



Case Study

Risk Not in SIMM

Analyzing and optimizing for
complex risk calculations

Effective margin optimization for over-the-counter (OTC) derivatives is crucial for banks to ensure that funds are not unnecessarily tied up in trades, allowing for better investment opportunities. The bank's goal is to profit while proving to regulators it is solvent enough to weather a systemic financial market crisis. For exotic swaps, this requires a chain of complex calculations to arrive at an accurate measure of risk and requires a solution that offers speed, performance, and real-time data management.

A leading global bank with over half a trillion dollars in assets turned to ActiveViam to address risk factors not covered by ISDA's Standard Initial Margin Model (SIMM), known as Risk Not in SIMM (RNIS). Facing high volume and complexity, the bank implemented ActiveViam's Atoti technology. This solution allowed them to integrate their models to slice and dice, compute, decompose, and explain their numbers daily, achieving optimal margin management.

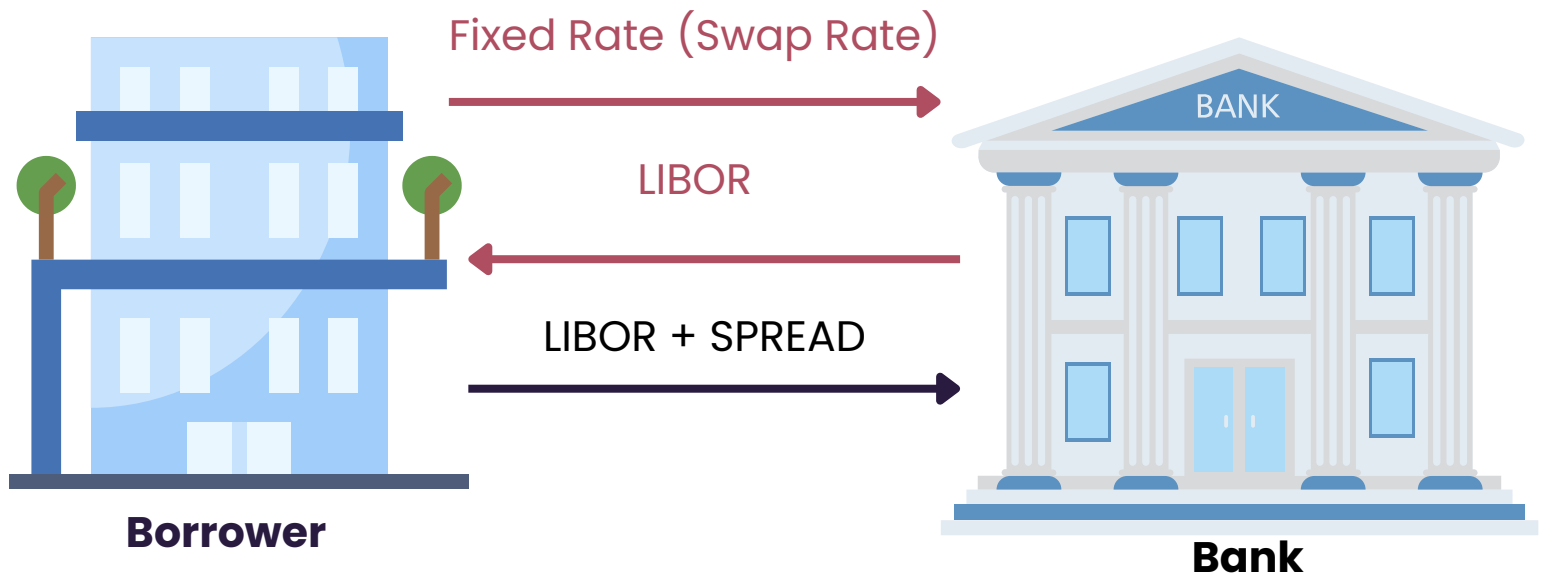
Swaps Desk Management

A swaps desk engages in OTC transactions with other financial institutions primarily to hedge risk. Post-financial crisis, regulators established a trading framework for all swaps, requiring market participants to adhere to these rules for trading and clearing swaps.

