quantifi

IN SIGHT

Newsletter | Autumn 2018

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How Blockchain Could Change the Financial Markets

Message from the CEO

Technology has become an enabler of fundamental innovation and a disruption for many industries as companies like Google, Amazon, Netfilx and Uber have demonstrated. Key developments like Big Data, Mobile Technology, Cloud, Machine Learning/AI and Blockchain are transforming business models and creating new opportunities for growth with a chance to boost profitability. Technology change, however, is not necessarily smooth and can require significant capital investment along with changes to a firm's business model.

Despite the pressure to improve profitability, our markets have been relatively slow at adopting new technology and resistant to disruptive change. Incumbents have found it difficult to spend the required significant investment during times of low profitability. New entrants have found high barriers to entry, including large capital requirements and heavy regulation. In addition, those that have invested have not always gained the desired benefits because of poor execution or lack of focus on the organisational changes required.

While transformation within our markets has been slower than some may have expected, there are signs that we are on the cusp of significant changes and there are many that are betting on this as reflected by the large (US$100B since 2010*) investment in FinTech. At Quantifi, we are seeing an increasing number of forward-looking firms taking the required step and making large, transformational, investments in technology to provide functionality that was not previously possible, reduce costs through automation and provide more business flexibility.

As a company focused on technology innovation, Quantifi is uniquely positioned to take advantage of the changes in progress. We are have a strong track record of successfully delivering solutions for our clients that transform their business to provide better services at a lower cost. We are also deeply involved with key partners to better leverage new technology. One example is our work with 7Chord, a FinTech firm powered by Quantifi that applies machine learning to automate trading in real-time. Another is our work with Noble Capital, which is the subject of this issue's cover story on Blockchain. In this issue we also have a Q&A with Vasily Strela, Global Head of Quantitative Strategies from RBC Capital Markets, where he discusses recent market developments and how the regulatory landscape is impacting the markets.

2018 is shaping up to be a record year for Quantifi, underpinned by strong new client growth, like COFCO, and growing business with our existing clients. We have also been honoured with a number of awards this year from Red Herring Magazine, CEO Magazine, HFM and Risk Magazine. As a final note, we are focused on continuously improving how we work and better serve our clients. We have completed implementing a number of corporate changes to achieve this, including a new Account Management team. The Quantifi team and I wish everyone a healthy and prosperous Autumn.

Rohan Douglas, CEO, Quantifi

* Total global investment in the Fintech sector since 2010 - Source Accenture

Cover Story

The New Kid on the Block

The cover story explores how blockchain, if fully adopted, will create a more efficient, more transparent and more secure marketplace, whilst reducing transaction processing costs.

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"Following an intense selection process of six notable commodity risk platforms, COFCO International selected Quantifi as its global enterprise risk solution. Quantifi demonstrated an unparalleled understanding of COFCO International's business and an ability to deliver a proven platform with a first-class implementation."
Roland Jordan, Head of EMEA & Asia Pacific

YMER SC Selects Quantifi as Core Pricing and Risk Management Platform

"Quantifi was by far the best solution we had seen. We liked the fact that Quantifi offered exactly what we needed without an expensive development process and that the technology is scalable to support the fund as we grow. We have been particularly impressed with the enhanced level of functionality and flexibility to configure the solution to our needs." *Stefan Engstrand, CEO, YMER*

Quantifi Wins Best Risk Management Solution HFM US Hedge Fund Technology Awards

"Quantifi stood out in the risk management category due to the substantial enhancements it has made over the last year. The judges were impressed by the client testimonials praising the combination of modern technology with mature functionality."
Carly Minsky, Senior Technology Reporter, HFM

Quantifi Named Best Pricing & Analytics Product at Risk.net Market Technology Awards

"Quantifi is delighted to be recognised as a leader in front office pricing and analytics technology. Through sustained investment in R&D, we place a heavy emphasis on architecture design and high-performance technologies to deliver accurate and consistent pricing analytics that clients can rely on enterprise wide."
Rohan Douglas, CEO, Quantifi

Events

The Dynamics Driving Capital Markets, London Conference

The Salter's Hall, 3rd October 2018

The Dynamics Driving Capital Markets, New York Conference

The Yale Club, 30th October 2018

Risk Minds International (Amsterdam)

Hotel Okura , 3-7 December 2018

THE NEW KID on the BLOCK

How Blockchain Could Change the Financial Markets

Written by Quantifi & Noble Markets

One of the most talked about topics in the financial markets today is blockchain. The global financial markets are investing in blockchain technology to revolutionise many aspects of financial product and services.

Blockchain, sometimes referred to as Internet 3.0 or the Internet of Value, follows a strong growth trajectory and has quickly become a seamless part of the global financial system and economy. The blockchain technology platform is a distributed ledger technology (DLT) system, which has triggered a fundamental challenge to the nature of money, transforming current business processes. It is one of the most disruptive technologies available at present, designed to simplify the value chains around trading, payment and market infrastructure. If fully adopted, blockchain will create a more efficient, more transparent and more secure marketplace while reducing transaction processing costs.

