IN SIGHT

Quantifi

NEWSLETTER ISSUE 06 2012

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MESSAGE FROM THE CEO

As the new global financial regulations are implemented, a clearer picture is starting to emerge around what the new financial market landscape will look like. Many institutions have been waiting for clarity and managed tactically. Most of the larger banks currently have a return on capital half of their historical norm and what is expected by shareholders. I'm with those of the opinion that this wait-and-see game is nearing a tipping point and many players will have to solidify and choose their business model over the coming year. This may be a painful period for many firms but in the long term, institutions that make better decisions about how and where they compete, focus on their competitive advantages, and carefully manage capital will prosper.

This is an environment where firms will be motivated to find ways to minimise the all-in cost of those parts of their analytics, trading and risk infrastructure that do not contribute significantly to their competitive advantage. Firms that manage this well will have a competitive advantage given the large cost and growing complexity of these systems.

Another challenge during this time is that market changes and new regulatory requirements have made OTC valuation and risk management significantly more complex. At the same time, market liquidity has suffered in some segments and volatility has increased. The net result is a significantly increased focus on transparent, independent valuation and risk management. This focus has been intensified, driven by a series of events like JP Morgan's CIO 'Whale Trade'.

While challenging for the markets, this time creates huge opportunities for innovation. New opportunities are being created in areas of the market previously dominated by a few institutions. Regional banks have an opportunity to grow and transform as the global players face difficulties. Other financial institutions also have the ability to compete in areas previously not possible. Quantifi continues to respond to these challenges with rapid and continued innovation as demonstrated by our most recent release, Quantifi V10.3, which contains over 120 new features including new support for commodities.

ROHAN DOUGLAS, Founder and CEO

NEWS

Quantifi Expands to Commodity Derivatives with Version 10.3, Bolsters Enterprise Risk Performance

Responding to current market conditions and client demand for additional asset coverage, improved enterprise performance and the latest innovations in counterparty risk management Quantifi Version 10.3 (V10.3) delivers significant enhancements across Quantifi's entire product range,

"Commodity derivatives are an important and growing asset class with over 10 trillion USD traded each month. This is an asset class with significant valuation and counterparty risk management challenges. Support for commodities is just one of many enhancements in this release that continues a long track record of rapidly translating research into solutions that directly address our clients key business needs."
Rohan Douglas, CEO of Quantifi

EVENTS

WBS Fixed Income Conference:
Quantifi Presentation 'Optimising Capital Charges and the Effects of Hedging under Basel III'
Vienna, 10th – 12th October

Quantifi and Capco, PRMIA Seminar:
Counterparty Risk and CVA
New York, 30th October

WBS Basel III & Capital Requirements Conference:
London, 29th – 30th November

RiskMinds:
Amsterdam, 3rd – 7th December

For more information, visit:
www.quantifisolutions.com/events.aspx

Robert Goldstein, Director of Client Services, Quantifi, talks about Quantifi V10.3, the latest version release of its award-winning pricing and risk analytics software.

What was the motivation for Quantifi V10.3?

Our clients' priority has been for us to support market changes for example OIS/CSA discounting and regulatory requirements including counterparty risk. In response to current market conditions and client demand, this release delivers significant enhancements across Quantifi's entire suite of products. V10.3 reflects our ongoing commitment to improve performance and benefit from the latest technology, enabling clients to perform faster pricing and risk analysis within a highly scalable, powerful and reliable infrastructure.

What client needs does V10.3 address?

This release has broader asset coverage that includes support for commodities, including the most commonly traded Energy, Agriculture and Metal derivatives and expanded coverage of exotic equity derivatives. Clients can now consolidate more positions into Quantifi and take advantage of the models and flexible reporting on a greater portion of their portfolio for a better aggregate view of their risk.

