

May 2023

Subject F202 — Life Insurance

Specialist Applications

EXAMINER'S REPORT

QUESTION 1

A South African life insurance company sells a range of risk products on both an individual and group basis. The company is conducting an actual versus expected experience investigation for the disability benefits over the last 5 years.

The result of the investigation is that the risk experience has been:

- better than expected for the group and individual lump sum (permanent) disability benefits,
- as expected for the group income protection benefits, and
- worse than expected for the individual income protection benefits.

A colleague has remarked that it is strange that disability experience can run better and worse than expected over the same time-period.

- i. Discuss why the different outcomes for the various investigations into these products is not unreasonable. You should include consideration of the nature of the investigations, differences in the products and any other relevant factors.

This question was reasonably well handled. Better candidates could work through the most important product differences that would drive experience differentials and could apply sufficient detail to these sections. Many candidates didn't pick up on the point of the output of an Actual vs. Expected analysis depends as much on the E as the A. Two products could have similar claims levels but very different results if the expected claims levels are different. Better candidates also provided a better breadth of points around other factors that could impact the outcome of the analysis.

While these are all disability products, they are still very different products. There is no reason why the outcome of one investigation should be the same as others.

It is also important to understand what the expected basis is in each case.

The two income protection products could be experiencing similar claims levels, but the expected bases could be very different.

For the income protection business, the experience will contain an incidence and termination element and as such both need to be understood.

Lump sum and Income protection

While all the products cover morbidity (disability) risk, the lump sum and income protection products are very different products due to the way disability is defined.

Definition differences could be due to:

- Occupation-based
- Related to activities of daily living (ADLs) and activities of daily working (ADWs)
- Referring to functional impairment and physical impairment.
- Permanent or temporary disablement

As such, something that may influence the experience for one, may not impact the other in the same way.

The lump sum disability product would expect a lower claims rate than the income protection products and the expected basis should reflect this.

This is due to the definition (whether occupation, ADL or impairment) including the requirement for permanence. The income protection products would not require this stricter requirement.

Income protection claims also tend to have a higher proportion of subjective claims due to the more lenient definition and shorter waiting periods. This could lead to potential abuse which may have occurred over last 5 years.

Lump sum products

The individual and group lump sum products are likely to be very similar in terms of product rules and definitions.

The expected bases should be similar, and it would be surprising to see very different results emerge across the group and individual products.

The differences that emerge would likely be due to group covers being compulsory and not underwritten (below free cover limit) whereas the individual product is taken up on an individual basis and fully underwritten.

One way the experience could diverge was if one big group that dominated the experience was written and it had a particularly high disability risk.

The fact that the lump sum disability product is running better than expected more than likely means that the basis it has been priced at it is somewhat conservative and it may be easier to set a basis based off prior stable internal or market experience.

Income protection experience tends to be more volatile.

Income protection products

The two income protection products are likely to be different and have different bases.

This makes comparison of the experience investigation relative to each other difficult.

One important difference would be the waiting periods.

Group business generally has 3 and 6-month waiting periods but on individual products the waiting periods range from 7 days to 2 years.

The other important difference would be that the occupation-based disability definitions may also not be the same. The definition under group product also tends to change after a certain duration in claim.

As such the experience and expected basis for the two income protection products could be similar across the medium length waiting periods but the whole analysis could be swayed by very poor experience for the very short waiting periods on the individual income protection product.

This would have been the case during the COVID-19 pandemic. The large-scale rate of infections would have impacted the experience for 7 day waiting periods but would not have had a significant direct impact on group experience (in terms of claims rates).

Other product differences that could also lead to divergence in experience could be different:

- Replacement ratios
- Claim escalations
- Maximum benefits
- Claim length

It would be useful to analyse the experience investigation by some risk factors and especially waiting period.

It would also be necessary to look at the actual vs expected claims incidence and termination rates. While the claims incidence for individual income protection may be running as expected it may be the termination rates that are worse than expected.

Other factors

Other factors that could cause a divergence in experience:

The products could have different target markets that aren't allowed for adequately in the expected basis.

The products could be sold via different distribution channels or with different underwriting requirements.

There could have been external shocks which impacted some products and not others. COVID-19 would have impacted short waiting period products. Downturn in economy would also have impacted experience indirectly but this would have impacted income protection much more than the lump sum products.