While the potential is huge, so too is the uncertainty. The key to turning blockchain's potential into reality is a collective effort among industry participants to learn, share, cooperate and see themselves as part of the blockchain network as opposed to as individual firms.

The OTC Derivatives Industry

The Over-the-Counter (OTC) derivatives market with, according to BIS, an outstanding notional of $542 trillion as of 2017, is a highly intermediated marketplace, consisting of buyers, sellers, broker-dealers and Central Counterparty Clearing houses (CCPs). The trade life-cycle consists of three main stages:

Based on this value chain, there are several ways for blockchains to transform the derivatives landscape, specifically for trading, trade reconciliation and reporting.

1 **Trade Reconciliation:** Currently, any derivatives transaction consists of a contract between two (or more) parties, which may be evaluated via different models (pricing) as well as reported via different accounting procedures. Consensus between market participants is achieved via periodic reconciliation or, if disputes occur during trade lifecycle events and cashflow exchanges, the involvement of other legal or trusted authorities. DLT offers the possibility of migrating to a whole new framework, whereby the terms of a derivatives transaction are captured in a single, mutually agreed upon and, thereafter, immutable smart contract. As the trade matures, events such as floating cashflows payments, contingent claims, etc. would be triggered via data fed from trusted sources (Oracles), with automatic settlement and transfer of funds being handled by the smart contract algorithm. As the valuation model is embedded into the contract, pricing and cashflow disputes are less likely to occur. Moreover, consensus is achieved in a distributed fashion with validators of the network (potentially Significant Financial Institutions [SIFIs], regulators, etc.) ensuring network robustness and quick dispute resolution (for example, via proof of authority). Smart contracts, as applied to derivatives trading and post trade processing, will improve efficiency and lower costs of capital by reducing reconciliation time and dispute processing in the financial markets.

2 **Regulatory Reporting:** All actions and events are stamped on the distributed ledger. A regulator running a full node would have complete access to the complete history of trading activity and payments across the network on a near real-time basis.

3 **Auction Process:** Notwithstanding the speed of confirmation on-chain, the process of order matching may be made simpler via a set of interoperable blockchains. OTC participants would submit bids directly to the network and rely on smart contracts to automatically choose the highest bid via a new form of decentralised exchange.

Progress on some of these financial applications is already underway. Last year, DTCC, in partnership with technology vendors, began working on a DLT solution for credit derivatives processing, which will enable the management of post-trade events for CDS trades on a distributed, permissioned DLT network [1]. Even more ambitious in scope and impact is the Common Domain Model (CDM) being developed by ISDA in conjunction with REGnosys [2,3]. The aim is to provide a global representative standard for all events and actions occurring during the life of a trade as well as the capture and automation of all associated product data (via the well-established FpML framework) onto a smart contract blockchain. ISDA recognised that automation and interoperability can only succeed when there is standardisation. Their long-term vision is to establish the CDM as the market standard to reduce reconciliation overheads and reporting inconsistencies. *See page 8 Case Study: ISDA Common Domain Model.*

Broadly Syndicated Loans (BSL)

Syndicated loans provide borrowers with a means of securing a loan facility from a group of lenders through a single loan agreement. Since such an agreement applies to the whole group of lenders, it eliminates the need for multiple separate bilateral loans documents, therefore simplifying the borrowing process.

An agent bank is appointed by the lenders to administer the loan. Its role can be extremely intensive due to the on-going monitoring of the various facilities.

Here we illustrate few key responsibilities:

- Representing the syndicate and providing a single point of contact for the borrower
- Monitoring compliance of the borrower with key terms of the facility
- Principal, interest and fee disbursements and reconciliations
- Maintenance of register and processing of assignments

DLTs can potentially automate the agent bank role via a single source of truth to achieve down-stream automation of various administrative tasks. Furthermore, DLT could provide full visibility on the chain of ownership of a loan, thus reducing the friction around reps and warranties - in particular, when a loan goes from par to distressed status and lawyers may be required. In recent years, like most fixed income products, BSLs have grown in size and the structure of ownership has changed to include participation by mutual funds. Regulators and the fixed income community support improvement in secondary market liquidity and a fund's ability to assess the liquidity of its underlying holdings. We believe DTL can be a valuable tool to remove operational latency from this market.

Risk Management after the Global Financial Crisis of 2008

Bitcoin was a direct response to GFC and the subsequent QE programme. Its genesis block contained the now famous headline from The Times UK on the 3rd Jan 2009 [4]: *Chancellor on brink of second bailout for banks.*

The crisis exposed the frail, interconnected nature of the global markets and their dependency on 'too big to fail' entities as well as the ability to devalue money at will by Central Banks.

