

EXAMINERS' REPORT

June 2023 examinations

Subject F102 — *Life Insurance* Fellowship Principles

INTRODUCTION

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

QUESTION 1

i. Key investment principles:

- In order to minimise risk, a company should select investments that match the liabilities.
- Matching should consider the nature, term and currency of the assets and liabilities.
- The investments should also be selected to maximise the overall return on the assets, where overall return includes both investment income and capital gains.
- The extent to which the appropriate investments referred to above may be departed from in order to maximise the overall return will depend, inter alia, on the extent of the company's free assets.

ii. a. Without-profits whole life assurance:

- The whole life insurance benefits are fixed in monetary terms and will primarily be backed by fixed interest government bonds.
- Bonds of suitable term and local currency will be selected to match the expected cashflows on the whole of life contracts.

b. Without-profits immediate annuities:

- Immediate annuity payments are fixed in monetary terms (whether level payments or fixed increases) and will be primarily backed by fixed interest bonds.
- Bonds of suitable term and local currency will be selected to match expected annuity payments.

For both types of contract:

- Due to the long-term nature of whole life assurance and some annuity contracts (e.g. life annuities) it may be difficult to find bonds of sufficiently long term to match the benefits, in which case a best match will be acceptable.
- The insurer will need to invest in some equities to provide a real return to meet expected expenses over the longer term and to match liabilities with a longer term than the longest dated bonds.
- The insurer will also need to hold some cash, in order to meet immediate cash outflows and prevent liquidity issues.

iii. Modelling the cost of the investment guarantee:

- One would mainly model future returns earned on the bonds and equities stochastically.
- This will be done by first selecting appropriate distribution function(s) and parameters that represent the likely future returns on the bond and equity portfolios.
 - For example, a lognormal distribution could be used and a back testing approach followed to determine the suitable parameters – or by purchasing standard simulated returns that have been modelled appropriately.
- For each simulation the unit fund is projected to maturity date on both the minimum guaranteed return and projected investment returns.
- The cost of the guarantee would then be represented as the difference, at maturity, between the projected unit funds, where the former (based on the minimum guarantee return) is higher than the latter.
 - In cases where the reverse is true, the cost of the guarantee would be zero.
- The average across all the simulation runs would then represent the expected cost of the guarantee.
- A sufficient number of simulations should be performed to ensure statistically credible results.

This question was answered reasonably well by most candidates.

Part (i) was straightforward fundamental bookwork. It was disappointing to see that many candidates did not know this.

For part (ii) it was surprising to see how many candidates thought that index-linked benefits are the same as conventional without-profits – these are different contract designs (as set out in the course objectives and notes). Many candidates were too imprecise in writing about using “bonds” to match the liabilities, without specifying that they need to be of the fixed-interest type. A number mentioned free assets, which was completely irrelevant for the question asked, and several thought that expenses are guaranteed in terms of an index (they are not).

Part (iii) was not done well by many candidates. Weaker answers tended to be vague with nonsensical statements and many were a bookwork dump of a general stochastic asset-liability modelling exercise where it was not made clear what assets and what liabilities were being referred to. A surprising number of candidates indicated that the cost of guarantee is based on “unit fund less guaranteed maturity value” (instead of the other way round).

QUESTION 2

i. Options available:

- Decline to offer the cover if the condition is very serious and irreversible.
- Defer the decision till you have more information on a condition that may stabilise or improve or send the applicant for further specialised tests.
- Add a loading to the premium, either a flat loading (for aviation, say), or a percentage loading for conditions that are more serious as one ages (most health conditions).
- Limit the sum insured offered.
- Impose an exclusion for the condition that you are concerned about.

ii. Role of claims underwriting:

- The main role is to ensure that only valid claims are paid, with others being repudiated.
- The insurer will check that:
 - There is a valid death certificate.
 - The death was not from a condition that was specifically excluded.
 - There is no evidence of non-disclosure.
 - The policyholder has paid their premiums.
- If a claim looks suspicious the claims team will have to gather additional information.
 - This could be medical reports from the claimant's doctor. This would include medication, hospital visits etc.
- The claims team would also check for aggregation of covers to ensure that the policyholder didn't have multiple policies with various insurers.
 - If over-insurance is suspected the claims team can gather additional information on the financial status of the claimant prior to death (e.g. income, assets and liabilities etc).