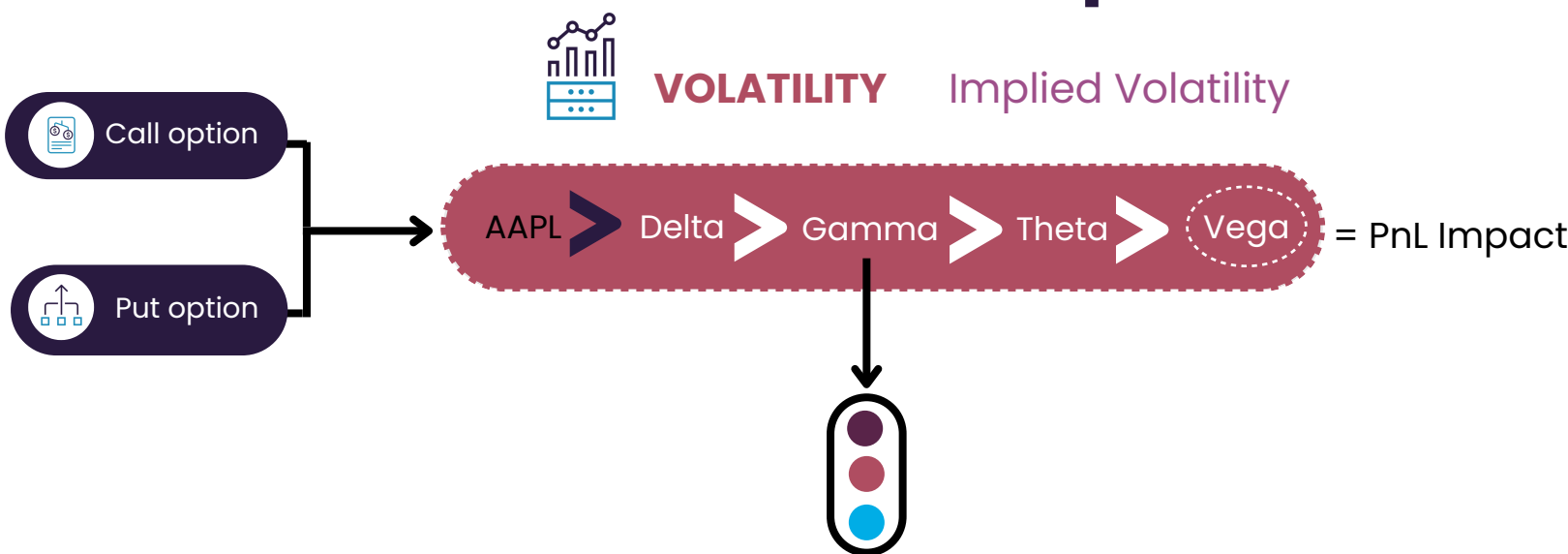
Standardized swaps, such as plain vanilla interest rate swaps in U.S. dollars, are frequently traded, have deep market liquidity, and standardized components like one-to-five-year maturities. These swaps are generally traded on swap execution facilities (SEFs) and can be centrally cleared, with clearinghouse members assuming default risk.

In contrast, bespoke or non-standardized swaps are tailored for specific counterparties and lack a central clearing backstop. These swaps may have unique characteristics such as unusual maturities, less commonly traded currency pairs, or combinations of call and put options.

Plain Vanilla Interest swap



Example: Options straddle on shares of AAPL stock price



For this reason, regulators mandated that OTC swaps need to be funded with margin to protect against default risk since they are widely available for trading and are not centrally cleared.

ISDA SIMM

In response to regulatory requirements, the International Swaps and Derivatives Association (ISDA) introduced the Standard Initial Margin Model (SIMM) in 2016. This model addresses the need for a standardized approach to calculating initial margin for OTC swaps, aiming to reduce disputes between counterparties. It also assists in complying with the Basel Committee on Banking Supervision's regulation 261, which mandates banks to post initial margin on non-centrally cleared derivatives.

To use SIMM, a bank must first meet ISDA's approval requirements, including backtesting portfolios and validating data from both internal and external sources. Even after approval, backtesting trades may reveal mismatched risk between counterparties, necessitating additional margin.

The Challenges

The SIMM model does not fully capture the risk of OTC options trades, known as Risk Not in SIMM (RNIS). Different counterparties often have varying methods for calculating initial margin and may use different models and market data sources, leading to inconsistencies in risk sensitivity calculations (Delta, Gamma, Vega, etc.).

Calculating margin for exotic swaps involves complex calculations across a derivatives portfolio and over time, requiring future value estimations. High volatility scenarios can lead to mispricing of initial margin, especially for complex financial instruments with multiple payout structures.

Additionally, if two parties exceed an aggregate of \$50 million in trades, regulatory margin requirements automatically apply. This affects the amount of capital a bank must hold against its OTC trades — posting too much margin limits investment opportunities, while posting too little risks regulatory fines.

In terms of regulatory constraints, OTC derivatives contracts need to be measured as "risk weighted assets" which, in turn, feed into a bank's solvency ratio — the riskier the asset, the higher the amount of regulatory capital needs to be held against it.