The financial crisis highlighted two key types of risk associated with the derivatives market. The first is counterparty risk, which is a measure of the loss incurred in the event of a default of a counterparty prior to the maturity of the contract (pre-settlement risk) or settlement of payments due (settlement risk). The second risk is systemic risk, which is associated with key institutional failures, leading to the spread of contagion that triggers the collapse of other institutions (as illustrated by Bear Stearns and Lehman Brothers). Learning from the lessons of 2008, the current regulatory framework, as promulgated under Basel III (and recent amendments), places more stringent requirements on the amount of capital that banks must hold in reserve as well as seeking to de-leverage balance sheets (via the Leverage Ratio) and improve provisions for liquidity in times of stress (Liquidity Coverage Ratio and Net Stable Funding Ratio). The market implementation of these requirements has led to an industry-wide improvement in the measurement and modelling of counterparty credit exposure (SACCR and Monte Carlo simulations) as well as a drive towards the minimisation of such exposures via netting and collateralisation.

Netting is the process of aggregating a set of trade level exposures, such that positive and negative exposures can offset each other, to arrive at a reduced total exposure.

Another risk mitigation approach is collateralisation, whereby both counterparties periodically reconcile their netted exposure throughout the lifecycle of their set of transactions and make payments to each other on any amount that is owed (via cash or other assets subjected to a haircut). Should either party default prior to maturity, their counterparty will have recourse to the collateral that they had received up until that point (known as Variation Margin [VM]). Upon default, there is typically a delay between the last collateral update and the final liquidation of the defaulting party's assets, known as the Margin Period of Risk (MPOR). This can be anywhere between 3 to 40 days, or more, depending on disputes, litigation and other bottlenecks within the liquidation process. This introduces significant Gap Risk, since the value of defaulted transactions will likely have deviated significantly since the last collateral update. To cover this, an additional amount of collateral known as Initial Margin (IM) is needed (typically determined via Value-at-Risk, or more recently, sensitivities under the ISDA Standard Initial Margin Model [SIMM]). CCPs impose IM and VM by default, while non-cleared OTC derivatives can be collateralised via CSAs. Since 2017, regulators have started to phase in mandatory margin requirements for non-cleared trades in an attempt to incentivise CCP clearing (and more standardised contracts).

Blockchain-Enabled Risk Management Framework

Distributed ledger technology presents a new paradigm for how information is collated and distributed and is poised to revolutionise the way firms transact. It mitigates risk and addresses settlement, pre-settlement risk and collateral management practice.

Managing Settlement and Counterparty Risk on the Blockchain

Settlement risk is prevalent in the non-cleared OTC Derivatives market as there is no CCP to guarantee payment. Blockchain eliminates settlement risk as smart contracts can be designed to ensure the simultaneous exchange of payments, principal and underlying, upon contract maturity.

Blockchain technology has the potential to transform the management of pre-settlement risk. For instance, the process of collateralisation for non-cleared OTC derivatives can be automated via smart contracts. These contracts can be used to implement Collateral Support Annex (CSA) terms (payment rules, thresholds, minimum transfer amounts, etc.) and the valuation model required to calculate the variation margin (VM). By embedding CSA terms into smart contracts, we can reduce disputes over collateral payments for the set of transactions.

Automation on the blockchain can increase the collateral monitoring frequency from daily (current best case) to hourly or even pseudo real-time. The close out process itself can also be transformed since a missed VM payment can be flagged in a matter of hours or minutes, rather than days, and thus, the effective MPOR is reduced. A shorter MPOR results in a significant reduction in IM that needs to be held in reserve, freeing up capital and lowering Capital Valuation Adjustment (KVA) charges.

In a smart contract framework, we can programmatically add grace periods or wait for a consecutive number of such defaults to occur before automatically unwinding the positions, therefore, reducing the chances of technical defaults due to liquidity gaps.

Managing Collateral on the Blockchain

The process of collateral management and lending can also be automated on the blockchain as the distributed ledger enables complete tracking of asset ownership and transaction history.

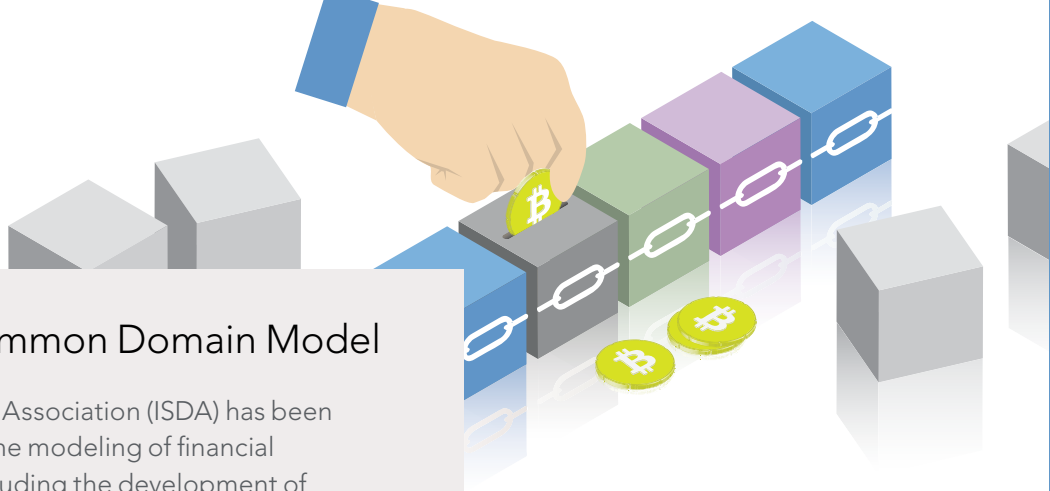
Assets held as collateral (both cash and non-cash) in a variety of custodian accounts can be recorded on the ledger. A smart contract automatically evaluates current asset prices based on predefined haircuts and market data (interest rates, FX rates, equity prices etc.) supplied by Oracles. Once the collateral value falls below a required amount, the contract triggers collateral calls, which unwinds the positions under the contract. Similar types of smart contracts have been designed to create cryptocurrencies known as stable coins. The intrinsic value of these currencies is pegged to other fiats such as USD, but backed by tokenised assets such as Ethereum, via Collateralised Debt Positions (e.g. DAI by MarkerDAO).

