

EXAMINERS' REPORT

June 2015 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. Product features:

- Pays a regular income to the insured during incapacity.
- Incapacity is based on illness or injury as defined in the policy wording.
- Definitions of incapacity are often based on occupation, activities of daily living (ADL) or activities of daily work (ADW).
- Benefits are usually limited, based on replacement ratios to prevent over-insurance.
- Proportionate benefits can be paid to encourage return to some form of employment after rehabilitation.
- Benefits are paid until the insured recovers, dies or the maximum term of the policy is reached.
- The maximum policy term will not extend beyond the insured's normal retirement age.
- Exclusions vary but may include attempted suicide, or self-inflicted injury.
- There is usually a deferred period for which the insured must be sick before a claim is paid.
- There may be a waiting period at the start of the contract during which time no benefit will be paid.
- Premiums and benefits can be level or increase with inflation.
- Any increases are normally limited to a specified percentage.
- Policy can have single premiums or regular premiums.
- Premiums can be reviewable or guaranteed.
- Policy terms may include a linked claim condition – whereby the deferred period will not be applied if sickness recurs within a short period of returning to work.

ii. The claim termination data could be grouped by:

- Duration since claim started
- Cause of claim
- Age
- Gender
- Deferred period
- Waiting period
- Type of termination (recovery or death)
- Benefit escalation rate
- Replacement ratio
- Whether or not the insurer took pro-active action to assist the incapacitated with recovery

Issues to consider:

- If necessary, recombine certain groups to ensure there is enough information per cell for the analysis to be credible
- Consider any factors that would weaken the relevance of past data.
 - For example, income protection experience depends a heavily on state of the economy
- May want to try and model recovery rates linked to level of economy
- Consider any trends in the data.
- It may be very difficult to find a suitable period that has sufficient data, but where the data are relevant to the expected future environment.

iii. Experience may differ due to differences in:

- Target market
- Periods of investigation
- Claims management processes
- Definitions of claims
- Interpretations of the same definition between different companies
- Levels of maximum benefits
- Escalation rates
- Deferred periods
- Waiting periods
- Replacement ratios

Those candidates who were well prepared and wrote an appropriate amount scored reasonably well. Those who did not score well generally made too few points. Some candidates made the fundamental mistake of failing to follow the instruction in the question (e.g. "comment"), and thereby gave inappropriate answers.

QUESTION 2

i. Factors to consider:

- The insurer will consider whether the terminal bonus will be affordable or negatively affect the solvency of the fund / company.
- The terminal bonus will be set relative to the difference between the asset share and benefits guaranteed to date at the policy maturity date (initial guarantee plus reversionary bonuses).
- Bonus distribution should be fair to different categories or generations of policyholders.
 - The insurer would group policyholders according to similar characteristics, for example, policies of the same term in determining the asset share and consequently the terminal bonus.

- The insurer will “smooth” the payouts, to reduce the impact on the policyholder of fluctuations in investment markets.
 - The extent of smoothing that can be applied will depend on policyholder reasonable expectations.
 - Policyholder reasonable expectations will be built up from product documentation, past practice of the insurer and market practice.
 - The insurer will need to comply with policy terms and conditions, for example it is likely that the terminal bonus cannot be negative.
 - The affordability of the terminal bonus will be considered in the light of future business plans (e.g. the impact on potential future new business) and terminal bonus rates declared by competitors.
- ii. The policy reserves using the gross premium valuation method are calculated as the present value of future benefit outgo plus the present value of expected future expenses less the present value of expected future office premiums.

All liabilities to policyholders arising out of the contracts should be allowed for, incl.:

- Guaranteed benefits or options available to benefits
- Guaranteed surrender values (the amount of the reserves for each policy should be at least as great as the surrender value)
- Bonuses which have already been guaranteed (vested, declared or allotted bonuses)
- Future bonuses (regular reversionary bonuses and may include terminal bonuses)
- The allowance for future bonuses needs to be consistent with both the reasonable expectations of policyholders and the assumed future investment and other experience

Expenses (including commission) are explicitly allowed for.

- This allowance may consider the possibility of the company ceasing to write new business, if that would increase the reserve.
- An appropriate allowance for future expense inflation will be necessary.

Future office premiums are explicitly allowed for where they are contractually due to be paid.

The elements of the statistical basis (demographic and withdrawal assumptions, and the allowance for expenses) should be relevant to the type of insurer and policyholder profile.

