

Improving the Initial Margin Model

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In December 2021, the UK Prudential Regulation Authority (PRA) issued a public letter directed to Chief Risk Officers across the major swap dealers ([PRA's review of the use of the SIMM model: Conclusions, 2022](#)) expressing its concerns about the use of the ISDA Standard Initial Margin Model™ (SIMM) in the calculation of initial margin for non-cleared derivatives trades. The letter's intent was to highlight two overall concerns. Firstly that SIMMs current model governance framework and the ability for firms using SIMM to be able to identify and remediate model underperformance in a timely manner especially during times of market stress. The PRA particularly outlines the potential for firms to over rely on ISDA governance process for SIMM recalibrations and Add -Ons that could result in inadequate margin levels especially during periods of market volatility. Secondly, the letter stated that it had identified several issues with SIMM that needed to be addressed to ensure that it was consistent with regulatory requirements.

In response, ISDA issued a detailed statement outlining its views on the PRA's concerns and provided an overview of the steps it had taken to address them. In this paper, we will examine ISDA's response to the PRA's comments of SIMM and explore the implications of this for the derivatives market.



Background to the PRA's Concerns on the use of ISDA SIMM™

Principals published by [IOSCO and BIS](#) provide the basis for calculating and posting initial margin. With the Key Principals set out as Potential Future Exposure (Initial Margin) and Current Exposure (Variation Margin) of non-centrally cleared derivatives, it ensures that all counterparty risk exposures are covered fully with a high degree of confidence, as noted in Key Principle 3 (Margin Requirements for non-centrally cleared derivatives, 2020).

The potential future exposure of that portfolio is defined as the plausible increase in value consistent with a one-tailed 99 per cent confidence interval over a 10-day horizon, based on historical data that incorporates a significant financial stress, Requirement 3.1 (Margin Requirements for non-centrally cleared derivatives, 2020).

It is these principles, which are translated to country specific regulations, that a regulator must consider when deciding if a regulated firm complies with the rules. It should be noted that it always remains the regulated entity's responsibility to comply with those regulations regardless of whether they have chosen to implement a standardized model managed outside of their firm.

SIMM is a widely used industry standard model for calculating initial margin for non-cleared derivatives trades. It is designed to provide a consistent and transparent method for determining the amount of collateral that counterparties must post to cover the potential future exposure of their trades. It has performed well for the regulation however has accepted weaknesses which need to be actively managed by in scope firms using backtesting and remediation of exceptions through the use of Add-Ons.

Add-Ons are a key part of the SIMM model. They provide a bilateral mechanism to remediate the SIMM model

where issues are identified. This allows both parties to post additional collateral where they have detected shortfalls in the model. Given that compromises on the accuracy of the SIMM model were made to ensure it was possible for all firms to adopt it, it is inevitable that some portfolios will not be accurately modelled, and these Add-Ons provide the mechanism to resolve those modelling shortfalls.

In its letter to ISDA, the PRA expressed several concerns about SIMM, including the approach to backtesting and firm’s overreliance on SIMM governance process and failing to adequately remediate underperformance. It further highlighted that the large number of hedge fund portfolios which were adopting the model in September 2022 could present new issues which would not have been identified through existing backtests.

ISDA’s Response to the PRA’s Comments

In its response to the PRA’s letter, ISDA acknowledged the importance of ensuring that SIMM was fully aligned with regulatory requirements. It noted that it had been working closely with regulators around the world to refine and enhance the model since its introduction in 2016.

Subsequently there have been significant revisions to the governance model of SIMM, which were published in March 2023 ([ISDA SIMM Remediation Annex to the ISDA SIMM Governance Framework, 2023](#)). In Summary:

- 1. Introduction of off-cycle recalibration when significant market events are driving significant new backtesting exceptions.
- 2. Clear guidance to the importance of Dynamic (or Actual PnL) Backtesting to identify Risks Not In SIMM (RNIS), and ISDA’s role in remediating any issues.
- 3. Reduction in Thresholds for Back testing Requirement, Reporting and Remediation. Coupled with reduction in the remediation timeline.