The company may have different claims assessment philosophies or quality across teams assessing group and individual claims.

Individual business products are long-term policies. As such the book will grow each year with new business and contract with lapses – resulting in a growing in-force book over the 5 years.

Group business products are one-year policies which means the business can move easily every year and you could end up with a very different set of lives over the 5-year period.

We would also assume that the experience investigation is on a claims cost (amounts) basis. One should also look at a claims count analysis to see how much of the divergence could be due to volatility in claims sizes. Could a few large claims be driving the poor experience on the individual income protection product?

It would also be useful to look at any trends or outlier years over the period – even though 5 years is reasonably short.

There are concerns about the profitability of the individual income protection business. The company is considering the various options available to improve the profitability.

- ii. **Discuss the actions that could be taken to improve the profitability of the individual income protection business and the issues that may be encountered in implementing them.**

This question was well handled. Better candidates covered more actions and could identify the issues that could result through these actions being implemented.

Update the pricing basis and increase premiums for new business and for existing business.

Increased new business rates should be checked against competitor rates in the market. Increased rates may impact distribution support and sales.

Ability to increase existing business rates would depend on the existence of any premium rate guarantees in the product.

If guarantees exist, not all policies would have elected this and as such there will be a mix of guarantees within the in-force book.

Any increase would therefore go through in each future year as each policy reaches the end of its guarantee period.

Increasing rates on existing business should also be assessed against TCF guidance and reputational risk must be considered.

Perform an assessment of claims assessment/management performance. Is the company admitting more claims than expected or getting fewer claimants back to work than expected?

Strengthening claims practices if they are found to be weak would improve profitability.

The company cannot arbitrarily attempt to pay fewer claims though. Valid claims must be paid.

Strengthening claims practices (even if justified) could also pose reputational risk.

Strengthen underwriting levels.

This would only impact new business though and could impact sales.

Adjust generous product features that may encourage claims behaviour:

- High replacement ratios
- Very short waiting periods

- Etc.

If the actual claims are higher than expected due to large claim volatility the company could reinsure claims above a certain level.

This would protect against volatility over short-term periods but the reinsurer would expect to make a profit and in the long-term profitability (net of reinsurance) could be worse.

Assess whether the poor experience is concentrated in:

- One aspect of product (e.g short-waiting period)
- One distribution channel (e.g direct)

And either stop sales in this area or focus business mix away from these.

When the company was completing the results for its published reporting, South Africa was in a high inflationary environment. Inflation was higher than the South African Reserve Bank's targeted band of 3% to 6%.

iii. Set out the factors relating to inflation that will need to be considered when setting up the claims in payment reserves for the income protection business.

This question was not handled as well as the examiners expected. Too few candidates picked up on the interaction of higher inflation with the likely changed interest rate environment as an important factor and not just the actual inflation rate.

It would be important to understand the entire interest rate environment. i.e. need to know whether yield curve has moved as well or changed shape.

Nominal yields will generally move with inflation expectations.

For claim payments that are real in nature (inflationary increases) it is the real yield that is more important. This would be the difference between the nominal interest rates and inflation rates.

Need to understand the interaction of these on the actual reserving basis / methodology. (Is a nominal yield curve used and a point estimate of inflation? Are real market yields available for all durations necessary?)

Need to consider how many of the claims are impacted. Products normally offer options for no increases, fixed increases, or inflationary increases.

Will need to consider the inflation outlook. Are the current inflation rates likely to be persistent, and if not for how long will the raised inflationary environment remain?

iv. Outline the likely impact of higher inflation on the reserves.

Similar comments to part iii apply. Better candidates could pick up on changes in real and nominal rates alongside higher inflation, and could link these to impacts on the reserves for products with different benefit increases.

For claims where payments are linked to inflation, it is the real interest rate that will determine the impact on the reserves. If both inflation and the nominal rates have risen in line with each other there may not be a big impact on the real rates, and as such reserves.

However, many products will set a maximum increase rate for products with inflationary in-claim increases. If inflation is above this rate then the full inflationary increase won't be passed on to the claimants. In these cases a reduction in reserves could occur if the nominal rates have risen as explained in above point. (As a result of the impact of discounting).

