

EIOPA's Market and Credit Risk Comparative Study: Key takeaways

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In the landscape of Solvency II internal models, market and credit are significant risk drivers of the Solvency Capital Requirement. In April 2021, EIOPA issued the 2019 update of the annual Europe-wide comparative study on the modelling of market and credit risk within internal models (IMs), along with a comparison with the Standard Formula (SF).¹ This briefing note provides a summary of the update and related key takeaways.

Executive summary

The European Insurance and Occupational Pensions Authority (EIOPA) benchmark study shows that, for all synthetic asset-liability portfolios, combined market and credit risk capital charges from the IM benchmark are in average higher than the SF. In this note, we discuss the main underlying insights from this study related to two areas:

- First, trends in discrepancies between IM and SF capital charges for comparable risks, i.e., for those risks already covered in the SF.
- Second, regarding the materiality of risks and mechanics not covered in the SF and often captured in IMs, such as sovereign bonds, implied volatilities for equity and interest rates, as well as the Dynamic Volatility Adjustment (DVA).

The comments provided in this note are synthetic and qualitative, and we refer the reader to the original EIOPA study for more details. This short note concludes with the main expected regulatory and modelling challenges in the near future.

Background

EIOPA performs an annual Europe-wide comparative study on the modelling of market and credit risks. The objective of the study is to compare risk charges for a selection of benchmark portfolios to be used as a common consistent reference, and to support the development of supervisory tools for IMs. Additionally, the study aims to highlight the potential differences between IM and the SF by analysing risk charges for individual asset classes such as fixed income or equity.

The 2019 year-end update includes a specific focus on interest rate risk modelling. It is based on 21 participants; 14 participants use integrated approaches while seven use modular approaches.² The participants cover eight different Member States and close to 100% of the EUR investments held by all undertakings with an approved IM covering market and credit risk in the European Economic Area (excluding UK).

Benchmark portfolios have been built by EIOPA to assess so-called capital charges as a function of specific exposure and durations. On the asset side, the allocation reflects EIOPA reference portfolios for the calculation of the Volatility Adjustment (VA). Liabilities are represented in the form of risk-free zero coupon bond positions. Different asset and liability portfolio combinations are then considered to reflect varying cash flow profiles. Market and credit risks are analysed in light of capital charges related to investment instruments. Tax effects or liability responses to shocks of financial risk drivers are not addressed.

Internal model vs. Standard Formula

INTEREST RATE

The capital charges for interest rates obtained from the benchmark have been assessed as significantly higher compared to the SF, hence leading us to conclude that internal models reflect the current low interest rate environment more appropriately. We expect this will be closely followed in the context of the revision of the SF regarding interest rate shocks, as already reflected during both the EIOPA 2018 and 2020 reviews.³

¹ EIOPA. Market and Credit Risk Comparative Study YE2019. Retrieved 14 May 2021 from https://www.eiopa.europa.eu/market-and-credit-risk-comparative-study-ye2019_en.

² In an integrated approach, both the market and credit risk are covered in joint simulations, whereas they are separated in a modular approach.

³ Ruissard, M. & Zandbergen, F. (December 2020). Solvency II 2020 Review – EIOPA's Final Opinion. Milliman Briefing Note. Retrieved 14 May 2021 from <https://us.milliman.com/en/insight/solvency-ii-2020-review-eiopas-final-opinion>.

EQUITY

With respect to equity risk, undertakings in general show less variation in the risk charges for major equity indices (as EuroStoxx 50, MSCI Europe, FTSE100 and S&P500) compared to risk charges applied to the strategic equity participation. Comparison with the SF on those main indices shows that the IM benchmark is disclosing higher shocks. This is to be balanced by observing that the risk charges applied by the undertakings with higher exposures tend to be closer to the SF than the average.

REAL ESTATE

Risk charges applied to real estate investments vary to a larger extent compared to equity. Model calibrations might place more emphasis on the risk profile of the undertakings' actual investment portfolios and less on publicly available indices. Those indices are in particular driven by geographical difference, types of real estate (e.g., commercial versus residential) and the inclusion of rental income in the models. Consequently, the comparison with the SF does not show a particular ranking.

