IN SIGHT

Quantifi

NEWSLETTER

April 2015

Q&A with Anish Gupta

Director, International Finance

OeKB

The Dynamics Driving OTC Markets

Quantifi Risk Conferences

IFRS 13 CVA, DVA, FVA & the Implications for Hedge Accounting

Quantifi & Deloitte

MESSAGE FROM THE CEO

Welcome to the first newsletter for 2015. Almost eight years after the global financial crisis, there are signs of economic recovery. The markets, however, still reflect uncertainty and many institutions are struggling to execute on strategic imperatives in a cost-efficient and timely fashion. This is an area of focus for Quantifi and one where we continue to add significant value for our clients based on our strong combination of leading technology and quantitative experience.

Over the last year, Quantifi has seen significant growth across all its business sectors resulting in 2014 being Quantifi's strongest year to date. This global growth has been driven by significant new client wins across both the buy-side and the sell-side. Responding to this growth, and in line with our long term commitment to reinvestment in our business, Quantifi has expanded our client service and development teams. Our priority, as always, is to deliver market-leading software and analytics as well as professional, exceptional service and predictable, low risk projects.

A significant recent milestone was our inaugural ranking by well-respected analysts Chartis as a category leader for sell-side risk management. This comes on the back of our ranking as a category leader for buy-side analytics, reflecting Quantifi's unique capabilities and value proposition.

Regulatory initiatives in the form of Basel III, EMIR, Dodd-Frank, MiFD, IFRS and IOSCO have altered the structure and competitive landscape of the OTC markets. Quantifi is at the forefront of product and technology innovation. During 2014, Quantifi released over 180 new features and enhancements to product coverage, analytics, functionality and usability. We have helped our clients keep pace with the challenges and opportunities presented by the evolving markets.
We are well prepared for the year ahead and I am pleased to look back at a successful 2014, with its strong revenue growth and important corporate milestones. This last year was a testament to the efforts and skills of the whole Quantifi team. We all look forward to continuing to assist our existing clients and welcoming new clients in 2015.

ROHAN DOUGLAS, Founder and CEO

NEWS

OeKB Selects Quantifi to Replace Existing Front-to-Middle Vendor Solution
"Having conducted a demanding selection process we chose Quantifi, which we believe offers us a modern and functionally rich strategic platform to modernise and streamline our trading and risk management processes. Compared to other alternatives, Quantifi's approach to implementation and integration offers OeKB lower project risk and a much faster time to market." Achim Keuchel, Senior Manager, International Finance, OeKB.

The Currency Exchange Selects Quantifi for Counterparty Credit Risk Management for Emerging Market Currencies Derivatives
"We chose Quantifi for their superior analytics. Their advanced models are simple to use and generate fast, accurate results that help us price transactions with confidence." Philip Buyskes, Vice President, The Currency Exchange (TCX).

Intermediate Capital Group Selects Quantifi to Support New Investment Strategies and Drive Growth
"We are delighted that ICG has decided to partner with Quantifi. This is another example of how buy-side firms are increasingly relying on Quantifi to help support their analytic and risk management needs." Rohan Douglas, CEO, Quantifi.

EVENTS

Quantifi and Chappuis Halder & Cie Paris Conference
Pricing Challenges Ahead: Turning XVAs into Competitive Advantage
Paris, 8th April, 2015

Quantifi and Deloitte Seminar
The World Post-XVA Implementation
Frankfurt, 14th April, 2015

WBS New York Conference
The 2nd Fixed Income Conference USA
New York City, 6th- 8th May, 2015

The Dynamics Driving OTC Markets
Quantifi Annual Risk Conferences

Quantifi recently hosted its annual London and New York risk conferences, focused on 'The Dynamics Driving the OTC Markets'. The conferences explored the impact of regulations, the changing landscape of the OTC Derivatives market with respect to valuation and risk management, regulatory reforms and the implications for clearing, buy-side risk management, the trend towards centralised XVA desks and big data in financial services. Videos of the two conferences are available on our website.

LONDON HIGHLIGHTS

George Handjinicolaou, ISDA, provided an overview of the structural changes to the OTC markets in response to the G20 reforms designed to reduce systemic risk and increase transparency across global financial markets.

The sell-side panel, moderated by Milena Imamovic-Tomasovic, Deutsche Bank, reflected on the impact of market changes on XVA pricing and modelling methodology, how banks are dealing with a regulatory divergence in the market and centralised XVA processes.

