EXAMINERS' REPORT

June 2011 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

Mortality:

- If this ruling was applied then, instead of setting separate rates for males and females, we would have to charge a single rate for males & females by age
- We would therefore have to make some assumption about the expected future portfolio mix between males and females
- The historical portfolio gender mix would be a good starting point
- Consider whether this is likely to change, as you would be charging females significantly more than previously and the new gender mix might therefore be different
- There may be a tendency for the mix by gender to stabilize across companies as there will no longer be gender-based selection based on pricing
- The assumption would also change as the result of it having to take account of possible changes in things such as target market

Expenses (incl. commission):

- Would not, in general, be affected by the ruling
- However, there may be a once-off cost associated with communicating the change to policyholders and updating product literature.

Inflation:

- Would not be affected by the ruling

Lapses:

- The premium rates for males after the introduction of the ruling could fall significantly, which may cause a substantial lapse & re-entry problem (from current policies to the new ones)
- Not likely to be the case for females though, as they may not get cover as cheaply again
- Any such lapses are likely to be selective, increasing mortality rates on the current portfolio
- For new policies sold after the introduction of the ruling a weighted average of historic male & female lapse rate assumptions may be used (if available)

Investment return:

- Would not be affected by the ruling, but this is not a key assumption as the reserves held for term assurances are small

Profit margin:

- Profit margins may be increased to allow for the increased uncertainty relating to portfolio mix following the introduction of the ruling

Several candidates wasted time discussing assumptions that were not the main assumptions as instructed.

Many candidates misunderstood/misstated the effect of selective lapses, saying that females will lapse because of higher rates whereas in fact it is the males who will get cheaper rates and therefore lapse and re-enter. Many candidates claimed (without substantiation) that females have higher lapses and that this change would drive it up even further.

There were also many candidates who suggested that females would no longer buy life insurance because of the price increase. This is extremely unlikely though because the rate change is not likely to be hugely significant and, furthermore, if you need life insurance you will simply have to pay the higher premium as there is no alternative.

QUESTION 2

i. Importance of financial underwriting:

- The main purpose of financial underwriting is to make sure that the policyholder is not over-insured.
  Over-insurance poses a moral hazard. For death benefits, in the extreme case, an individual may commit suicide to save his / her business, or to provide funds for his / her family. Even if there is a suicide exclusion clause it is often very difficult to prove suicide.

- The second issue is affordability. If the policyholder has a higher sum insured than they really need, there is more of a chance that they will not be able to afford the premiums at some time in the future.
  If this is the case the lapse rates will be higher than anticipated and you will be less likely to recoup your up-front expenses, which will be higher for large sums insured.

- The third major issue, linked to issue two, is that if people are generally over-insured it may lead to selective lapsation.
  If people have too much cover, many of them will lapse, or reduce their cover, if they don't need it or can't afford it. However, anyone who becomes sick after taking out the policy will keep the policy, leading to worse experience in the long run.

ii. Issues with doing financial underwriting:

- Sometimes financial underwriting is easy to do, for example if someone is formally employed and can provide you with a salary slip.
- However, many people who take out insurance are self employed and getting proof of income is not straightforward.
- There is the risk of moral hazard from incorrect information.

- Such underwriting may be unpopular amongst potential customers and there may be resistance to providing the information required.
- Anything which may slow the time taken to accept a proposal will be unpopular with the distribution channel.
- Companies asking for proof of income can be at a competitive disadvantage, in particular in countries where this is not common practice (e.g. South Africa).
- For business insurance the underwriter needs to place a value on the business. This is not a trivial exercise and requires financial skills in terms of interpreting income statements and balance sheets.
- Often financial statements are out of date or not audited.
- Carrying out financial underwriting can be an expensive exercise.

iii, Reinsurer could assist you by:

- Comparing your practices to:
  - the rest of the market.
  - international best practice.
- Helping you analyse your book of business relative to the market to see if you are getting:
  - more large sums insured than the rest of the market.
  - comparable levels of profitability
- Putting appropriate reinsurance structures in place, e.g. surplus reinsurance, which will remove the volatility of your results.
- Providing assistance in establishing appropriate practices, e.g. through the provision of:
  - underwriting manuals
  - training to your underwriters.

