

November 2023

Subject F202 — Life Insurance

Specialist Applications

EXAMINER'S REPORT

QUESTION 1

A South African life insurance company is assessing its financial performance for the last financial year. It has prepared the regular published and regulatory reporting as well as the embedded value reports.

A board member has looked at the published reporting profit and compared it to the change in surplus under the Solvency Assessment and Management (SAM) framework and the change in embedded value. She has questioned which metric is a better profit measure and has queried why the three results are not similar.

Outline the differences between these three metrics in terms of considering them as profit measures and why their results could be different.

This question was reasonably well handled. Better candidates could clearly articulate the differences and links between the different reporting metrics. Better candidates also produced more detail on the differences in the liability and asset calculations.

The actual profit from any life policy is not known until the policy terminates / claims and a final assessment of premiums and claims and costs can be made.

All profit measurement standards are measuring profit emergence on varying sets of standards and bases.

While all three metrics are providing some measure of value change to the business over a year, they are doing so for different purposes.

Published reporting. This produces a profit reported through IFRS, which provides an accounting standard for reporting profit emergence from insurance contracts.

Profits in any given period will be the change in excess assets on the published reporting basis (adjusted for any dividends paid and capital raised or repaid).

The focus for published reporting is on the income statement.

These results are also (currently) utilized in the taxation calculation.

Regulatory reporting. The purpose is to demonstrate solvency under the SAM.

Profits can also be determined in line with the prudential supervision basis. This would be the change in excess assets on the prudential supervision basis, instead of the published reporting basis.

The focus for regulatory reporting is on the balance sheet.

Embedded value

EV consists of the adjusted net worth (ANW) of the company, the present value of the future after tax profits from the policyholders' fund (PVIF), and an adjustment in respect of the cost of the required capital (CoRC).

PVIF is the surplus arising in the future at market rates, net of the cost of capital.

A company will want to have a realistic (or market value) assessment of the profit arising over a year. This profit is usually calculated as the change over a year in the EV of the company, where the EV is on a realistic (market) basis.

The surplus arising on the published and regulatory reporting and the change in EV could be different for the following reasons:

The bases used in each for liability calculation are different.

They are best estimate:

- With margins (compulsory, discretionary, risk, CSM, depending on IFRS 4 or IFRS 17) for published reporting.
- With some prescribed assumptions (yield curve) for regulatory reporting

EV can use either of these liability calculations.

The businesses covered under each calculation may be different. e.g. EV must include covered business as a minimum which may be different to the business included in the published or regulatory reporting.

EV is forward looking and includes future expected surplus.

If the company changes its' future best estimate assumptions that improve future profitability it would change the PVIF part of the EV and not necessarily the other metrics.

Some of the calculation methodologies (e.g. use of contract boundaries) are treated differently under the three liability calculations.

Some items (e.g. DAC, deferred tax assets, expenses) are treated differently under the three liability calculations.

Some business (e.g. participating business, unit-linked etc.) is treated differently under the three liability calculations.

Positive IFRS profit should contribute to a better solvency position and higher EV. However, it excludes any capital movements. e.g. if all profit is paid out as dividends it will in theory not have any impact on solvency or be included in EV.

Values for assets held should all be similar at market values with some adjustments.

QUESTION 2

A South African insurance company has a large amount of accumulated tax credits from previously written business.

- i. Explain how the accumulated tax credits can be used for the benefit of the company and the policyholders of a savings product and note any practical limitations that would apply.**

This question was poorly handled by many candidates. Some candidates didn't understand the basics of the application of tax credits. Other candidates didn't produce points for either the company or policyholder and just listed some options without specifying where the benefit would be. Better candidates were also able to identify more of the practical limitations that would apply.

The taxable income of the insurance company's IPF is reduced by tax credits carried over from previous years.

This means that the insurance company will not pay tax on the full taxable investment income generated by savings products.

If the company credits the policyholders' accounts with investment returns net of the 'normal tax', then it will make additional profits on the policies.

Alternatively it can share the benefit with the policyholders, with the expectation that it can make the products more marketable/competitive and that it will increase profits through higher volumes.

The policyholder benefits could be enhanced in a number of ways:

- Credit the policyholder accounts with a tax-free, or lower rate of tax, investment income.
- Policy and administration fees could be made lower than competitor's products.
- The amount of each premium allocated to the savings account could be made higher than competitor's products

It may choose different methods for single and recurring premium policies.