These assumptions are likely to be prudent, including an appropriate margin for adverse experience.

The strength of the valuation basis will, however, be determined by the regulator and/or professional guidance.

On the supervisory valuation assumptions, future surpluses are projected to emerge in a suitable pattern and amount so as to match the assumed future regular bonuses.

Negative reserves may have to be eliminated for the purpose of demonstrating solvency.

The discount rate should be based on the yields of assets matching the liabilities or the risk-free rate.

The discount rate can be reduced to implicitly allow for future bonus declarations.

The projection term should reflect the expected term of the policy.

The basis chosen should recognise profit appropriately over the duration of each policy.

Care needs to be taken in setting the basis, because differences between the valuation basis and office premium basis will be capitalised immediately.

iii. The regulator could set up requirements:

- For the board of the insurer to consider the fair treatment of policyholders in the bonus declaration.
- For an independent advisor (e.g. actuary) to give input to the board on the fair treatment of with-profits policyholders.
- For the insurer to set up a bonus policy that considers the fair treatment of policyholders.
- For minimum and simple to understand disclosure in product literature on the bonus projections, bonus philosophy and investment portfolio supporting the with-profits policies of the insurer.
- For minimum and simple to understand disclosure on the risks relating to the investment strategy for the with-profits funds.
- In terms of standard calculations of terminal bonuses (e.g. minimum and maximum smoothing periods).

In part (i) the most common mistake was not answering the question asked. The question was about deciding on a terminal bonus rate “in any given year” i.e. what rate of bonus should be declared, given the current product design (low reversionary bonus rates / high terminal bonus rates). A large number of candidates discussed the relative merits of a product design with low reversionary bonus rates and high terminal bonus rates. Some candidates also suggested that declaring a low terminal bonus rate could be a source of working capital – which would not be equitable.

Part (ii) was relatively easy with the better prepared candidates scoring well. The most common mistake was not providing enough detail (the question says “describe in detail”).

Part (iii) was a challenging question and most candidates struggled with this part. Many candidates suggested changes to the product design (e.g. increasing reversionary bonus rates) when the question was about managing the risk for the current product.

QUESTION 3

i. Factors affecting the distribution of the accumulated unit fund at maturity:

- Size of single premium.
- Policy term.
- Allocation rate.
- Unit fund charges.
- If unit fund charges are performance related they could also affect the shape parameter.
- Investments underlying the unit fund, including the split by asset class.
- Statistical distribution assumed for investment returns on each asset class.
- Interdependence (correlation) that is assumed for investment returns between different asset classes.
- Assumptions about future investment strategy.
- For example, whether the portfolio is rebalanced if the balance is distorted by investment returns.

ii. Probability of guarantee biting:

$$\begin{aligned} P(\text{guarantee biting}) &= P(\text{Unit fund at maturity} < R1m) \\ &= P\left(\left[\frac{\text{Unit fund at maturity} - R1.3m}{R0.2m}\right] < \left[\frac{R1m - R1.3m}{R0.2m}\right]\right) \\ &= P(z < -1.5) \\ &= 6.68\% \end{aligned}$$

iii. Hedging its exposure to this guarantee:

The company can match the cost of the guarantee by investing in a European put option that has the following characteristics:

- Underlying assets are consistent with the assets underlying the unit fund
- Strike price = R1m
- Strike date = maturity date

Overall the question was generally answered well. However:

In part (i) a number of candidates made assumptions about how surrenders would be treated, despite being told to assume that policies cannot be surrendered prior to maturity. A number of candidates realised that expected investment returns would have some influence on the distribution at maturity, however failed to mention the volatility of returns, the mix of assets and correlation between asset returns.

In part (iii) a number of candidates ignored (or did not understand) the details given in the question and offered unreasonable solutions.

