Solvent II Own Funds – The Economics of Market Consistent Valuation

by Christian Tomberg, Gen Re, Cologne

In the first two articles in our series on Solvent II (SII), we looked at reasons for being cautious about interpreting Solventy Ratios and pointed out the pitfalls in analyzing the SII required capital. This article focuses on the available capital according to SII, also referred to as Own Funds.

As a starting point for the calculation of Own Funds, “Basic Own Funds” have to be determined based on the SII Economic Balance Sheet (EBS). The main components are outlined below.

Figure 1 – Solvent II balance sheet (market consistent approach)

The EBS is meant to reflect the market values of the assets and liabilities. In cases where the market values are not observable (e.g., if markets are not sufficiently deep and liquid), modelled results need to be considered instead. The assumptions underlying these models can have a significant impact on both the amount and the volatility of Basic Own Funds, making a comparison between companies complex.
To address this handicap, we take a closer look at the valuation methods prescribed for the assets as well as the liabilities in the EBS.

Valuation of assets in the EBS
The default method to determine market values of assets is to use observable market prices from deep and liquid markets (“mark-to-market”). For listed investments – such as equities, corporate bonds and government bonds – market prices are generally available from data providers. For other asset classes, however, this is usually not the case:

• Real estate – Investments in real estate and own-use real estate are evaluated using one of these options:
  > Current prices for similar objects
  > Recent prices for similar objects with adjustments due to changes in economic conditions since these transactions
  > A Discounted Cash Flow method

Even in liquid markets, judgment is required to assess which objects are considered “similar” as real estate investments are usually not standardized. If no liquid markets exist, additional assumptions are necessary. In particular, The Discounted Cash Flow method is based on several assumptions including the timing and amount of future cash flows from the real estate, future discount rates and adjustments for the uncertainty of the cash flows.

As these three methods are not equivalent, the evaluation for real estate can differ significantly depending on the method applied.

• Investment funds – For certain funds, information on the underlying investments is usually unavailable; instead approximations – such as index values – have to be used to determine the market value.

• Derivatives – Valuation models for derivatives usually use stochastic modelling techniques and thus often rely on an Economic Scenario Generator (ESG). The results of these models can heavily depend on the underlying stochastic processes as they determine whether

  > Negative interest rates scenarios are possible
  > Risk drivers tend to revert to a long-term value (mean reversion)
  > The model can replicate the market prices of all relevant asset classes

For more on the wide range of options regarding ESGs, refer to the U.S. Society of Actuaries’ Economic Scenario Generators – A Practical Guide.

As a consequence, market values of these assets, and thus Own Funds, are only comparable if the same modelling approaches are used.

Valuation of liabilities in the EBS
While market prices for investments usually exist, no market prices are available for the majority of insurance liabilities. In this case, Technical Provisions according to SII are calculated as:

• A “Best Estimate” plus
• An additional “Risk Margin”

Both components are based on projection models and rely on a wide range of assumptions and actuarial judgment. As a result, Technical Provisions and Own Funds are only comparable if the same methods and assumptions are used.

Assumptions and methods for the “Best Estimate”

Best Estimate actuarial assumptions
“Best Estimates” are based on assumptions about future cash inflows and outflows from in-force business. In particular for long-term business, such as Life or Casualty, cash flows need to be projected for up to 30 years or even beyond. Subsequently, Best Estimates can be very sensitive to small changes in assumptions, such as mortality rates, morbidity rates or liability run-off patterns. Though these assumptions are usually based on historical experience, there are several aspects that require actuarial judgment. For example:

• Credibility of historical time series and external data
• Outliers and events not in the data
• Assumptions for lines of business with scarce data
• Trends in the data
As there is no one single approach, there is no one and only Best Estimate, even though the term might suggest it. Even with the same data, one can determine a range of Best Estimates, and it is up to each company to set its Best Estimates within these ranges.

Financial Options and Guarantees
For products with Financial Options and Guarantees (FOG) – such as variable annuities or with-profits Life business – calculating Best Estimates is even more complex. Like derivatives on the asset side, FOG business is usually evaluated using Economic Scenario Generators, and therefore the value depends heavily on the company’s choice of ESG.

Furthermore, this business usually increases the capital market sensitivity of Own Funds. According to a study by Germany’s BaFin (Federal Financial Supervisory Authority), Own Funds for the German Life insurance industry decreased by about 12.7% in the first quarter of 2016, mainly due to capital market developments. For the German Non-Life industry, however, Own Funds were hardly affected due to the absence of FOG business.

This example shows that it is crucial not only to compare Own Funds of a single reporting date but to also look at the sensitivity to capital market movements, as Own Funds can vary significantly depending on the underlying business.