Counterparty Risk presents many challenges to our clients. We continuously hear the same questions: Is there an easy way to determine the correlation between market factors? How do we calculate the counterparty risk for illiquid names? How can we hedge our counterparty risk? Does your counterparty risk engine support OIS/CSA discounting? Listening to our clients, V10.3 provides functionality that addresses all of these questions. V10.3 allows clients to imply correlations from historical data that includes dependencies between market factors and the counterparty; i.e. wrong-way risk. For illiquid names, Quantifi provides functionality to imply a credit spread from external ratings, hazard rates, and probability of default. Enhanced CVA sensitivity analysis allows for better hedging tools. Support for OIS/CSA discounting has been added to the counterparty risk engine to ensure our clients receive the most accurate results.

New regulations such as Dodd Frank and Basel III are making it more difficult for our clients to determine trade profitability. V10.3 calculates the additional trading costs due to funding value adjustments (FVA) and new capital costs determined by risk weighted assets (RWA) and counterparty volatility (CVA VaR). Furthermore, new reports are provided to analyse trade profitability, making it easy to identify the counterparty that makes a trade most cost effective.

Performance is always a concern of our clients. With larger portfolios and more complex products being traded, there is a constant demand for faster models to ensure risk managers have the results they need at the start of their day and traders have access to intra-day risk reports to make better trading decisions. This release provides significant improvements to enterprise risk performance and scalability allowing for millions of trade valuations per second per processor, providing more accurate valuation and more comprehensive risk management without shortcuts.

Why has Quantifi decided to deliver support for Commodities?

Commodity derivatives are an important and growing asset class with over 10 trillion USD traded each month. Support for commodities was a common request from clients that want to leverage the Quantifi models and reporting capabilities on their positions. This is an asset class with significant valuation and counterparty risk management challenges. Support for commodities is just one of many enhancements in this release that continues a long track record of rapidly translating research into solutions that directly address our clients' key business needs.

What other enhancements can we expect in V10.3?

- New models for Converts, Quanto hybrids & CLNs
- New two factor LMM tree model for callable bonds
- Enhancements to the FX Option model that includes significantly expanded Vanna-Volga pricing and calibration
- Counterparty Risk back testing, stress testing, and CVA VaR analysis
- More intuitive CVA and index option pricer interfaces
- 82% faster interest rate sensitivity calculations
- Extensive new pre-deal and what-if trade analysis
- Over 100 other individual enhancements and additional features

COMPARING ALTERNATE METHODS *for*

Calculating CVA Capital Charges under Basel III

By ROHAN DOUGLAS and DR. DMITRY PUGACHEVSKY of Quantifi and
DR. JON GREGORY of Solum Financial Partners

INTRODUCTION

The global financial crisis brought counterparty credit risk and CVA very much into the spotlight. The Basel III proposals first published in December 2009 introduced changes to the Basel II rules and the need for a new capital charge against the volatility of CVA. This "CVA VAR" capital charge was always likely to be punitive since the Basel committee considered that it referenced two thirds of counterparty risk related losses. However, there are two ways for banks to compute CVA VAR, so-called standardised and advanced methods, which depend on their current regulatory approval with respect to other aspects. Furthermore, there is the potential to reduce the capital charges via eligible hedges. This paper aims to explore the capital charges under the two regimes and the capital relief that can be achieved.

CVA VOLITILITY

During the recent credit crisis, according to the Basel committee, more bank counterparty risk losses resulted from credit market volatility than from realised defaults. CVA was part of a banks' balance sheet due to 'fair value' accounting rules and by some estimation around two thirds of counterparty risk related losses were coming from CVA volatility and only one third from actual defaults. Resulting from this experience, the revised Basel III document (BIS, June 2011) introduced a special provision for capitalising for this type of loss resulting from CVA volatility.

As in the case of Basel II, these new capital charges can be calculated using either a simplified standardised formula or an advanced method that requires calculating the CVA VaR of the full portfolio using a Monte Carlo model approved by regulators. The advanced method is available to banks with IMM counterparty risk and specific risk approval. As with IMM over CEM, it may be expected that the advanced approach would be more beneficial than the simpler standardised approach. However, we will see that this is not necessarily the case.

Reflecting the fact that banks are actively hedging CVA positions, Basel III recognises credit hedges (single name CDS, Contingent CDS and CDS indexes) for alleviating CVA volatility. However, the benefit of these hedges differs between the standardised and advanced approaches. Below we will analyse optimal hedges which minimise capital charges for both methods.