The company will need to determine how long the tax credits will last, and therefore what volume of sales can be supported.

It may need to limit the terms of the policies so that all policies mature before the projected tax credits run out.

The risk policies that are still in the IPF will still generate tax credits, but as more of this business shifts to the RPF the source of tax credits will dry up, and the company will need to take this into account in its projections.

Taxable investment income includes interest & rental income and capital gains. The tax credits can only be used when there is positive investment income against which they can be offset.

A sharp market fall will lead to negative capital gains and a reduction in the investment income.

The company needs to be aware that this can cause volatility in its profits.

Section 18 of the Tax Amendment Act No:20 of 2021 limited the assessed loss that a company can carry forward from the preceding year of assessment, to the higher of R1 million and 80% of the amount of taxable income. The rate of corporation tax was also changed from 28% to 27%.

- ii. Discuss possible steps the company could take to counteract the change in profitability that would result from these changes.**

This question was again poorly handled by many candidates. Many candidates did not realise that this wasn't necessarily a tax application question. It was a profitability question set in the context of changing tax regulation. As such many candidates missed out on some quite straight-forward points with regard to improving profitability.

Assuming that the R1 million minimum is passed, the change will mean that the company will not be able to avoid paying tax on the full taxable investment income generated by savings products but will have to pay tax on 20% of this, reducing the profitability of the savings products.

This is offset by the reduction in the corporate tax rate.

For new business the company can reduce the net investment income it credits to policyholder accounts or increase the administration charges to restore the profitability of the product.

It will need to ensure that the product remains competitive, so its ability to make such changes may depend on what competitors in similar positions are doing.

For existing business, the company may wish to quantify the extent of the reduction in profitability before deciding on whether to take any measures to counteract that.

It would want to determine whether the products remain financially sound.

As with new business, the company may be able to reduce the net investment income it credits to policyholder accounts or increase the administration charges.

However, it will be bound by what is allowed in the policy contract.

The change for existing business should be consistent with that for new business.

If the policy contract allows for changes, then it will still have to consider the Treating Customers Fairly considerations.

It will need to communicate clearly to policyholders beforehand that the change will take place.

And consider the policyholder expectations that may have arisen due to marketing material and past practices.

It should consider the reputational risk and what other competitors in the market are doing.

The tax change is a change on the taxation of the company, not the taxation of policyholder benefits or premiums, which may raise questions on whether it is TCF compliant to pass the effects of the change onto policyholders.

If the company is using the change in corporate tax rate to reduce the charges/premiums on other lines of business, then it would strengthen the argument that it is TCF compliant to pass the effects of the '80% limit' tax change on to policyholders.

The net effect of the tax change may not be overly onerous, but the company may wish to consider the precedent that is set with regards to future tax changes if it does not make changes to the existing policies.

QUESTION 3

The Solvency Capital Requirement (SCR) under the Solvency Assessment and Management framework (SAM) reflects the amount of own funds that an insurance company must hold in order to survive a 1-in-200 year loss event.

FSI 4.2 states “Catastrophe risk for life insurance obligations is the risk of loss, or of adverse change in the value of insurance obligations, resulting from extreme or irregular events whose effects are not sufficiently captured by the other risk components of life underwriting risk. Examples of catastrophe risk in the context of life insurance include pandemic events or nuclear disasters.”

A South African life insurance company is considering its capital requirement emerging from the life catastrophe risk component of the standard formula and the associated cost of this capital, and how this is included in pricing.

Considering the recent pandemic and other emerging risks, a query has arisen as to whether the required capital for catastrophe risk for the company (as determined by the standard formula) is appropriate. Furthermore, whether the company should include a charge directly in the mortality pricing basis to recover the expected mortality costs of pandemic and catastrophe events over time, rather than just through a cost of capital charge.

- i. Outline at a high-level approaches you could take in assessing the potential additional mortality charge for these events.**

This question produced mixed results by some candidates doing relatively well and others poorly. Better candidates managed to identify approaches through needing to estimate a frequency and severity measure. Given the nature of the events being considered data points would be scarce and scenarios would need to be considered. Candidates who handled the question well could also distinguish between a cost of capital and an anticipated claims cost.