Data availability for projection models
For Life business in particular, projection models for Best Estimates are based on portfolio information. For certain lines of business (e.g. Group Life) or certain markets, detailed portfolio information might not be available. Even if it is available, it has to be aggregated to model points to allow for a proper handling of the large data sets. In both cases, assumptions about the underlying portfolio have to be made, which reduce comparability.

Methods to determine the "Risk Margin"
The Risk Margin (RM) reflects the cost of capital for providing the Solvency Capital Requirement (SCR) over the run-off of the business. Therefore, all arguments that apply to the SCR – as laid out in our article “Solvency Capital Requirement – A Look Behind the Curtain” – are valid for the Risk Margin as well. In addition, the SCR needs to be projected to determine the RM. According to the European Insurance and Occupational Pension’s Authority (EIOPA), the four simplification methods below can be applied for the RM:

- Calculate the SCR for each future year but approximate individual SCR modules
- Project the overall SCR relative to the Best Estimate
- Determine the RM based on the duration of the insurance liabilities
- Approximate the RM as a percentage of the Best Estimate

These four methods are not equivalent and thus the results for the RM can easily differ by +/-10% or even more depending on the method chosen. As a consequence, the RM is usually not comparable if different methods are used.

Transitional measures and long-term guarantee measures
In addition to the valuation options inherent in the calculation of Technical Provisions, the SII regulation allows for explicit valuation options referred to as transitional measures and long-term guarantee measures. As part of the “phasing-in” of Solvency II, insurance companies can use adjustments for the calculation of Technical Provisions. These adjustments are intended to avoid a sudden increase of Technical Provisions and as a consequence improve Own Funds and the Solvency Ratios.

The following adjustments can be applied:

Technical Provisions
A linear combination of the statutory reserves, according to Solvency I and the new SII Technical Provisions, can be used subject to approval by the regulator. The weight for the SII Technical Provisions gradually increases from 0% in 2016 to 100% in 2032.
Risk-free rates

Over the next 15 years it is permitted to gradually move from the interest rate structure used for Solvency I reporting to the risk-free rates provided by EIOPA. As for Technical Provisions, this measure is subject to supervisory approval.

Volatility adjustment/matching adjustment

The risk-free rates provided by EIOPA can be adjusted to avoid volatility. Provided certain criteria are met, the risk-free rates can be increased across all maturities (matching adjustment) or up to the last liquid point of the interest rate curve (volatility adjustment). These measures increase the discounting effect. As the increased discounting effect is applied to liabilities only, these measures tend to increase the value of SII Own Funds.

The impact of the measures described above can be significant. In a study of the Day 1 Reporting results, BaFin analyzed the impact of these measures on the German Life insurance industry. The graphic below shows a box plot of several percentiles (5%, 25%, 75%, 90%) as well as the median and mean of the Solvency Ratios with and without these measures.

Figure 2 – Impact of transitional measures on German Life Insurance industry

Source: BaFin
The figure illustrates the following:

- Without the transitional measures, both the mean and the median Solvency Ratio would decrease by more than 100 percent points.
- The impact of the transitional measures is particularly strong for high Solvency Ratios.
- Several companies meet the Solvency Capital Requirement when using the transitional measures, but fall short of the required capital without them.

This analysis shows that only if the same transitional or long-term guarantee measures are used, can we directly compare Technical Provisions. However, a recent study by InsuranceERM shows that the use of transitional measures differs significantly across Europe. According to this study, the transitional measure on technical provisions in particular is largely used in the UK, Portugal, Germany and France. Its use in other countries is rather limited.2

**Conclusion**

We have seen several explicit and implicit valuation options for determining of assets and Technical Provisions in the EBS that may make it difficult to compare Own Funds. These options are summarized in Table 1.

Comparing Own Funds overall can easily be misleading. Therefore, we consider it important to take a more detailed look at the information provided in the future SII narrative reporting (e.g. the Solvency and Financial Condition Report, SFCR) and to compare the SII numbers to other accounting and financial strength standards (e.g. as provided by rating agencies). Furthermore, the sensitivity of Own Funds to external factors, such as interest rates and exchange rates, should also be taken into account to avoid misinterpretations.

In summary, although at first sight a Solvency Ratio offers a compact, and therefore attractive, measure for the comparison of financial solidity between companies, there is a lot more than meets the eye. We encourage you to keep asking questions and use additional quantitative and qualitative data in your assessment.

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**Endnotes**

1. EIOPA-BoS-14/166 Guideline on the valuation of technical provisions, Guideline 62.

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**About the Author**

Christian Tomberg supports the CRO of General Reinsurance AG as a Risk Management Analyst. His main focus is the ORSA process according to Solvency II and in particular the assessment of capital adequacy from an internal and a regulatory point of view. He is a qualified Actuary (DAV) and CERA (Certified Enterprise Risk Actuary). He may be reached at +49 221 9738 206 or christian.tomberg@genre.com.
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