CORPORATE BONDS

Credit risk charges for corporate bonds are generally higher for bonds with lower credit ratings. The variation becomes substantial for BB-rated bonds. This demonstrates the variety of modelling assumptions being taken by firms, particularly for low-rated bonds. Credit risk charges at an instrument level are generally higher for the firms using an integrated approach versus those using a modular approach. Also, firms using an integrated approach show higher shocks for 5-year bonds compared to 10-year bonds (whereas equivalent shocks are observed for modular approaches), and this difference increases as credit rating quality decreases.

CURRENCY RISK

Main reported currency exposure reported in the benchmark relates to GBP and USD. Foreign exchange (FX) rate distribution from the benchmark appears to be asymmetric, as shocks corresponding to an appreciation of the EUR against the GBP and USD (denominated "upward") show larger magnitudes compared to downward shocks. Recall that, for those firms showing exposure to foreign currencies on the asset side without material liability exposure, FX risk is measured through upward movements. Comparison with the SF shows that the average benchmark shock is roughly aligned, although benchmark results demonstrate a high degree of variation between firms, with some of them disclosing significantly high shocks.

Risks outside the scope of the Standard Formula

SOVEREIGN BONDS

In contrast to the SF, capital risks of sovereign bonds are generally modelled by the participants in the benchmark. Credit risk charges for sovereign bonds across groups of modelling approaches show relatively low variation for bonds issued by Austria, Belgium, France, Germany and Netherlands. The variation is greater for the bonds issued by Ireland, Italy, Portugal and Spain. It is noted that some firms show zero or low credit risk shocks across specific sovereign instruments. Overall analysis shows that, as expected, for benchmark portfolios with significant exposure to sovereign bonds, the capital charge (market and credit risks combined) is significantly higher for the internal models in comparison to the SF.

IMPLIED VOLATILITIES

The shocks from the benchmark are in a relatively close range for both interest rate and equity-implied volatility shocks. It is recalled that derivative positions on the asset side are not the only source of exposure to implied volatility, as this risk driver also impacts the level of the value of options and guarantees on the liability side.

DYNAMIC VOLATILITY ADJUSTMENT

The DVA is the approach where the VA is allowed to move in line with the modelled credit spreads. As expected, excluding the DVA effect for the DVA users would increase this variability and significantly increase the risk charges. One sees in particular that, on average, the risk charge of undertakings not using a DVA mechanism is higher than for those using such a DVA; while if one removes the DVA impact, then the risk charge for DVA users becomes higher than that of firms not using a DVA. Also, one notices that the combined market and credit risk charges for DVA users remains, on average and for most portfolios, higher than if one would use the SF (where a DVA is not permitted). This shows in particular that, on average again and for most benchmark portfolios, the DVA effect is not fully counterbalancing the increased risk charge loading related to higher shocks compared to the SF (as for equity) and the addition of risks outside the SF (as sovereign and implied volatility risks).

Perspectives

The EIOPA report update is a useful information source on model calibration for market and credit risks. This analysis is expected to be updated annually, and EIOPA is announcing a study on year-end data with additional emphasis on inflation, correlations and sovereign risk modelling.

Our overall perspective is that first, heterogeneity of modeling practices and resulting capital charges are likely to trigger a higher regulatory scrutiny towards the reasonableness of the models' results in comparison to the benchmark (especially when relatively universal data is used, such as for major equity indices), as well as given the COVID-19 impact and potential consequences on the appropriateness of model calibrations.

Second, overall higher results for IM compared to the SF should be an incentive for further understanding of those discrepancies and to work towards refining the risk modelling and measurement. This should be particularly the case for risks where the benchmark shows clear discrepancies, such as equity-level risk and sovereign bond risk. This work is expected to be done by following closely the SF future updates.

Also, work on convergence of practices may be seen through the use of integrated approaches, as opposed to modular aggregation, and reliance on a pure one-year time horizon, compared to measuring instantaneous deviations.

Finally, one also notices a clear trend towards developing a taxonomy of sustainable investments, related to issues of Environmental, Social and Corporate Governance (ESG), leading the way to more effort towards the refinement of modelling approaches and resulting shocks by taking this information into account.



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