Moody's Analytics

IFRS 17 Series

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Calculating the IFRS 17 Risk Adjustment

Executive Summary

IFRS 17 introduces the concept of a risk adjustment for non-financial risk. The IFRS 17 risk adjustment is an influential factor in how profit from insurance contracts is reported and emerges over time. While the risk adjustment must satisfy certain conditions, the method for its calculation is not prescribed and is the choice of the insurance company. As such, there are many potential methods of calculation.

This paper provides an overview of some potential methods for the calculation of the risk adjustment. It also highlights some of the benefits and challenges associated with each method. It opens with a short review of the requirements for calculating the IFRS 17 risk adjustment. Three potential calculation methods for the IFRS 17 risk adjustment are briefly described, with corresponding issues to consider. The final section summarizes the conclusions and discusses next steps.

As with all of the papers in this series, this paper assumes that the reader has basic knowledge of the IFRS 17 reporting requirements.

CONTENTS

1. Risk adjustment requirements

Under IFRS 17, the risk adjustment for non-financial risk should reflect "…*the compensation an entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risks as the entity fulfills insurance contracts.*"[1]

The calculation method is not prescribed and is the choice of the insurance company, however it must have the following reasoned characteristics:[2]

- Risks with low frequency and high severity result in higher risk adjustments for non-financial risk than risk with high frequency and low severity.
- For similar risks, contracts with a longer duration result in higher risk adjustment for non-financial risk than contracts with a shorter duration.
- Risks with a wider probability distribution result in higher risk adjustments for non-financial risk than risks with a narrower distribution.
- The less that is known about a current estimate and its trend, the higher is the risk adjustment for non-financial risk.
- When emerging experience reduces uncertainty about the amount and timing of cash flows, risk adjustments for non-financial risk will decrease and vice versa.

Disclosure of the methodology is also required including the equivalent confidence level[3] of the calculated IFRS 17 risk adjustment. In addition, disclosures must also include a reconciliation from the opening to the closing balances[4] of the risk adjustment. This reconciliation might be similar to the analysis of movements exercises some companies currently produce as part of their ongoing reporting processes. However this is specifically for the risk adjustment, and must be published in the financial statements.

The IFRS 17 risk adjustment is required to be calculated at IFRS 17 contract group level as with the present value of future cash flows and the contractual service margin that form the liability for remaining coverage.[5]

1 IFRS 17 Insurance Contracts – Appendix A Defined Terms
2 IFRS 17 Insurance Contracts – Paragraphs B91-B92
3 Paragraph 119 requires that an entity that uses a technique other than VaR discloses the technique used and the confidence level corresponding to the results of that technique.
4 IFRS 17 Insurance Contracts – Paragraphs 100-102
5 IFRS 17 contract groups are discussed further in the Moody's Analytics paper "IFRS 17 and the level of aggregation", Neri, M. (2018)

Three potential methods are briefly described in the following sections, followed by examples of how these methods can be implemented with key points to consider. These methods are linked to other widely used reporting metrics or calculations that might already be carried out in an insurance company.

Where similarities exist between the IFRS 17 risk adjustment and existing reporting metrics, the insurance company is expected to be consistent with existing measures or be able to justify any differences.

2. Cost of capital

The cost of capital approach is the approach prescribed to calculate the Solvency II risk margin.

$$Risk\ margin = CoC * \sum_{t=1}^{T} RC\ (t-1) * \frac{1}{(1+RFR(t))^t}$$

Where:

CoC is the cost of capital
RC(t) is the required capital for the risks in scope at time t
RFR(t) is the risk free rate for maturity t

Under Solvency II, the risk margin covers the non-hedgeable risks, commonly interpreted as all non-financial risks. The confidence level for the required capital is set at the 99.5th percentile. The cost of capital is set at 6%, and the risk free rate is set by EIOPA.

The cost of capital approach is also used more generally for some non-Solvency II firms to calculate a risk margin as part of their economic capital reporting. In this case, the risks and assumptions are set by the insurance company to reflect their own view of the risks.