A starting point would be to consider the actual SAM required capital for catastrophes. A charge to recover this cost every 200 years could be estimated based on the current portfolio.

You could also consider the cost of the COVID-19 pandemic on the company and assess what will need to be charged to cover a similar event if it is expected to happen every n years.

One could also compare this cost to the required capital held for catastrophes.

Whether the regulatory capital is an appropriate amount, and the ultimate amount to use when considering a mortality charge, would require an investigation.

This would entail looking at the frequency and severity of extreme/rare events likely to impact the company.

Need to determine a set of events to consider – e.g. pandemics, natural disasters, wars etc.

For these consider any past data available in terms of frequency and mortality impact.

You would also need an assessment of whether the past is a useful predictor of the future. By the nature of tail-risk events this is extremely difficult.

For these types of events there are always unknown events that will emerge that will add additional risk.

There are also emerging risks (e.g. climate change) that would have very little data on potential mortality impact.

Where any of these events are present in past experience used in setting the mortality basis (and not excluded), you would need to consider whether they are already priced in to some extent.

An example of this may be the HIV epidemic in South Africa.

Could also utilise research that reinsurers publish.

The annual cost that a reinsurer would charge for catastrophe risk would be a guide as well.

This is likely to be a lower bound as the cover is unlikely to cover events that occur over time like pandemics. Catastrophe cover usually covers a singular event in time and the claims that can be directly linked to it.

When considering the impact of the events you should also assess these against the product rules in place.

For example, if there are any exclusions for war and riot, terrorism, or nuclear warfare then the impact of these could be ignored.

Because we are dealing with tail-risks, any exercise would likely involve looking at a range of scenarios rather than an “average” cost for these events.

After an investigation, it has been decided that an additional charge will need to be added to the mortality premiums to cover the cost of these events over time.

- ii. Discuss the factors that need to be considered before changing premium rates for pure risk mortality business and how this would differ for group, term assurance and whole-of-life assurance business.**

This question was handled well by most candidates. Better candidates were able to provide more detail, e.g. consider new and existing business, consider guarantees etc.

General Factors

The competitive position of the company and market needs to be considered.

Will the rate adjust impact sales volumes?

Will the change be implemented on in-force business as well as new business?

If premium rates are increased, there is an increased chance of lapses for existing policies.

This should be factored into account and whether expenses will be covered.

Is there scope to cross-subsidize with other lines of business e.g. annuity or disability.

What are the current margins on the in-force business and is there potential to absorb the additional cost and will this be satisfactory to shareholders.

Would it be cheaper to take out stop loss cover or catastrophe cover and reduce the cost transferred to policy holders.

Can the systems easily incorporate the adjustment.

Need to think about the communication with existing clients on rate increases.

Need to consider TCF guidance and potential reputational issues.

Group Business

Group business is renewed on an annual basis and therefore a rate adjustment could go through at each of the next renewals.

Group business is very competitive and easily compared to competitor rates.

As such the impact on sales and lapsing groups will be important to monitor.

Because group business is annually renewable there is the ability to change prices, policy terms or activity in the market within a short period of time. As such there is flexibility in reacting to any events playing out such as a pandemic, war etc.

As such could a lower increase apply than on guaranteed individual life business.

Whole-of-Life Business

For existing business an important factor will be whether the rates are guaranteed or not.

For guaranteed existing business:

- how will rates be implemented at the end of the guarantee period?
- Understanding the timing of the price adjustment over time throughout the book would be necessary. i.e. would most go through after 5 years or 25 years?

For existing business without rate guarantees, the increase will likely go through at the next policy anniversary when other contractual rate adjustments go through.

How will policy holder expectations be managed?

A rate adjustment on level-premium business vs. business with premium patterns that are already increasing could have different impacts in terms of lapses.

How do the premiums for tranches of existing policyholders compare to the new business rates with the adjustment? If these are the same or higher you could consider leaving them unaltered.

Term Assurance Business

Similar issues to whole-of-life would apply.

For existing short duration policies e.g. 5 years, you could consider leaving the premiums unaltered.

For longer durations e.g. 20 years you would consider like whole-of-life.

If there are any renewal options at the end of the term, then the new premium rates would apply to the new term policy.

The insurance company has decided to implement the increase immediately on all new policies sold and as soon as possible for existing policies. For published and regulatory reporting purposes the company is debating whether the increase should be treated as an extra margin in the premium or as an adjustment to the best estimate mortality rate.

