Scotiabank

Enabling real-time credit analysis

Overview

Business challenge

The counterparty risk systems that Scotiabank had in place provided overly conservative measures, and could not support a consolidated view of counterparty credit risk (CCR). Scotiabank wanted to efficiently manage capital and credit so that it could conduct more business without increasing overall risk.

Solution

Scotiabank integrated IBM® Algo Credit Exposure with its existing implementation of IBM Algo Market Risk to deliver a unified solution for measuring and managing counterparty exposures and CVA in the front, middle, and back office.

Scotiabank is the wholesale banking arm of the Scotiabank Group, with 29 offices and more than 300 relationship managers organized around industry specialties. It offers a wide variety of investment and corporate banking products and services to government, corporate, and institutional clients. In 2010, Global Finance magazine named Scotiabank as the Best Investment Bank in Canada, Best Foreign Exchange Bank in Canada, and Best Infrastructure Bank globally.

For Scotiabank and many others, the credit crisis demonstrated the speed at which market conditions can impact counterparty credit risk. "The credit crisis highlights the importance of having a clear consolidated view of counterparty credit risk. In fact, it propelled us to consider how we could measure counterparty credit risk better in order to have more efficient use of our limits," explains Alyson Bailey, Director of Global Analytics and Financial Engineering for Scotiabank.

The counterparty risk systems that Scotiabank had in place provided overly conservative measures, and could not support a consolidated view of counterparty credit risk (CCR). In fact, they measured counterparty potential future exposures (PFE) and Credit Valuation Adjustment (CVA) within some product lines by individually calculating measures on each trade and combining the results. Scotiabank knew that by measuring CVA for commodity derivatives and interest rate derivatives separately, it was not benefiting from a reduction in CVA due to diversification effects.

"Scotiabank is undertaking multiple expansion projects, and as we grow our businesses, we want to ensure the best use of our credit lines. One key way is to know the total exposure to a given counterparty, which would be reflected by proper modeling of the counterparty exposure through joint simulation of risk factors, and recognition of portfolio benefits, credit mitigants, and diversification," says Bailey.

Recognizing that there were several barriers to extending their current system, the team at Scotiabank needed to find a new solution to meet its business needs.

Business Benefits

- With access to more sophisticated analytics on different types of trades, Scotiabank's traders can conduct more scenario analyses to make the best trading decisions.
- IBM Algo Credit Exposure gives Scotiabank more information to interpret risk. Instead of looking at risk as a one-time maximum measure, the firm now views it as a profile. Traders and the credit group now know what a trade will look like and how the exposure increases or decreases with time.

Turning to a trusted partner

As an extensive user of IBM Algo Market Risk, Scotiabank had created a low cost infrastructure that provides robust and consistent risk management across all its derivatives product lines, while allowing front and middle-office innovation. With this success, it was therefore natural for Scotiabank to turn to IBM to meet its counterparty exposures and CVA management goals. The implementation team would be able to shorten implementation timeframes and reduce costs by integrating the existing IBM systems and the bank's valuation methodologies with the IBM Algo Credit Exposure offering.

"We already had the underlying infrastructure in place for market risk and could use the same end-of-day data feeds and models for credit risk. By choosing the IBM solution, we didn't need to develop new end-of-day connectivity with our trading systems," says Bailey.

Moreover, Scotiabank gained the advantage of having integrated market and credit risk solutions and CVA. Integrating measures for market and credit will allow Scotiabank to do more business with the same or lower limits. Additionally, traders can be more accurate in their prices because they can understand the incremental CVA in advance of doing a trade.

Benefiting the front, middle, and back office

In the back office, employees use the web-based interface to set up counterparties and the associated rules and limits in the system. Scotiabank had previously stored limits in several different systems that supported individual business lines. With IBM Algo Credit Exposure, the firm is able to create and store rules-based exposure profiles in a central place. Users can view the consolidated risk associated with a single exposure measure that incorporates all asset classes executed under the master agreement with the client.

Instead of separate credit lines for both interest rate derivatives and equity derivatives, the firm can enter a single limit representing a consolidated view of both, leading to more efficient use of scarce credit lines.

"We wanted to move away from a siloed approach for counterparty limit setup and limits, and be able to properly aggregate our true exposure," says Bailey.

Solution Components

Software

- IBM® Algo Credit Exposure
- IBM Algo Market Risk

The front office uses the solution in a number of ways. For new trades, the marketers and traders can conduct what-if analyses to determine the incremental impact of a new trade that fully accounts for portfolio diversification, netting, and collateral. By recognizing incremental credit risk at deal time, Scotiabank can choose the hedging counterparty that will pose the least incremental risk, or even one that will have a risk-reducing effect with that counterparty.