"This session from Quantifi was excellent, it was very engaging, the quality of speakers was exceptional. The audience was engaged right from the beginning to the end."

Other sessions included a presentation by Lee McCormack, Nomura, with a focus on central clearing of OTC derivatives and the associated collateral, margin and capital requirements. Pierre Sarrau, Blackrock, moderated the buy-side panel as they debated the broader influence of market reforms on the buy-side community.

NEW YORK HIGHLIGHTS

The buy-side panel 'Shift in Risk from Sell-Side to Buy-Side', moderated by Lev Brodovsky, Star Mountain Capital, debated the concept of shadow banking and its impact on different market participants. The panel considered the driving forces behind the growth in shadow banking including tighter regulations, increased cost of capital and recognition that the scale of bank deleveraging requires economies to look outside banks to secure the finance required for growth.

"There are a lot of people here who are experts in their industry. The panel sessions were outstanding."

The second panel session moderated by Gonzalo Garcia-Kenny, Citigroup, reflected on 'Counterparty Risk & Regulation from a Sell-Side Perspective'. Udesh Jha, CME Group, touched upon the regulatory impact on margining and how CCPs are reacting to the development of new margin methodology.

Terry Benzschawel, Citigroup, delivered the keynote address, 'Big Data in Financial Markets,' exploring the role of big data models in finance and the contribution they can make to risk management within financial markets.

Q&A

Interview with
Anish Gupta
Director
International Finance
OeKB

What is the history and background of OeKB?

OeKB is a well-established financial institution that has played an important role in the Austrian economy since 1946. The shareholders of the bank are commercial banks located in Austria. Together with the other companies in OeKB Group, it provides a wide array of services. The portfolio ranges from financing and government-backed guarantees to credit insurance in the private sector market, to numerous other services in areas such as the financial and energy markets and the provision of research.

For the export industry, under its public mandate, OeKB facilitates guarantees and financing for large export transactions and outward foreign investment as well

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as for SMEs to strengthen their ability to compete globally.

OeKB plays a vital role in the Austrian capital market. It does this in multiple roles: as infrastructure provider, notably as a central securities depository (CSD), and in the central counterparty (CCP) formed together with the Vienna Stock Exchange for transactions on the Exchange; as a financial services provider and information broker; as a provider of IT services; and as the agency responsible for services related to Austrian government bond issues.

OeKB also acts as an information broker by delivering premium services to its customers and also making information available to its stakeholders through educational and networking activities.

How does OeKB differentiate itself from its peers?

OeKB is unique to the extent that it offers a very wide variety of institutional services to the Austrian industry and to capital market participants. The services provided by OeKB tend to be such that it is efficient for only a single provider operating in these fields.

> OeKB follows a conservative approach to market risk, credit risk and operational risk management.

What opportunities do you see for OeKB in the region?

Austrian firms traditionally have had a strong presence in the neighbouring markets. The opportunities for OeKB arise as and when exports and investments in these and new markets occur. In the realm of the Austrian capital market, OeKB, due to its unique role and ownership structure, is able to address and provide services for instance in response to new regulatory requirements.

What is your approach to risk management?

The risk policy and strategy as defined by the Executive Board aims to ensure a sustainable and stable return on equity. This takes into account financial risks and risks arising from business operations in general.

The risk policy and strategy sets out the risk management principles, the risk appetite and the

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principles for the measurement and control of the risk categories used.

The public mandate from the Austrian government and its role as a central provider of essential services to the capital market and the economy in general puts OeKB in a unique position and this is reflected in its business strategy and risk policy.

A key variable in the measurement and management of OeKB Group's risk is economic capital; it is calculated using Value at Risk (VaR) and Credit Value at Risk (CVaR) over a one-year time horizon. OeKB follows a conservative approach to market risk, credit risk and operational risk management.

Liquidity risk is managed primarily via the provision of sufficient liquidity buffers for operational purposes as well as for stress scenarios.

Over the course of the past 12 months what do you consider to be the most significant developments in the capital markets?

Certainly the effects of the global financial crisis have been the dominating theme in the capital markets. As OeKB funds itself exclusively in the capital markets it has had to adapt itself to the new market environment. Regulatory changes have had a significant impact on banks and financial intermediaries which have adjusted their business models accordingly. These changes also impact OeKB despite its various exemptions due to its public mandate within the regulatory framework. Investors on the other hand have had to deal with the ultra-low yields as a result of expansive monetary policies pursued by the major central banks. Global liquidity surplus has led to receding demand for credit.