- iii. Outline the impact of each of these approaches under IFRS 17 and under the Solvency Assessment and Management (SAM) framework.**

This question was handled well by some candidates and quite poorly by others. An understanding of the mechanics of IFRS 17 was tested and better candidates could work through this. The SAM section of the questions was handled better.

SAM

Impact of a change to best estimate

There will be a direct increase in the technical provisions.

This will decrease own funds and therefore decrease solvency ratio.

The mortality and catastrophe shock will both increase which will directly increase the solvency capital requirement (SCR).

An increase in the SCR will increase the risk margin.

These will further reduce own funds and the solvency ratio.

No recognition for future premium increases on existing business can be included until they have been implemented.

In addition to this, only new business in the next 12 months will be allowed to be included at the higher rates.

This will reduce technical provisions slightly but will depend on the proportion of new to old business and once existing business has moved onto the new rates at the end of the guarantee period.

Overall there will be a worsening in solvency.

Impact of a change as an additional margin

The explicit loading will not form part of the best estimate assumptions and therefore will not impact the technical provisions or solvency ratio.

The impact on premiums will be the same as above.

(No recognition for future premium increases on existing business can be included until the new rates have been implemented and only new business in the next 12 months will be allowed to be included at the higher rates.)

This will reduce liabilities slightly but will depend on the proportions of new to old business.

Overall there will be an improvement in solvency.

IFRS 17

Impact of a change to best estimate

The cashflows would be included as part of the fulfilment cash flows.

If the contract is not onerous – then increasing the best estimate would result in:

- an increase in future claims costs and this would result in
- a direct increase in the liability remaining coverage (LRC) which would
- increase the risk adjustment and
- reduce the contractual service margin.

If the contract is onerous, there is no CSM and the LRC and risk adjustment would still increase with further increases in insurance expenses and loss component.

Impact of a change as an additional margin

There would be no impact on IFRS 17 cashflows as these would be calculated using the best estimate and other charges or margins for uncertainty would be covered by the risk adjustment.

The additional charge will increase the CSM at the end of the financial year and therefore future releases of profit.

QUESTION 4

A South African reinsurance company is considering a financial reinsurance transaction for a life insurance company in the domestic market. The deal will involve the reinsurer reinsuring 50% of a tranche of pure-risk life insurance policies on a quota share (QS) basis and paying a lump sum commission when the deal commences. The repayment of the financing will be achieved through an additional charge on each life policy reinsured while it is still in-force.

i. Outline the major risks that the reinsurer is exposed to through this transaction.

This question was well handled by most candidates. Better candidates could identify where the insurance risk and lapse risk would have the more important impacts. Better candidates also picked up on the credit / counter-party risk.

For the underlying QS risk the reinsurer will be exposed to insurance risk, which will be predominantly the mortality risk. (Risk of more claims than expected or priced for)

It is unlikely that there will be significant lapse risk for the reinsurer on the QS portion of the transaction.

For the financing part of the transaction the risks concerned would be those that impact the ability for the financing to be repaid by the insurer and underlying policies.

For the financing part of the transaction the largest risk would be lapse risk.

If lapse rates are higher than expected the financing could not be repaid in full.

If the mortality rates are higher than expected the book will also run-off quicker than expected but this will have a much smaller impact than lapse rates being higher than expected.

The reinsurer is also exposed to credit and counter-party risk.

Should the insurance company become insolvent or fail to be a going concern it would impact the ability to repay the financing.

The reinsurer also has some exposure to the insurance company's operational risk.

Should the company perform poorly or service existing clients poorly it may impact lapse rates negatively and in turn impact lapse rates.

The reinsurer would not have high maintenance expenses (compared to insurer) and as such risk of expense over-run would not be significant.

ii. Set out the assumptions that the reinsurer would require for pricing this transaction and briefly describe how it would go about setting the assumptions.

This question was handled well.

The reinsurer would need mortality and lapse assumptions to estimate expected claims and produce an expected future cash flow.

Mortality rates could be based on the reinsurers mortality basis for the mortality risk involved.

It could also perform a mortality experience analysis on the underlying book as the book would have prior experience.

The insurer could also share its mortality basis with the reinsurer.

