

The ISDA SIMM overview & FAQ

A guide to the ISDA
Standard Initial Margin Model (SIMM)

Contents

- 02** Model overview
- 02** SIMM implementation choices
- 02** Bloomberg SIMM implementation
- 04** Bloomberg offering/workflow
- 05** Frequently asked questions (FAQs)

SIMM overview.

What is the ISDA Standard Initial Margin Model (SIMM)?

On September 1, 2016, regulations went into effect for the U.S., Canada and Japan that required the largest financial firms (essentially the largest banks and dealers) to post initial margin (IM) to each other when trading non-centrally cleared derivatives. These regulations went into effect for Europe and other parts of Asia in February 2017. These rules will be applied, globally, to smaller financial institutions in several phases ending in 2020. In response to these rules, the International Swaps and Derivatives Association (ISDA) published a standardized methodology for calculating initial margin requirements for non-centrally cleared derivatives; this methodology has been adopted by most, if not all, of the banks included in the initial implementation of the rules.

Bloomberg has licensed the SIMM methodology from ISDA. We are providing solutions for a variety of different market participants, tailored to single-security, portfolio and collateral management workflows, leveraging the Bloomberg Terminal[®]'s powerful suite of derivatives functionality, including the Multi-Asset Risk System (MARS).

Bloomberg has implemented the SIMM methodology in line with ISDA guidelines as set out in the ISDA SIMM Methodology documents that can be found on the ISDA website — www2.isda.org/functional-areas/wgmr-implementation/.

Other information can be found on the following links:

- Read more about ISDA's SIMM release at www2.isda.org/functional-areas/wgmr-implementation/.
- Learn more about Bloomberg's SIMM solutions on the Terminal via SIMM <GO>.
- Get a complete picture of Bloomberg's Multi-Asset Risk System offering on the Terminal via RISK <GO>.

Model overview

The ISDA SIMM is a parametric sensitivities-based (e.g., delta and vega, also known as “the Greeks”) VAR model calibrated to market data in historical stress periods; the model is made consistent with BCBS/IOSCO margin requirements to achieve an Initial Margin capable of covering a margin requirement to a 99% degree of confidence given a 10-day Margin Period of Risk (MPOR). Although ISDA SIMM specifies the various formulas, their order of operation/summation and all* risk weights and associated correlation parameters; in order to calculate SIMM Initial Margin, users are required to calculate and input the Greeks in accordance with ISDA SIMM specifications for format. For example, ISDA specifies precisely the tenors required for interest rate bucketing. This is described in more detail below, and in a nutshell, it’s all about the Greeks.

Risk class	Bloomberg coverage
Interest rate	Yes
FX	Yes
Credit (qualifying)	Yes
Credit (non-qualifying)	In progress
Equity	Yes
Commodity	Yes (Precious metals only)

Product class	Bloomberg coverage
Interest rates & FX	Yes
Credit	In progress
Equity	Yes
Commodity	Yes (Precious metals only)

For each of the 6 Risk Classes, “X”, there are 3 types of (Greeks) components in the Risk Class margin:

$$X = \text{DeltaMargin}_X + \text{VegaMargin}_X + \text{CurvatureMargin}_X$$

Essentially, given a portfolio of derivative deals (under one CSA netting set), each deal would be put into one product class. For a product class, for each Risk class at a time, Greeks for each of the three components in the above equation, are summed in accordance with the weighting and combining functions described in the SIMM model for each component and then summed together as per the equation above.

Note – *CurvatureMargin_X* is similar to “gamma” but is computed using vega as the raw Greek input. See section 12 of ISDA SIMM™, 1 Methodology, version R1.2 (based on v3.19: 22 November 2016) Effective Date of the EU Rules [4 February 2017].

SIMM implementation choices

SIMM model documentation provides user/vendor discretion and choices for implementation in several areas, along with methods to align such choices with the standard (or preferred) method proposed by ISDA. For example, for IR delta Risk, SIMM specifies the following tenors: 2 weeks, 1 month, 3 months, 6 months, 1 year, 2 years, 3 years, 5 years, 10 years, 15 years, 20 years and 30 years.

However, given that users’/vendors’ existing systems may not have existing risk analytics infrastructures (perfectly) consistent with producing these above tenors, SIMM specifies a method to “re-grid” tenor deltas into SIMM tenors (see the examples in ISDA SIMM™, 1 Methodology: Risk Data Standards Version 1.36: 1 February 2017).