A consortium of banks, including Commerzbank, Credit Suisse, UBS and others, have developed a blockchain solution for a collateral lending framework in the form of Digital Collateral Receipts (DCR) using the Corda DLT. The DCR is a digital token that enables the exchange or legal ownership of a basket of securities without the need to migrate underlying assets across custodians. The tokens can then be used to pledge such securities for IM and VM as well as provide to HQLA in order to meet LCR and NSFR liquidity requirements. Conditional logic in the smart contract can enforce the creator of the token to maintain the notional value above a pre-defined threshold or automated liquidation protocols when funds are no longer sufficient. Finally, the DCR network enables regulators to have a real-time view of collateral allocation and usage, allowing potential liquidity and funding shortfalls to be identified in a timely and efficient manner.

Managing Systemic Risk on the Blockchain

The rise in prominence of CCPs post-2008 as a means of reducing counterparty risk has, to a certain extent, introduced additional systemic and contagion risk into the global financial markets. Risk management of CCPs continues to be an active area of research and development with the focus on large global regulatory bodies.

Blockchain proponents argue that the decentralised nature of the technology could mitigate the risk of massive single point failures as represented by the current framework. Rather than CCPs, a decentralised clearing network (DCN), organised into a distributed autonomous organisation (DAO), could fulfil some key functions of current CCPs such as contract and margin valuations, collateralisation and closeout management as well as novation, netting and even compression. Validators of such a network (or a pool of interoperable blockchain networks) would need to meet certain admission criteria (equivalent to CCP membership requirements) and serve to safeguard the network by providing capital, punishing bad actors and providing consensus (either via Proof of Stake, or Proof of Authority). Moreover, all participants of the DCN, in contrast to the current unilateral approach of the CCP, can vote for changes to the rules (such as margin requirements and capital buffers). Such blockchain infrastructure would be open and transparent to regulatory oversight, paving the way for a fairer, more efficient and robust derivatives market.



Case Study: ISDA Common Domain Model

The International Swap Dealers Association (ISDA) has been leading efforts to standardise the modeling of financial instruments for many years, including the development of Financial products Markup Language (FpML) in 1999. FpML was developed to standardise the communication of complex derivatives contract terms between counterparties and to simplify messaging of trade data. Even with standardised messaging, firms still use individual processes to model, process and value complex derivatives. To further streamline the post-execution trade cycle, ISDA Common Data Model (CDM) focuses on common, industry-wide features of trade life-cycle. It serves as a data model specification and "is targeted at DLs to exploit their embedded lineage and consistency properties."

The CDM infrastructure set forth the foundations for DLs to automate data and synchronise the state of derivatives contracts across various trading counterparties. DL technologies allow for a consistent record to be shared amongst all relevant market participants simultaneously. Further, it can also contain trade life-cycle events as well as risk and valuation information, therefore transforming data integrity and reducing reconciliation and reporting costs for the financial services industry.

Designed to facilitate the instantiation of trades on a DLT, CDM is the first step to building self-executing smart contracts. Rather than beginning with the product such as a 5yr USD Interest Rate Swap (IRS), the CDM begins at the "event" level. An event represents an action that may be applicable to any trade (e.g. initiating, cancelling, amending, novating the trade, etc.). The events of the first stage identify common actions, which are independent of the financial products. The second layers are "Dependent Events" defined by contract terms, market data, record of daily value, option exercise, etc. For example, a simple Forex trade is an event, namely the exchange of cash between two parties, and the price is captured by the two amounts exchanged. We can build a record of more complex transactions from simple derivatives that are built from independent and dependent events. The process scales up to whole portfolios, allowing for the automatic operation of portfolio events such as collateral calls, capital and risk calculations.