STANDARDISED FORMULA

The standardised formula for the CVA capital charge given in the BIS Basel III document is described in detail in Quantifi's latest whitepaper 'Comparing Alternate Methods for Calculating CVA Capital Charges under Basel III' – co-authored Quantifi and Jon Gregory.

We show there that in risk management terms, the standardised formula has the interpretation as being the 1-year 99% CVA VaR under normal distribution assumptions for the portfolio of netting sets (with individual hedges included) with additional index hedges applied to the whole portfolio.

ADVANCED METHOD – HISTORICAL CVA VAR CALCULATIONS

For the advanced method, Basel requires calculating two 10-day 99% VaR's of CVA changes: for the current one-year period and for one-year stressed period

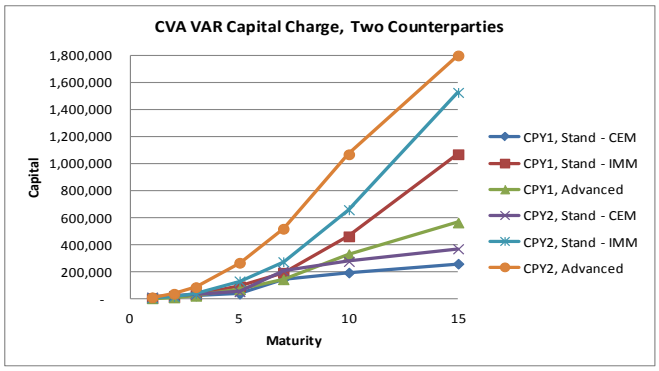
defined as increasing credit spreads. The total capital charge is their triple sum:

$$CVA_{ADV} = 3 \cdot (CVAVaR^{Cur} + CVAVaR^{Str})$$

TEST RESULTS FOR A SIMPLE CASE: SINGLE NETTING SET WITH NO HEDGES

We ran series of tests for this case. First we considered a netting set consisting of a single trade: 100 million USD receiver standard IR swap. To gain an understanding of the maturity effect we considered 1yr, 2yr, 3yr, 5yr, 7yr, 10yr and 15yr at-the-money swaps.

We calculated capital charges resulting from the Standardised method (CEM), the Standardised method (IMM), and the Advanced method. Results for both counterparties including the three methods of calculating capital charges are given in the graph below.



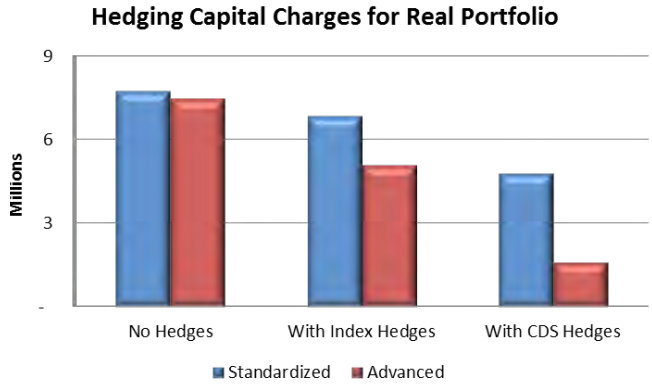
Graph 1: CVA VaR capital charges for ATM swaps of different maturities

An interesting result can be seen for Counterparty 2 where the advanced capital charge is always larger than standardised ones. The credit spread of Counterparty 2 is three times than that of Counterparty 1 and its lognormal volatility is 50% bigger. We would expect advanced charge for Counterparty 2 to be 3-4 times than that of Counterparty 1, but for the standardised charges the only difference is in the weight which grows from 0.7% to just 1%, i.e.an increase of just 43%.