For companies already calculating a cost of capital for other purposes, a natural starting point for the IFRS 17 risk adjustment could be to recycle as much as possible from the existing calculation. It is not just an effort to reduce reporting time, costs, and efforts but also ensures that there is consistency between existing regulatory or internal capital and/or profit metrics. This is a crucial attribute for users of the financial statements including the market, regulators, and auditors to understand and compare the results.

For example, consider an insurance company using the Solvency II prescribed cost of capital approach for the risk margin. Consider each of the components:

- **Risks in scope:** The Solvency II risk margin includes all non-hedgeable risks and typically includes all non-financial risks including operational risk. The IFRS 17 risk adjustment specifically excludes general operational risk. As the Solvency II risk margin should include all non-hedgeable risks, financial risks occurring in the long term can be included if the company is unable to hedge certain market risks beyond say, a 30-year time period. The IFRS 17 risk adjustment only includes non-financial risks.
- **Percentile and time horizon:** Although the capital used in the cost of capital calculation is set at the 99.5th percentile over a one-year time horizon, the resulting Solvency II risk margin does not correspond to a 99.5th percentile. Therefore if the capital requirements for the appropriate risks are recycled the resulting percentile must be determined. In addition, while the 99.5th percentile might be appropriate for the regulatory capital requirement, the insurance company should consider how this relates to their own appetite for risk.
- **Cost of capital:** Much debate has occurred over the appropriateness of the 6% cost of capital rate prescribed under Solvency II. The insurance company can use other metrics for other purposes, such as economic value added ('EVA') for example, that uses an internally defined cost of capital, which could indicate that a different rate might be more appropriate.
- **Risk free rate:** EIOPA prescribes the risk-free rate to be used under Solvency II. Under IFRS 17, two main approaches have been proposed to calculate the discount rate used for the present value of the future cash flows: top down and bottom up.[6] The bottom up approach explicitly refers to the risk-free rate, as a starting point. Whichever approach is used, there must be consistency between the rates used for the risk adjustment and the present value of the future cash flows.

3. Value at Risk 'VaR'

The Value at Risk approach is used for the Standard Formula Solvency Capital Requirement calculation under Solvency II and frequently used for internal economic capital calculations. It has also been used by many firms in their Solvency II Internal Models. These capital measures typically cover all risks that can be mitigated by holding capital, not just non-financial risks.

Under the Solvency II Standard Formula calculation, a stress test and correlation approach is used, where the stress tests and correlations are calibrated by EIOPA. For both the Standard Formula and Internal Models, the calculation covers all risks and the confidence level for the required capital is set at the 99.5th percentile over a one year time horizon. For internal economic capital purposes, stochastic or stress test and correlation approaches have been used along with different confidence levels and sometimes different time horizons.

The VaR approach is one of many quantile style approaches that might be considered. Another example is the Conditional Tail Expectation 'CTE', which considers the expected value of the losses above the chosen percentile. This approach is not only used internally by some insurance companies to calculate the risk margin under economic capital reporting, but is also used under some regulatory jurisdictions.

3.1. Stress test and correlation VaR

Under IFRS 17, the present value of future cash flows is calculated for each contract group. This would be the best estimate part of a VaR calculation. Under a stress test and correlation approach, the calculation would be repeated with margins added to different assumptions. The differences between these runs and the best estimate run are aggregated using a correlation matrix.

For example, an insurance company might want to use their own economic capital reporting which is calculated using stress test and correlation approach that they define to be a 99.5th percentile over a one-year time horizon. Again this would help ensure consistency and save resource. Important considerations in this case are:

- **Risks in scope:** Economic capital reporting will typically include all risks the insurance company is exposed to in their own view. But the risk adjustment should only include the non-financial risks that contribute to uncertainty in the amount and timing of future cash flows.
- **Stresses:** In this case, the economic capital stresses have been calibrated to be appropriate for the 99.5th percentile over a one-year time horizon. However the risk adjustment aims to compensate for the uncertainty over the life of the insurance contract, so the stresses could be too large. Where the distribution for each stress was defined as part of the calibration work, minimal extra work would be required to define the new stresses. The difficulty is in choosing and justifying an appropriate percentile.