Bloomberg SIMM implementation

We calculate our Greeks via our SHOC infrastructure in which we price and reprice the derivative deals at current and at shifted market (data) prices, respectively. This is an instantaneous “scenario” in which we shift the relevant “SIMM factors,” one at a time, to obtain the resultant change in derivative deal price due to this shift. (Consistent with ISDA SIMM, this manual shock or shift process produces a “discretized” estimate of the Greeks rather than the theoretical “calculus derivative” Greek value.)

Interest Rate (IR) risk class

ISDA specifies five main benchmark interest swap curves: OIS, 1-month, 3-month, 6-month and 12-month Libor (or Ibor). All other swap curves (such as prime rates or Muni) are mapped to one of these benchmark curves.

For each currency, we transform market IR swap curve data into “independent” PAR SWAP curves consistent with the above five benchmark curves to the extent possible (note that we support 18 OIS currencies, 11 of which we apply “dual curve stripping” [DC] to). For more information on curve construction, supported OIS curves and dual curve stripping, please see OIS <GO> on the Bloomberg Terminal.

IR deltas are computed for each tenor for each of the five benchmark curves (what Bloomberg calls “key rate risk”) by a 1 basis point UP shift within the above-mentioned SHOC framework. Keep in mind that for currencies where DC applies, a shift of (one tenor of) the OIS curve results in a re-strip of the other four Libor (Ibor) curves, thus producing slightly different Libor (Ibor) forwards.¹ In a nutshell, every time we impart a shift of one tenor (or one “factor”) at a time and re-strip the swap curve given that shift, we produce slightly different forwards and discount

*Currently, there is an industry crowd source utility operated by ICE/IBA that collects and provides consensus for SIMM classification of risk buckets for the many credit and equity corporate and other entity names. This consensus classification data is a necessary input for the Credit and Equity Risk classes SIMM calculation.

¹ Libor (Ibor) swap curves are not entirely independent if/when DC applies within that currency.

factors for that curve. We then use these new forwards and discount factors to reprice the derivative deal (portfolio). We further compare the new deal price versus the old (unchanged) deal price. This would produce the resultant delta(s) associated with that shifted tenor. Similar/analogous procedures are followed to obtain other factor sensitivities (vegas, etc.).

For deals whose pricing depends upon volatility from our Bloomberg Vol Cubes (VCUB), “sticky strike” is applicable within the VCUB stripping (e.g., upon shifting the swap curve [tenors], the vols within the VCUB are expected to remain constant at the original strikes).

For more information on VCUB and stripping/interpolation, please see: VCUB Help Page > Calculations Sections > Cube Stripping Method.

IR vegas (for the purpose of computing both *VegaMarginX* + *CurvatureMarginX*) are computed via a 1bps shift UP of normal volatility within our IR VCUB.

FX risk class

The FX Risk factors are in the context of the IM CSA “calculation currency” versus all the other deal cash flow currencies within that portfolio netting set. So, for example, given a base currency of USD and IR and FX deals spanning the EUR and JPY currencies, the various deltas and vegas will be computed as a shift in the base currency (USD) versus the cash flow currencies (EUR and JPY), e.g., shifts of USD/EUR and USD/JPY.

FX deltas

Computed via a 1% shift UP of the SPOT FX currency.

For more information on FX vol cubes, please see: OVDV FX Help Pages > Calculations > Surface Interpolation or Surface Recalibration.

FX vegas

Shift UP of 1% Black (lognormal) vol. The tenors (expiry) of the FX vegas match the above-mentioned IR tenors (2 weeks, 1 month, 3 months, 6 months, 1 year, 2 years, 3 years, 5 years, 10 years, 15 years, 20 years and 30 years).

Equity risk class

Standard Equity Indices are covered but via the ISDA SIMM “standard preferred approach”.

Equity deltas

Computed via a 1% shift UP of the SPOT equity.

For more information on Equity vol cubes, please see: OVDV EQUITY Help Pages > Calculations .

Equity vegas

Shift UP of 1% Black (lognormal) vol. The tenors (expiry) of the Equity vegas match the above-mentioned IR tenors (2 weeks, 1 month, 3 months, 6 months, 1 year, 2 years, 3 years, 5 years, 10 years, 15 years, 20 years and 30 years).

Commodity risk class

Only precious metal commodities (e.g. Gold, Silver, Platinum, etc) are currently covered. Other commodities coverage are currently under implementation.