What have been your priorities over the past 12 months?

Our priorities have been shaped by changes in the aftermath of the global financial crisis. Pricing of financial instruments such as plain vanilla derivatives have become more complex as banks have increased their focus on managing more actively their risk-weighted assets (RWAs). This leads to a need for

> One of our priorities has been to upgrade our systems and other resources in order to adapt to this new paradigm.

systems that can cope with these changes and are able to price all the relevant components accurately. So one of our priorities has been to upgrade our systems and other resources in order to adapt to this new paradigm. Furthermore, fulfilment of the reporting and clearing requirements under the European Market Infrastructure Regulation (EMIR) have also driven change within the organization.

Looking ahead, what market developments do you anticipate and how do you ensure you are adequately prepared to address those developments?

The macroeconomic environment is still uncertain, certainly in the Eurozone – key challenges remain – returning to growth in a deflationary scenario being the main one. The banking models will evolve as a reaction to the regulatory environment such as

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the full implementation of Basel III. It will remain a challenging environment for lending to the real economy. Nevertheless, as in the past OeKB will strive to provide its services in all possible states of the world economy by adapting according to the changing needs of its client base.

IFRS 13

CVA, DVA, FVA

And the Implications for Hedge Accounting

By Quantifi & Deloitte

IFRS 13 provides a framework for determining fair value, clarifies the factors to be considered for estimating fair value and identifies key principles for estimating fair value. IFRS 13 defines fair value as an "exit price". For similar instruments, traded in an active market, the market price is representative of an "exit price" and IFRS 13 requires an entity to use the market price without adjustment[1]. IFRS 13 defines an active market as one in which transactions for assets take place with sufficient frequency and volume to provide pricing information on an on-going basis.

Fair value measurement should take into account all characteristics and risk factors of the asset or liability that would be considered by market participants. IFRS 13 specifically requires the credit risk of a counterparty as well as an entity's own credit risk to be taken into account when valuing financial instruments.

Credit Valuation Adjustment (CVA) is used to adjust the market value to take into account counterparty credit risk and Debit Valuation Adjustment (DVA) is used to adjust the market value to take into account an entity's own default risk. CVA and DVA are in essence expected credit loss valuation adjustments to the risk neutral value of the derivative. Both adjustments are in line with the valuation adjustments envisaged in IFRS 13.

Calculating CVA and DVA

There is a relatively straightforward approach, occasionally referred to as Quasi CVA (DVA), whereby the counterparty (own) credit spread is added to the discount curve applied to the cash flow values of the contract. For example, to evaluate Quasi CVA (DVA) for an interest rate swap with a flat par rate of 2% and a counterparty (own) spread of 3%, one has to first discount the cash flows at the riskless interest rate (2%), then discount them at the risk carrying rate (5% = 2% + 3%), and then capture the difference between these two valuations. Note that this method only provides an approximation of the CVA (DVA) for instruments with positive (negative) cash flows or trades heavily in-the-money (out-of-the-money).

When calculating exposures for simple stand-alone instruments like swaps and forwards, one can use European swaptions priced with Black's formula. However, taking into account netting and collateral requires performing multiple valuations under a host of different scenarios. This allows netted exposure profiles, for any given portfolio of contracts, to be calculated and for collateral to be applied consistently, therefore reducing potential exposure for both counterparties. Specific collateral features to take into consideration include:

- Independent amounts
- Threshold amounts
- Minimum transfer amounts
- Call period (frequency at which the collateral is monitored)
- Cure period (the period of time given to close out and re-hedge a position)

Consistent CVA (DVA) evaluation involves running a Monte Carlo simulation of the market dynamics underlying the valuation of each financial instrument or portfolio. Each market scenario is a realisation of a set of price factors, which affect the value of the financial instrument; for example foreign exchange rates, interest rates, commodity prices, etc. Scenarios are either generated under the real probability measure, where both drifts and volatilities

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are calibrated to the historical data of the factors, or under the risk-neutral measure, where drifts must be calibrated to ensure there is no arbitrage of traded securities on the price factors. In addition, volatilities should be calibrated to match market-implied volatilities of options on price factors where such information is available.

[1] IFRS 13:69 states that if there is a quoted price in an active market (for an identical asset) an entity shall use that price without adjustment.

