

2 November 2012 (am)

**Subject F202 — Life Insurance
Specialist Applications**

EXAMINERS' REPORT

Question 1

- (i) Describe the product features of a risk only CI product in the South African market.**

This was a straightforward question and was well answered.

Pays out on diagnosis of pre-defined list of illnesses or events

The payout could be a lump sum or income

The product may include a “catch all” definition

Pay-out may be linked to the severity of the disease but should not indemnify the policyholder. This would cause demarcation issues.

Benefit will only pay out after a survival period, typically between 14 days and a month

The policy may pay out more than once, but likely only for unrelated claims

The benefits will need to be meet ASISA SCIDEP requirements

The product would typically be a WOL product but could also be term

Stand alone or accelerator versions

Core or comprehensive versions

Various premium paying patterns, ranging from risk rates to level premium

Annual cover increases will be available

The product will not have any surrender values

Premium guarantees will be available but not for the entirety of the contract, typically up to 15 years

There could be guaranteed insurability options

There will be minimum and maximum entry ages

- (ii) Describe how the company can manage the insurance risk on their CI products through product design, the claims and underwriting process as well as any other tools available to the company.**

This was generally well answered. However, quite a few candidates covered more than just insurance risks in their answers. Some did not identify analysis of experience as a key manner in which the insurer should manage its risk.

Product Design

The product must cover insurable risks. In this sense the product should not cover diseases that have extremely high incidence or are inevitable, should not attempt to encourage anti-selection and the claims amounts should also be definite in nature.

In limiting anti-selection risk the cover amounts offered should be limited. A CI benefit can represent a windfall (benefit not directly related to needs) and this can cause anti-selection problems and conflicts with one of the basic principles of insurance: the matching of loss to benefit.

The company should also only offer diseases for which it is able to underwrite out the anti-selection risk.

CI definitions and severities should be totally unambiguous and there should be no overlap. The company will not want to be pay higher claims values than anticipated in pricing for any CI diseases or severities.

The company should check what is offered by other companies in the market in terms of CI products. If the company offers any additional benefits (more diseases, higher covers, more options) then it increases the risk of anti-selection. If UW is less than competitors, anti-selection risk is also increased.

The company increases its insurance risk the more guarantees and options it offers in its product. These should be limited unless they can be accurately priced for or the company is willing to take the extra risk in and potentially requiring higher solvency capital related to the product.

Limiting guarantee terms also allows the product to be re priced.

The product guides and literature should set clear policyholder expectations in terms of which diseases are covered and to which degree. This would also limit reputational risk.

Include contractual ability to revise claim definitions to adapt to changing medical environment – but clients likely to be wary of this.

Underwriting

Underwriting is one of the most important risk management tools available to the company in managing the insurance risk posed to the company through a CI product.

Underwriting attempts to ensure that the pool of lives covered under the product are aligned to the risk assessment criteria and assumptions used by the pricing actuary.

Underwriting also allows the company to prevent or at least limit anti-selection by potential policyholders.

The company will need to set UW requirements both in terms of what medical info is required and at what levels of cover the UW will apply from. Need to balance benefit of extra UW info against extra cost of UW and deterring clients.

Companies can also make use of the ASISA life register. A record is kept of all persons underwritten for insurance who were offered a loaded premium rate or declined cover.

The company can also use financial UW. The potential policyholder will need to prove the need for the amount of the cover. This allows the company to ensure insurable interest and is also a control against anti-selection.

Waiting periods may be used to limit anti-selection, to replace / supplement initial underwriting.

Continuous UW can be employed, e.g. better terms to those who regularly exhibit good health or 'healthy behaviour', such as maintaining a certain level of fitness or BMI.

Analysis of experience

Frequent analysis of the various components of experience and the processes is an important step in the actuarial control cycle. Results should be fed back into the design and pricing process.

This should include:

- Rates. Actual versus expected experience analysis split into all the rating factors and diseases if possible. Being able to point to the source of underwriting profits and losses within the CI portfolio and identify any trends
- Claims. Assessing the claims that are paid and declined and are these in line with expectations and pricing. If there appear to be too many declines is there potentially a problem with PRE, product documentation or the sales process?
- Underwriting. If there are more claims than expected it could be that the underwriting process is allowing through too many sub-standard cases, or these cases may not be rated correctly.