Commodity deltas (Precious metals)

Computed via a 1% shift UP of the SPOT Commodity.

For more information on Comm vol cubes, please see: OVDV Commodity Help Pages > Calculations > Surface Interpolation or Surface Recalibration.

Commodity vegas (Precious metals)

Shift UP of 1% Black (lognormal) vol. The tenors (expiry) of the Comm vegas match the above-mentioned IR tenors (2 weeks, 1 month, 3 months, 6 months, 1 year, 2 years, 3 years, 5 years, 10 years, 15 years, 20 years and 30 years).

Credit (qualifying) risk class

Credit default swaps based on both single names and indexes are covered in our SIMM calculations.

Classification of the CDS into the corresponding risk bucket according to the ISDA SIMM standard requires assigning a sector and a credit quality rating based on the ISIN of the reference obligation. Please note currently classification into sector for a given ISIN is based on the BICSBETA classification data from BICS. We will address support of SIMM IBA classifications in a later phase.

Credit deltas

Computed via a 1bp shift UP of the credit spread curve for each issuer/seniority pair, separated by payment currency, on the following vertices: 1 year, 2 year, 3 year, 5 years, and 10 years.

For credit indexes, credit delta is calculated on the underlying constituent level, consistent with ISDA specifications.

Cross-currency swaps (CCS)

Given that the IOSCO/BCBS margin rules allow exclusion of FX forwards for physically settled currencies (as a practical matter this tends to be at least the G10 currencies), ISDA SIMM applies a special treatment for CCS pricing and Greeks for the cases with an FX principal exchange embedded within the swap deals that apply to physically settled currency pairs. For this reason, we apply special pricing for CCS (which may differ from the standard pricing of CCS within our flagship pricers such as SWPM and MARS) to be consistent with ISDA's document: SIMM™, 1 Cross-Currency Swap Treatment.

Bloomberg offering/workflow

MARS collateral management

Bloomberg offers SIMM end of day calculations through the MARS Collateral Management tool {BCOL <GO>}, providing a full end-to-end solution for your collateral management process. BCOL allows you to monitor and quickly take action on margin call events triggered by collateral agreements managed in the Legal Documentation Database (LEDO). Using the built-in margin calculator in MARS BCOL, you can determine margin requirements, electronically send and receive margin calls and book collateral to your portfolio — all on a single platform.

The MARS Collateral workflow allows the setup of multiple CSAs per principal-counterparty pair, thus enabling a Legacy/ VM/IM CSA structure. It calculates NPV, risk and initial margin via SIMM per appropriate netting set and displays each SIMM-based margin event in BCOL (which also manages communication, reporting and analysis).

BCOL <GO> offers our users the ability to upload their own Greeks (using the ISDA CRIF format), as well as the option to derive SIMM calculations based on Bloomberg-calculated Greeks. For the latter, we have described in the previous sections the various assumptions/choices made to compute the Greeks and thus to compute the SIMM IM.

SIMM output is shown as margin events in BCOL and allows for drill-down analysis by product class and transaction. CRIF files will be available and exportable.

BCOL is also integrated with Acadiasoft's Initial Margin Exposure Manager (IMEM), an initial margin reconciliation and calculation service. BCOL clients who are also clients of IMEM can automatically route their sensitivities data (CRIF or common risk interchange format) from BCOL to IMEM.

MARS front office

Bloomberg offers portfolio-based SIMM calculations for the front office to run pre-trade initial margin calculations in the Multi-Asset Risk System, MARS <GO>.

The MARS Front Office package function provides risk management, stress testing and scenario analysis tools, allowing you to risk-manage a multi-asset portfolio of equity, FX, interest rate, inflation and commodity derivatives and their underlying instruments.

You can identify the incremental initial margin resulting from adding a "what-if" deal to a counterparty in your portfolio. Currently MARS allows you to create a deal from a single security pricer (e.g., SWPM, OVML, CDSW, OVME, DLIB) and add it to your portfolio as a "what-if" trade to perform pre-trade analytics. Additional transparency of SIMM IM calculations showing interim step-by-step attribution to the total final SIMM IM value will be provided. User interface wireframes are available upon request.

Frequently asked questions (FAQs)

You may also be interested in referencing the ISDA SIMM website for the ISDA FAQ document.

Are the principal and counterparty SIMM IM values symmetrical?