Overall the question was not answered that well. Several candidates gave answers about general underwriting which were not specific to financial underwriting, and thus did not get credit. Credit was also not given for generic points such as "regulation".

QUESTION 3

i. Possible reasons:

- Anti-selection, driven by the limited underwriting at proposal stage. Sickly people are taking out the policy and are passing away shortly thereafter.
- Incorrect pricing basis for mortality. The mortality basis used in pricing is lighter than the population into which the policies are sold.
- Poor experience due to random variation since the book isn't that large yet. While possible it is unlikely that this explains all of the deviation from the expected level given the high number of deaths.

ii. Reasons:

- To understand the reasons for the experience in order to take corrective action, e.g. change the pricing basis for future sales
- To ascertain the potential size of current and future losses
- To assist with analysis of profit/surplus
- To assist in reserving appropriately
- To provide management information on the experience (e.g. as requested by the CEO)
- To enable the identification and analysis of trends in experience

iii. Information required:

- Full policy information for each claim, e.g. sum assured, age of policyholder, etc. to enable analysis down to this level.
- The causes of death of the policyholders, particularly the split between natural and accidental deaths.
- The medical history of the policyholders in question. This will be compared to their answers on the proposal form to check if they answered honestly.
- The repudiation rate. It is possible that the actual number of approved claims is roughly consistent with the pricing basis.
- The geographical areas in which deaths occurred in order to assess if they are concentrated in a specific area.
- The sales channel / intermediaries attached to the policies to determine if the deaths relate to policies sold by a specific channel / intermediary(ies).

iv. Recommendations & considerations:

a. Repudiate claims where dishonesty is detected.
- Consider the possible bad publicity if the market views this as the company reneging on its promises to pay claims.

b. Change the benefit structure, by for example:
  - Using an initial waiting period, or only returning premiums on death due to natural causes in the first year say.
  - Reducing the cover level for natural deaths in the first six months to say 25%.
- Consider that the policy will not be attractive, impacting sales (marketability).

c. Introduce more rigorous initial and/or claims underwriting.
- Consider the additional costs and that this will make the policy less attractive, possibly impacting sales.

d. Stop selling the product
- Consider impact on overall sales and recovery of costs.

Most marks on this question were lost in part (iii), where the vast majority of candidates explained the process rather than giving the "information required" to carry out an investigation.

In part (iv) it was surprising how many candidates mentioned reinsurance despite the question clearly stating "other than through the use of reinsurance".

Both of the problems mentioned above can be attributed to candidates not reading the questions carefully enough.

QUESTION 4

i. A financial economic approach would seek to set future unknown parameter values so as to be consistent with market values where they exist.

   Assumed parameter values for future investment returns would be based on a risk-free rate of return, irrespective of the type of asset held.

   This compares with the traditional actuarial approach of assuming a risk-free rate of return on government bonds plus a margin for equities.

   The financial economic approach would argue that in the long term the equity margin should also be combined with an increased risk of not achieving the increased yield, the net result being the risk-free rate of return.

ii. The liability value is the sum of the unit fund and the non-unit fund.

   The liability relating to the unit fund is:

   unit price × number of units for all policyholders.

   The valuation of the non-unit fund requires a projection of all non-unit fund expected cashflows in each future year from the portfolio, namely expenses, charges, guarantee benefit outgo and investment returns on these cashflows.

   A projection of the unit fund is required for calculating asset-related charges and expenses and the cost of the minimum guaranteed benefits.

   used for projection of benefits and for discounting the cashflows will be based on current risk-free interest rates.

   Term-dependant interest rates will be required for projections and discounting cashflows in each year, which can be obtained from an appropriate yield curve (e.g. government-backed zero-coupon yield curve).

   If the cashflows were certain and guaranteed amounts, the market value of the portfolio of zero-coupon bonds replicating the liability cashflows (i.e. replicating portfolio) would represent the required market-consistent valuation.