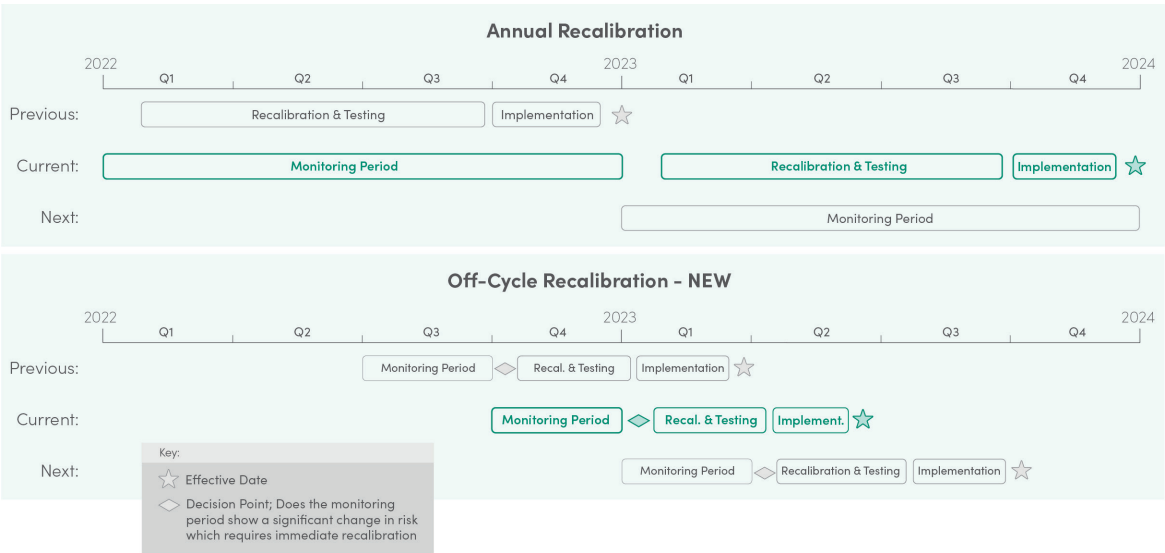
While this doesn’t change the basic mechanics of the SIMM model, it does significantly affect the process around complying with it. Taking each change in turn we can outline how this will impact firms and what actions they should take.

Off-cycle Recalibration

Off-cycle recalibration was introduced to ensure that very large market shocks which drive a significant change in risk are adequately absorbed by the model. This is measured quarterly, through collection of backtesting data.

We have seen to date one off-cycle recalibration. This was triggered because of backtesting exceptions in Q4 of 2022. The new SIMM version (2.5A) was announced in Q1 2023, and has an effective date of July 15th 2023.

The off-cycle recalibration is targeting specific risk factors, in the case of 2.5A Interest Rates, rather than applying a general recalibration more broadly across all risk factors. This should make them easier and quicker to validate.



This introduction of off-cycle recalibrations should reduce the time taken from a significant market shock to a recalibration to ensure the methodology still covers the risks from a maximum of 23 months to a maximum of 8 months.

Identifying Risks not in SIMM

While the remediation annex does not add the requirement for Dynamic Backtesting it does clarify its intended purpose and provide a lot of detail about how to handle exceptions which are generated.

In particular it provides clarity about the definition of what are and are not risks in SIMM.

Examples that are **not** RNIS:

- Exceptions caused by market-observed risk weights being greater than those of SIMM risk factors.
- Exceptions resulting from market-observed correlations being different than the SIMM correlations.