QUESTION 4

i. The advantages of this product for the policyholder are:

- The product encourages ‘forced’ regular savings for the child’s education, creating a savings habit.
- While marketed as an education policy the benefits can be used for other financial needs, e.g. repaying mortgage, so it is flexible.
- The smoothed bonus fund should provide real investment growth, which would be required to meeting inflating costs of education.
- There is also no downside of negative bonuses and less exposure to the potentially volatile returns of unit-linked / market-related policies.
- The premium is flexible and can be selected based on the desired maturity benefit.
- The surrender value provides a payout if the policyholder’s needs/priorities change.
- The two partial withdrawals provide cashflow for unforeseen smaller expenses during the policy term.
- On death the policy can continue as paid-up and thus still contribute towards a child’s education, or can be surrendered to meet funeral expenses.
- The waiver of premium option provides some protection in the event of the death or disability of the policyholder and allows the policy to remain in-force in the event of the early death or disability of the parent.
- It is possible that there may be some tax benefit, e.g. income tax relief may be received on the premiums, or the final maturity benefit may be paid free of income tax.

ii. The risks that the insurer needs to consider in introducing this product include:

Data:

- The fact that the product has been developed for a new target market will mean that the insurer will not have appropriate internal data for the setting of assumptions, e.g. mortality and morbidity.
- The insurer could make use of industry data (if available) or reinsurers’ data.
 - However, this may come at a cost.

Investment risk:

- The fact that bonuses may not be negative places investment risk on the company as bonuses form part of the guaranteed benefits once declared.
- Investment risk can be passed back to policyholders via reduced bonuses, but this will also impact the future marketability of the product.
- Regular bonuses may not be negative, but the insurer can use smoothing in final bonuses for maturity benefits and a market value reduction (MVR) for surrender benefits to manage this risk.

- However, the extent to which these tools can be used depends on expectations of policyholders and practice of competitors.
- The company runs the risk of return on assets backing the waiver of premium benefit being lower than expected.
- Low fund values will result in low management charges.

Reputational risk:

- Policyholders will expect a reasonable level of real return, in the form of regular and terminal bonuses, throughout the term of the policy.
- In particular, policyholders may expect growth to keep pace with increases in the costs of tertiary education.
- They may compare the regular bonuses received during the policy term to:
 - interest rates on bank savings accounts;
 - investment returns on education products from other insurers;
 - investment returns on savings in other investment products (e.g. unit trusts);
 - projections in the policy literature.
- This risk could be made worse if the company does not have an established track record of providing competitive bonuses on with profits business.
- It is important that the policyholders understand the (reasonably complex) contract to avoid reputational risk and high lapses.
- Any inability to meet policyholders' bonus expectations could result in reduced sales and increased lapses.

Mortality and morbidity risk:

- For policies without the waiver of premium benefit death would result in a surrender or conversion to paid-up. The extent of the risk will depend on the terms for surrender or conversion (see below).
- For policies with the waiver of premium benefit there is the risk that the insurer underestimates the mortality and/or morbidity experience for this benefit.
 - If more policyholders die/become disabled or if they die/become disabled earlier than expected the insurer will have to pay more waiver of premium benefits and possibly pay benefits for a longer period than anticipated.
 - This can also occur if the waiver of premium benefit ceases on recovery from a disability, and the rates of recovery have been overestimated.
- The uncertainty relating to future mortality and morbidity is increased due to the minimal underwriting.
- The minimal underwriting could also increase anti-selection.
- The business can be reinsured in order to reduce the risk, however:
 - this will also reduce the expected profitability of the business; and
 - exposes the reinsurer to the risk of the reinsurer defaulting.
- There is an added risk in respect of the waiver of premium benefit relating to the definition of permanent disability. If the definition is not clear and understood by policyholders it could result in:
 - more claims having to be paid than expected; and/or
 - legal disputes and bad publicity.

Withdrawal risk:

- There is a risk of higher than expected surrenders at early stages when the asset share is negative.
- At later durations, the level of risk depends upon the relationship between the asset share and the discontinuance terms.
- The extent of surrender penalties may be limited by market practice and policyholder expectations.
- This product is marketed to the lower-income government employees, the risk of withdrawal due to a lack of affordability of the premium may be a higher risk than for the current target market of the insurer, increasing risk if this increase is difficult to estimate.
- Some surrender risk may be passed on to the policyholder through lower bonuses (but this is limited by the need to remain competitive and the need to meet PRE).
- This is also true for expense risk.
- The company is also exposed to risks from partial withdrawals being higher than expected, as this would reduce the annual fund management charges, with at least some of the administration expenses being unchanged.