However the liability cashflows are subject to uncertainty.

In this instance there is uncertainty due to decrement experience (lapses, surrenders, mortality), expenses and expense inflation, and the cost of providing the minimum guaranteed benefits.

The liability created by the investment guarantee could be evaluated using option-pricing techniques or stochastic simulation.

- Option prices: the maturity guarantee corresponds to a European style put option written by the insurer with an exercise price corresponding to the maturity guarantee.

  The market-consistent valuation of the guarantee is assessed by determining the current market price of corresponding put options.

- Stochastic simulation: A stochastic model is employed to determine a probability distribution and expected value of the shortfall in the value of unit-linked assets relative to the GMVs.
  The stochastic model would be calibrated to market-consistent variables at the date of the valuation such as the correlation matrix of returns between asset classes and asset price volatility.

As there is unlikely to be a highly liquid active market for decrement risk, it is not possible to determine a market-consistent valuation assumption, so the assumptions are likely to be set using either industry statistics or internally available best estimate assumptions as a starting point.

The expense assumption might be determined by reference to expense agreements available in the market such as from third party administration companies.

The expense inflation assumption might be based on the difference between the current market yields of equivalent fixed-interest and index linked bonds.

Projected cashflows based on best-estimate assumptions would underestimate a market-consistent liability because a potential purchaser of freely-traded liabilities would require additional compensation for the risk that the liability should turn out to be more costly than the calculation based on best-estimates.

To allow for this uncertainty an appropriate margin would be added to the various best-estimate assumptions.

Some market-based indicators for some of these parameters might be available, and would help determine the suitable level of margin to use.

Overall the answers were very poor. This was disappointing, given the increasing importance of market-consistent valuations and the coverage of the topic in the notes.

In part (i), despite it being bookwork, a number of candidates were not familiar with the basic differences between financial economic and traditional actuarial approaches.

In part (ii) common problems were:

- *Very few candidates made the obvious comment that the total reserve is the sum of the unit and non-unit reserves;*
- *Almost no-one specified the simple formula for unit reserve = bid unit price x No. Of units. A number of candidates set the unit reserve equal to the underlying asset value. While it should equal the value of assets, it might not be (e.g. due to errors in unit pricing) in which case the liability to the company is not equal to the value of assets.*
- *Some candidates assumed there is only a unit reserve and a reserve for the guarantee, and some candidates only considered the reserve for the guarantee.*
- *A number of candidates misread the question and made points around guaranteed death and surrender benefits (and not maturity benefits).*
- *Many candidates took the approach of finding the replicating portfolio, and treated this as an investments question, assuming it is a simple matter to find such a portfolio. Many candidates ignored the uncertainty in cashflows created by decrements and expenses.*
- *Many candidates took the approach of valuing the maturity guarantee liability as the value of a zero-coupon bond portfolio that will replicate this liability, without any deduction from unit reserves. This is over-prudent, as it requires the insurer to hold this reserve in addition to the unit reserve (and non-unit reserve for expenses etc.), and assumes that 100% of this guarantee reserve will be required 100% of the time in addition to the unit reserve.*
- *Despite being bookwork, few candidates were able to discuss correctly the methods for valuing guarantees (European put options and stochastic approach).*

QUESTION 5

i. Possible reasons for differences might include:

- Different model structures, including:
  - Distributions assumed for asset class returns (incl. skewness and kurtosis);
  - Different assumed long-term relationships between variables;
  - Different variables assumed to be mean-reverting e.g. dividend yield (Wilkie) or real short term interest rate (Barrie-Hibbert);
  - Different 'base variables' that are generated randomly and used to determine other projected or 'derived variables' (e.g. using projected dividends or inflation to derive share prices);
  - Frequency of projected returns and cashflows e.g. monthly vs annual;
  - Different allowance for changes over time in projected asset volatility or correlations between returns.
- Different input assumptions used due to:
  - different model structure requiring different inputs;
  - calibrated to market variables on different days;
  - errors.