For products with fixed increases the impact would be similar to those where a maximum increase has been reached.

For claims with no increases there could likely be a reduction in reserves if the nominal rates have risen with inflation.

For all of the points above the impact will also be linked to how long this scenario is expected to persist.

QUESTION 2

IFRS 17 is the new accounting standard for insurance business that comes into effect for accounting periods after 1 January 2023. Under IFRS 17 the Contractual Services Margin is the main mechanism for allowing insurance profits on a group of policies to be reported over the lifetime of the group of policies in line with general accounting principles.

- i. Outline what the IFRS 17 Contractual Services Margin (CSM) represents and how it is built up for policies valued using the General Measurement Model.**

This question was handled well by most candidates.

The Contractual Services Margin (CSM) can be seen as the discounted value of expected future profits from a group (cohort) of policies.

CSM represents unearned profit. One of the objectives of IFRS 17 is that profit is recognised as it is earned, and the creation of the CSM facilitates this.

The CSM is a retrospective reserve.

The CSM is not calculated on a per policy basis after the initial determination.

At each reporting date after inception of the group of policies, the CSM is built up in a retrospective manner allowing for:

- Interest on the CSM based on the discount rate at inception (accretion).
- A reassessment of fulfilment cash flows relating to future service, i.e. the CSM is adjusted by (or unlocked for) the change in value of the best estimate liabilities and risk margins due to non-financial variances or assumption changes as well as variances in cashflows that relate to future service.
- An amount released from the CSM into profit in recognition of services provided to policyholders in the period.

Since CSM is calculated per cohort, there is no new business element in the build-up of the CSM for an existing group of policies.

Instead, new business creates a new layer of CSM, which has its own build-up from point of sale to valuation date.

For gross/underlying insurance contracts, the CSM cannot be negative. If a group of policies is deemed to be loss-making (onerous), either at initial recognition or subsequent measurement, then the loss is recognised immediately.

The release of CSM in a reporting period is based on the proportion of services provided in that period relative to services provided over the entire service period. The mechanism for the release is coverage units, which represent the ‘amount’ of service provided in the reporting period. The formula for the release of the CSM (which is calculated on the end of period CSM) is $A/(A + B)$, where

- **A represents the coverage units utilized in the reporting period; and**
- **B represents the coverage units for the periods after the valuation date.**

ii. Discuss the suitability of using undiscounted and discounted coverage units for future service in the CSM release formula.

This question was not handled well by many candidates. Too many candidates focused on the fact that some units (like lives) can't be discounted as opposed to looking at the impact of units that could be discounted and discussing the impact on the profit profile of discounting or not discounting. Many candidates also didn't tie their answer to some information in the question like the formula.

IFRS 17 does not specify whether coverage units should be discounted or undiscounted.

Undiscounted coverage units will result in a slower release of CSM (and therefore profits) over time, since the B in the formula is larger.

Undiscounted coverage units result in the deferral of interest earned on CSM in current period and hence inflates the service provided in future years.

Where the policy contracts are of short duration, then the difference between using discounted and undiscounted coverage units will be minimal.

However, it is desirable that the company should adopt a consistent approach between different groups of policies.

If discounted coverage units are used, then a suitable discount rate will need to be determined.

iii. Describe the appropriateness of the following coverage units for annuities, pure risk products, and savings products (that fall into the scope of IFRS 17).

- **Number of policies**
- **Premiums**
- **Sum Assured**
- **Fund value**

This question was well handled by candidates that understood coverage units well as well as the specific features of the products mentioned. For example, for some products some units were more or less appropriate than other ones (but still appropriate) while some were not at all appropriate. Better candidates displayed an understanding of these nuances.

Coverage units are used to determine the proportion of the total revenue over the lifetime of a policy that is earned in the reporting period.

IFRS 17 states that profit should be recognised as services are provided, so coverage units should be correlated with the amount of service provided.

Number of policies

For all types of products, number of policies in force would provide a uniform run off pattern for coverage units, and it can be argued that while the policies are in force a service is being provided.

However, this does not take into account the relative size of the policies.

For instance, if annuitant deaths in the period were of high payment annuities, then it would be sensible to recognise more revenue in the period than would be implied by the straight averaging of number of policies.