Examples that **are** RNIS:

- Basis between Loan Credit Default Swap and Loan Credit Default Index
- Absence of cross currency basis swap term structure in SIMM
- Inflation index basis
- Absence of inflation term structure in SIMM
- Higher order sensitivities of risk factors which are in SIMM e.g. third order and higher-order sensitivities of SIMM risk factors
- Movements in a market-observed price which is neither an existing SIMM risk factor nor mostly driven by existing SIMM risk factors

Since the Actual PnL should include all market affects, regardless of if they are observable or not then it should capture those issues. Given that in many cases a 3+1 (VaR based) model is dependent on risk scenario valuations which may well have the same limitations as the SIMM model then it will not always capture Risks Not In SIMM.

Firms are required to remediate RNIS issues bilaterally when they occur. Typically firms would use Fixed Add-Ons at a product class level. Firms should identify the products which are causing issues in the backtest and agree a multiplier which will provide sufficient add-on to the SIMM to remediate the exception.

These issues will also be submitted to ISDA to decide whether industry-wide action is appropriate. The remediation annex sets out the conditions by which industry-wide action would be required.

- Systemic – an issue occurs across the industry and is not just focused on a small number of firms
- Persistent – an issue occurs on more than one occasion
- Material – an issue has a significant size and impact

It also provides guidance to the types of action which would be taken to remediate such an issue. This includes the potential to add new risk factors to the sensitivity calculation.

This provides further justification for including Dynamic Backtesting into a firm's SIMM governance regime. Whereas at one point the approaches could be seen as alternatives, this provides a compelling reason to execute both.

Firms should be ready to implement a new major version revision, with the addition of new risk factors should an issue breach the Systemic, Persistent and Material tests.

Reduction of Thresholds

The revision to the remediation annex provides a significant drop in thresholds for almost all aspects of SIMM. In particular it provides clarity about the definition of what are and are not risks in SIMM.

Threshold	Severity	Previous	New
Portfolio Monitoring		EUR 50M	Non-Zero Collected Collateral : EUR 0M
			Otherwise : EUR 25M
Reporting	Red	At least EUR 25M and 15%	Maximum of EUR 10M and 15%
	Amber		EUR 100M
Remediation		At least EUR 50M and 15%	Maximum of EUR 25M and 15%

Table 1 : Showing the Change in Thresholds in the Governance Annex published in March 2023

These changes impact portfolios differently depending on the current exposure. To understand the scale of the change the plot below shows a logarithmic histogram of the number of agreements in each exposure range. This data allows us to estimate how many agreements will have their reporting and remediation thresholds changed by the new governance annex.

Distribution of Agreements by Exposure:

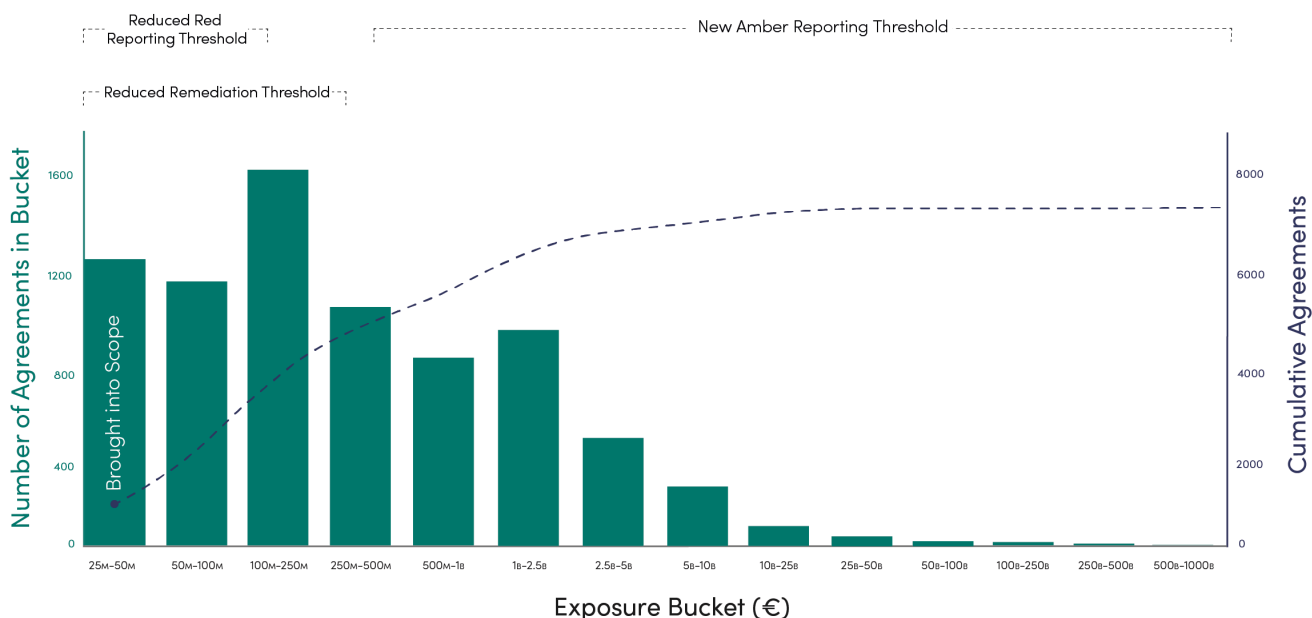


Figure 1 : Logarithmic histogram of the number of margin agreements with respect to their exposure

There are several significant impacts of these changes. The first is that it brings relationships which are below threshold into portfolio monitoring. This would appear to be in response to the challenge of new hedge fund portfolios coming on-line which have not been adequately backtested.

This means that once a hedge fund (or other) portfolio is either sending collateral, or their SIMM exposure hits €25M then their dealer would be expected to start backtesting the portfolio. If exceptions are identified then it's possible that remediation add-ons could have to be applied before the portfolio hits the €50M threshold. There are 1,124 Agreements which this would impact.

This change means that it should be unlikely that a hedge fund would move directly to exchanging margin before any back testing has been completed. Note that this may still happen if a portfolio is allowed to grow extremely quickly.

The Reporting threshold has dropped which will impact portfolios whose SIMM Exposure needs to be reported. The change in reporting thresholds means that portfolios with exposures between EUR50M and EUR127M have significantly reduced red reporting thresholds, and portfolios in excess of EUR25M are now reportable if they have a breach. On top of the 1,124 agreements which were included because of the change in monitoring threshold and an additional 1,504 have their threshold reduced.

Similarly, the remediation threshold has dropped which will impact portfolios whose SIMM exposure needs to be remediated. The change in reporting thresholds means that portfolios with exposures between EUR50M and EUR334M have significantly reduced remediation thresholds, and portfolios in excess of EUR25M may require remediation for the first time. On top of the 1,124 agreements which were included because of the change in monitoring threshold and an additional 3,052 have their threshold reduced.