Expense and volume risk:

- There is a risk that the company underestimates the expenses it incurs to administer the policy and that the charges are insufficient for the actual expenses incurred and contribution to shareholders profit.
- There could also be a mismatch in timing between expenses (e.g. the high initial expenses) and charges.
- The inflation assumption used in pricing may have been insufficient resulting in expenses growing at a faster rate than assumed.
- In deriving the expense assumptions, the insurance company will have made assumptions regarding the likely volume and mix of business written on this product. This may be difficult to estimate as the target market is not familiar to the company.
- A different mix of business (e.g. by premium size) to that assumed in the pricing, may lead to incorrect charges for expenses if cross-subsidisation is taking place.
- Lower than expected volumes of business (either through low new business or poor persistency) will lead to lower contributions to development costs, fixed costs and shareholder profit.
- If the company writes more business than expected:
 - there may be insufficient capital to support initial costs and regulatory reserving requirements; and
 - there may be undue pressure on the insurers systems and operational staff (causing errors, delays and customer dis-satisfaction).
- The extent to which charges are variable would mitigate the expense risk.

Competition and marketing risk:

- There is a risk that competition may negatively impact on business volumes.
- Competitors' products may be more attractive to policyholders due to innovative product features, lower charges or higher bonuses and final pay-outs.
- There is a risk that the proposed distribution channels are inappropriate to the market resulting in lower sales, especially since the company has no experience in the lower income market.
- There may be mis-selling by intermediaries resulting in higher withdrawal rates and reputational risk for the insurer.
- This risk is exacerbated due to the target market being a lower income market, which might be financially unsophisticated.
- The company's marketing might be inappropriate for a lower income market.

Administration / Systems issues:

- The insurer's IT systems may not be able to cope with the administration of this product.

Legal, regulatory or fiscal developments:

- Regulatory changes may impact on the investment returns and costs of the business, e.g. changes to the investment limitations for insurers may force the insurer to invest in assets producing lower returns and impact on the insurer's ability to meet PRE.
- The fiscal environment may change removing any tax advantages impacting on the popularity of the product.
- Decisions of the courts could impact on minimum bonus declarations or limit the use of MVR in practice.

Part (i) was fairly well answered by most candidates. Some candidates claimed the structure was simple, however it is unlikely that a unitised with-profits policy with surrender penalties and a market value reduction could be described as simple compared to some of the other investment avenues open (e.g. a fixed deposit). Some candidates did not give sufficient detail for an "outline" question.

Part (ii) was reasonably well answered by most candidates. Marks were lost by candidates in respect of things such as:

- *Giving answers which were too brief, for example making suggestions such as "regulatory changes" without explaining why these could pose a risk in this case.*
- *Several candidates referred to "the guarantee" without explaining what the guarantee was.*
- *Some candidates outlined factors to consider in contract design instead of focusing on the risks as required.*
- *Some candidates indicated that "high mortality/morbidity in the low-income market" is a risk, when it is actually mortality/morbidity higher than expected which is the risk. High mortality/morbidity is not a problem if it can be predicted and priced for.*

QUESTION 5

Suitability of changes:

- Client needs:
 - The early surrender values will be improved due to the removal of surrender penalties.
 - This may meet policyholder's expectations of a return of premium at early durations.
 - However, this will be at the expense of relatively poorer surrender values for those that surrender later (due to the higher charges they will have paid).
 - The refund of product charges, means that maturities are unaffected by the removal of the surrender penalty.
 - However, surrender shortly before maturity will not receive the refund, which will not meet policyholder expectations as it results in a discrepancy between surrender and maturity values.
- Marketability:
 - The lack of a surrender penalty may appear marketable.
 - However, the higher product charges may make the product less marketable.
 - Reduced commission makes the product less marketable to advisors.
- Competitiveness:
 - The removal of the surrender penalty will apply to all insurance companies, so should not affect the competitiveness of the product.
 - Product charges may become relatively more important from a competitive perspective:
 - Particularly relative to products offered by other financial institutions (such as unit trust companies or banks).
 - This might result in the increased fund management charge being very unattractive to the market.
 - Or other product features may now become a competitive advantage (e.g. the refund of charges on maturity).
- Product risks:
 - Because there is no surrender penalty, the product is now more sensitive to the lapse rate experience.
 - This increased riskiness could result in the company being required to increase the risk discount rate in line with the increased required return for shareholders.
 - This may result in more conservative pricing assumptions.
 - The regular commission may incentivise the sales force to service the policyholders better, which may improve persistency.
- Financing requirements:
 - Lower upfront commission reduces the new business strain.
 - However, because there is no surrender penalty, the surrender strain on lapses will increase.
 - This will require more working capital.