- Other factors, including:
  - Results not comparable e.g. if based on different number of runs, projection period, or liability/model point data;
  - Results might be misinterpreted (e.g. if the output is in a complex unfriendly format).

ii. Factors to consider in deciding the choice of model:

- How well do the internal and commercial models measure up against one another in terms of being "good" models fit-for-purpose? i.e.
  - Model output should be representative and realistic/plausible: the model should mimic the behaviour of assets by capturing their most important characteristics;
  - Output needs to be clearly displayed, understandable and easily communicable
  - Economic interpretation: the behaviour of the assets should be consistent with generally accepted economic principles e.g. no-arbitrage principles;
  - Model should be flexible enough to easily run alternative parameters or change assumptions such as asset return distributions and for subsequent refinement;
  - Joint behaviour of model variables should be realistic (e.g. inflation and interest rates);
  - Simplicity: model should avoid being unnecessarily complex to enable scenarios to be generated quickly and errors to be identified and corrected easily;
  - Should be able to easily integrate with existing valuation and other software;
  - Model should be fully documented and auditable;
- Practical Issues:
  - Cost of commercial model (initial and ongoing) compared to continuing with in-house model;
  - Level of support available for implementation, operational use and future development of commercial model compared to level of in-house expertise;
  - Level of acceptance of the commercial model by regulators and other insurers.
  - A new model is unlikely to be consistent with the previously used model, which can create some issues, for example valuation and financial results might differ, and it might be difficult to explain the difference to management and shareholders;

The standard of answers varied, with better candidates scoring reasonably well.

In part (i): Some candidates did not seem to realise that an asset model is unlikely to include specific features of the insurer's products and guarantees (which will be found in the liability model). However to the extent that differences in the liability model/assumptions might have contributed to a difference in results, credit was given to candidates if their points were reasonable.

Part (ii) was answered well by candidates that thought, and wrote, about the attributes of a good model. A number of candidates made vague and/or thoughtless comments. For example, a number of candidates spoke about using the "more accurate model" without explaining how

"accuracy" can be assessed (or thinking whether it is even possible to assess "accuracy"). Some candidates suggested using the model that gives the lowest cost of guarantees!

Very few candidates thought of the key issue of maintaining consistency of results with previously used models.

QUESTION 6

i. Uses for Asset Shares include:

- Bonus Declarations
  - Comparing the accrued liability to asset share, gives an indication of the surplus available for distribution
  - Assists in deciding on the size of terminal bonuses (UK style) and sustainability of reversionary bonuses

- Monitor Fairness
  - The asset share relative to the benefit due (particularly where there is a discretionary component), could be used to monitor fairness across tranches of business & policies

- Surrender values
  - On average the benefit on surrender (or liability after a policy alteration), should not exceed the accrued asset share

- Market Value Adjustment Factor
  - The asset share compared to the smoothed benefit (under a unitized with profit contract), gives an indication of any market value adjustment factor that may be required

- Policy alterations
  - On average the value of the benefit after alteration should not exceed the accrued asset share

- Profit Distribution
  - Gives an indication of surplus arising, which can then be shared between policyholders and shareholders (often on a prescribed basis like 90:10)

- Planning
  - Projection of solvency position of fund / company over time
  - Expected profitability of a book of business **OR** monitoring the effect of actual experience being different to the expected experience on a book of business
  - Capital requirements of the company

ii. Practical problems:

- Assets on WP and NP (or different WP groups) are likely to be combined. A decision is therefore necessary on how to allocate the actual investment returns to areas of business (e.g. shareholders, term assurance and WP) and between tranches of business
- This may also be dependent on the appropriate asset mix for each of the tranches of business
- The actual investment return cannot always be directly observed (e.g. on less marketable assets like property). Some approximate method will be required to determine the investment return on these assets e.g. the use of indices
- Available indices may not accurately reflect the actual underlying assets held
- The return allocated to the asset share may be smoothed over time. The extent of smoothing is subjective
- Investment returns should be net of tax
  - Need to allow for the accrual of tax on unrealized gains
  - There may be relatively complicated expense relief calculation that can only be approximated in advance e.g. different tax rates on capital gains and interest/rental, expense relief also dependent on allocation of expenses
- The actual investment return needs to be reduced by investment expenses. Some approximations may be required
- The data quality and detail necessary for calculation may not be available
- "Accurate" calculations may only be done periodically. Some approximation is required for the intermediate terms
- Some policies may provide working capital and an allowance for the cost of capital needs to be made which may be difficult to determine