Any part of the product or process that is not performing as expected should be corrected in order to ensure that new business is not acquired on loss making terms and that adjustments can be made to the in-force business portfolio where possible.

Claims Management

Claims management (or claim underwriting / claim control) is initially concerned with ensuring that the company pays the correct claims. These would be the claims that the actuaries would have assumed and allowed for in pricing.

The company can “underwrite” at the claims stage if there is suspicion of non-disclosure. Obtaining evidence can be difficult and can be viewed negatively by the market.

CI contracts will usually be underwritten both at entry and on inception of a claim

Reinsurance

Reinsurance is mainly used to assist in managing insurance risk.

This could be achieved through reducing the company’s exposure to large claims and subsequent claims volatility through some form of surplus treaty.

If a company is entering the CI market for the first time or introducing a new CI product in its offering then a QS treaty may be suitable where the reinsurer takes most of the risk until the company builds up its own experience until comfortable enough to take more of the risk themselves. Although less of an issue for a large company such as this, with 10 years of experience.

In return for a reinsurance treaty a reinsurer will also often offer technical assistance which is important for CI products.

Often a lot of research and analysis needs to go into setting CI rates and drawing on a reinsurer’s pooled (and international) experience is sometimes required.

Reinsurers may also provide technical advice on how to underwrite (both at outset and claims stage) difficult cases.

Treaties with reinsurance partners could also contain a profit share arrangement. This provides a further insurance risk management advantage of closely aligning the interests of the parties when it comes to rates, underwriting and risk management.

(iii) Describe the potential reasons for the differences in the two sets of views of the profitability.

This was a more difficult question, requiring candidates to view profitability from a different perspective. Most candidates demonstrated good insight.

The company could be looking at their gross or net of reinsurance result and the reinsurer would be looking only at the reinsured result which could be different.

If the reinsurance is quota share the experience of the reinsurer should follow that of the company.

If the reinsurance includes any surplus then the two portfolios are likely to look different with the reinsurance portfolio being more heavily weighted with the policies with higher cover amounts. Any large claims in the experience would impact the reinsurance experience (adversely) more heavily.

It may also be that the company only reinsures a subset of its CI products.

It could be that the two parties are not looking at comparable results in terms of the definition of a “profit” or a “loss”

The reinsurer could be looking at the underwriting result (in terms of risk premiums and claims) and the company could be looking at overall profitability of the portfolio. While its underwriting result may also be negative there may be other sources of profit (lapse, investment, expenses) that offset this.

If the reinsurance is on a risk premium basis then lapses would not be a source of profit or loss for the reinsurer.

It could be that the two parties are not looking at comparable results in terms of how the result is measured.

It could be that the reinsurer is referring to one of an actual vs. best estimate analysis or some sort of valuation (e.g. FSV) result and the company another.

Even if they are both referring to valuations results, either company’s views on the assumptions used, IBNR and margins added in the valuation would result in differences in result.

The premium bases may be different. The reinsured portfolio may be entirely on a risk premium basis and the insurance premiums may be on a number of different bases. The reinsurance premiums may also be on the same basis but at a different level (reinsurer may have taken a more aggressive view)

There is a timing difference in information between the insurer and reinsurer. There will be a lag between a new policy or claim occurring and being captured on the company’s systems and a further lag before it gets to the reinsurer. The longer the lag is, the larger the difference in information between the parties and the larger the possibility of differences in results. This is made worse if the reinsurance accounts are annual.

There may be data errors on either side, or in the info given by the insurer to the reinsurer.

- (iv) **The statutory actuary has asked you what the likely impact on the company would be in terms of its CI portfolio if such an initiative was ever introduced in South Africa.**

Candidates found this difficult. Many did not produce sufficient relevant detail. Few identified UK experience as a useful source of information. Some candidates thought that the screening would be only for cervical cancer, but most of the points made were still relevant.

Any screening programme would only impact CI experience to the extent that the diseases screened for are covered under the CI products.

A screening programme would be likely to increase awareness of the diseases and as such it could lead to an increase in the number of people applying for policies and consequently sales.

On the other hand, as people become more aware and more knowledgeable about their own state of health, there would likely be an increase in the number of CI policy applications that are anti-selective. Underwriting accurately would become even more important.