- Profitability:
 - Due to increased competitiveness in the market in terms of charges, there is likely to be a reduction in the profitability.
- Sensitivity of profit:
 - More sensitive to withdrawal rates in particular – covered earlier.
- Practical Considerations:
 - Administration systems will have to be changed.
 - The changes will need to be communicated to the sales force, administrators, etc.
 - All of these changes incur costs, which need to be recouped.
- Consistency with existing products:
 - If the company has any other products affected by the regulations then it is important to check that the changes to the 10 year product are consistent with the changes made to the other products affected by the regulations.

Overall, this question was not well answered.

Some of the common mistakes included:

- *Not reading that it was a 10-year term, which led to mistakes about the total commission paid, etc.*
- *Referring to the “premium” and the “price”, suggesting that candidates did not understand that the increase in fees from 2% to 4% was the “price”.*
- *Commenting in detail on underwriting, indicating a lack of understanding as to how savings products work.*
- *Failing to mention that higher risks would result in an increased return requirement from the shareholders.*

QUESTION 6

- i. The general approach to setting surrender values is to consider the following values:
- Asset share:
 - The company would not want to pay more than the asset share on average over a reasonable period of time.
 - However, basing the surrender value on the asset share means that the company will not make a profit on surrender.
 - At very early durations:
 - the asset share is negative because initial expenses have not been recovered; and
 - the company cannot avoid losses on surrenders (even if no surrender value is offered at these durations).
 - Some cross-subsidy is therefore always required between early surrenders and surrenders at later durations.

- Prospective reserve:
 - If the surrender value is based on a prospective reserve, calculated using the original premium basis, then the company broadly retains profits accrued up to the surrender date.
 - Basing the surrender value on the prospective realistic reserve allows the company to capitalise all the profits it is expecting to make on the contract, both past and future.
 - However, capitalising future profits may be considered too unfair to surrendering policyholders, so a basis between the realistic basis and the premium basis may be preferred.
 - One significant disadvantage of using the prospective reserve is that it is very sensitive to future assumptions, in particular the interest rate assumption.

- It is common to use retrospective values at early durations, blending into prospective values at later durations.

- Surrender administration expenses:
 - The company will want to be sure that the cost of administering the surrender is borne by the surrendering policyholder and not by the company or by other policyholders.

- General considerations:
 - Surrender values should meet policyholder reasonable expectations, which include:
 - For surrenders near maturity, surrender values that are in line with the maturity value.
 - For surrenders at early durations, surrender values that are comparable to premiums paid.
 - The surrender values should maintain fairness between:
 - Policyholders leaving and staying; and
 - Policyholders and shareholders, the latter would require a reasonable contribution to profit.
 - Need to ensure that surrender values are consistent with paid-up values and comparable to auction values, if they exist.
 - Surrender values should:
 - Not encourage selection against the company, including lapse and re-entry.
 - Be comparable to values offered by competitors.
 - Comply with any regulatory requirements.
 - Progress relatively smoothly over duration and scales should not change frequently (over time).
 - The basis, including modifications, needs to be expressed in a way that will be easy to apply, document and explain to policyholders.

Since the insurer has experienced losses relating to surrenders at early durations it suggests that the surrender values are possibly too generous at early durations.

This could potentially be addressed by:

- Reducing existing surrender values (possibly to zero) at early durations (if regulation allows).
 - This may, in addition, change the surrender behaviour of policyholders (reducing surrenders).
- Increasing the cross-subsidies between late surrenders and early surrenders.
 - The existing surrender experience could be useful to assess the extent of the cross-subsidy required.
 - However, this will reduce the surrender values at later durations, possibly resulting in policyholder dissatisfaction.

It is unlikely that the insurer will be able to change the surrender values for existing policies, due to:

- explicit surrender terms in the contract; or
- the risk of negative publicity.

It is therefore likely the surrender values will only be changed for new business (subject to regulation and competitive considerations).

ii. Interest:

- The expected returns on securities backing the liabilities will be the best estimate assumption.
- Consider the interest rate used in the premium basis if the company wishes to use a blended basis.

Expenses:

- The most recent expense investigation will be used.
- Only renewal expenses and claim expenses will be included.
- The company is unlikely to add margins since this would increase surrender values.
- Allow for renewal commission as paid.
- Allow for the expenses incurred in surrendering the policy.