Premiums

Premiums are not appropriate coverage units for annuities and other single premium policies, because the B in the formula is 0, which would result in all profit being recognized up front.

For risk products where recurring premiums are paid, the size of the premium is related to the size of the cover, so the relative sizes of policies are taken into account, making premiums more appropriate than number of policies.

Policies with level premiums will have an accelerated release of profit compared to policies that have increasing premiums, because the B factor will be relatively larger for policies with increasing premiums.

For savings products, recurring premiums do take into account the relative size of policies.

However, the level of premium in a particular reporting period is not directly correlated to the size of the investment fund on which fees are generally based.

In particular if there had been an alteration changing the level of premiums, which would mean that similar policies with the same accumulated investment fund but had undergone different premium changes would contribute to a different release of CSM.

As with risk products, there will be different release patterns depending on whether the policy has level or increasing premiums.

For both risk and savings products premium holidays (as experienced during the Covid 19 pandemic) would make premiums inappropriate as a coverage unit, with no service being recognised during the period of the holiday.

Sum assured

Sum assured is not applicable for annuities since no sum assured exists.

For savings products there may be a sum assured, however, the extent to which this is applicable for determining the level of service provided to a policyholder depends on the relative size of the sum assured to the fund value at different points in time e.g. a Universal Lifestyle contract might have a large sum assured relative to the fund value early in the policy but if the fund value grows to exceed the sum assured, then sum assured alone may not be an appropriate coverage unit.

The insurance service provided by a pure risk product is the cover, and so the sum assured in force during the valuation period is a very good measure of the service provided in that period.

The sum assured takes the relative sizes of policies into account.

In the event of a premium holiday the service will still be recognised, unlike with premiums.

Where policies have increasing cover, the profit recognition will be slower compared to level cover policies.

This can be considered appropriate because for an increasing sum assured, more service (i.e. cover at risk) is provided later on in the policy.

Fund value

Fund value is only applicable to savings products.

For savings products fund value distinguishes between the size of policies.

The main revenue for the insurance company is usually fees based on the size of the underlying fund, so using fund value as a coverage unit aligns the revenue recognition with the fees deducted.

However, for savings products the extent to which the fund value is an appropriate coverage unit may depend on the relative size of the sum assured to the fund value at different points in time.

Hence, for savings products an alternative coverage unit may be the Max (Fund value, Sum assured)

Though the reserve value for risk and annuity products may be thought of analogous to a fund value, this would not be appropriate due to the potential volatility caused by basis changes.

iv. Outline the reasons for the CSM being calculated for cohorts of policies starting not more than 12 months apart.

This question required an understanding of some of the principles behind IFRS17 and was not handled well by many candidates.

The CSM is a retrospective reserve. After initial calculation, the CSM is no longer calculated on a per policy basis.

Limiting CSM layers to cohorts of policies no more than 12 months apart, ensures that when all the policies of that cohort go off the books, then all the CSM for those policies will have been recognised.

Without this layering then a situation could arise where the CSM for a group of policies that have all gone off the books could still be in force.

Non-economic basis change effects need to be calculated using the average economic assumptions that applied when the policies were first sold. Economic conditions can change over time, so it makes sense to group cohorts into shorter bands.

However, this does not mitigate against a rapid change in economic conditions within the 12-month period. In such circumstances (e.g. where it is difficult to determine average economic assumptions to use) it may be appropriate to group the cohorts into shorter periods, even monthly.

By having cohorts of policies which are not more than 12 months apart limits the level of cross subsidy/smoothing within the CSM calculation and ensures that trends in the insurers profitability are reported and disclosed timeously.

In addition, due to the mechanics of the CSM, leaving a cohort open across annual reporting periods may prove operationally challenging.

However, an insurer is not limited to annual cohorts and can have monthly or semi-annual cohorts if it desires.

v. Explain how the strengthening of the mortality basis for annuity products affects the profit for that reporting period under IFRS 4 and IFRS 17.

Some candidates interpreted this question as an increase in mortality rates as opposed to an increase in reserves. Based on the wording of the question the examiners marked along both interpretations. This question was handled well by many candidates.

The strengthening of a mortality basis will increase the best estimate liability (BEL) for annuity products.

Under IFRS 4 there will be a commensurate increase in the compulsory margins for the products.