iii. Catastrophe reinsurance operates as follows:

- The reinsuring company will agree to pay out if a "catastrophe", as defined in the reinsurance contract, occurs.
- The cover is usually only available on a yearly renewable basis and must be renegotiated each year.
- A typical definition of what constitutes a catastrophe is that there needs to be a minimum number, say five, deaths from a single incident with the deaths occurring within a specified time, say 48 hours of that incident.
- The reinsurance contract will also specify how much the reinsuring company will pay if a catastrophe occurs. Typically this might be the excess of the total claim amount, net of any amounts already reinsured, over the cedant's catastrophe excess point (retention limit).

- The reinsuring company's liability in respect of a single catastrophe claim would be subject to a maximum amount and any amount above this would revert to the cedant.
- There is also usually a maximum amount of cover per life.

Managing the risk:

- As the insurer has many policyholders living or working in close proximity, if there is a catastrophe and many policyholders die it will be able to claim from the reinsurer
- This will protect the insurer against large once-off claim payments which will prevent a once off large reduction in profits, or possible insolvency.

Part (i) was a simple application question and was well answered by most candidates.

Part (ii) was mostly well answered. However, several candidates confused fraud with anti-selection, that is suggesting claims underwriting detects anti-selection. Claims underwriting detects fraud but not anti-selection, which is permissible and depends on the product design and pricing. Knowingly giving false information on an application form is fraudulent but selecting against the insurer is not.

Part (iii) was not well answered for what was an easy question. Candidates failed to know the basic operation of catastrophe reinsurance. Some gave generic benefits of reinsurance which was not required. Many did not relate the answer about managing the risk to the particular situation at hand.

QUESTION 3

i. Inception / disabled life approach:

- The inception / disabled life annuity approach makes use of two functions, the claim inception rate and the disabled life annuity to value the benefit.
- The claim inception rate is the probability that a claim will become payable to an individual in the year of age x to $x+1$.
 - Provided that the individual remains sick to the end of the deferred period.
- In order to derive the claim inception rate, one must multiply the sickness inception rate by the probability of remaining sick throughout the deferred period.
- The disabled life annuity is the present value at the date of claim inception of expected claim payments to individuals disabled after the deferred period until policy expiry.

- Allowance is made for any escalation of the benefit amount, interest and the probabilities of death and recovery between the end of the deferred period and the policy expiry date.
- The expected claims outgo is then calculated as the annual benefit amount multiplied by the disabled life annuity multiplied by the claim inception rate.

ii. Multi-state modelling approach:

- The multi-state modelling approach tracks policyholders through various stages of healthy and claiming as follows:
 - Healthy premium payers.
 - Lives falling sick within the deferred period.
 - Lives becoming claimants following the deferred period.
 - Lives recovering, reverting to premium payers.
 - Lives dying.
- Each subclass requires its own set of transition probabilities.
- These transition probabilities may vary according to the number of previous times that the cohort has been ill and all transition rates may be a function of the duration within that stage.
- In addition to the transition probabilities, assumptions regarding the proportion of lives in each state will be required.
- The value of claims outgo will depend on the number of lives in the benefit-receiving states, in a given month.
- Premium income will depend on the number of lives in the premium-paying states, in a given month.
- Investment income and all expenses will also need to be allowed for.
- Transition intensities will be applied to each state to determine the numbers expected in the various states for the following month.
- The multi-state model can be very complex with hundreds of sub-cohorts requiring assumptions.
- Although the multi-state model is the more technically accurate approach there is unlikely to be sufficient data available to follow this approach and it may lead to spurious accuracy.
- Due to the increased granularity it allows for sensitivity testing which is not as easily achievable using the inception/disabled life annuity approach.

iii. Appropriateness of a multi-state model:

- Since the insurer has been selling income protection products for 15 years it may have a large amount of data available.
- However, since it has always followed the inception / disabled life annuity approach it is unlikely that it will have the level of granularity required in the data to facilitate the multi-state modelling approach.