Inflation:

- Should be chosen to be consistent with the investment return assumption.
- The company may need both a price-inflation and an earnings-inflation assumption.
- The real return on index-linked government stock will give an indication of what might be a suitable margin below the full interest rate assumption.

Mortality:

- The basis chosen should reflect the expected future mortality of the surrendering policyholders.
- Since there is a guaranteed death benefit under endowment assurances it is reasonable to assume that surrendering policyholders would experience lighter mortality than those who do not surrender (for protection policies).
 - The company could make an explicit allowance for lighter mortality.
 - Select mortality could be used (although the nature of the selective process is not the same as that of the underlying standard table).
 - Alternatively, the company could use unadjusted mortality experience and rely on other margins in the basis for differences in the mortality between those who surrender and policyholders who remain in force.

Part (i) was a relatively easy question if candidates knew the theory well. The most common mistake was to not explicitly address both parts of the question, in particular what the company could do to address the losses on early surrenders. Where candidates suggested an approach, it was often too generic (e.g. “use the retrospective method early on and then move to the prospective method at later durations”). A surprisingly large number of candidates also seem to confuse a surrender value on a conventional without profit product with a surrender penalty levied on unit-linked contracts (or use the two terms interchangeably).

In part (ii), a large number of candidates discussed general considerations when setting assumptions instead of tailoring their answer for the scenario of setting the basis for surrender values. Some candidates also suggested that initial expenses will be included in the prospective reserve, showing a lack of basic reserving knowledge.

QUESTION 7

i. A reinsurer could provide assistance in the following areas:

- Technical assistance:
 - This will be needed because the mutual is small and therefore will likely have limited resources.
 - You are also new in the job and newly qualified and therefore might not have sufficient knowledge and experience in your area of responsibility and therefore getting outside assistance will be necessary.
 - It is a new product line and the mutual is unlikely to have sufficient experience to price the product.
 - It is an online proposition and you will need assistance with the underwriting question set and possibly access to an automated underwriting system which the reinsurer should be able to make available.
- Capital requirements:
 - The mutual is small and therefore unlikely to have a lot of capital to finance the expansion therefore some form of financial reinsurance might be a way to finance the growth.

- Risk transfer:
 - The mutual is small and in a new market and will want to be cautious about how much risk to take on. Therefore it will most likely want to reinsure with a large % quota share ideally with a profit share to the insurer.

ii. Underwriting:

- Because the product is offered through the internet you would ideally like the underwriting questions to be part of the application and at the end of the application process an ‘accept, reject or loading decision’ to be given.
- You would want only a small proportion of cases to be referred for further medical evidence as it is likely that the inconvenience of going for medicals or blood tests would be a deterrent to sales.
- You would want to ask lifestyle underwriting questions such as occupation, pursuits and residence as you would probably also use these as rating factors.
- Minimal financial underwriting would be sensible which probably can be achieved by limiting the maximum sum assured that is offered.
- Strict claims management processes would be essential to ensure that there was no non-disclosure at the time of application.

iii. Pricing would differ as follows:

- No experience will be available on this product as it is new, however you could use the underlying experience from the without-profit term assurance sold through the salesforce and then make adjustments to it.
- It is likely that a higher price would be needed for the new product to allow for reduced underwriting and therefore possibly greater anti-selection leading to worsening underlying experience.
- However, reduced underwriting means lower expenses on underwriting which means a lower allowance for expenses and therefore a lower price. The point above though is likely to outweigh this reduction.
- The increased claims underwriting will increase expenses.
- No commission will be paid to a salesforce which should result in a lower price. However, the cost of setting up the systems for the direct offering will need to be recouped and will push the price up.
- Withdrawals are likely to be higher for the direct product (as sales advised products should better meet the needs of policyholders) and so initial costs would need to be recouped quicker pushing up the price. (It could, however, also be argued that as the policyholder initiates the purchase withdrawals may be lower – *while less likely in practice credit was given if this point was argued clearly.*)
- Overall you would expect higher mortality costs but lower expenses but the overall result is likely to be a higher overall cost for the product than the one sold through the salesforce.
- Due to the new product, new market and new distribution method the product is more risky than the existing product and might be priced using a higher risk discount rate.