6 IFRS 17 discount rates are discussed further in the Moody's Analytics paper "IFRS 17 Discount Rates", Jessop, N. (2018)

» **Correlations:** Copulas are widely used to acknowledge that correlations between certain risks can differ between normal events and extreme events. Therefore the correlations used in the economic capital calculation might not be appropriate at the new percentile.

3.2. Scenario test VaR

An alternative VaR approach would be to use a scenario test, where a combination of assumptions is changed simultaneously. The advantage over the stress test and correlation approach is where modeling resource and capacity are scarce. As under this approach a single extra run would be required on each contract group rather than a series of stress tests. The key difficulty is to determine an appropriate scenario. Many methods are available, for example, as the risk adjustment is focused on non-financial risks, the scenario could be determined holistically via structured expert judgment (for example a Delphi technique) or by interrogating a stochastic model (which might exist in the insurance company) at the appropriate percentile. However, if the scenario changes significantly between periods, then the variability of the scenario dilutes any explanation of period-on-period movements published in the disclosures.

4. Margins for Adverse Deviation

Approaches that involve explicit margins on all assumptions, that is where the amount of the margin over the best or current estimate is explicitly calculated, are currently used in many regulatory jurisdictions. This method can be applied in many different ways, as noted in the IAA paper on risk margins including[7]:

» *Use a specified adjustment to a mortality, morbidity, or other assumption table, e.g. use the current best estimate assumption for mortality, adjusted by x% to reflect risk (x being positive for life insurance and negative for annuities).*

» *Use a minimum loss ratio until an exposure period is sufficiently mature. This has often been applied to general insurance 'unearned exposures'.*

» *Use an explicit discount rate that is lower than the risk-free discount rate.*

» *Use a fixed percentage risk margin assigned by line of business, for example, 5% of discounted current estimate for motor insurance, 10% for risker liabilities, and so forth.*

» *Use a 'cost of capital' approach by applying a fixed cost ratio on a regulatory-based capital, which is not specific to the individual risk. For example, simply a fixed ratio of statutory liabilities of premiums.*

Some of these can be considered for the IFRS 17 risk adjustment. For example consider an insurance company currently using margins for regulatory reporting. As with the other cases consistency with the regulatory basis could be achieved by recycling some of these calculations. Consider each of the components:

» **Risks in scope:** As with the other metrics, the risk adjustment calculation will only require margins to the non-financial risks that cause uncertainty around the timing and amount of cash flows, not all risks.

» **Stresses:** Under this approach, different margins can be applied to different assumptions during the projection period. Typically the target for the total extra provision has been in the range of the 60-80th percentile. While this percentile is not as extreme as for the other methods, appropriateness for the risk adjustment should still be considered.

» **Discount rate:** As noted above, the margins can also be applied to the discount rate and the specific cash flows.

5. Other issues for consideration

The choice of IFRS 17 risk adjustment methodology is a key decision for insurers to take in the coming months. Different methods, assumptions, and confidence levels should be considered under different future scenarios to fully investigate the implications of this decision. This paper highlighted:

» IFRS 17 requirements

» Consistency with other reporting basis

» Use of existing data, assumptions, and processes

There are several other issues to consider, some methodological, and some practical. These include:

» Calculation at the IFRS 17 contract group level

» Determination of an appropriate confidence level

» Recalculation, projection, and analysis including disclosure requirements

These issues and others for consideration when determining the risk adjustment methodology and calculation process will be discussed further in subsequent papers.

7 IAA paper – Measurement of liabilities for insurance contracts: Current estimates and risk margins

6. References

IASB, May 2017, IFRS 17 Insurance contracts

IAA, Measurement of liabilities for insurance contracts: current estimates and risk margins

Moody's Analytics articles:

Neri, M., May 2018, IFRS 17, and the Level of Aggregation

Jessop, N. March 2018, IFRS 17 Discount Rates

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