INDUSTRY INSIGHT

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Basel III: Credit & Liquidity Risk Management

Under the Basel Accords, markets would be more regulated in New York, London, Tokyo, etc. As Wall Street debates the effectiveness of post-crisis regulations, firms recognize that these new laws would change trading practices and business relationships, and resulting in both intended and unintended consequences.

Of the most far reaching regulations is Basel III, the accords' latest proposed modification. Although firms would have several years to fully comply with Basel III, they would need even more time to restructure their existing processes and IT/trading systems in order to support revised analytics and reporting standards.

BASEL III

Basel III addresses the shortcomings of earlier versions of the Basel Accords by focusing on counterparty credit risk (CCR) and liquidity risk, including definitions of short and medium/long-term liquidity ratios. Under Basel III, banks must hold a capital reserve of 2.5 percent as a buffer against future periods of stress and meet a total common equity requirement of 7 percent.

Basel III requires banks to maintain a high quality liquid asset pool to meet short term liabilities. Banks will need to constantly evaluate if their pools include the minimum amounts, and revise accordingly.

"REAL TIME" COUNTERPARTY AND LIQUIDITY RISK MANAGEMENT

A bank with multiple lines of businesses will need to aggregate, reconcile, and analyze data to gain an accurate measure of its CCR and liquidity risk exposures. But database silos may quickly and inadvertently accumulate a total potential future exposure (PFE) in excess of an upper limit for a specific counterparty.

An emerging area of interest is the application of Credit Value Adjustment (CVA) in pre-trade. One only needs to be reminded of Lehman Brothers Holdings Inc.'s bankruptcy to understand the CCR threat. Bill Gross of PIMCO LLC sized up Lehman's collapse as an "immediate tsunami" on dealers, funds, et al due to their derivatives and credit swaps deals.

A key hazard associated with credit lines is liquidity risk. A Monte Carlo simulation for analyzing the liquidity risk associated with a credit portfolio is one such example.

SCALABLE AND HIGH PERFORMANCE INFRASTRUCTURE

Basel III would drive banks to conduct more frequent and comprehensive stress tests with large data sets. Key tests include:

- Comprehensive, frequent stress tests on bank portfolios that calculate possible outcomes using hundreds of market scenarios, including extreme conditions. Running Monte Carlo simulations on grid environment — on a regular or ad hoc basis — is one way to accomplish stress testing.
- Reverse stress tests to identify conditions leading to bank failure
- In times of market crisis, a bank will need to frequently calculate its exposures. In the event that the value of its liquidity buffer falls below a set limit, the firm will need to make up the difference.

BACK-TESTING

Banks will need to conduct comprehensive back-testing of models. These would compare expected risk exposures against actual exposures. Such testing require a flexible computer infrastructure that scales up and down to process extremely large sets of historical data (see Data Volume).

DATA VOLUME

Market data is effectively doubling in volume each year. In the U.S., Options Price Reporting Authority (OPRA) message rates are expected to rise by nearly 200 percent in 2010 over 2009.

In December 2009, OPRA hit a peak of 1,470,242 mps compared with 810,999 mps a year before. Consolidated market data like CQS with the National Best Bid and Offer (NBBO) quote peaked at 166,523 messages per second (mps) at year-end 2009 compared to a peak rate of 88,249 mps in December 2008.

The CME MDP FIX/FAST feed grew 34 percent to 25,753 mps over the 1 second interval, according to the October 2010 bulletin from the Financial Information Forum (FIF). Such growth drives firms to seek out new business models as well as next generation analytics software, hardware and workload management tools.

TECHNICAL CHALLENGES

How can financial services firms scale to process this mountain of data to provide CCR and liquidity risk calculations in a timely fashion? As external and internally generated data doubles in volume approximately every 10 to 12 months, firms will need high performance systems with sufficient I/O capabilities that can batch process large historical data volumes while handling extreme peaks of market data in real-time.

Leading financial services firms have migrated from SMP servers to grid farms of commodity x86 boxes over the past five years. By doing so, firms have reduced their CAPEX by 20 percent or more, and OPEX by 10 percent or more.

Through the use of Platform Computing grid software:

- A large multi-national bank deferred a physical expansion of its European datacenter for years by fully utilizing IT servers and desktop scavenging of desktops at night
- A large fund decreased its asset liability modeling time from 10 hours to less than 2 hours

Platform Computing and Sybase are partnering to develop integrated Sybase RAP and Platform Symphony offerings that address firms' needs for scalable, low latency systems capable of processing extremely large data sets for risk calculations.

SUMMARY

Basel III mandates banks adopt a holistic view of risk that includes counterparty and liquidity exposures. Which banks can withstand another period of prolonged market stress with continued depressed housing prices, anemic job growth and volatile politics worldwide?

Grid and data management technology such as those from Platform Computing and Sybase have helped banks process larger data sets for risk calculations faster and more cost effectively.

Banks will have several years to fully comply with Basel III, but firms that revamp their business and risk processes fastest will have a competitive advantage over the rest. Unless banks get a truer understanding of their exposures from derivatives, et al, they may find themselves in a liquidity squeeze similar to that of Lehman — and in the not too distant future.