- Even if the past data available is granular enough, consideration would need to be given to the appropriateness of this data in terms of changes in the economic conditions, benefit definitions, target market and claim management processes.
- The time and resources required to build the multi-state model from scratch will need to be considered.
- External sources could be consulted for assistance with data and modelling, but this could come at a significant cost.
- Expert judgement may need to be applied where there is a lack of credible data in particular sub-cohorts, which the company may not have.
- To avoid spurious accuracy a more straightforward approach with a reduced number of sub-cohorts is likely to be followed.
- The insurer will need to consider whether the potential for increased accuracy outweighs the risk of insufficient data and time and effort required to build an adequate model.

iv. Possible reasons for losses:

- The claim inception rate is higher than expected.
- The claim termination rates are lower than expected.
- The investment income earned is lower than expected.
- The annuity factors are under-estimating the present value of future claims.
- Selective lapsing being worse than expected and hence having a cohort of lives in worse health on average than expected.
- Higher expenses than expected.
- A downturn in economic conditions and hence a reduced incentive to return to work.
- An increase in fraudulent claims.
- Benefit escalations could be higher than anticipated.
- A change in the claims assessment process which means there is a mismatch between pricing and assessment.
- The mix of business may be different to what was assumed in pricing where there are cross-subsidies in the pricing basis.

Parts (i) and (ii) were bookwork, yet were poorly answered. A number of candidates did not know what the inception / disabled life annuity approach was or did not provide sufficient detail on the multi-state modelling approach to score well.

Parts (iii) and (iv) were better answered by most candidates. Generally, however, most candidates did not give enough relevant points to score well.

QUESTION 4

Considerations:

- Avoid anti-selection:
 - The alteration should be subject to underwriting. For example:
 - a declaration of health; and
 - a test to prove that the life is not currently smoking.
- Policyholder's reasonable expectations:
 - Ex-smokers that would now be classified as non-smokers if they applied for a new policy, may reasonably expect to be treated consistently with non-smokers (as per the company's definition).
- Avoid lapse-and-reentry:
 - The risk is limited because the current pricing basis is used to calculate the premium after the alteration which should lead to a premium consistent with new business premiums.
 - The lapse-and-reentry risk is further limited, because:
 - the policy value before alteration may be positive (which can be viewed as a "single premium" injection); and
 - lapsing lives would have to go through the full underwriting process and they will be older, and thus
 - premiums on a new policy may not be cheaper.
- Affordability to the insurer:
 - For this alteration to be affordable, the policy value before alteration should be less than the earned asset share (on average over time).
 - The excess of the earned asset share over the policy value before alteration calculated on the original premium basis for smokers, represents the accrued historic profit for the period up to the date of alteration.
 - Since the original pricing basis is used to calculate the policy value before alteration, the expected future profit margins on the existing contract are not extracted from the policy at alteration.
 - Use of the current premium basis (for non-smokers) to determine the policy value after the alteration will give the expected profit over the remaining life of the contract consistent with new business policies.
 - However, the use of select rates is likely to lead to some losses on these policies, which will not have gone through the same level of underwriting as new business policies.
 - The initial expenses and commission included in the current pricing basis should not be included in the calculation of the policy value after alteration (as they are not payable in the case of an altered policy).
 - The cost of administering the alteration should be allowed for in the calculation (e.g. by adding this to the policy value after alteration).
- Fairness to policyholders that alter their policies:
 - Using select mortality rates to calculate the policy value after alteration is overly generous to the altering policyholders.

- Fairness to policyholders that remain in the smoking pool:
 - It is likely that this pool would previously have been subject to selective withdrawals as policyholders that stopped smoking could have lapsed-and-re-entered.
 - However, it is still possible that future mortality experience in this pool may be worse than expected under the original pricing basis (as relatively healthy lives leave the pool).
 - This may ultimately require a premium review (if allowed), which would negatively affect those policyholders, which may be viewed as unfair.
- Fairness to policyholders in the non-smoking pool:
 - As the company uses the same definition for non-smoker that is used for new business, the mortality experience of this pool is probably not negatively affected. ✓
 - This should avoid premium reviews (if allowed) in future as a result of alterations.
- Fairness to the shareholder / amount of profit extracted:
 - It could be argued that the shareholders take on the risk of experience being worse than expected in the pool of smokers, which is not compensated.