Another interesting result is that the Standardised CEM charge is almost always least punitive comparing compared to the other two methods. The reason is that so far we have considered ATM swaps, therefore their MTM is 0, and for interest rates the max add-on in CEM EAD calculation is only 1.5% of the notional (for comparison, for equity products it is 10%)

RESULTS OF HEDGING FOR A REAL PORTFOLIO

It has been noted that delta-neutral hedges are much more beneficial when using the advanced method of calculating CVA capital charges. In order to test how hedges can alleviate capital charges in a realistic example we set up a portfolio of trades with two counterparties and calculated Standardised (IMM only for the fairest comparison) and Advanced capital charges for a combined portfolio, results are plotted in a graph below.



Graph 2: CVA capital charges for real portfolio, with and without hedges

It is evident that while the advanced and standardised approaches produce very similar results in the case of no hedges, applying a delta-neutral hedge, especially a single name CDS, alleviates the capital charge much more significantly when the advanced method is used as opposed to the standardised one. Under the advanced method the capital charge is reduced by almost 70% compared to the standardised method. Whilst the capital relief in the advanced approach is unlikely to be perfectly aligned to the optimal CVA hedge (mainly due to the use of stressed parameters to calculate the EEPE), it is much better than in the case of the standardised approach (where the alpha factor alone would imply an over-hedge of 40.

CONCLUSION

We have compared the various methodologies for calculating counterparty credit risk capital under Basel regulations. We have shown that the difference in capital between simple and more advanced approaches when considering hedging can be significant. In the sample portfolio the advanced method reduced the capital charge by almost 70%. The difference between the two methods, however, is not predictable and depends on the portfolio in question. We have also compared the implicit assumptions in the standardised and advanced approaches for CVA VaR. Finally, we have illustrated the capital relief achievable from CDS hedges and shown that this is significantly misaligned. In particular, in the standardised approach, the definition of exposure at default and assumption of 50% correlation for index hedges mean that a CVA desk will receive very limited capital relief even when actively hedging their credit risk.

To request a copy of the complete whitepaper visit http://quantifisolutions.com/whitepapers.aspx

QUANTIFI INTERVIEW *with*

JOOST ZUIDBERG

Managing Director, The Currency Exchange Fund

Q: What is the history and background of your company?

A: TCX was established by international financial institutions in 2007, to facilitate long term local currency lending in frontier markets. TCX acts as a swap counterparty and risk sharing vehicle for its investors and their clients, and typically swaps local currency cash flow streams to hard currency. Since we operate in currencies where there is no active market, by design we cannot hedge our positions; instead we rely on diversification of risks, a conservative capitalisation and strict risk management practises to maintain and grow our capital. Since 2007, the fund has closed USD1.5 billion in swaps notional in 47 frontier currencies. The fund currently has USD660m in capital provided by 23 investors and is rated A- by S&P.

Q: What key challenges and/or opportunities does the current environment bring to your business and how do you intend to manage them?

A: As TCX expands its trading reach to the local frontier market clients of our investors, we increasingly face new risks beyond our market risk mandate, including sub-investment grade counterparty credit risk, cross-border liquidity risks and frontier market legal risk. We have developed a customised margin trading platform to support access to our capacity by these smaller frontier markets clients. Separately, we are currently studying the feasibility of establishing a dedicated fund which would absorb counterparty credit risk of institutions in emerging and frontier markets seeking to access global derivative markets on competitive terms.

> "TCX is first and foremost a risk management vehicle for its investors and, as such, risk management is at the centre of everything we do. "

Q: What are the challenges of dealing with emerging market currencies?

A: Identifying appropriate benchmark interest rates, constructing interest rate curves and pricing and valuation of even vanilla products can be particularly challenging in frontier markets in the face of a lack of liquid benchmarks in primary, let alone secondary markets. In the past 5 years we have developed a unique skill in pricing derivatives in illiquid markets, including the use of macro-economic forecasting models for pricing in markets where there are no local capital markets at all.

Interest rate differentials remain elevated after the 2008 crisis, creating a perception of high cost of local currency funding relative to hard currency alternatives. Borrowers in emerging markets tend to have short term memories and underestimate currency risk and threat of currency crisis on their business.

Q: What is your approach to risk management and what measures do you have in place?