Closing Thoughts

Blockchain (or distributed ledger) technology has generated a huge amount of interest within financial markets. While the business benefits of blockchain are clear, the industry needs to collaborate with government agencies and regulators to realise the potential of blockchain. The shift and adoption of a new technology standard will take time. The regulator is one of the most important stakeholders in the adoption of this new technology as new regulatory principles are likely to be needed where blockchain technology becomes an integral part of the market infrastructure. Some regulators have expressed interest as they recognise the potential impact on business models, reductions in risk and savings of cost and capital. However, it is hard to predict when and where DL technology applications will reach scale and what kind of impact they will have across markets. For firms that want to benefit from DL technology, an important first step is to understand the scope of its likely impact on the market and establish a clear view of their financial, technology and regulatory ecosystem.

[1] DTCC, http://www.dtcc.com/news/2017/january/09/dtcc-selects-ibm-axoni-and-r3-to-develop-dtccs-distributed-ledger-solution
[2] ISDA, https://www.isda.org/2018/02/15/isda-appoints-regnosys-to-develop-digital-common-domain-model/
[3] ISDA, https://www.isda.org/2018/06/08/a-big-step-towards-efficiency/
[4] Satoshi Nakamoto, "Bitcoin a peer-to-peer electronic cash system," 2009

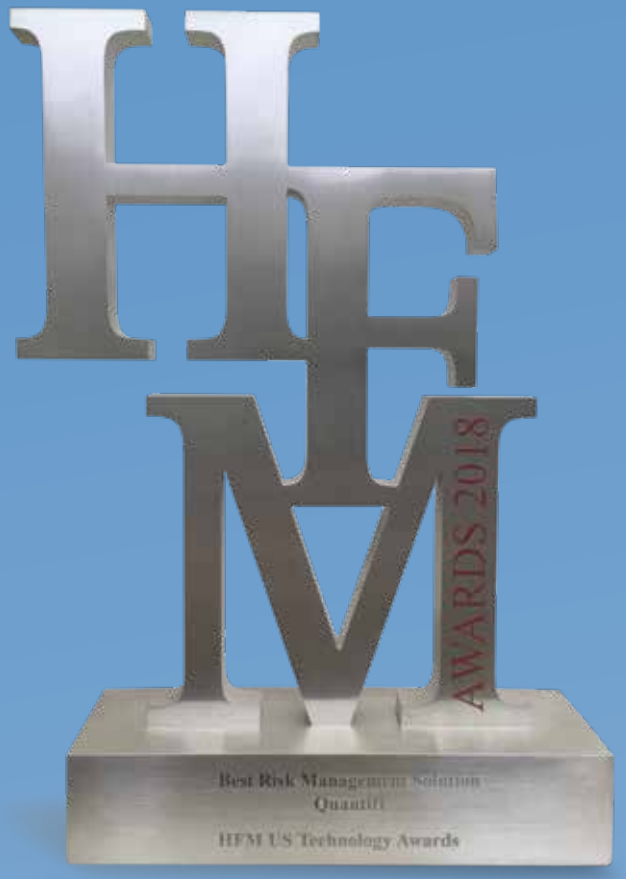
QUANTIFI WINS BEST RISK MANAGEMENT SOLUTION

HFM US HEDGE FUND TECHNOLOGY AWARDS

Quantifi has been named 'Best Risk Management Solution' in the HFM US hedge fund technology Awards. These awards recognise technology providers, serving the hedge fund sector, that have demonstrated exceptional customer service and innovative product development over the past 12 months.

At the awards ceremony in New York, Quantifi emerged the winner in the hotly contested accounting, risk and compliance solutions category. The awards were judged by a panel of senior technology professionals from leading firms from across the buy-side industry. The winners were chosen based on their product development, technology innovation, revenue growth and customer satisfaction.

"Quantifi stood out in the risk management category due to the substantial enhancements it has made over the last year, including additional scenario analysis capabilities, improved stress testing and support for regulatory requirements," said Carly Minsky, senior technology reporter, HFM. "The judges were impressed by the client testimonials praising the combination of modern technology with mature functionality," continues Carly.



For the buy-side Quantifi delivers cross-asset trading, front-to-back operations, position management, market, credit and liquidity risk management, margining and regulatory reporting all on an integrated platform. As well as supporting the key regulatory requirements such as Solvency II EMIR, AIFMD, MiFID II and CRD4, Quantifi applies the latest technology innovations to provide new levels of usability, flexibility and ease of integration. This translates into dramatically lower time to market, lower total cost of ownership and significant improvements in operational efficiency. Trusted by both start-ups and some of the most sophisticated global investment managers, Quantifi helps clients keep pace with the latest market innovations with its blend of new technology and advanced functionality.

"We are delighted to be recognised by HFM US as Best Risk Management Solution," comments Pradiv Mahesh, Director, Americas Sales. "Over the past 12 months, we have taken further strides in product and technology innovation which have been highly rated by our clients. These developments have given our clients a competitive edge as they are better prepared to deal with the challenges of managing complex, cross-asset portfolios," continues Pradiv.

COFCO International Selects Quantifi as its Commodity Credit & Counterparty Risk Management Solution

About COFCO International

With 12,000 people in 35 countries, COFCO International is the overseas agriculture business platform for COFCO Corporation, China's largest food and agriculture company. In 2017, COFCO International handled over 100 million tonnes of related commodities with revenues of $34bn. The company is accelerating its growth to create a world-class integrated global agriculture supply chain, anchored in China and competing globally.