Deloitte.

Having calculated the EE (NEE) profile, CVA (DVA) is calculated by multiplying the exposure with the probability of default (PD) and loss given default (LGD). CVA (DVA) can also be approximated by multiplying the average of the EE, the so called Expected Positive Exposure - EPE (Expected Negative Exposure – ENE), by the counterparty (own) credit spread and risky annuity. There are several techniques to obtain the credit spread, although the current Basel III requirement is to use CDS credit spreads of the counterparty or its proxy.

Note that the same Monte Carlo simulation can be used for calculating PFE (Potential Future Exposure) and EEPE (Expected Effective Positive Exposure). While PFE is important for calculating Economic Capital and setting internal limits for trading desks, EEPE is part of

The objective of hedge accounting is to ensure that the gain or loss on the derivative (hedging instrument) is recognised in profit or loss in the same period when the underlying that is being hedged (hedged item) affects profit or loss.

IMM (Internal Model Method) calculations for deriving Risk Weighted Asset (RWA). Therefore, by building comprehensive Monte Carlo models, consistent valuations for regulatory, accounting and internal limit purposes can be achieved.

The Fair Value adjustment for bilateral credit risk equals the risk free valuation minus CVA plus DVA. Calculations for both CVA and DVA can be performed during the same Monte Carlo run without any extra expenditure of time. Common market practice involves taking into account correlation between own and counterparty defaults. This is achieved by either using separate copula-like calculations or as part of a general wrong-way risk set-up. The latter approach makes it easier to incorporate correlations between own default, counterparty default and market factors.

Hedge Accounting Implications

The objective of hedge accounting is to ensure that the gain or loss on the derivative (hedging instrument) is recognised in profit or loss in the same period when the underlying that is being hedged (hedged item) affects profit or loss.

There are two ways in which hedge accounting achieves this objective:

- Fair value hedge accounting - changes in the fair value of the hedging instrument are recognised in profit or loss, at the same time as a recognised asset or liability, that is being hedged, is adjusted for movements in the designated hedged risk (adjustment also recognised in profit or loss).

- Cash flow hedge accounting - changes in the fair value of the hedging instrument are recognised initially in equity (other comprehensive income – OCI) and reclassified from equity (OCI) to profit or loss when the hedged item affects profit or loss.

IAS 39 requires both a prospective and retrospective assessment of hedge effectiveness. Hedge effectiveness is measured as the change in fair value of the hedging instrument as a percentage of the change in fair value of the underlying hedged item. To apply hedge accounting, the hedge effectiveness ratio needs to be within a range of 80% to 125%. Instead of measuring the change in fair value of the hedged item (for example loan asset or liability, sales, cost of sales), a hypothetical derivative could be used as a proxy for determining the change in fair value of the hedged item, mostly for cash flow hedging relationships.

IFRS 13 requires credit risk to be incorporated in the valuation of the actual derivative, however, IAS 39 is not prescriptive on how to incorporate credit risk in the hypothetical derivative. IFRS 13 clarifies the factors that need to be considered when estimating the fair value of a derivative. A key area where IFRS 13 provides guiding principles is the inclusion of counterparty and own credit risk. These IFRS 13 principles have implications for hedge accounting.

The way counterparty credit risk is incorporated into the fair value of the hypothetical derivative can have a significant impact on the hedge effectiveness