Part (i) was a straightforward bookwork question and most candidates performed well. Candidates that did not score well on this question generally just "listed" uses where the question required a brief description of the use. Some candidates wasted time giving more than the four uses asked for (only the first four listed gained credit if more than four were given).

Answers to part (ii) were generally poor, with most candidates only able to describe a limited range of practical problems.

QUESTION 7

Principles:

- PRE
  - As determined by past practice, policy documentation and past experience
  - Do not create unrealistic policyholder expectations
  - Where the source of the surplus can be viewed as once-off, this may be distributed by way of a special reversionary bonus to limit the effect on policyholder expectations

- Equity
  - Between different tranches of business
  - You do not unnecessarily want to defer surplus distribution, because shareholder profit transfer is often dependent on bonus declarations (e.g. 90:10 rule)
- Financial soundness of company and "scheme" / level of free assets
  - Ensure bonus rates are sustainable, given long term assumptions
  - Relatively higher RB increases guarantees and affects the statutory solvency position
  - Ensure company has the ability to deal with potential adverse experience in the future
- Availability of shareholder capital
  - To absorb adverse experience
  - For working capital (with profit fund could be a source of working capital)
- Consistent with the company's investment strategy
- Consistent with the company's (stated) bonus philosophy
  - Extent of smoothing
  - Comply with the description in the policy documentation and the scheme's with profit guide
- Rates should be competitive compared to competitor rates (subject to affordability).
- If it is not competitive it could
  - Negatively affect new business volumes
  - Increase surrenders
- Bonus rates should be sustainable in the short term to prevent frequent changes to the interim bonus rates
- Consistent with any professional guidance notes / regulation
- Tax
  - The bonus declaration may have implications for any tax liability
- Business Objectives / Strategy
  - The bonus declaration should support any business strategy (e.g. new business acquisition), subject to principles outlined above

*The majority of candidates were able to outline most of the principles and thus most scored well. Some candidates described the alternative methods of distribution (e.g. simple reversionary bonus versus compound reversionary bonus) in some detail, where the question required an outline of the main **principles** for surplus distributions. Such answers did not score well.*

QUESTION 8

i. Principles for surrenders:

- Feasibility:
  - Consider any legislative requirements/restrictions and market practice in the country.
- Affordability:
  - Over all policies (and over time) the Asset Share (less the costs of the surrender) is the maximum the company can afford to pay out without making a loss.

- As losses are inevitable at early durations (when asset shares may even be negative) the company may compensate by having surrender values below asset shares at later durations.

- The company should treat withdrawing and continuing policyholders equitably:
  - Thus on surrender of a non-profit contract the office may try to recoup a similar amount of profit as it would had the contract not been surrendered
  - This is not always possible (or desirable as it can be argued that the office has no entitlement to future profit on premiums not yet paid)
  - For practical reasons the company may end up using a blend between surrender values being based on:
    - asset shares initially (when > 0), moving towards
    - a prospective method (with realistic assumptions) later on, where full expected profit is then retained by the company
- The values should be consistent with policyholder's reasonable expectations (PRE). This could include:
  - consistency with quotations at outset
  - reasonableness of early surrender values relative to premiums paid (or premiums plus some interest)
  - running smoothly into maturity values (which may on occasion involve paying more than asset share – which should only be done where absolutely necessary owing to the principle of affordability)
  - having regard to competition and auction values (if any)
- Practical Issues:
  - the method should be well-documented
  - it should be simple to apply and easy to explain
  - the scale should not change too frequently owing to the administrative work involved
  - anti-selection should be avoided, e.g. selective withdrawals or financial anti-selection, and surrender values should take account of financial conditions
  - surrender values, in conjunction with new business premiums, should not encourage lapse and re-entry
  - surrender values should be stable, i.e. small differences in policies should produce small differences in surrender values
  - whether any "blending" is required between an old and a new surrender value scale
  - surrender values should be consistent with any other alterations offered

ii. Possible alterations to the endowment assurance:

- Reduce the sum assured
- Increase the policy term (leaving the sum assured unchanged)

iii. Considerations that apply to both alterations:

- The alteration should be supported by the Asset Share, on average
  - Given that the alterations happens so early in the contract term, the asset share is likely to be negative and the company should consider how to recoup this loss (if possible)
  - With a reduction in the premium so early on in the product term, commission clawback is likely and could be used to decrease the strain on alteration
- A reasonable profit should be allowed to emerge
  - At the date of conversion, and
  - Over the future lifetime of the policy, given the risks and PRE
- The alterations should be consistent with PRE and be fair
  - Altered policy should be consistent (in terms of sum assured & term) with new business sold at the revised level of premium
- Allow appropriately for expenses on alterations
- Impact of the alteration basis for these alterations on the surrender benefit
  - The SV before the alterations and the SV benefit immediately after the alterations should be similar to minimize the lapse and re-entry risk.
- Practical issues
  - The method should be stable over time
  - The method should not be too difficult to apply or explain to the policyholder
  - The alteration basis should be well documented
  - Avoid "strange" results, e.g. the 25% reduction in premium producing a vastly disproportionate decrease in sum assured (or increase in term)

Differences:

- Reduction in sum assured
  - Ensure consistency with paid-up values (the limiting case of a reduction in sum assured as a result of a reduction in premium)
  - The basis may need to allow for the cost of death cover already provided
  - With a reduction in the death benefit, arguably less profit should be extracted (in absolute terms), from the altered policy because the risk is reduced
- Increase in policy term
  - Additional underwriting may be required
  - Where commission is term related there may be additional commission due
  - The additional renewal expenses will need to be included in the alteration basis

Part (i) was an easy bookwork question with an extensive range of valid points that could have been made. The majority of candidates scored well.

Answers to Part (ii) were reasonable, with the most common mistake being the suggestion that a ***decrease*** *in the policy term would lead to a reduction in premium (which is not the case for an endowment assurance).*

Part (iii) was very poorly answered on the whole. Candidates who scored well on this question highlighted a range of issues. A common mistake made by candidates was to merely list a range of points, instead of comparing and contrasting how the issues raised would affect the two alterations.

QUESTION 9

i. Needs met:

- Can provide for liabilities due on death, e.g. funeral cover, inheritance tax, etc.
- Can pass on wealth from parents to children in a tax-efficient way
- Can provide a savings element through the unit fund
- The surrender value can provide emergency funding prior to death if required

ii. a. Investment Performance:

- Not a significant direct risk if monies to be allocated to units are invested immediately in the unit fund
- There is an indirect impact on profitability as poor returns will lead to lower management charges than anticipated
- As the charges in this design are unit related, the risk could be significant (as the charges may be vital for profitability).
- Poor investment performance will lead to unhappy policyholders and bad publicity and a competitive disadvantage, which reduce sales and increased withdrawals.
- While the variable management charge can reduce the risk associated with low charges when units under-perform, increasing the rate of management charges would increase policyholder dissatisfaction.

b. Expenses:

- The risk is that the expenses are not covered by the management charge
- The level of expenses will be uncertain because the office is entering a new market with a product new to that market, e.g. admin., development & marketing costs
- The costs of implementing premium reviews may not be known up front.
- Changes in the mix of business from that anticipated is also a problem as there are likely to be cross-subsidies involved in expense recoupment (between policies with large & small unit funds)
- Lower than expected new business volumes is also a risk as fixed expenses may not be adequately recouped
- More withdrawals than expected may result In overhead expenses not being covered, although the surrender penalty may reduce this risk.
- Higher than anticipated inflation may be a big concern as the terms of cover may be fairly long
- Charges are fund-related and so might be expected to beat inflation
- There is a mismatch between expenses and charges (in both currency and timing)