You could investigate what the UK experience was as these programmes were introduced. What happened in terms of the market (changes in sales, products offered) and what happened to claims incidence. A reinsurer/insurer with experience in the UK market is likely to be able to assist.

With regards to the claims experience:

- Screening would result in earlier diagnoses in general if people were invited to be tested for free rather than initiating tests on their own behalf.
- Diseases that are picked up earlier would generally result in treatment before reaching a stage severe or advanced enough to disable a person or threaten their life.
- On this basis you would expect better mortality and disability experience after screening is introduced but not necessarily CI.
- Early diagnoses may not be severe enough to trigger a claim, however, if your product has lower severity definitions with a lower payout some of these earlier diagnoses could result in additional claims.
- Screening could also result in more diagnoses as some diseases would have gone unnoticed until either an unnatural death occurred, the disease resulted in death (cancer, heart attack, stroke for example) or the severity of the disease was not bad enough to impact the quality of life at all.

The points above indicate that the CI experience is likely to get worse.

The impact would also be gradual over time as the tests are rolled out to everyone over a number of years. The full impact would not be immediate.

Question 2

- i Describe the minimum sensitivities to be disclosed when reporting embedded values.**

This was a bookwork question, but was not well answered.

100 basis point *increase* in the risk discount rate(s).

100 basis point *pa reduction* in the interest rate environment, which should allow for all consequent movements in the future expected returns, bonus rates, inflation rates and risk discount rates.

10% *decrease* in equity/property capital values at the valuation date, without a corresponding fall/rise in dividend/rental yield.

100 basis point *pa increase* in the expected return on equity/property assets (as a change in the equity or property risk premium with no consequential changes to discount rates). This sensitivity is not required where a bottom-up market consistent approach has been adopted for calibrating discount rates.

10% *decrease* in maintenance expenses (i.e. the ongoing cost of administering contracts).

For value of new business only, a decrease of 10% in acquisition expenses other than commission and commission related expenses.

10% proportionate decrease in lapse, paid-up and surrender rates. This sensitivity should reflect a single, sustained downwards movement in persistency rates. Separate analysis of contracts that are either positively or adversely affected by reduced lapse rates is not required.

5% proportionate decrease in base mortality and morbidity rates (disclosed separately for life assurance and annuity business).

Minimum sensitivities required by ASSA professional guidance (PGN 107)

- ii Describe how you would allow for future automatic regular premium increases when calculating the Statutory Valuation Method liabilities and the Embedded Value.**

This was a simple question, but many candidates did not understand that the EV would contain best estimate cash flows, while the SVM liabilities would not be reduced in respect of the take up of future options.

SVM liabilities

Schedule 3 to the Long-Term Insurance Act applies. (Paragraph 5)

Expected profits should not be recognised in respect of future options expected to be taken up (e.g. automatic regular premium increases).

But expected losses in respect of such options should be recognised.

We expect profits (not losses) from future automatic regular premium increases. These profits will not be recognized when setting up the reserve (i.e. SVM liability).

Business may be grouped into broad categories with similar expected take-up rates of the options. Only the net loss in any category (if any) needs to be recognised.

Embedded Value

ASSA professional guidance (PGN 107) applies.

Future automatic regular premium increases (whether the level is specified or not, and whether they are contractual or take place unless the contract owner specifically cancels them) will be included when calculating the embedded value, **even though they may not** be included in the calculation of the Statutory Valuation Method liabilities.

Future cash flow relating to in-force business should be best estimate: i.e. assumptions regarding their amount and timing should be made that are consistent with other projection assumptions and based on reliable evidence.

iii Given the replacement of secondary tax on companies with dividend tax, discuss the expected impact of this on the embedded value in the first year after implementation.

Most candidates had difficulty in working out how, in practice, the tax change would be reflected in a company's EV. Very few candidates mentioned VNB. Many candidates seemed not to realise that the shareholders had actually been taxed previously. Very few mentioned that the rate of the dividend tax is higher than STC.

Secondary tax on companies (STC) was an additional shareholder tax which was paid on dividends.

STC has been abolished from 1 April 2012. From 1 April 2012 a dividend with-holding tax will be levied.