No, not in general. There are nonlinear terms in the formulas that can result in different margin requirements on each side. For example:

- For derivative deals with optionality (contingency claims), since one party would be long the option, whereas the other party is short the option and thus the latter has more risk, convexity (curvature term) introduces asymmetry.
- Given above, the concentration/threshold calculations could increase differences between each party's SIMM values.

Is cross-currency basis risk included?

ISDA has recently added cross-currency basis risk to its SIMM. We at Bloomberg have updated our implementation to reflect this change.

Are FX forwards excluded and, if so, what about FX options and other FX derivatives?

Some regulators have made provision to exclude FX forwards from the initial margin requirement. Typically more complex derivatives such as options are included. It is important to consult the relevant regulatory documents provided by your regulator on this.

How are derivative deals allocated into their product classes?

Taken from the ISDA FAQ document:

A.1. [para 6] How is a trade's product class determined? Firms should allocate trades to product classes according to the relevant regulatory requirements and their own best judgment, no further guidance is provided. ISDA will be monitoring whether this degree of freedom leads to material initial margin differences.

What is the effect of these choices on SIMM IM?

Even though risk classes are handled the same way for each product class, as a minimum, the concentration/threshold calculations make the product class choice relevant in the SIMM IM calculations.

Is collateral included within SIMM calculations?

No, collateral is not explicitly included. However, given that users are encouraged by ISDA and regulators to perform SIMM calculations consistent with their pricing and risk management practices to the extent possible, in the cases in which collateral is posted for Variation Margin (VM) — in such cases CSA curves (CSA discounting) is the preferred practice — then SIMM calculations can (and should) be used as the assumed discounting curves where appropriate for these CSA netting sets. At this time, Bloomberg is using the OIS discounting curves for each deal's currency, commonly termed as "domestic OIS discounting."

About the Bloomberg Terminal.

Since 1981, business and financial professionals have depended on the Bloomberg Terminal for the real-time data, news and analytics they need to make the decisions that matter. The Terminal provides information on every asset class — from fixed income to equities, foreign exchange to commodities, derivatives to mortgages — all seamlessly integrated with on-demand multimedia content, extensive electronic-trading capabilities and a superior communications network.

Learn more

To learn more about Bloomberg's SIMM solution, contact us at riskinfo@bloomberg.net.

Take the next step.

For additional information, press the <HELP> key twice on the Bloomberg Terminal®.

Beijing
+86 10 6649 7500

Dubai
+971 4 364 1000

Frankfurt
+49 69 9204 1210

Hong Kong
+852 2977 6000

London
+44 20 7330 7500

Mumbai
+91 22 6120 3600

New York
+1 212 318 2000

San Francisco
+1 415 912 2960

São Paulo
+55 11 2395 9000

Singapore
+65 6212 1000

Sydney
+61 2 9777 8600

Tokyo
+81 3 3201 8900

bloomberg.com/professional

The data included in these materials are for illustrative purposes only. The BLOOMBERG TERMINAL service and Bloomberg data products (the "Services") are owned and distributed by Bloomberg Finance L.P. ("BFLP") except (i) in Argentina, Australia and certain jurisdictions in the Pacific islands, Bermuda, China, India, Japan, Korea and New Zealand, where Bloomberg L.P. and its subsidiaries ("BLP") distribute these products, and (ii) in Singapore and the jurisdictions serviced by Bloomberg's Singapore office, where a subsidiary of BFLP distributes these products. BLP provides BFLP and its subsidiaries with global marketing and operational support and service. Certain features, functions, products and services are available only to sophisticated investors and only where permitted. BFLP, BLP and their affiliates do not guarantee the accuracy of prices or other information in the Services. Nothing in the Services shall constitute or be construed as an offering of financial instruments by BFLP, BLP or their affiliates, or as investment advice or recommendations by BFLP, BLP or their affiliates of an investment strategy or whether or not to "buy", "sell" or "hold" an investment. Information available via the Services should not be considered as information sufficient upon which to base an investment decision. The following are trademarks and service marks of BFLP, a Delaware limited partnership, or its subsidiaries: BLOOMBERG, BLOOMBERG ANYWHERE, BLOOMBERG MARKETS, BLOOMBERG NEWS, BLOOMBERG PROFESSIONAL, BLOOMBERG TERMINAL and BLOOMBERG.COM. Absence of any trademark or service mark from this list does not waive Bloomberg's intellectual property rights in that name, mark or logo. All rights reserved. ©2019 Bloomberg 410847 DIG 0419