

To: Solvency II WG
From: Prudential Team
cc:
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Subject: Summary of EIOPA yearly study on the modelling of market and credit risk in internal models

Comments

The secretariat has prepared a high-level summary of EIOPA's report "**YE2021 Comparative Study on Market and Credit Risk Modelling**" ([here](#)), which contains the results of EIOPA's yearly study on the modelling of market and credit risk in internal models. The report is part of an ongoing process of monitoring and comparing internal models (IM) for market and credit risk. EIOPA notes that the study and the subsequently report include regular refinements and enhancements, and the results feed into the Supervisory Review Process on IM.

Summary

- **Scope:**
 - **Data:** This report uses year-end 2021 data.
 - **Undertakings in scope:** The report covers nearly 100% of the EUR investments held by undertakings with an approved internal model covering market and credit risks, representing 35.2% of total EEA assets.
 - There is a total of 20 participants from 7 Member States.
 - The study focuses on EUR-denominated instruments but also looks into selected GBP, USD and their foreign exchange rate indices.
 - **Risks under the scope:** The report covers the modelling of market risks (interest rate risk, equity risk, property risk and currency risk) and credit risks (default risk, migration risk and spread risk).
- **Goals of the study:**
 - **Data collection and assessment:** To ensure a consistent and regular collection of information to efficiently conduct and assess internal model outputs and highlight the causes of the presumed dispersion in the risk charges.
 - **Supervisory tool:** To further develop and refine comparative studies for use as a supervisory tool.
 - **Modelling approaches:** To have an up-to-date overview of the modelling approaches.
 - Undertakings use different methods to assess these risks (known as integrated and modular approaches), and some elements within credit risk modelling are only observable on the portfolio level.
 - The report, therefore, mainly presents at an aggregate level, i.e. market and credit risk together. This is because the aggregate results are considered more comparable.
 - **Supervisory practices:** To further develop supervisory tools and foster common supervisory practices.
- **Main findings:**

The main findings below compare the dispersion of the risk charges among the internal models and against the standard formula (SF). In the case of significant risk charge dispersion, the rationale behind it is explained for some risks. For sustainability risk, there is only a reference to the use of taxonomy

within the modelling approach. The study also covers other risks that are not summarised below, such as intra-market risk dependency, derivatives and FX rates.

- **Combined market and credit risk charges:** The results show a sizeable variation between undertakings; some observed variations can be attributed to risk management preferences. Comparing the IM results with the SF reveals that SF charges are typically below or near the 25% percentile of IMs' stresses. This is partly due to:
 - The current design of the interest rate risk in the SF is flawed and does not sufficiently capture the risk of low or negative interest rates.
 - Most IMs have explicit capital requirements for sovereign bonds (more information below).
- **Interest rate risk:** The risk charges under internal models are significantly higher than the standard formula. Internal models better capture the 2021 low-interest risk environment;
 - As noted above, the current SF interest rate risk charges are insufficient because of the negligible interest rate down risk in a low-interest rate scenario as the one of 2021.
 - For the GBP and USD, the dispersion within the internal models is even higher than the EUR.
- **Credit risk charges for sovereign bonds:** The dispersion of risk charges show differences depending on the sovereign-debt-issuing country:
 - relatively low dispersion for DE, NL, AT, BE, FR
 - greater dispersion for IE, PT, ES, and IT.
 - the SF does not require capital for sovereign bond exposures. However, IM users can use the dynamic volatility adjustment, which reduces the impact of the sovereign (and corporate) bond risk charges.
- **Credit risk charges for corporate bonds:** The dispersion becomes higher for bonds with lower credit ratings (substantial for BB-rated bonds); EIOPA notes that the mixture of assumptions applicable in each IM explains this dispersion. The dispersion is also higher in the case of the IMs using an integrated approach rather than a modular approach.
 - EIOPA omits a comparison to the SF for this category of risk charges.
- **Equity risk:** Undertakings show low dispersion in the risk charges for the major equity indices. However, risk charges applied to the strategic equity participation show higher dispersion. The SF risk charges are in line with the risk charges arising from the major index; however, the SF applies a lower capital charge to the strategic equity participation in a non-listed insurance entity.
- **Property risk:** Five real estate investments (commercial properties for DE, FR, IT, and UK markets and residential properties for the NL market) are used to compare risk charges within the property risk. The risk charges applied for participants with higher exposure to real state are inferior to the ones with a lower exposure; because there is a more granular calibration in the internal model of companies with high exposure. The SF risk charges align with the risk charges arising in all the models.
- **Sustainability risk:** Two participants used the taxonomy of sustainable economic activities for the asset modelling. Seven participants are developing such taxonomies for their IMs.
- **Follow-up and outlook from EIOPA/NCAs:**
 - According to EIOPA, the findings from this study highlighted the need for continuous supervisory scrutiny, including at the EU level. EIOPA will further develop supervisory tools and foster the consistency of supervisory approaches.
 - After each edition of this study, participating NCAs are provided with tailored feedback packages enabling them to discuss with and challenge the participating undertakings.

- In some instances, the results also feed into the respective validation processes and exercises performed by undertakings, which has sometimes led to model changes. It is also expected to occur in the future, and EIOPA will follow up on NCAs' activities
 - Specific topics discussed and challenged by NCAs in this edition include the following:
 - Two participants don't have a charge for sovereign bonds; they perform an ad-hoc liquidity analysis in Pillar II instead.
 - Two participants model only the pure credit spread risk and set up conservative margins to mitigate model deficiency.
 - Interactions with the undertakings comprise aspects of data quality and improvements in the coverage of single submissions. The undertakings were additionally asked to provide written feedback on the results and their evaluation. Furthermore, the NCAs' feedback on the study setup and potential future improvements was collected.
- Next steps
- EIOPA launched another year-end 2022 survey ([here](#)) on 16 January 2023, the results of which will be published in early 2024. The next year-end 2022 study will follow, as closely as possible, the scope and extent of the last data request.