Prior to 1 April 2012 a company paid STC equal to 10% of the dividend paid to the shareholders. Dividends received by shareholders were free of any tax. If a company received a dividend it also received an STC credit. These STC credits could be off-set against a company's STC liability when a company paid a dividend.

From 1 April 2012 a company will not pay any STC. But the dividend will be taxed in the hands of the shareholder receiving the dividend. The dividend tax is 15% of the dividend received. (Was originally expected to be 10%.)

The embedded value reported is net of any tax payable by the life insurer, but it does not take account of any tax payable in the hands of the shareholder. Therefore, the embedded value is net of STC but gross of dividend tax.

This implies that the abolishment of STC will result in an increase in the embedded reported by a life insurer.

The analysis of the embedded value in the year in which the life insurer implements this change (i.e. removal of STC) will not necessary be comparable with previous years.

Changes in the analysis of embedded value may include:

- VIF: A significant positive embedded value change will be shown under “Effect of tax changes”. This will represent the increase in embedded value due to the abolishment of STC.
- VNB: The reported value of new business will increase to reflect the removal of STC.
- VIF & Net worth: The expected transfer of profit from VIF to Net worth used to be net of STC. This implies that the total expected transfer of profit from VIF to Net worth will be higher in the absence of STC.

Question 3

(i) Discuss potential reasons for the proposal and factors the insurer should consider. Also describe the investigations that would be performed in assessing the proposal.

This was a simple question, and was well answered.

The primary reasons for increasing the offshore exposure are likely to be:

- Improved risk / return profile. Offshore investments may provide diversification benefits.
For example, some other countries offer investments in industries not available in South Africa (or other valid example).
- May have been prompted by a relaxation of exchange controls.
- Higher foreign exposure may be attractive from a marketing perspective. Such a move may be designed to match (or trump) similar investment shifts by competitors.

- The insurer (or in particular its investment management) may have formed a view that offshore investment returns are likely to exceed local returns over some time horizon (i.e. taking an active position).

Factors to consider would include:

- Compatibility with PRE and the company's PPFM - is such a change in accordance with what has been promised, and what clients expect.
- Bonus declaration policies may need to change in light of the new investment strategy.
- The insurer would have to consider how it would communicate any changes to clients.
- Increased offshore investments would imply an increased currency risk. The insurer would have to consider the degree to which it would want to mitigate that risk through currency hedging.
- Asset management charges tend to be higher on offshore investments. Will that be the case here, and can / should the insurer pass any increase in costs on to clients?
- The insurer should consider whether there would be any breach of the asset spreading requirements of the LTIA. It should consider both the proposed asset composition, as well as the position if there was a spike in the value of the offshore investments.
- The insurer should consider whether there would be a reputational risk - could the company be viewed as losing confidence in the local economy?
- The higher exposure to offshore investments would increase the importance of the asset class. It may be necessary to consider whether the investment expertise available is still sufficient. The insurer may consider whether an external manager (specialising in global markets) should be used.
- Depending on the countries in which the company would increase their investments, there may be increased political risk, or language barriers (if a new territory was being considered).

(ii) Describe the investigations that would be performed in assessing the proposal.

Candidates found this question difficult. Many mentioned stochastic models, but few could demonstrate how such models would be used to assess the proposal.

Investigations that should be performed to assess the financial impact:

The company would likely test a number of potential levels of offshore investments. Assumptions would also be required regarding the asset classes which would reduce to allow an increase in offshore exposure.

The expected returns would be assessed, and considered against the risk (volatility of returns or bonuses or some similar measures).

A cashflow model could be used to assess the impact on the smoothed bonus product.

An efficient frontier would be constructed to assist in deciding on the appropriate level of offshore investment.

The point on the frontier chosen would depend on the company's risk appetite.

To perform proper analysis, a stochastic model would be required.

The types of decisions that could be taken would depend on the sophistication of the model. For example, could different economies be modelled (or only the global economy as a whole, or a single economy such as the USA), and could offshore asset classes other than equities can be modelled (e.g. bonds or property).

The effect on the investment guarantee reserves required would be calculated.

An increase in reserves is likely, assuming the increase in offshore investments is at the expense of less risky asset classes.