Note to marker:
Comments on select rates could receive credit here if not rewarded earlier.
- Boundary conditions:
 - The company will have to compare the premium after alteration to the premium the policyholder would have paid had they lapsed their current policy and taken out a new one.
- Competitive position:
 - The company will have to consider how these terms will be perceived by the market which may place the company at a competitive disadvantage for new business if alteration terms are perceived poorly.
- Legislative/professional requirements:
 - There may be legal and/or professional requirements to treat customers fairly.
 - It is unlikely that there would be any other restrictions on the terms that can be offered.
- Frequency of change in basis:
 - To the extent that the new business premium basis does not change frequently, terms offered should be consistent over time.
- Easy to explain:
 - Equating policy values may be difficult to explain to policyholders, who are unlikely to be familiar with present value calculations.
- Easy to document and administer:
 - The method should be relatively easy to document and administer, as the basis is available for new business policies and the calculation of policy values is common practice.

Candidates who demonstrated that they knew the theory well and were able to apply the theoretical ideas to the scenario in the question did well. Some candidates did not answer the question that was asked by including comments that were not relevant to the scenario or product (for example, suggesting that there is a maturity value on a term assurance product).

Very few candidates provided commentary on the likely impact on the various risk pools under this alteration.

QUESTION 5

i. Definitions:

- Appropriation price is the price at which a company will create a unit.
 - It is the price that maintains the same net asset value per unit before and after the creation of a new unit.
- Expropriation price is the price at which a company will cancel a unit.
 - It is the price that maintains the same net asset value per unit before and after the cancellation of an existing unit.

ii. Explanation:

- The company is likely to be using the “offer” basis.
- As the business is growing, it implies that there is a net creation of units and a net purchase of assets by the fund.
- The fund will be paying offer prices for its asset purchases,
- hence the use of offer prices for underlying assets in calculating the net asset value per unit.

iii. Assumptions:

- Unit fund growth
- Discount rate
- Expenses (per policy, per premium)
- Expense inflation
- Future decrements:
 - Mortality
 - Lapses and surrenders
 - Paid up
- The minimum guaranteed maturity value will require additional assumptions to be valued (most likely stochastically):
 - Return distribution for unit fund growth
 - Discount rate link to unit fund growth

iv. Significant risks:

- Under a risk-based VaR capital requirements approach, the biggest contributors to capital requirements will be those risks that:
 - (a) have a significant probability of being worse than the valuation assumptions, and
 - (b) give rise to large financial losses if experience is worse than expected.

- Investment risk (returns lower than assumed in the liabilities):
 - Due to high potential volatility from fund returns (from shares and from currency), there is a high probability of the maturity value biting;
 - Lower than expected fund returns also leads to lower than expected fund-based charges.
- Lapse risk (early lapses greater than assumed in the liabilities):
 - Payment of upfront commissions and other initial costs leads to negative asset share in early years and losses for the insurer if lapses are greater than expected.
 - Lapse experience may be volatile if brokers are motivated more by attractive commission than selling to suitable clients, and lapses may increase significantly if fund returns become unfavourable.
- Expense risk (expenses per policy/premium higher than assumed in the liabilities):
 - Expenses per policy may be volatile partly due to expenses themselves being volatile and partly due to volatile volume of policies.
 - If charges are not reviewable, higher-than-expected expenses per policy can lead to large losses for the insurer.
- Expense inflation risk (expense inflation greater than assumed in the liabilities):
 - Expenses (many of which are fixed and increasing with inflation) may not be well matched to charges (if mostly fund related) and may lead to significant losses over long policy terms.
 - Inflation volatility may be high in a developing country, and rapidly growing insurer may experience rapid expense growth (e.g. investing in new capability) to support its business growth.
- Operational risk (losses arising from errors, fraud etc)
 - The magnitude of losses can be very high for the company, depending on the origin of the losses e.g. unit pricing error.
 - The probability of such losses is not insignificant due to the insurer's circumstances: foreign investments, rapid growth (possibly stretching resources), developing country (which may influence levels of skills available).
- Surrender/Paid-up risk (losses from surrenders exceeding valuation assumptions)
 - Losses arise if the surrender (or paid-up) charge (if any) is not sufficient to offset loss of future charges.
 - Fund values may be too small for several years for the surrender charge to fully offset lost future charges.
 - Probability of surrender may be high if fund returns become unfavourable.
- Mortality risk (death experience differing from valuation assumptions)
 - If no benefit is paid on death prior to maturity, the insurer is at risk of lighter than expected mortality, as more policyholders will receive the maturity benefit. This risk is exacerbated if the investment guarantee bites.
 - Greater than expected mortality, on the other hand, causes losses if the asset share is negative at death, as the insurer will not be able to recoup initial expenses.
 - Capital requirements are likely to be based on the experience causing the greater loss to the insurer – lighter or heavier mortality.
 - Probability of death (and its volatility) are unlikely to be significant, however this will depend on the average age and health of policyholders.