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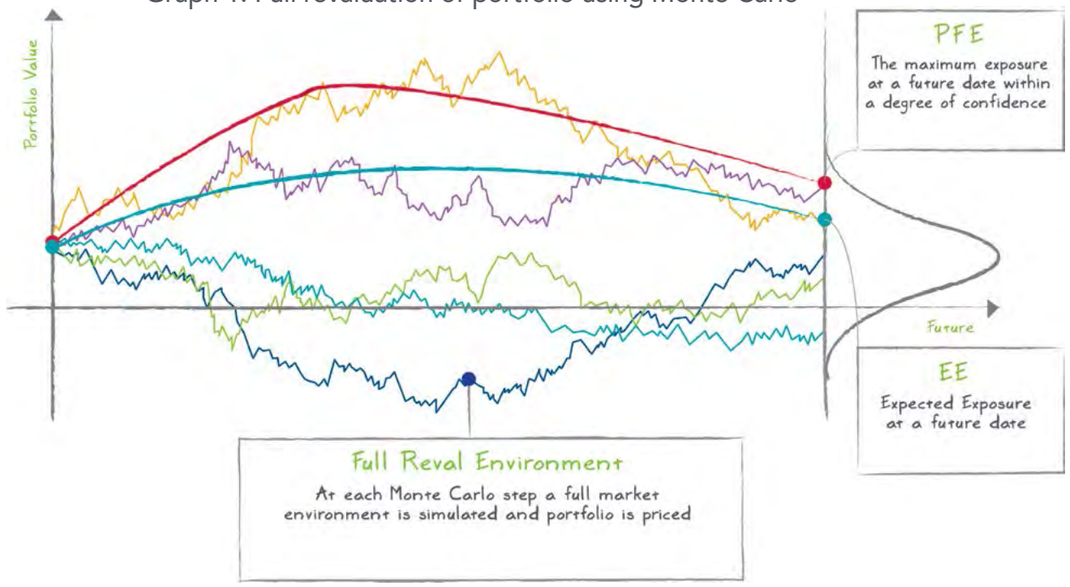
Graph 1. Full revaluation of portfolio using Monte Carlo



ratio. Incorporating CVA and DVA in the fair value of the hedging instrument, but excluding it from the hypothetical derivative, could result in ineffectiveness. As mentioned above, there is no clear guidance in IAS 39 on how to incorporate CVA and DVA in hedge

Incorporating CVA and DVA in the fair value of the hedging instrument,but excluding it from the hypothetical derivative, could result in ineffectiveness.

effectiveness testing. We are of the opinion that there are two acceptable methods:

The first method is to exclude the credit risk when setting up the hypothetical derivative. Thus, changes in credit risk are not included in determining the fair value of the hypothetical derivative over the term of the hedge i.e. do not include a CVA and DVA adjustment for the 'at-inception' fixed rate on the hypothetical derivative[2].

[2] The hypothetical derivative must be set up such that it is worth zero at inception. This is achieved by solving for the fixed rate that results in a zero net present value of the contract.

The second method is to include CVA and DVA when setting up the hypothetical derivative and keep the at-inception credit risk parameters (PDs and LGDs) constant when subsequently determining the fair value of the hypothetical derivative over the term of the hedge.

Our preferred approach is the second method, as it reduces overly punitive ineffectiveness.

In Conclusion

With the introduction of IFRS 13, the requirement to calculate complex variables, such as CVA and DVA has renewed emphasis. The introduction of IFRS 13 will have significant implications for all entities, including corporates and those in the financial services sector that hold derivatives, which are measured at fair value. CVA and DVA also result in additional challenges when performing hedge effectiveness testing under IAS 39.

Quantifi Named 'Best Risk Management Technology' at FOW International Awards 2014

These awards, judged by FOW's editorial team, take into account the views of industry users, recognising technology firms for their innovation and excellence in the OTC markets. The FOW International Awards acknowledge pioneers of the global derivatives markets that have launched new products or made enhancements to existing products during the judging period that solved a problem creatively, opened up new possibilities, or changed the way participants approach the market.

"The risk management category is the most hotly contested and this year was no different, with over 15 entries. Quantifi impressed judges with the recent enhancements to its integrated analytics, trading and risk platform, the most significant of which focused on advanced clearing, reporting and connectivity capabilities," commented William Mitting, Editor of FOW. "Judges also praised the way Quantifi is helping OTC participants solve even the most complex risk management and valuation challenges with its sophisticated cross-asset models."

"Quantifi has a long tradition of re-investing in technology and research, and we are delighted to be recognised by FOW International," comments Rohan Douglas, CEO, Quantifi.

Quantifi 'Best Risk Management Technology Provider' MENA Fund Manager Awards, 2015

"We were overwhelmed with examples of excellence by service providers in the asset management sector, contributing to one of the most highly competitive awards in recent years. Quantifi produced compelling evidence in support of its entry for best risk management technology provider to win the votes of our industry judges," comments Robert Langston, Editor of MENA Fund Manager.

Whitepapers

- IFRS 13 CVA DVA FVA and the Implilcations for Hedge Accounting
- Should Banks Charge for FVA?
- Comparing Alternate Methods for Calculating CVA Capital Charges under Basel III
- OIS & CSA Discounting
- Buy-Side Risk Analytics - RiskTech Quadrant®

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ABOUT QUANTIFI

Quantifi is a specialist provider of analytics, trading, and risk management solutions. 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 16 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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