Related to that would be the consideration about whether the guarantee / smoothing charge could or should be changed.

The impact on the company's CAR would also be assessed.

The fall in the fair value of the assets backing the liabilities used in the calculation of CAR would likely be increased (depending on which asset classes were reduced to allow increased offshore exposure), which would increase OCAR.

The company would also assess the effect on other measures, such as:

- a SAM / Solvency II basis
- any internal model used to determine required capital
- a measure of expected shareholder injections into the portfolio (and their variance and distribution)
- EV and reserves (if prospective reserves are held)

Sensitivity tests would also be performed to assess how the measures calculated above could vary in future.

(iii) Describe how the financial metrics mentioned above would change if the expenses were reallocated and all the calculations performed again.

This was a simple question, but very poorly answered. Very few candidates realised that the R 10 m increase in maintenance costs needed to be multiplied by an annuity factor. Many candidates thought that the impact on operating profit would be zero as they forgot about the change in reserves element.

The maintenance unit cost would be increased by R10m divided by the number of policies in force.

The issuing unit cost would be decreased by R10m divided by the number of policies issued in the previous financial year.

The VNB would be increased by R10m in respect of the reduced issuing costs, but decreased by the increase in the maintenance unit cost multiplied by the number of policies issued multiplied by a PV factor (the factor would reflect the effect of the maintenance expense in all future years as the book runs down).

The VNB would also be reduced by the extra cost of reserving associated with the maintenance costs.

There would also be tax changes, as the tax relief on expenses and tax on transfers would be affected.

The combined effect on the VNB is unclear. It would depend primarily on:

- The size of the block of new business sold compared to the in force book: the greater the proportion of the in force book that the new business constitutes, the more the VNB is reduced.
- The size of the PV factor: longer policy terms and greater persistency imply greater reductions in VNB.

The EV would decrease:

For prospectively valued products:

- The NAV would reduce to reflect the increase in reserves.
- The VIF would increase slightly because of the release of incremental margins on the higher expenses, but the overall effect on EV would be negative

For retrospectively valued products:

- Similarly to the VNB, the EV would be reduced by the increase in the maintenance unit cost multiplied by the number of policies issued multiplied by the PV factor (net of tax effects).

The impact on reserves would depend on the reserving basis.

For any products where retrospective reserves are used, there would be no impact (unless the prospective reserve now exceeded the retrospective reserve).

For those products where a prospective reserve is calculated, the reserve would be increased by the increase in the maintenance unit cost multiplied by the number of policies issued multiplied by the PV factor.

There would also be tax effects via the relief on expenses, and changes in the prescribed (and possibly also discretionary) margins held.

The profit for the financial year would be reduced by the change in reserves.

(iv) Discuss the issues that the insurer should consider when assessing this proposal. Also describe the impact on its financial position, as measured by its CAR ratio, which is currently 3.

This was a difficult question, and most candidates struggled. Many candidates did not consider the impact on CAR and thus expected the CAR ratio to decrease.

Zeroising the rand reserves introduces a discretionary margin.

The Statutory Actuary should consider whether the margin is necessary, either because the compulsory margins are insufficient for prudent reserving, or because it will defer the release of profit consistent with policy design or company practice.

Such a change in methodology would have to be disclosed to the Registrar in the statutory return.

This move would be in a different direction to SAM / Solvency II, where margins are removed.

While the reserves may be more stable, the profit may in fact be more volatile. This will depend on the degree to which the assets underlying the product have been invested to match the liabilities.

In any case, it will add complexity to the analysis of profit.

Impact on financial position

The CAR ratio is the excess of the insurer's assets over its liabilities, divided by its CAR, where all these values are on the statutory basis.

The reserves would increase, decreasing the excess assets.

To the degree that this loss could be offset against other profit, the effect would be dampened by tax on transfers.

CAR will decrease, primarily as a result of a reduction in the lapse risk CAR.

This is because there would no longer be a valuation loss when a risk only policy lapsed.

If the company is on a TCAR basis, CAR would reduce by approximately the value of the change in the reserves.

If the company is on an OCAR basis, CAR would reduce by approximately 40% of the value of the change in the reserves.

The CAR ratio would be expected to increase.

It would increase more significantly if the insurer is on a TCAR basis.

END OF REPORT