> "Quantifi demonstrated an unparalleled understanding of COFCO International's business and an ability to deliver a proven platform with a first-class implementation."

Background

Against a backdrop of price volatility, cost pressures and competition, commodity trading firms are experiencing challenging times. Despite this, many firms are still relying on traditional, manually intensive methods to evaluate and respond to risk. To improve its risk management capabilities and better govern risk exposures, COFCO International began an initiative to implement an enterprise-wide approach to credit risk management. After careful review COFCO International selected Quantifi's Commodity Counterparty Risk Management (CCRM) solution. COFCO International recognised that Quantifi could help with their plans to grow into a new global force in agricultural trading.

Why Quantifi?

"In this increasingly competitive and volatile environment, holistic credit risk management is an important component of industry best practice. As part of its risk management strategy, the COFCO International Board needed a consolidated view of exposures and risk to better manage volatility and control counterparty risk. Following an intense selection process of six notable commodity risk platforms, COFCO International selected Quantifi as its global enterprise risk solution. Quantifi demonstrated an unparalleled understanding of COFCO International's business and an ability to deliver a proven platform with a first-class implementation." *Roland Jordan, Head of EMEA & Asia Pacific Sales, Quantifi*

Quantifi Commodity Counterparty Risk Management (CCRM) solution

Quantifi's CCRM is a high performance, scalable and intuitive solution that can be seamlessly integrated with a firm's existing processes and systems. Available as on-premise or in-cloud, the solution is designed to help reduce risk and operational complexity with more accurate analytics, consolidated reporting and simplified data management. Automated processes reduce costs and allow firms to respond faster to credit events to mitigate losses. Firm wide, all participants involved in the credit decision making and risk management process can use Quantifi to make optimum credit decisions while managing the associated risk.

"COFCO recognised our strength in this space and were keen to benefit from the advanced techniques and models we apply for measuring this."

Client Benefit

"We are delighted to be working with COFCO one of the world's largest agribusiness groups. In the dynamic marketplace in which COFCO operates, it is more important than ever to understand counterparty risk and exposure. The very nature of counterparty risk means firms require solutions built specifically to manage this risk. COFCO recognised our strength in this space and were keen to benefit from the advanced techniques and models we apply for measuring this." *Roland Jordan, Head of EMEA & Asia Pacific Sales, Quantifi*

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COFCO INTL

VASILY STRELA

The Global Head of FICC Quantitative Strategies, RBC Capital Markets, talks about market developments, regulation and technology.

What is your role at RBC Capital Markets?

As the Global Head of FICC Quantitative Strategies at RBC Capital Markets, I am responsible for running the Fixed Income (rates, credit, muni, FX, mortgages) & Commodities quantitative teams. My team provides quant support to the business, which involves looking at new ways to enhance and adapt our models to current market conditions i.e. new algorithms and how to apply them to the business.

Over the course of the past 12 months, what do you consider to be the most significant market developments?

In terms of market developments, the start of the Secured Overnight Financing Rate (SOFR) index in mid-2018 has the potential to be a game changer as it influences all product types and may create new trading patterns. [SOFR is a measure of the cost of borrowing cash overnight collateralised by treasury securities]. This new market standard is in its infancy, but I do think it has potential to disrupt. SOFR is widely designed to replace the London Interbank Offered Rate (LIBOR). The market is pretty nervous, so I do expect that there will be some important developments which will create new discount indices and will require significant adjustments to models.

As for technology, we are living in very interesting times. Technology outside of banks has advanced greatly. Banks are slower to adopt the latest developments. The FinTech community does not currently have enough expertise to enter the institutional market properly, so what will happen in the coming years will be a merging of new technology and the know-how from banks. This will actually be a huge market change. In the near future, banks will have no choice but to adopt new technology as old technology is becoming too pricey and difficult to manage. However, it is not an easy choice because you cannot change systems and processes overnight. I think there will be a lot of hybrid activity in this space involving FinTech and institutional technology.

Lower costs is one of the key benefits of adopting new, more efficient technology. It also makes the industry more competitive. People are already talking

about FinTech because they understand that it is fast approaching and can be a substantial competitive advantage, although I have not seen any significant players embrace new technology so far. Going forward, systems as well as processes will become more consolidated across the industry. I do not believe owning particular sets of processes or models is a competitive advantage anymore because everyone is doing the same thing. What I expect is the merging of technology/FinTech and institutional finance.

Big data is a huge talking point and we are investing time and resources in this area. It is a reasonably young field of expertise and a lot of activity goes on, so we are investing to try to be as proactive as possible from a quant and tech perspective. This involves consolidating our data sets, making them more accessible and efficient and applying quant know-how.

Brexit is another contentious talking point. After a knee jerk reaction, I do not think it will have a drastic impact on the industry. Short-term, it creates volatility in the market because of uncertainty, but long-term I think it will not change things too much.

How is the regulatory landscape impacting the markets you operate in?