As to be expected, the bookwork parts (i) and (ii) were done reasonably well by most candidates.

The answers to the application parts (iii) and (iv) were disappointing. Some candidates ignored the instructions to give a specific number of responses and gained no credit for giving more than instructed.

For part (iii), a number of candidates provided as assumptions items that are known and therefore not assumptions e.g. policy charges and tax rates.

Answers to part (iv) were disappointing and demonstrated that few candidates understand the risk-based VaR approach for setting capital requirements. Very few candidates seemed to appreciate that the starting point for this method is the valuation basis used to calculate the liabilities, and that capital requirements are based on adverse fluctuations in experience from those assumptions. Some candidates thought that capital requirements are based on fluctuations from pricing assumptions. Many candidates used vague terms such as “poor investment performance” to describe investment risk. Many made the generic statement that assets and liabilities are mismatched by currency, without clarifying this further, and many wasted time writing about how to mitigate risks.

QUESTION 6

i. Factors influencing asset mix:

Nature, term and currency of the liabilities

- The liability under a conventional with-profits policy is partly guaranteed in monetary terms (the basic sum assured and reversionary bonus, once declared) and partly discretionary.
- Currency is likely to be local, while term is influenced by the outstanding term of existing policies and new policy terms.
- In terms of the discretionary component the insurer would aim, as far as possible, to invest to provide returns that meet with the reasonable expectations of policyholders (PRE).

Policyholder expectations:

- PRE is influenced by the company's past bonus declarations, marketing material and returns on similar products in the market.
- Policyholders who take out a with-profits policy will expect the proceeds to at least maintain their value in real terms.

Level of free assets / Insurer risk tolerance:

- The level of freedom that the insurer has will depend on the level of free assets.
- Given it is an established insurer that has distributed surpluses mainly through terminal bonuses, it could be expected to have a higher level of free assets and hence higher tolerance for volatile short-term returns

Business objectives of the company (including competitive position):

- The insurer may aim for bonuses that compare favourably with competitors especially if it intends continuing selling this product.

Appropriate assets:

- Guaranteed benefits are likely to be matched by fixed interest bonds of suitable term.
- Discretionary benefits are likely to be matched by equities and index linked bonds.
 - The mix will depend on factors listed above e.g. PRE may imply that policyholders have high risk tolerance and expect high bonuses over time, enabling and requiring a higher proportion of equity investment.
- Overall, the high proportion of terminal bonuses will imply a higher proportion of equities.
 - This is because the insurer has a longer duration over which it can declare the bonuses and hence can invest in riskier but higher expected return yielding assets.
- Some cash would be held as working capital and to meet claims.

ii. Factors to consider:

- Because no new business is added to the book:
 - Over time there will be fewer generations over which to smooth experience; and
 - The ability to take corrective action (e.g. to deal with a year with poor investment returns) is reduced.
- In the short term, policyholder reasonable expectations might be for the current split to remain unchanged.
- The company also needs to ensure that the existing surplus, and future surplus arising, is spread equitably over remaining policyholders so that the last few remaining policyholders are not unduly rewarded or penalised.
- In addition, as the book decreases in size:
 - The mortality surplus is likely to become more volatile.
 - It becomes harder to maintain a well-diversified portfolio of assets, increasing the volatility of returns,
- Over the longer term it may therefore be necessary for the insurer to:
 - Reduce the smoothing of the terminal bonus between generations, leading to potentially more volatile terminal bonuses, all else being equal.
- Alternatively, the company may consider:
 - Changing the investment strategy so that investment returns are less volatile.
 - E.g. changing the asset mix from predominantly equities and property to index-linked and conventional bonds.
 - Consider whether reinsurance can be used to manage the mortality volatility in the long term when the fund becomes relatively small.

- This change will allow the company to change the split between reversionary bonus and terminal bonus in favour of greater reversionary.
 - Changing the split has the advantage of distributing surplus as it arises, ensuring equity between generations.
- If this change in the bonus distribution strategy is implemented:
 - It will lead to an increase in guarantees and a (further) reduction in free assets.
 - It may reduce the capital available to the company for other business plans and.
 - It may require a special reversionary bonus to distribute accumulated surplus equitably.
 - This special reversionary bonus must be carefully communicated to avoid creating policyholder reasonable expectations.
- Any changes (either in the smoothing of terminal bonuses or a change in reversionary bonus) will have to be phased in over time.
- This will allow the company to communicate the changes to:
 - Manage policyholders' reasonable expectations.
 - Attempt to manage the risk of an increase in withdrawals.
 - Increasing withdrawals would lead to an increase in the per policy expenses.
- Professional guidance (and possibly regulation like TCF) should be considered.

Most candidates did reasonably well in part (i) of this question. Some candidates spent too much time on this part and provided too much detail (given the mark allocation and the instruction in the question to focus on the “key” factors).

Part (ii) of the question was challenging and most candidates performed poorly. The instruction clearly indicated that the considerations in the context of a “closed book” should be “discussed”. Candidates that only listed the bookwork, did not score well.

QUESTION 7

i. Factors to consider:

Clients' needs, marketability and profitability:

- The proposal will provide better value for money for younger clients although young clients may not be inclined to purchase as much cover as older clients even though the price has been reduced.
- The actuary will need to consider whether the business can be presented in a way to appeal to younger clients with a lower premium and now also separately to older clients with a higher premium to determine the product mix and charging to ensure sufficient volumes to cover expenses.
- The complexity of changes to marketing material and the mobile app if premiums are quoted on it will need to be considered.

Competition:

- If competitors use age as a rating factor then this change will bring the product more in line with competitors and stop the company from attracting too many older clients.
- The company will need to be competitive relative to the market on all rating factors in order not to continue to attract substandard lives at a cheap price (anti-selection).
 - And hence improve profitability.
- It is important to note whether most competitors in the market have further rating factors (e.g. gender or socio-economic status), as the age change may not be sufficient if this is the case.
- Competitors' rating, coupled with any upfront medical underwriting will need to be considered.

Cross-subsidies:

- Currently, there is a cross-subsidy between older and younger clients, with younger clients likely subsidising older clients.
- It is likely that younger clients may not have bought this product as much in the past as a result. Alternatively, there may be a disproportionately large number of older clients.
- Older clients could be unhappy as they will need to pay more, and younger clients should pay less.
- There may be possible reputational implications if this cross-subsidy has been in place for many years (and due to now potentially charging higher for older clients).

Consistency with existing business:

- It is probable that existing clients will not have surrender values.
- Younger clients may lapse products and take out the new solution (Lapse and re-entry) if rates are not changed immediately on existing business.
- This would make the losses on the existing book worse.
- However, may only be able to make changes from next renewal.

Product risks:

(Anti-selection and lapse and re-entry risks addressed in other points.)

- Depending on the changes made, there is a risk of losing some clients, which could impact the cost per policy and spread of overhead expenses.
- This may result in the premium needing to be adjusted upwards for increased charges.

