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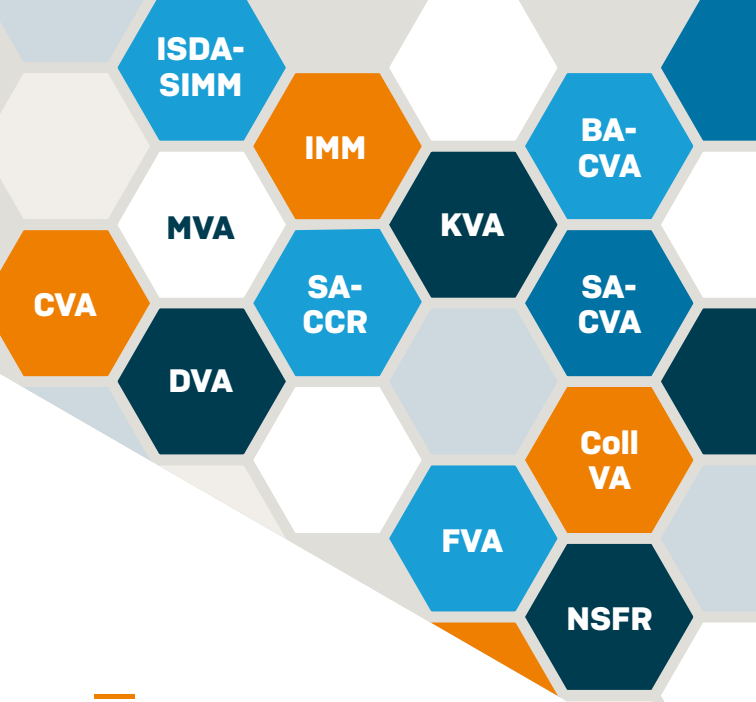
The Impact of Initial Margin

On xVA and Regulatory Capital



A new age of collateral

The phase-in of initial margin (IM) is progressing since Sep. 2016 and currently affects the largest market participants with portfolios over 350 Bn€ AANA[1] of derivatives already affected by variation margin. From the 1st Sep. of 2021 and 2022, portfolios of 50 Bn€ and 8 Bn€ AANA will be affected as well.

What is initial margin? Collateral that is used to lower the future exposure to a counterparty. Relevant trades are OTC derivatives already requiring variation margin. IM can be calculated either via a notional based standard approach or an internal model, which has to cover at minimum a one-tailed 99 % confidence interval and a 10 day margin period of risk.
The market standard for the latter is the ISDA's "Standard Initial Margin Model" (SIMM).

[1] **A**ggregate **A**verage **N**otional **A**mount: The notional sum of the relevant OTC derivatives of the respective counterparty group.

MVA – Margin Value Adjustment

MVA measures the expected lifetime costs for posting IM and can potentially be charged to the trade counterparty. It is typically determined by including SIMM sensitivities in the exposure simulation or by a regression method. Schedule based IM can easily be included in any xVA calculation.

CVA – Credit Value Adjustment

While IM introduces new costs in form of MVA, it can also reduce CVA (and DVA) significantly. However, due to IM threshold, cash flow spikes, and exemptions, the CVA of an IM collateralised counterparty is not negligible and cannot be estimated without modelling IM in the credit exposure simulation.

CVA and MVA of a sample portfolio

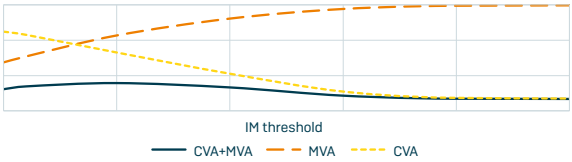


Figure 2: Impact of IM threshold on CVA and MVA for a sample portfolio.

What does d-fine offer?

We have extensive experience with projects on initial margin, exposure simulation, xVA and regulatory capital. From pilot studies on the impact of IM, over prototyping and selecting vendors of

SA-CCR and KVA

The new standardised approach for counterparty credit risk credits received collateral (VM and IM) much more favourably than the CEM, reducing required capital for IM counterparties. If lifetime capital costs (KVA) are to be considered, future IM needs to be simulated (or estimated) as well.

CVA Risk Charge

From 2023 onwards, financial institutions must follow one of the two new CVA risk approaches, BA-CVA or SA-CVA. If IM is taken into account in CVA, it can yield a significant benefit for SA-CVA. An example is given in figure 3, which is explained in detail in the d-fine whitepaper "Impact of the new CVA risk capital charge".

Comparison of CVA risk charges

	BA-CVA	SA-CVA
no CSA	366%	372%
CSA	156%	34%
CSA + IM	44%	**9%**

Figure 3: New CVA risk charge of a 10y ATM swap with a financial counterparty, relative to current standardised method.

exposure and IM simulation systems, to actually implementing and customising such systems, as well as integrating IM simulations into existing xVA systems.

Counterparty credit exposures

The new IM requirements lead to changes and challenges not only with collateral exchange processes, but also in determining the effect of IM on the balance sheet and on regulatory capital requirements; both of which cannot be left unaccounted for.

Integrating initial margin into credit exposure simulations reduces counterparty exposures and therefore benefits CVA, CVA risk charge, KVA (capital costs for SA-CCR and CVA risk), and limit utilisation.

For calculating the latter, a careful modelling and treatment of cash flow spikes may become necessary.

However, posting IM is not without costs (like MVA), and calculating them also requires a simulation of future IM needs.

EE of a collateralised swap

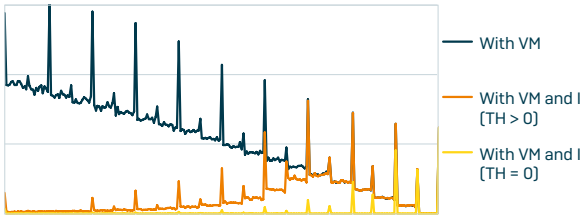


Figure 1: Expected exposure of a VM collateralised 10y ATM swap with and without IM, assuming an MPoR of 10bd.

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