Under IFRS 4 the total profit will be reduced by the total increase in liability (best estimate plus compulsory margin).

Under IFRS 17 there may be a commensurate increase in Risk Adjustment for Non-Financial Risks, depending on how the Risk Adjustment is determined.

Under IFRS 17 the change in BEL and Risk Adjustment will form part of the build-up of the CSM.

The CSM at the end of the period will therefore be lower by the total amount of the basis change.

Only a portion of the CSM is released at the end of the reporting period, so only that portion of the basis change would reduce the profit of that reporting period.

If, however, the basis change results in an increase in BEL that is greater than the CSM, then the excess is recognised immediately as a loss.

Italics text answers for students who assumed strengthening annuity mortality basis meant increasing qx's, and therefore decreasing reserves:.

The strengthening of a mortality basis will decrease the best estimate liability (BEL) for annuity products.

Under IFRS 4 there will be a commensurate decrease in the compulsory margins for the products.

Under IFRS 4 the total profit will be increased by the total decrease in liability (best estimate plus compulsory margin).

Under IFRS 17 there may be a commensurate decrease in Risk Adjustment for Non-Financial Risks, depending on how the Risk Adjustment is determined.

Under IFRS 17 the change in BEL and Risk Adjustment will form part of the build-up of the CSM.

The CSM at the end of the period will therefore be higher by the total amount of the basis change.

Only a portion of the CSM is released at the end of the reporting period, so only that portion of the basis change would increase the profit of that reporting period.

If, however, the policies had a loss component, then the decrease in reserves would be recognised in profit to the extent that it eliminated the loss component. But if the decrease in liabilities was greater than the loss component, then a positive CSM would be created from this excess, and so the full effect would not be seen in profit.

vi. Discuss how the components of the Embedded Value of a company might change when IFRS 17 is adopted.

This was a difficult question and was not handled well by many candidates. Better candidates worked systematically through the parts that make up EV and commented on how a change from IFRS4 to IFRS17 would impact any items within each part.

EV = Adjusted Net Worth (ANW) plus Value of In-Force business (VIF), less Cost of Required Capital (CoRC).

Adjusted Net Worth (ANW)

Under IFRS 4, ANW is the difference between Total Assets and the sum of Discounted Best Estimate Liabilities (BEL), Compulsory Margins, and Discretionary margins (and required

capital).

Under IFRS 17, ANW is the difference between Total Assets and the sum of Discounted Best Estimate Liabilities, the Risk Adjustment (RA), and the CSM (and required capital). .

Total Assets should be similar under IFRS 4 & IFRS 17, if not the same.

Best Estimate liabilities may differ due to differences in...

- attributable/non-attributable expenses,
- contract boundaries,
- valuation discount rates

There are no compulsory margins under IFRS 17, but instead the Risk Adjustment (RA) that reflects the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risks. Differences between compulsory margins and the RA will lead to a difference in ANW.

Discretionary margins are not allowed under IFRS 17. Therefore, all existing discretionary margins will be released, leading to an increase in ANW.

Discretionary margins include the zeroisation of negative Rand reserves. Zeroisation is not permitted under IFRS 17, so where applicable this will lead to a decrease in liabilities and an increase in ANW when moving from IFRS 4 to IFRS 17.

The net effect on ANW depends on the interactions of these factors, but the expectation is that IFRS 17 liabilities will generally be lower than IFRS 4 liabilities, leading to an increase in ANW.

The taxation of any increase in ANW will be phased in over 6 years.

Value of In-Force business (VIF)

VIF under IFRS 17 will be the present value of expected releases of CSM and RA less the present value of non-attributable expenses.

The present value of the release of Compulsory and Discretionary margins would have formed the VIF under IFRS 4, but under IFRS 17 they no longer are used and so do not contribute to VIF.

In the overall EV value, discretionary margins move from VIF to ANW.

The positive ANW effect should be higher than the negative VIF effect, because the ANW effect is an immediate margin release, whereas the VIF effect is a change in a discounted value of margin releases.

Opinions have been expressed that the CSM together with the disclosures required by IFRS 17 provides enough information about the company to replace VIF (or embedded value), in which case VIF/EV may disappear from the insurance reporting landscape.