Regulation has certainly been a big driver of quant-related activity over the past 10 years since the crisis. It has stabilised lately as a lot of work has been done, people are less nervous and are now in the mode of implementing.

FRTB is a big task for us to fulfil, so we have been expanding resources on this. It is clear what we need to do, but it is more of a technology question – how to make the technology efficient enough that it doesn't cost too much, both for implementation and running cost. Technology is one of the hurdles when it comes to complying with new regulations and, as a result, regulation drives a lot of technology development. The delay in FRTB and regulation has alleviated the pressure on IT resources, but I do not expect key regulation, such as CCAR and FRTB, to be rolled back for large institutions. Regulation will always be an industry challenge. However, not to the same degree the industry experienced five years ago.

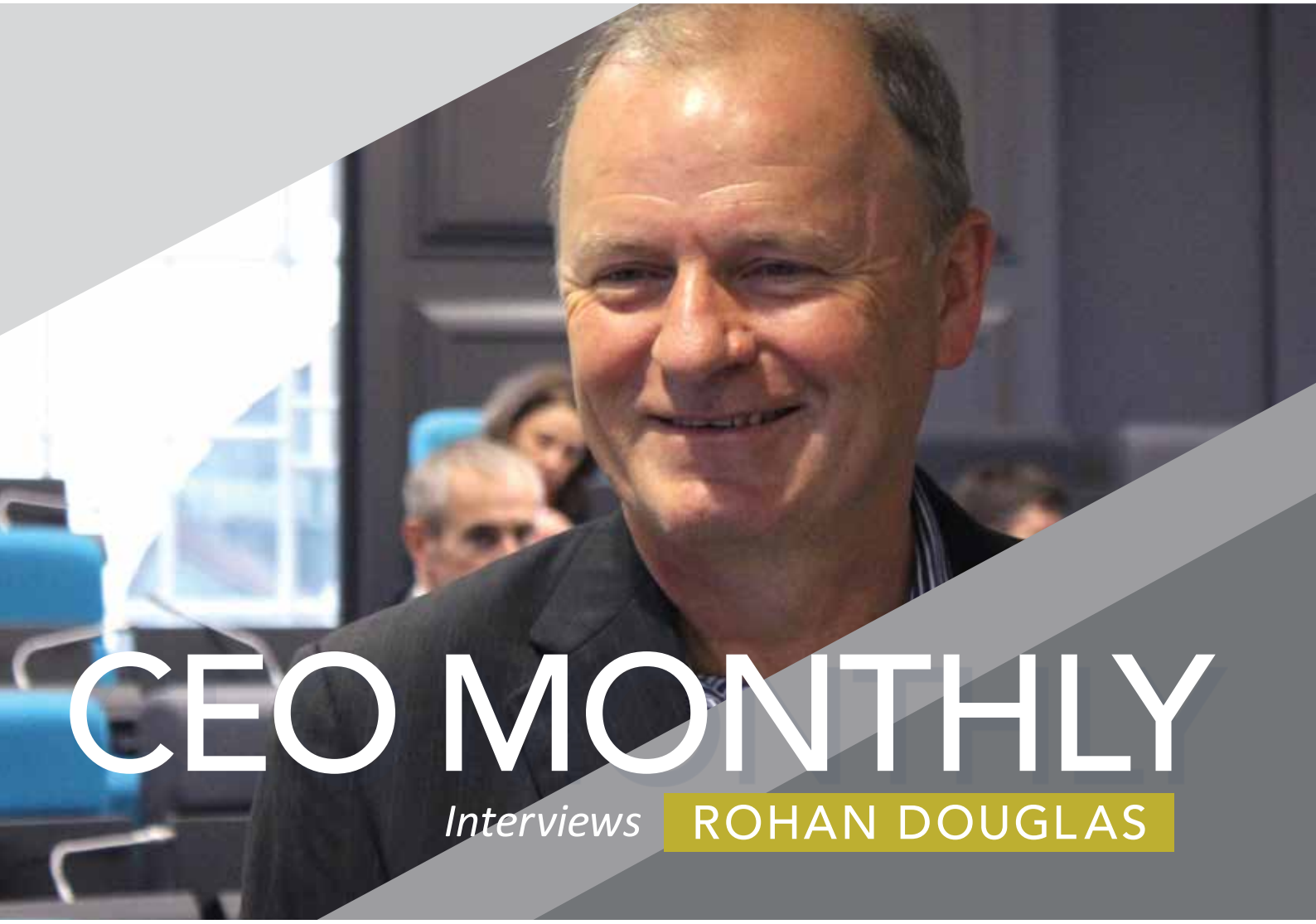
Vasily Strela, Global Head of FICC Quantitative Strategies at RBC Capital Markets

Looking ahead, what developments in quantitative finance do you anticipate and how do you ensure you are prepared to address the developments?

The biggest developments in the quant space include big data and the convergence of technology across the industry. Quant finance is heavily connected to technology more so than ever before. This is because the market has become more complex, more automatic and the state of technology allows us to carry out more complicated quant work.

