third party
- Put in place detailed service level agreements with outsourcers
- Carry out due diligence of outsourcers
- Clear enforceable performance contracts with outsourcers and have penalties for non-compliance
- Only deal with reputable care homes and monitor on a regular basis
- Pay care homes in frequent payments so that cash payments meet the regular ongoing cost
- Only deal with reputable brokers

General

- Have additional margins in premiums
- Hold capital against the risks
- Monitor experience
- Have strong governance and controls
- Have regular internal audits

## QUESTION 5

*For part (i) candidates that provided the considerations from product design, and applied them to the context of the question, did well in this question. The poorer solutions went into a lot of detail on very few product design factors, or provided generic comments around product design.*

*On a separate note, it was encouraging to see a number of candidates look towards the potential of using the loan provider's information to predict morbidity, as well as the issues around data privacy and protection.*

*For part (ii) credit was given for alternative approaches, and this question was generally well answered. Solutions that considered several factors from how to manage anti-selection, fraud from policyholders, fraud from medical providers and fraud from the loan company were generally well rewarded.*

i)

### Volume and Mix of lives

- Can reach large spread of lives quickly
- Mix will depend on the profile of lives targeted (or mail-list used)
- Hospital cash benefit would be low-cost so could appeal to a wide market (if there is a real need for this cover)
- Uncertainty of volumes and resulting claims experience may mean that there is a risk that fixed expenses are not covered
- Large volumes can result in significant operational strain

### Withdrawals

- May not be appropriate to their needs. Therefore a higher likelihood of withdrawal (although this depends on the significance of this premium relative to the loan payments)
- Particularly selective withdrawals as those that see benefit of the product will retain it (unless the HC component is small).

### Anti-selection

- As insurer is initiating sale, less likelihood of anti-selection
- Although product would have very limited underwriting
- And benefits would pay cash directly to policyholder
- ...so incentivises fraud and worse than priced-for claims profile
- Although this would be reduced if the loan is larger proportion of the product
- Fraud – persons taking out the cover knowing they have upcoming planned hospitalisations [pre-existing exclusions NB]
- However, may not be able to always know/have records of pre-existing conditions, resulting in a big moral hazard risk for the insurer
- False claims or claims for lives not covered – policy wording and eligibility need to be explicit and understood

### Complexity

- Product would need to be simple and easy to understand as sold directly using phones
- But the simpler the product and T's and C's, the greater the scope for anti-selection and fraud
- A large part of the target market will not be financially sophisticated

### Distribution Channel Remuneration

- Acquisition costs would be low, but need to consider the commission/fees to the cellular company and the company selling the loans

Start-up and systems maintenance costs

- Likely to be low, but may require some systems manipulation, increased marketing, etc.

Competitiveness

- May be able to sell at a premium – if this is novel in the market
- However, strong competition may exist, or to gain market share, premiums may need to be reduced
- New entrants into the market may force down prices, resulting in it not being profitable of sustainable in the long run

Regulation

- May these products be sold through this channel – TCF outcomes met?
- Risk of mis-selling and retrospective court judgements/fines and new regulations being put in place

Reputation

- Selling via cellphones may deter more sophisticated individuals
- Not only on this product but on their entire suite, potentially resulting in brand damage and loss of loyalty/reputation
- Also, any mis-selling, or misunderstanding of the product by the target market and bad press can result in further reputational damage

[Max

9]

ii)

The implementation of any risk management measures would need to be in the context of their associated cost.

Risk management should aim to ensure that the experience seen is similar to that which it has been priced from.