Cost of Required Capital

The move from IFRS 4 to IFRS 17 does not change the statutory solvency requirements, so on its own the change should not lead to a change in the face value of RC or the cost of RC.

However, RC is the amount of capital that the entity needs to manage its business, to implement business plans and to maintain target metrics, such as the Solvency Capital Requirement cover ratio.

To the extent that IFRS 17 leads to changes in these requirements, there may a change in the level of RC, and hence the Cost of Required capital.

The change to IFRS 17 may lead to a change in the way the drivers of RC are modelled. Changes in the run-off pattern of RC would change the cost of RC.

QUESTION 3

A South African life insurance company sells a wide variety of life insurance products. The company uses the standard formula approach for its Solvency Capital Requirement (SCR) calculation under the Solvency Assessment and Management (SAM) framework.

The regulator has required that the company hold additional capital (as a capital add-on) at the previous year end following a review of the company's solvency calculation.

- i. Suggest possible reasons why the regulator has imposed a capital add-on.**

Too many candidates performed poorly in this question. Many got the very basics for why an add-on could be required but considered the most important reason being a company already in trouble and not meeting, or being close to not meeting, the SCR. A capital add-on here would just put the company in a worse position. Different regulatory intervention would occur in these instances. The regulator could require an add-on for a company with a very high SCR coverage ratio.

The regulator has concluded that the capital required through the standard formula calculation is not sufficient to cover the risks the company is exposed to.

The regulator will have reached this conclusion through reviewing the company's SAM submissions from its Pillar I and ORSA disclosures.

It could be that the profile of the business is different to that for which the standard formula stresses were intended.

The regulator may feel that the company has limited risk management processes in place e.g. limited reinsurance, hedging etc.

It may be that there are data quality issues and so the regulator believes additional prudence should be taken reflect the risk that policy data used in the calculations is not adequate.

The regulator may feel that the simple standard formula for operational risk does not adequately capture the operational risk inherent in the company.

It may be that the quality of the ORSA itself is poor and the risks identified are not complete.

Or there has been poor judgement in assessing the overall risks the company is exposed to.

The quality of the risk management within the firm may be poor or the governance set up to oversee the management of risks is not strong.

And so the regulator does not have confidence that all risks have been appropriately assessed.

The add on may be to bring the SCR up to a similar level to the company's peer group.

There may have been an event which changed the nature of the business / solvency (large number of lapses, loss of new business) which raised concerns about the ongoing viability of the company.

It may be that the Standard Formula is in the process of changing, but due to legislative hurdles it has not done so yet, but the regulator has still imposed the capital changes on the company in the meantime.

For example, additional pandemic/Mort CAT risk not allowed for in the standard formula.

Due to the capital add-on, the company is considering moving to an internal model.

ii. Discuss the benefits of an internal model and challenges in implementing such a model.

This reasonably straight forward question as handled well.

Benefits

By construction, an internal model should more accurately capture the risk profile of the entity.

It also provides an opportunity for firms to take credit for any risk mitigation strategies that they have implemented (on the proviso that these are approved and documented).

The company can use their own risk management structure and their own calibrations for the risk factors which may lead to an improvement in risk and capital management.

Where the standard formula is particularly onerous, the company may end up holding less capital than required by the standard formula.

It may provide the company with the ability to implement a partial internal model for particular risk types or lines of business.

Challenges

The quality and quantity of data required to calibrate the internal model may be a big challenge.

Recent experience and expected future experience may be different to historical data and hence the data usable for the internal model may be less credible.

Determining dependencies and correlations may be difficult and time-consuming.

A lot of expert judgement will be required, and this will prove time consuming and costly for the company.

Ongoing documentation, maintenance and knowledge transfer of the internal model may prove particularly difficult.

The governance relating to the ongoing use of an internal model is particularly onerous:

This model needs to be approved by the regulator and is subject to meeting certain tests before it can replace the standard SCR calculation.

Insurers wishing to use an internal model have to ensure that the internal model is embedded in the day-to-day running of the business. The Use Test is a particularly crucial governance concept for internal models.

An insurer's head of actuarial function is responsible for expressing an opinion to the board of directors regarding the accuracy of the calculations and the appropriateness of the assumptions underlying the internal model.

END OF MARKING SCHEDULE