Administration and execution:

- This is a fundamental change to the product so training of marketing team members, call centre agents and admin staff may be required.

- The administrative implication of any change to underwriting will also need to be considered, in line with changes in pricing.
- Different prices for different clients will have an impact on administration and IT systems.
 - These changes will be costly in their own right and these costs will need to be recovered.
 - Possibly through an increased premium.
 - This may be time-consuming, delaying the introduction of the age-related premiums.
- The type of age rating will need to be considered and will impact the sales and administration process – e.g. will rating be in age bands or different for each age.

Other markets:

- Such a product may be well established in other markets and lessons learnt from those could be used in this country.

Other relevant factors, suitably discussed in the context provided, could also gain credit.

ii. Factors used to group data:

- Type of contract (age-rated or non-age-rated).
- Duration in force.
- Size of premium / sum assured.
- Frequency of premium.
- Age.
- Premium payment method.

(The original term of the contract is not relevant (as already covered by age), and gender is not known.)

iii. Further analysis:

- The company can verify the data used and make sure that decisions are taken based on accurate information.
- Initial results are for the book as a whole. The company will need to find the contracts where the lapse rates are significantly higher than what was expected.
- Identify the factors contributing the most to lapsed policies e.g. age, duration in force, etc
- In carrying out detailed lapse and surrender studies priority will be given to, for example, lapses where initial underwriting and initiation costs are unlikely to have been recouped.
- Check for trends over time and for the root causes of lapses so specific action can be taken to address the cause.

The following actions could be taken, depending on the potential cause:

- If poor customer service is contributing to the high lapse rates:
 - Staff training to improve service levels.
 - Establish a customer service unit/sales force unit (retentions team) to target policies that lapse and try to reinstate them.
- If poor value for money/affordability is a concern:
 - Introduce changes to the product design to enhance retention – e.g. cash out bonuses or loyalty bonuses to encourage clients to keep the policy.
 - Reprice or redesign so products compare favourably with competitors.
 - Target a higher income segment where affordability is less of a concern.
 - Consider revising the underwriting processes to account for elements such as affordability, etc.
- If it is believed the distribution channel is a problem:
 - Ensure the sales process leads to appropriate sales to reduce the risk of mis-selling/improve training.
 - Identify if there are deficiencies in the sales remuneration structures offered.
 - The company could also look to change its distribution channels to one that provide tailored advice to clients.
- If clients are lapsing unintentionally by forgetting to pay:
 - Consider suitable reminder mechanisms or alternative billing mechanisms (e.g. debit orders) to improve retention.
- If policyholders are lapsing due to concerns regarding the company's image/reputation:
 - Spend on advertising and promotion to improve brand image in the marketplace.
- If the experience in the future is believed to be worse than previously expected:
 - The pricing and valuation basis should be updated.
 - Expenses could be targeted for reduction to ensure viability at higher withdrawal rates.

Part (i) was mostly very poorly answered, largely due to not discussing the factors by considering the merits of the proposal relative to the current situation. Many candidates struggled to generate sufficient relevant points or gave only generic answers that did not consider the particular situation at hand. Many candidates merely listed or outlined factors but did not 'discuss' them. For example, it is not sufficient to say 'consider competition'. Instead the various permutations of the competitive landscape should be described and the possible effects explained. Furthermore, many candidates were imprecise with their choice of words and hence lost marks.

Part (ii) was reasonably well answered. A notable number gave factors that were relevant to a mortality investigation and not a withdrawal/persistency investigation, or included factors that were not readily available given what was directed in the question.

Part (iii) was reasonably well answered.