AI and robotics also helps increase the value of quant finance. The more robotics, the more quants will be needed to create the new technology and to effectively operate it once it has been created. New technology brings the desire and necessity to build more, with older task being automated. I am quite bullish on the outlook for quants. Robotics and AI are complimentary to quant finance and I am optimistic about technology and quants.

RBC Capital Markets



CEO MONTHLY

Interviews ROHAN DOUGLAS

Global publication CEO Monthly recently caught up with Quantifi CEO, Rohan Douglas, to explore the initiatives he has implemented and the techniques he has employed to drive his firm to its current position.

Describe your responsibilities as CEO. What is your leadership style?

As CEO, I am responsible for setting the strategic direction of the company and executing on that strategy. I believe in success through sustainable growth and maintaining a long-term perspective. This results in a focus on adding value for our clients and a significant reinvestment in our employees, our business and our community.

I have a great management team who I rely on and our goal is to ensure Quantifi is a successful company, where through collaboration, fun and hard work we can help shape some of the significant transformations currently happening in the financial markets.

What do you believe is the key to your success? Are there any key attributes that have helped shape your success?

Determination, hard work and a bit of luck are part of any success. As Quantifi has grown, I have had to adapt and constantly learn new skills. This is reflected at Quantifi by a continual process of adaptation and improvement and a significant reinvestment in our business.

How has your career progressed? What have been the major milestones?

I have over 25 years' experience in the global financial industry. Prior to founding Quantifi, I was Director of Research at Salomon Brothers and Citigroup, where I worked for ten years. My experience includes working in credit, interest rate derivatives, emerging markets and global fixed income. I teach as an adjunct professor in the graduate Financial Engineering program at NYU Poly in New York and the Macquarie University Applied Finance Centre in Australia and Singapore. I am also the editor of the book Credit Derivative Strategies by Bloomberg Press.

I founded Quantifi in 2002 in my attic in New Jersey. My goal was to deliver the same sophisticated risk management and analytics, used by the largest banks, to all market participants. Quantifi has come a long way since then, having expanded its footprint in EMEA, NA and Asia Pacific.

What is the culture within your company and how do you ensure that this is understood by all of your staff?

At Quantifi, we have created a culture focused on success that encourages innovation and engagement. Our people are at the heart of our business and we value individual intellect as much as teamwork. By collaborating with some of the smartest minds in the industry, our employees have a real opportunity to shape the way in which our clients do business. Individual growth is as much a priority as corporate growth and we firmly believe in investing in our people. Attracting and retaining talented individuals enables Quantifi to exceed its commitment to our clients.

How do you manage staff? Do you have any key principles you adhere to?

As a manager, I try to set clear goals and hold people accountable for those goals. I encourage creativity and personal development and focus on getting to the best decisions through meritocracy.

What advice would you give to someone looking to make a success similar to your own?

Starting a business has many unexpected challenges. I was lucky enough to have learnt from prior experience but see many people attempt start-ups and encounter common problems. I always suggest seeking advice from people who have been through the same things, as this can help avoid painful mistakes.

Looking ahead, what do you believe the future holds for both yourself and your firm? Do you have any plans or projects you would be willing to share with us?

There are transformational changes occurring in the financial markets driven by market changes and technology innovation. As a FinTech company focused on innovation, Quantifi is uniquely positioned to participate in and help shape many of these changes. Building something new is exciting and with a strong, stable and diversified client base, I am looking forward to continuing to grow Quantifi and deliver ground-breaking solutions for our clients.

In terms of plans or projects - expect to see some exciting releases from Quantifi over the year as we continue to apply the latest technology developments to finance in innovative and ground-breaking ways.

"I believe in success through sustainable growth and maintaining a long-term perspective. This results in a focus on adding value for our clients and a significant reinvestment in our employees, our business, and our community."

Quantifi & Intel Webinar: Applying Vectorisation to CVA Aggregation

New challenges in the financial markets driven by changes in market structure, regulations and accounting rules have increased demand for higher performance risk and analytics. This demand has put a focus on how to get the most out of the latest generation of hardware.

Topics Covered:

- What is vectorisation?
- The rise of parallelism
- What kind of problems can be vectorised?
- Implementation challenges: Intel's 6 step program
- Applying vectorisation to CVA aggregation

intel® Software Partner

www.quantifisolutions.com/applying-vectorisation-to-cva-aggregation-video

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Whitepapers

- FRTB: Moving Towards a Practical Implementation
- Vectorisation: The Rise of Parallelism
- Microservices: The New Building Blocks of Financial Technology
- Indentifying Liquidity Risk for Financial Stability
- Cost of Trading and Clearing in the Wake of Margining
- IFRS 13: CVA, DVA, FVA and the Implications for Hedge Accounting
- Buy-Side Risk Analytics – RiskTech Quadrant®

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About Quantifi

Quantifi is a provider of risk, analytics and trading solutions. Our award-winning suite of integrated pre and post-trade solutions allows market participants to better value, trade and risk manage their exposures and responds more effectively to changing market conditions.

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 40 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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