Securing the Partnership with ActiveViam

For nearly a decade, this bank has relied on ActiveViam's solutions for market risk, credit risk, and FRTB SA and IMA within their Traded Risk and Global Banking and Markets units. During discussions, the bank discovered that ActiveViam's FRTB solution for the Standardized Approach could also support their RNIS methodology due to the similarity in calculations.

Using ActiveViam's technology, this Tier 1 bank developed a unique solution from scratch to address their specific needs. Among all the solutions evaluated, ActiveViam was the only provider that allowed the bank to calculate RNIS using their own methodology. The key factor in choosing ActiveViam was the transparency of the solution—it was not a "black box." The bank had access to the source code, enabling their market risk officers and technology developers to integrate their methodologies seamlessly.

Without ActiveViam, the bank would have faced cumbersome and time-consuming data export and reconciliation processes, along with managing hundreds of shared spreadsheets. This would have resulted in lower performance, more errors, and increased time spent on unproductive activities, instead of benefiting from a unified and efficient solution.

Polymorphism:

ActiveViam's technology allows clients to perform Polymorphic Distribution or what is known as Polymorphism, meaning they can keep specific calculation chains for specific datasets in different cubes and call upon the data when they need it.

For example, VaR is a tenor-based risk measure (if the basis points on an interest rate change, then it changes the sensitivity for that financial instrument) whereas PnL is an additive calculation.

These two disparate datasets cannot be calculated equally so what ActiveViam's technology does, through polymorphic distribution, is separate the data into different cubes so it can be calculated on its own terms. Each application is developed at its own pace and is easy to maintain in separate cubes.

Immediate and Significant Benefits

Unified Platform

The bank leveraged ActiveViam's "polymorphism" to utilize a single "cube" for both calculations and aggregation, displayed in one user interface. This streamlined approach eliminated the need to navigate multiple platforms.

"From a processing point of view, there are a lot of benefits," said the bank's Global Lead for Margin Requirements on Uncleared Derivatives. "We now operate on a unified platform, streamlining our aggregation and computation processes. This transition has significantly simplified tasks for our BAU team, eliminating the need to navigate multiple platforms."

Time Saved

ActiveViam's solution enabled the bank to run daily calculations, far exceeding the regulatory requirement of quarterly reports. This capability drastically reduced the time required for margin calculations.

"If I have to run the margin for one given client with any hypothetical trade, it's a much quicker process. We're talking from two hours to a couple of minutes," stated the bank's representative.

On-the-Fly Calculations

The ability to calculate margins on exotic swaps instantly improved workflow efficiency and decision-making.

"We don't have to do calculations by brute force, which used to take a lot of time, and the aggregation also happens on-the-fly. It is quite agile," said the Business Manager for Regulatory Risk, who oversaw the project development and implementation.

Future Growth and Optimization

The bank plans to continue leveraging ActiveViam to enhance its portfolio optimization. As a result, model validation will contribute to long-term portfolio efficiency, providing greater visibility within the firm. This strategic move is expected to extend the benefits of ActiveViam's technology beyond current applications, impacting the bank's overall trading and risk management strategies.

By refining portfolio optimization processes, the bank aims to link model validation directly to actual transactions. This will not only streamline current trade processing but also influence pre-booking decisions, enabling the bank to make more informed and proactive trading choices. The integration of ActiveViam's technology at higher management levels underscores its importance in driving future growth and achieving a competitive edge in the market.

"That's then linking it to actual transactions the bank is taking. At the moment we are just processing existing trades. We will eventually go up the management chain when we start influencing pre-booking of trades," said the Global MRUD Lead.

With ActiveViam's ongoing support, the bank is poised to achieve greater accuracy, efficiency, and strategic insight, ensuring sustained success and robust risk management in an increasingly complex financial landscape.



About ActiveViam

Founded by industry experts, ActiveViam understands the data analytics challenges faced by financial institutions across trading desks, risk, and compliance. ActiveViam pioneered the use of high-performance analytics in finance, helping the largest investment banks, asset managers and hedge funds make better decisions, explain results with confidence, and simulate the impact of their decisions. ActiveViam's mission is to deliver train-of-thought analysis on terabytes of data in the most cost-effective way so clients can explain their results with confidence and model the scenarios that will optimize their business. ActiveViam specializes in risk data analytics for one of the fastest moving and most regulated industries with a presence in the world's leading financial marketplaces – London, New York, Singapore, Sydney, Hong Kong, Paris and Frankfurt.

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