- Make it a rider product and a small component of total package to reduce anti-selection risk.
- Set up hospital networks
- Audit hospitals in networks, set up Key Performance indicators  
*...Particularly in hospitals where potential fraud can be seen.*
- Alter the benefit design
  - deferred periods where benefits only paid if in hospital for at least 3 days.
  - low cash benefit (and restrictions on the total amount paid)
  - restrict benefits to pay only upon certain conditions, e.g. emergencies
  - Require Pre-auth (can then check that correct life, exclusion, premiums received, etc.)
  - more intensive underwriting might be considered but this would be expensive relative to the product
  - Waiting periods before benefits become active
  - Exclusions relating to pre-existing conditions
- Practically, underwriting can only occur at claims stage so knowledge of pre-existing conditions may be difficult to verify.
- Monitor experience (and ensure data is captured)
- Target mail-groups that are expected to have a low risk-profile for hospital-cash (although this would be difficult if the main product is the loan).
- Ensure policy wording has tight definitions around benefits, claiming, disclosure, etc.
- Specify clearly who is covered and how benefit eligibility is determined

- A particular risk is policyholders owning multiple cell numbers, therefore the policy wording should clearly state that the benefit can only be paid once per hospital event.
  - This can be managed by auditing and flagging bank account numbers and whether two claims are to be paid into the same bank account.
  - Require the policyholder to submit the hospital account in order to validate the claim.
  - The submitted hospital account can then be audited for clinical veracity in order to identify any fraud on the part of the policyholder that may be done in conjunction with the providers (should be viewed in the context of the cost of this measure)
- [Max 7]

## QUESTION 6

*Part (i) of this question was bookwork and many lost marks due to focusing only on “medical expense cover” and not on the broader class of PMI-type products as asked for in the question. Part (ii) was a very simple calculation, however, more than half the candidates failed to convert monthly premiums to annual premiums, losing marks.*

*Part (iii) was reasonably answered, however most candidates did not generate sufficient distinct points to score well.*

*For part (iv) candidates often did not comment on the change to solvency requirements “in general”.*

*Overall, this was a fairly straight forward question, with some scoring well, but the majority surprisingly missing out on marks, especially with the calculation components and with idea generation to come up with a range of points.*

i)

- Typically short-term –
  - annually renewable and reviewable
  - Premium guarantees are uncommon
- Risk-only –
  - Conventional products with no savings components (except MSA’s in SA – however, not intended as a “savings” product)
- Typically indemnity-based, linked to the actual cost of medical treatment
  - However hospital cash, MME, accident offers lump sum benefits
- Premiums are typically regular, monthly, but single premium for annual cover may be possible
- Group or individual versions
- May be community rated (no individual risk rating), e.g. as in SA
- Excesses, limits and co-payments common
- Large risk of anti-selection, abuse – importance of managed care interventions
- After initial underwriting, cover is generally renewed without subsequent underwriting
- Large suite of products covered, e.g. hospital cash plans, MME, disability/accident cover etc.

ii)

- $(\text{Sum}(\text{Gross premiums per beneficiary type} * \#\text{beneficiaries})) * 12 * 20\%$
- $0.2 * (200 * 15550 + 300 * 8430 + 150 * 13850) * 12 = R18\ 519\ 600$

iii)

- Advantages:
- Easy to calculate
- Easy to explain and interpret
- Easy to monitor compliance
- Cheap to calculate, monitor and report on
- Solvency margins as a percentage of premiums could incentivise insurer to keep profit loadings reasonable and reduce expenses where possible, benefiting policyholders
  
- Disadvantages:
- Not linked directly to risk of underlying profile
  - However, given that premiums increase with age, the 20% requirement is higher for older individuals, which makes sense
  - On the other hand, this may result in insurers cherry-picking younger lives in order to reduce their solvency requirements
- Claims volatility and solvency requirements depend on the size of the risk pool (these are expected to be inversely related, however, this is not the case for the SCR)
  - Reserves may be too high for large insurers – inefficient use of capital
  - Reserves may be too low for smaller insurers – does not effectively protect against the risk of insolvency
- Does not allow for risk mitigating strategies/practices of insurer, e.g. underwriting, managed care, etc.
  - May not incentivise proper risk management
  - Having reinsurance in place reduces the likelihood of insolvency
- A large influx of members close to the end of the year will result in large additional reserves being required before premiums have been received
- New insurers will struggle to meet start-up costs, initial claims and setting aside the solvency capital, especially if there are large volumes
- Does not take into account other categories of risk such as investment risks or operational risks
  - Although the inclusion of premium loadings may offset this by bluntly increasing the solvency requirements
- Includes non-healthcare premium loadings in the calculation, which may overstate the reserve requirements relative to a risk-based approach
- May result in underpricing – leading to a greater risk of insolvency