Sometimes the marketers will build sample trades to prepare a hedging strategy for a client. They will be able to determine potential exposures that they will use to present to the credit department about the type of approval that should be granted to a client. By understanding the difference between the expected exposure and the worst-case exposure, the business can make more informed decisions about extending credit.

IBM Algo Credit Exposure also complements the firm's use of IBM Algo Market Risk. Within IBM Algo Credit Exposure, Scotiabank uses the scenario generation engine to simulate possible paths for counterparty exposure profiles. It then analyzes the results using IBM Algo Market Risk. "We can now simulate the different market risk factors and reflect their correlations and diversification effects on counterparty portfolios," says Bailey.

Driving better trades

With access to more analytics on different types of trades, Scotiabank's traders can conduct more scenario analyses to make the best trading decisions. Previously, traders would have to ask the risk management group to run what-if analyses. Risk management would run the trade and provide numbers, but the turnaround was not fast enough to keep pace with moves in the market or client requests.

Moreover, instead of a portfolio methodology, some businesses used grid table estimates. Because the firm was relying on very rough approximations to determine CVA and credit limit utilizations, the numbers estimated during the day did not always match the numbers run at the end of the day.

"We were forced to estimate conservatively to make sure we didn't go over our credit limits. Now that we know our deal-time measure will be the same as at end of day, we can reduce our operational risk and be proactive with managing utilizations," explains Bailey.

"IBM provides us with an integrated risk infrastructure that helps us meet our business objectives, and we'll be expanding it across other business lines to extract further value."

— Alyson Bailey, Director of Global Analytics and Financial Engineering, Scotiabank

Traders can now make more informed decisions based on pre-deal incremental exposures, delivered with virtually no compromise in trade execution time. Overnight, IBM Algo Credit Exposure runs all scenarios, trades, and portfolios simultaneously. When traders access the system the next day to determine risk for a certain trade, the solution responds instantly by taking advantage of the baseline overnight analytics.

By individually simulating the new trades while re-aggregating the exposures every time a new trade is executed, the solution is able to accurately report on incremental and total exposures. As a result, traders do not have to rely on an estimate. Instead, they can use a portfolio methodology with incremental CVA numbers upfront to price trades more accurately at deal time. "This integrated solution allows us to efficiently do pre-deal and end-of-day CVA attribution," continues Bailey.

Evolving the firm's risk culture

IBM Algo Credit Exposure gives Scotiabank more information to interpret risk. Instead of looking at risk as a one-time maximum measure, the firm now views it as a profile. Traders and the credit group now know what a trade will look like and how the exposure increases or decreases with time. "Our goal is to move away from a single additive risk measure per trade and simulate the exposure over the life of the trade. This system will enable us to do that and provides the tools to help our employees understand it," says Bailey.

The bank can now use its credit lines more efficiently. Because Scotiabank had relied on separate product and aggregated credit measurements in the past, the credit group was not comfortable increasing exposure to certain counterparties. With the proper measure of counterparty risk, Scotiabank has more efficient utilization of credit lines, which means it can do more business with the same, or lower, limits.

"Having a clear consolidated view of counterparty credit risk is critical, especially as market and economic conditions change. Now that we can incrementally add on trades without adding risk onto the counterparty, our insight into the exposure has improved," explains Bailey.

Realizing the benefits of integration

Scotiabank understands the benefits of an integrated solution that captures the interactions between market, credit, and liquidity risks. To effectively manage risk under severe market conditions, the solution must evaluate credit risk by recognizing the underlying market risk that exists, the aggregated counterparty risk by considering netting hierarchies, and the liquidity risk through cash flow tracking that accounts for the collateral needs on the associated credit risk.

"It's challenging to coordinate the required data definitions, interactions, and strategies for risk management. IBM provides us with an integrated risk infrastructure that helps us meet our business objectives, and we'll be expanding it across other business lines to extract further value," concludes Bailey.

About IBM Business Analytics

IBM Business Analytics software delivers data-driven insights that help organizations work smarter and outperform their peers. This comprehensive portfolio includes solutions for business intelligence, predictive analytics and decision management, performance management, and risk management.

Business Analytics solutions enable companies to identify and visualize trends and patterns in areas, such as customer analytics, that can have a profound effect on business performance. They can compare scenarios, anticipate potential threats and opportunities, better plan, budget and forecast resources, balance risks against expected returns and work to meet regulatory requirements. By making analytics widely available, organizations can align tactical and strategic decision-making to achieve business goals.

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