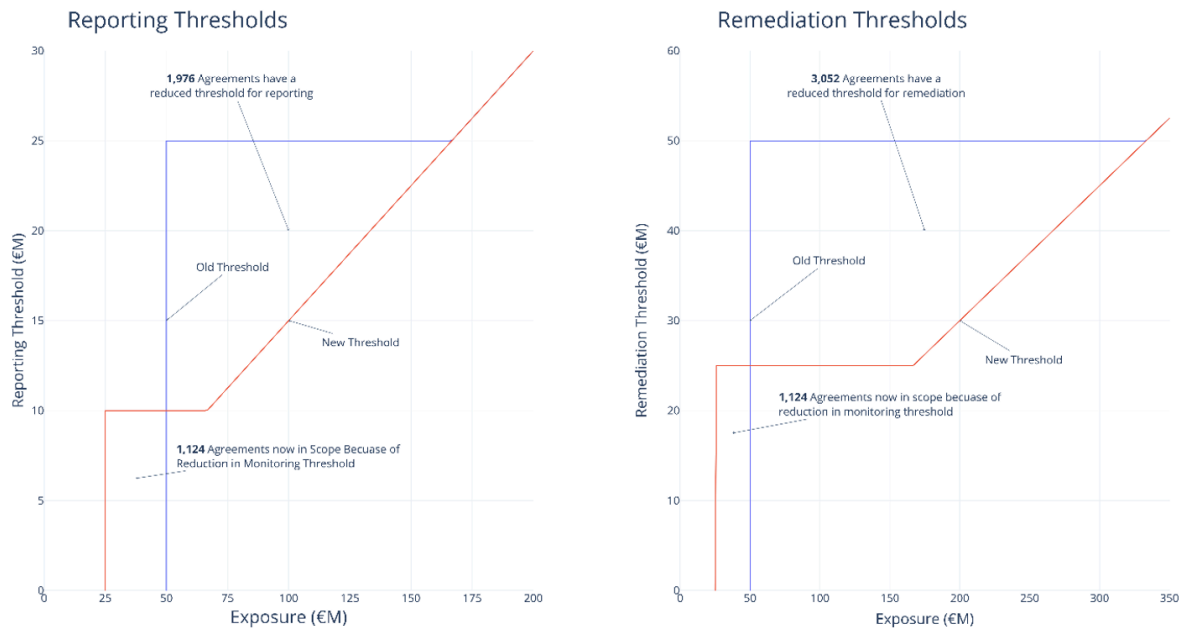


Figure 2: Changes in Reporting and Remediation Thresholds with respect to the current exposure of the agreement

Finally a new amber reporting threshold is defined such that portfolios with exposure in excess of EUR667M will have a reduced reporting threshold. This reduces the reporting threshold for 1,972 portfolios, including all of the largest SIMM exposures and reduces the reporting threshold to around 0.07% of the average exposure of the 20 largest portfolios.

Implications for the Derivatives Market

The PRA's criticism of SIMM and ISDA's response to this highlight the ongoing challenges facing the derivatives market in the area of initial margin calculation. As the market continues to evolve and new products are introduced, it is important that the models used to calculate initial margin remain robust and fit for purpose.

The fact that regulators such as the PRA are closely scrutinizing these models is a positive development, as it helps to ensure that the models are being appropriately implemented and governed, and that this evolution evolves with time as market conditions change and market participants follow new strategies.

The adjustments implemented by ISDA to the governance of SIMM has made significant changes to the detail of how it is managed within firms and increases the scrutiny on the model for both the smallest and largest portfolios.

Find out how to manage recalibrations efficiently with Acadia's IM Recalibration Analytics Service by clicking [here](#). Our [IM Backtesting](#) service can also help your firm comply with Dynamic Backtesting regulations.

References

Bank of England Prudential Regulation Authority. (2022). PRA's review of the use of the SIMM model: Conclusions. Letter. Retrieved from <https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2022/june/simm-model.pdf>

Basel Committee on Banking Supervision, Board of the International Organisation of Securities Commissions. (2020). Margin Requirements for non-centrally cleared derivatives. Retrieved from <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD651.pdf>

International Swaps and Derivatives Association. (2023). ISDA SIMM Remediation Annex to the ISDA SIMM Governance Framework. Retrieved from https://www.isda.org/a/8BJgE/20230309_ISDA-SIMM-Remediation-Annex.pdf

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Stuart Smith joined Acadia in 2022 as Co-head of Business Development. In his role, Stuart is responsible for driving the strategy, development and growth across Acadia's Risk and Data suite of solutions. Stuart has worked in the capital markets industry for over ten years, implementing a range of risk systems with financial institutions globally. Prior to joining Acadia, he led the development of FIS' market and credit risk solutions working with clients on complex problems including regulatory compliance, real time credit limits and innovative high performance aggregation solutions. Stuart holds a Masters (MPhys) from Oxford University and PhD in Quantum Electronic Engineering.

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