In part (i) many candidates just gave the generic ways a reinsurer can help an insurer without considering the specifics given in the question, e.g. small insurer, new distribution channel, newly qualified actuary, all of which should have influenced the answers:

In part (ii), once again, many candidates just reproduced the general items from the notes without taking into consideration the distribution channel the mutual wants to use (the internet). You will not make many sales on the internet if you are going to ask people to go for medical tests or doctors' appointments. Many candidates also missed the fact that if you underwrite less up front then you need to be more stringent in your claims underwriting.

The answers to part (iii) were generally quite poor, with only a few candidates considering all aspects of pricing. Very few candidates stated that the insurer could use the experience from their existing product and then adjust it for changes needed. A number of candidates took the approach of mentioning which items would differ (e.g. expenses, mortality etc.) but then failed to say which would be higher or which lower in each case and why that would be the case. This is a display of very poor critical thinking and exam technique. Many candidates did not demonstrate clear thinking when considering the likely withdrawal experience of the internet-sold policies.

QUESTION 8

i. Main reasons for holding free assets:

- The main reason is to ensure that policyholder obligations are met even if future experience is worse than expected and actual liabilities are higher than the current expected level.
- A minimum level will probably be required by the regulator.
- Finance future new business strain.
- Enable less reinsurance to be purchased.
- Enable a less restrictive investment strategy to enhance expected returns.
- Support management strategies e.g. business acquisitions in specific areas or take advantage of other profitable opportunities as they present themselves.
- Smooth dividend payments to shareholders.
- Smooth surplus distribution and thus support policyholder expectations.
- Provide confidence to policyholders, shareholders and brokers.
- Improve credit ratings and thus reduce debt finance costs.

ii. Dynamic solvency testing (DST) is the projection of the company's revenue account and balance sheet (and thus solvency level) for a specified future period.

The projection could be done deterministically or stochastically. If deterministic, the projection basis should include possible adverse scenarios.

The benefits of DST are:

- To assess how well the company can withstand variations in both economic elements of experience as well as demographic adverse future experience, which cannot be appreciated with a static solvency test.
- This insurer is growing rapidly, and will require significant capital to finance new business strain. DST will demonstrate whether there is a risk of insolvency given new business growth scenarios.
- To assess the impact on solvency of any other decisions, e.g. business acquisitions, reinsurance changes and investment strategy.
- Depending on the type of product and level of guarantees being sold, the insurer can assess its risk of insolvency as a result of adverse experience on items being guaranteed e.g. mortality or investment.
- DST will thus allow management to take corrective action before solvency deteriorates to an unacceptable level.

iii. Considerations in investing the free assets:

- The main consideration would be to maximise the investment return on free assets, subject to the risk tolerance of the company.
- The need to finance new business strain. This will lead to a greater holding of cash and other stable and liquid assets.
- The results of the DST in combination with management risk tolerance: if the DST shows an unacceptably high probability of insolvency at some future point, this may lead to some risk reduction, including a less aggressive investment strategy.
- The nature, term and currency of the liabilities and whether the liabilities have been matched. If they have been matched, it allows the free assets to be invested more aggressively for a higher expected return.
- Policyholder expectations for smoothed bonuses: the less the need to smooth bonuses using free reserves, the greater the investment freedom for the free assets.
- Excess over regulator minimum requirement: A large excess will allow a more aggressive investment strategy.
- Size of the free assets will determine the extent to which investment can occur in certain asset classes such as direct property.
- Any ethical investment restrictions imposed by shareholders e.g. investments in tobacco companies.

Given how straightforward the question was, the answers were mostly disappointing.

Part (i) was a very easy bookwork question, and generally done well.

Part (ii) was also an easy bookwork question, however this part was not done well, with a number of candidates not defining DST properly – a number of candidates did not specify that it entails a projection of the solvency position over some future time period. A number of candidates guessed that there was some sort of scenario testing and/or stochastic simulation

involved, but the answers produced suggested a point-in-time exercise, rather than a future projection.

Part (iii) was very disappointing, with a number of candidates producing points relating to the investment of reserves rather than free assets. A number of candidates thought that day-to-day expenses and claims are payable from free reserves, however liabilities (and corresponding assets) are specifically held for this purpose. A large number of candidates provided a list of considerations (e.g. “size of free assets” or “business plans”) without outlining and explaining the impact of the factor listed on investments.

END OF EXAMINERS’ REPORT