[Max 6]

iv)

- $12 \times (0.05 \times 150 \times 13850 + 0.1 \times 15550 \times 200 + 0.3 \times 300 \times 8430) = R14\,082\,900$
- +/- 24% lower than under old requirements
  
- Due to the large proportion of young adults and children and the significantly reduced solvency requirements for these
- Relatively small proportion of older adults with higher solvency requirements
- *[Max 2 for calculation; Max 1 for comment on relative difference]*
  
- In general, this approach is more risk-based than the original approach

- the new requirement will free up solvency capital for insurers who have a younger membership profile
  - this capital can be more efficiently utilised elsewhere
- Still easy and straightforward to calculate and explain
- However, still suffers from most of the disadvantages outlined above
  - May be too high/too low; does not take risk management into account, etc.
- Also, has the risk of causing insurers to want to avoid covering older adults due to the significantly higher solvency requirements and capital strain these individuals pose to the insurer
- The lengthy (and likely expensive) consultation process may not be justified by the superficial changes actually brought about – aims achieved?

[Max 2 for general comments]

[Total, max 5]

## QUESTION 7

*Part (i) was well answered although many candidates did not link the points back to the regulator and the need for comparing risk pools. For part (ii) a number of alternative approaches were given credit but the question specifically referred to using the 2016 cost weights and so these needed to be included to get full marks. Common mistakes were working at the aggregate level rather than in per life per month costs and also calculating weights by taking an arithmetic average of the four group instead of dividing by the average cost per life per month. Part (iii) was reasonably answered but only a few candidates referred to anti-selection.*

- (i) Health care costs vary by age and Chronic status
- Older policyholders demand for health care services
  - While those with chronic illness often demand frequent medication
  - And are at higher risk of complications of other conditions
  - Regulator needs to take these factors into account in comparing risk pools.

(ii)

Year	Age Group	Chronic Status	Number of Life Months	Total Annual Claims Costs	Average Cost	Cost Weight
2016	0-60	N	422 500	R 84 500 000	200	0.51
	60+	N	227 500	R 113 750 000	500	1.27
	0-60	Y	227 500	R 84 175 000	370	0.94
	60+	Y	122 500	R 110 250 000	900	2.29
2017	0-60	N	380 250	R 79 852 500	210	0.51
	60+	N	257 052	R 134 952 300	525	1.27
	0-60	Y	275 275	R 106 944 338	389	0.94
	60+	Y	151 900	R 143 545 500	945	2.29
		Average	R 392.68		CaseMix2016	1

		Cost 2016				
		Average Cost 2017	R 437.11		CaseMix2017	1.060154678
		Increase	11.32%		CaseMix Adjusted 2017	412.30875
					CaseMix Adjusted 2016	392.675
					CMA Inflation	5.00%
					Change in CaseMix	6.02%

- Calculation of 2016 average costs per life per month for each risk cell (total cost / number of life months)
- Calculation of 2016 cost weights for each risk cell (average costs per risk cell/ overall average costs)
- Calculating casemix for 2016 or setting it to 1
- Applying the 2016 cost weights on 2017 average costs per risk cell
- Calculating casemix for 2017
- Calculating casemix adjusted average cost for 2017
- Calculation inflation as (casemix adjusted average cost 2017/ casemix adjusted average cost 2016)

*Other methods credited and no deduction for rounding differences but method needed to use 2016 cost weights*

(iii)

average inflation = [(sum of costs 2017)/(sum of life months 2017)] / [(sum of total costs 2016)/(sum of life months 2016)] = 11.32%

- The casemix adjusted inflation is 5% this is lower than the change in casemix of 6.02%
- Therefore the increase in costs is mainly due to an increase in sicker policy holders
- i.e. older members with chronic conditions
- cannot rule out over servicing or supply side behaviours
- This could be due to selective lapsing of younger healthier members and anti-selective behaviour of new joiners
- But it appears that the industry players have a very strong argument – given what we know (but may be worthwhile to investigate further the drivers)