

To: Solvency II WG  
From: Prudential Team  
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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 "**YE2022 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 (IMs) for market and credit risk. EIOPA notes that the study and the subsequent report include regular refinements and enhancements, and the results feed into the Supervisory Review Process on IMs.

## Summary

- Scope:
  - **Data:** This report uses year-end 2022 data.
  - **Undertakings in scope:** The report covers nearly 100% of the EUR investments held by undertakings with an approved IM covering market and credit risks, representing 35.8% 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).
- Stated goals of the study:
  - **Data collection and assessment:** To ensure a consistent and regular collection of information to assess IM outputs and highlight the causes of dispersion in the risk charges of different IMs.
  - **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).
    - The report presents market and credit risks at an aggregate level with a drill-down analysis for some risks.
  - **Supervisory practices:** To further develop supervisory tools and foster common supervisory practices.
- Main findings:

The main findings below compare the dispersion of different risk charges among the IMs. The results include comparisons against the standard formula (SF) and explanations of the rationality of the

dispersion for specific risks. 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 are able to consider multi-currency portfolios and complex dependency structures.
  - The dispersion within undertakings using the DVA can be attributed to the interest rate risk component methodology, which addresses the duration mismatches between assets and liabilities. The exclusion of the dynamic volatility adjustment (DVA) effect in DVA users would significantly increase dispersion and risk charges.
  
- **Interest rate risk:** The risk charges under IM are significantly higher than the standard formula. IMs better capture the 2022 still low-interest risk environment and consider a large set of simulated variations (changes in the slope and curvature of the interest rate curve);

  - At a single maturity level, the increase in interest rates (2022 vs 2021) has led to greater dispersion among IMs (for short and medium maturities) and an increase in the shocks applicable in the SF.
  - For the GBP and USD, the IM's dispersion is higher than the EUR, especially for long-term maturities.
  - The EIOPA's proposal on the 2020 SII review would increase the standard formula risk charges significantly for up and down shocks (especially for up shocks).
  - At a portfolio level, higher durations in the portfolio lead to higher risk charges and dispersion.
  
- **Credit risk charges for sovereign bonds:** The dispersion of risk charges shows 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.
  - Compared with last year's report, the dispersion remains stable except for IE bonds in the modular approach, where it has increased.
  - The SF does not require capital for sovereign bond exposures.
  
- **Credit risk charges for corporate bonds:** The dispersion becomes higher for bonds with lower credit ratings (substantial for BB-rated bonds). USD and GBP bonds include higher shocks than EUR corporate bonds. The dispersion is higher in the case of the IM using an integrated approach rather than a modular approach. EIOPA notes that the mixture of assumptions applicable in each IM explains this dispersion.

  - Around half of the undertakings consider higher credit spread shocks for financial bonds than equivalent non-financial bonds. Also, half of the undertakings produced a lower credit risk charge for covered bonds than for equivalent unsecured bond
  - 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 have a higher dispersion. The SF risk charges have decreased in this study due to the lower symmetric adjustment; these risk charges are below or near the 25% percentiles of the IMs' results.

- **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 estate are inferior to the rest of the participants; this is more prominent for exposures to residential properties in the Netherlands. A plausible explanation for this difference is that there is a more granular calibration in the IM 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. Six participants are developing such taxonomies for their IM, which are mainly for asset management purposes.
- Follow-up and outlook from EIOPA/NCAs:
  - According to EIOPA, the findings from this study highlight 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 do not 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

- The next year-end (YE) 2023 survey will follow a different process. The YE 2023 survey will reduce the amount of publicly disclosed information. This means there will be no report, closing event, feedback session, or scope extension/changes. However, the core data collection process (data request, analysis, and validation) will remain the same. EIOPA refers to this reduced information disclosure as a "reduced scope" survey. EIOPA will alternate each year a "reduced scope" (e.g. YE 2023 study) with a "full scope" (e.g. YE 2022 study).
- EIOPA launched the YE 2023 survey ([here](#)) on 12 January 2023, the results of which will be published in early 2025.