A: TCX is first and foremost a risk management vehicle for its investors and, as such, risk management is at the centre of everything we do. The fund has a strict risk charter and operational guidelines, and operates with an independent risk manager, Cardano Risk Management, reporting directly to the supervisory board of the fund. Our strong governance and control framework has been critical to ensuring the fund's success to date.

Q: Looking ahead, what market developments do you anticipate and how would you characterise your investment style?

A: As a development fund owned by the world's pre-eminent development finance institutions, we are closely following the G20 reforms on OTC derivatives and the potential unintended consequences on emerging and frontier capital market development agendas. Derivative users in these markets often have limited and expensive access to hard currency and thus the expected increased demand for high-quality collateral going forward may effectively lock these entities out of the market. We believe this will become a very pertinent issue in emerging markets as derivative dealers will have limited ability to trade without collateral, and will have limited appetite for the illiquid assets that are available in frontier markets for collateral.

t style is unique in that TCX does not price based on a view of a currency. Instead we aim to identify appropriate benchmark interest rates and adjust them for distortions. If this is done correctly the open currency risk taken by the fund should be compensated by the diversified carry in the portfolio in the long-run. The fund is not primarily profit driven given its risk management focus and development mandate. As such, we seek to maximise diversification in order to utilise our capital as efficiently as possible on behalf of our investors and clients whilst ensuring we have sufficient capital to absorb those hopefully once in a lifetime multiple sigma events. ■

"Our investment style is unique in that TCX does not price based on a view of a currency."

TCX

the currency exchange fund

Risk Management Technology Award

Quantifi recently achieved one of the industry's highest accolades having won 'Risk Management Technology Product of the Year' in Risk Magazine's 2012 Risk Awards.

According to Risk Magazine (Risk, January 10, 2012):Quantifi was among the first technology suppliers to support OIS discounting, credit value adjustment (CVA) – and the latter's more controversial twin, debit value adjustment (DVA). Quantifi cemented its reputation for accurate pricing with its initial credit pricing library in 2006, and has maintained the quality while branching out across other asset classes such as interest rates and foreign exchange. Its technology is relatively light and slots into a bank's infrastructure quickly. Quantifi clients praise the company's balance of business and technological expertise. While a number of banks have implemented Quantifi Risk on an enterprise level, it also offers a cost-effective option for individual business units or smaller institutions.

"We are delighted that Quantifi Risk continues to receive a high level of industry recognition. This award means a great deal to us, especially considering our size compared to other firms operating in our space," comments Rohan Douglas, CEO of Quantifi. "With a significant commitment to research and development, combined with close collaboration with our clients, Quantifi consistently leads the industry with innovative solutions. Winning this award from one of the premier publications in risk management is testimony to this on-going commitment."

Counterparty Credit Risk and Credit Value Adjustment BY JON GREGORY

The Latest Basel III Calculations Provided by Quantifi

Videos

The Evolution of Counterparty Risk in the German Banking Industry

Quantifi & PRMIA teamed up in Frankfurt to present an interactive seminar on Counterparty Risk & CVA:

- Challenges & best practices in setting up a CVA process
- Regulatory priorities and counterparty risk
- How area banks hedging CVA now and in the future
- Calculation, attribution and mitigation of risk costs

View seminar videos:
http://quantifisolutions.com/videos.aspx

Whitepapers

- Comparing Alternate Methods for Calculating CVA Capital Charges under Basel III
- OIS and CSA Discounting
- How the Credit Crisis Has Changed Counterparty Risk Management
- Challenges in Implementing Counterparty Risk Management Process

Request a copy: enquire@quantifisolutions.com

ABOUT QUANTIFI

Quantifi is a leading provider of analytics and risk management software for the Global OTC Markets. Our suite of integrated pre and post-trade solutions allow market participants to better value, trade and risk manage their exposures and respond more effectively to changing market conditions.

Founded in 2002, Quantifi is trusted by the world's most sophisticated financial institutions including five of the six largest global banks, two of the three largest asset managers, leading hedge funds, insurance companies, pension funds and other financial institutions across 15 countries.

Renowned for our client focus, depth of experience and commitment to innovation, Quantifi is consistently first-to-market with intuitive, award-winning solutions.

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