QUESTION 8

i. The additional morbidity risk:

- The additional premium charged on the base contract to cover the option cost may prove to be inadequate to cover the cost associated with a higher critical illness inception rate than expected.
- TopCI will now need to be able to price separately for each CI. The extent of the morbidity risk will depend on the quality and extent of data available to do this.
- In addition, there are potentially correlations and comorbidities between CIs
- The company may ultimately be exposed to “new” CIs which are not on the current list of 10, but which may be added by the NIB in the future.
- There may be anti-selection at outset, with policyholders not seeking cover for the CIs which they believe they are at least risk of contracting.
- There may be significant anti-selection when additional CIs are added.
 - In particular, there could be instances where policyholders add coverage for a CI for which they have already being diagnosed as having contracted.
 - The premium rate charged for the addition of a CI may exacerbate the anti-selection if excessive margins have been included.
- The morbidity risk is also likely to increase if the take-up rate of the option is lower than expected, owing to increased variability and anti-selection.
- The anti-selection risk will be exacerbated by selling through independent intermediaries.
- The extent of the additional risk posed by anti-selection will be impacted by the level of initial underwriting carried out. Although it will be the same as for the standard policies (whatever that may be for this company) it may not be sufficient.
- Withdrawals, and hence selective withdrawals (impacting morbidity), may be more of an issue on the new product as policyholders review their cover on the stated option dates at which time they may decide they no longer require the cover.
- Risk pooling will have diminished relative to the standard product, as some CIs may have limited take-up. ON the standard policy all were included.
- Reinsurers may be less willing to provide cover for the morbidity risk, leaving TopCI with more exposure to the morbidity risk.

ii. Possible reasons for disappointing levels of new business:

- The product may appear complex and be too different from the others available in the market to be attractive.
- If it appears complex the independent intermediaries may not wish to sell it.
- The premium rates may not be sufficiently attractive compared to products which cover all 10 CIs from outset.
- If premium rates are not attractive it may not be easy to sell through independent intermediaries.
- If commission rates are not attractive the product may not be favoured by the independent intermediaries.

- Potential policyholders may be concerned about all 10 standard CIs and not just 5 of them.
- The product may be perceived more for what it is not covering than for what it is covering.
- The uncertainty about future premium rates when adding additional CIs could be off-putting.

iii. Ways of mitigating the risk:

- Limit the maximum sum insured available on these contracts to limit exposure.
- Limit the maximum number of CIs which can be added through the options to limit CI exposure.
- Limit the number of option dates to restrict the number of opportunities for anti-selection.
- Only allow an option to be exercised on certain life events (e.g. marriage) or if all previous options have been exercised. This will limit the scope for anti-selection.
- Limit the time available during which each option needs to be exercised. The longer it is left open the greater is the chance of something going wrong with the insured's health (increasing anti-selection).
- Restrict the term of the base contracts in order to limit the time period to which the option applies.
- Restrict the option to lives accepted on standard terms or ensure that any exclusions incorporated for the base policy apply to each CI added through the option, as sub-standard lives pose a higher risk.
- Use waiting periods relating to each additional CI added to reduce anti-selection.
- Introduce a pre-existing exclusion on all option policies effected after the base contract to reduce the risk of anti-selection.
- Increase claims underwriting to eliminate invalid claims. This will be of particular importance if a pre-existing (or other) exclusion is in place.
- Price conservatively initially to ensure sufficient premiums are collected to cover the option risk.
- Encourage take-up of additional CI cover, e.g. through reminder notices, in order to reduce anti-selection at each option date.
- Pricing of the premium to be charged when adding an additional CI should be kept attractive to encourage take-up. Setting unattractively high premiums at that time will exacerbate anti-selection.
- Monitor the experience by the relevant factors, e.g. independent intermediary channel, to allow remedial action to be taken where required.

Overall this question was answered very poorly. Many candidates failed to read the question carefully enough and hence made many irrelevant/incorrect points. It appeared as though several candidates ran out of time.

In part (i) candidates generally failed to generate enough points to score well. Despite the question asking for input on the additional morbidity risk the company would face, some candidates wasted time commenting on how the morbidity risk may have reduced.

Part (ii) was answered reasonably well.

In part (iii) many candidates failed to fully answer the question by not explaining how each of their suggestions would reduce the morbidity risk as required. Some of the suggestions given by candidates altered the core design of the proposed product (which had been explicitly prohibited in the question) and thus gained no credit. Some candidates also mentioned reinsurance despite the question specifically stating “other than reinsurance”. Some suggestions made had nothing to do with the morbidity risk.

END OF EXAMINERS' REPORT