- Reviewable charges can in theory protect the company. However, the company may not be able to review charges owing to factors such as policyholder reasonable expectations and competitive pressure.

c. Mortality:

- the risk is that the office underestimates mortality (when the unit fund is below the guaranteed death benefit)
- the office has no experience in this market and so needs to source appropriate assumptions elsewhere, e.g. from a reinsurer
- the extent of the risk will depend on how applicable the data used are
- adequate allowance for the uncertain mortality should be allowed for in pricing, although reviewable charges should alleviate some of the pressure in this respect
- the reviewable charges and premiums may encourage the office to make unrealistically low estimates of future mortality in pricing and reserving bases
- even though adverse mortality experience can in theory be dealt with by reviewing charges and premiums it is not certain that the market will accept significant increases at that time
- anti-selection will be a problem since the initial premium for a given level of cover should be lower than that of competitors offering conventional whole life products (owing to reviewable charges and premiums only being guaranteed for 10 years)
- selective withdrawals are also a risk, in particular at the time of premium review
- if mortality experience is favourable, the office may come under pressure to reduce mortality charges (and premiums at review)

iii. Risks faced by policyholders:

- Benefits not received
  - through insolvency of insurer
  - there could be a challenge by the insurer based on incorrect information supplied by policyholder at outset, e.g. if there is a pre-existing condition exclusion
- Benefits less valuable than expected
  - performance of the assets underlying the units worse than anticipated (even negative), resulting in lower benefit payments
  - currency risk as units are not denominated in local currency
  - benefits eroded due to regular charges increasing at a rate greater than expected
  - benefits on surrender being lower than anticipated owing to surrender penalty
  - benefits not properly explained (e.g. assumed they will keep pace with inflation)
  - unanticipated increases in costs which the policy was intended to cover
  - not received when expected
  - taxation changes impacting on amounts received
- Higher cost than expected
  - premium may become unaffordable after the premium review
  - (inexperienced) insurer may have been overly optimistic with initial assumptions

iv. Recouping initial expenses:

- Initial expenses will have to be recouped through the management charge as this is the only charge (other than the benefit charge) on the contract.
- The management charge will thus need to be higher than required to merely recoup renewal expenses, and could either be increased on all units issued or only on "Capital units" issued during an initial period (less popular nowadays).
- In either case a unit-related surrender penalty will be required to recoup outstanding initial expenses on early surrenders
- Actuarial funding can then be employed to reduce new business strain, viz:
  - initially purchase fewer units than notionally allocated
  - purchase the "missing" units over time from the future unit-related profits (associated with the extra management charges on the units)
  - a lower unit reserve is permissible because the full unit fund is only required on death, which thus reduces new business strain
  - the larger initial cash flow produced provides a better timing match for initial expenses, and reduces the company's exposure to the investment risk

Overall the question was not answered well.

In part (i) several candidates only looked at the benefits of the policy relative to conventional non-profit business, instead of giving the general needs met.

In part (ii) several answers were too generic, for example listing "model risk, parameter risk and random fluctuations risk".

In part (a) some answers would have been better suited to the risks posed by a conventional policy. Many candidates also spent a lot of time describing how the guaranteed minimum death benefit poses an investment risk, with several candidates treating it like a maturity value guarantee. This guarantee only presents a risk in terms of the rate of benefit charge not being appropriate (i.e. mortality risk).

In part (b) it should be noted that high expenses, per se, are not a problem (as these can be allowed for if known in advance) – it is expenses greater than expected which pose a problem.

In part (iii) the question asked candidates to "outline briefly". It is thus not sufficient to simply list generic factors such as poor equity investment performance, high charges, etc., without indicating why these are risks for the policyholder. Candidates did not always differentiate between premium increases and increases in charges.

In part (iv) most candidates did identify actuarial funding as the way to reduce new business strain, but failed to give an adequate description of the method.

END OF EXAMINERS' REPORT