Lapse rates are more likely to be product and company specific.

As such a lapse analysis of the book would be the best approach.

Again, the insurer could share the current lapse basis for the reinsurer to assess.

Once the cash flows are established the reinsurer will need a discount rate to discount the excess cash flow (the extra charge) to arrive at the upfront commission.

This is likely to be based off a risk-free market rate and adjusted for:

- Credit and counter-party risk.
- The risk-return the reinsurer would want to make on the financing part of the deal.

These could be based off the credit rating of the insurer and the reinsurers assessment of the risk associated with the transaction.

The reinsurer would more than likely have an internal expense assumption for this type of transaction.

The reinsurer would also apply a profit margin for the QS portion of the transaction to the extent that it isn't covered in the risk discount rate. (The reinsurer could target a single internal rate of return on a transaction such as this.)

The tranche of mortality business being considered for this transaction is all life insurance policies sold by the company over a period of time. This includes funeral and fully underwritten whole-of-life policies on a range of premium patterns.

iii. Describe how this product mix would impact the assumption setting process.

This question was handled well by many candidates. Better candidates picked up that both the mortality and lapse assumptions would be very different between the two products and could articulate the reasons why in a fair amount of detail. Better candidates also picked up the potential lapse differences between the different premium paying patterns.

While these are all mortality products it is not a homogeneous group with regards to the required assumptions.

Funeral and fully underwritten WOL products will have very different mortality rates.

This is due to the nature of the products as well as the expected target markets.

The lapses rates would also be significantly different for the two mortality products.

Funeral business experiences very high lapse rates.

Financing a WOL and funeral policy would be very different given the average expected duration of each policy.

Different sets of lapse rates would also be required for the WOL policies with different premium patterns.

Level-premium policies likely to have lower lapse rates as a policyholder loses the fund build-up on lapsing.

Risk rated or increasing premium policies face a larger risk of lapsing and moving to another policy (subject to underwriting). No (or little) fund build up to subsidise future premiums.

Level premium policies would need to re-enter at higher level premium rate.

Reinsurer would set risk-discount rate and profit margin relative to the risk associated with this product mix.

The company is assessing the proposal from the reinsurer. As a check it has decided to compare the upfront commission proposed by the reinsurer to the VIF of this tranche of policies that is calculated as part of its embedded value. Because the reinsurer is reinsuring 50% of the tranche the company expects the commission to be 50% of the total VIF for the tranche.

iv. Explain whether this is a useful check to perform.

This question was handled poorly by many candidates. The question was testing candidates understanding of the expected present value of two sets of cash-flows, both related to the same set of policies. Candidates who handled the question well understood the mechanics of the cash flows on an EV basis relative to the cash flow that the reinsurer would have projected on its assumptions.

This check makes some sense in that both calculations are placing an expected present value on a profit/margin emerging from a set of cash flows from the same book of business.

For the VIF calculation the future cash-flows are the profits attributable to share-holders from this tranche of business. This will be driven by the release of margins in the reserves.

For the commission calculation the excess cash flow being discounted is the additional charge required to finance the commission.

There is however no reason for these two cash flows to be the same or related, or for the cash flow financing the commission being 50% of the expected profits. If they aren't related a comparison is difficult.

If they are a function of each other, i.e. the company has decided to pass on a portion of the reserving margins then a more useful comparison is possible.

If the company is passing on 50% of its expected future profit stream and expecting a commission of 50% of its' VIF this also won't necessarily be the case. This is because the reinsurer may be using:

- different mortality assumptions
- different lapse assumptions
- a different risk discount rate
- a credit-risk adjustment to the risk discount rate

If different mortality and lapse assumptions are being used the underlying cash flows will be different and as such the margin on this will look different for the reinsurer and the company.

There may also be timing differences. The reinsurers proposal may be based on current data whereas the VIF calculation may have been at the company's financial year-end.

The companies may also be in different tax positions with regards to the tranche of business.

While there are differences that could obscure any results, if the company can express both the commission and repayments as reasonable proportions of the VIF and profit stream, then a comparison is useful. e.g. passing on 60% of profit stream in return for 45% of VIF.

The company could also compare the change in VIF (down) if the transaction went through with the change in NAV (up) due to the commission payment. The company would need to decide whether the transaction meets their needs and financial hurdles.

END OF EXAMINER'S REPORT