The rise of XVA and how it transformed an entire industry

Satyam Kancharla, Chief Strategy Officer & Senior Vice President,
Client Solutions Group, Numerix

numerix

When numbers matter

In this article, Satyam Kancharla, Chief Strategy Officer at Numerix, brings to light the rapid growth and expansion of pricing and risk valuation adjustments in the financial industry. He addresses how xVA is now the posterchild for risk-informed decision making and the key to unlocking trade profitability across capital markets.

What historical event would we call the poster child for financial services risk management? The scandalous collapse of Enron in 2001, one of America's largest corporations—and its largest corporate bankruptcy—at the time? Or before that, the horrific fall of Long-Term Capital Management in 1998, which jeopardized not only the biggest banks on Wall Street but the stability of the financial system itself? Or maybe, the 2000-2002 burst of the dot-com bubble, which resulted in the Nasdaq Composite losing 78% of its value? The world has experienced more than its fair share of macro-economic shocks, and I think it would be no surprise if I stipulated that the answer to my question is the 2008 financial crisis.

The crackdown on the systemic risk in derivatives has been transformational for the financial industry.

Because of its systemic economic impact, the crisis launched a swarm of changes for the financial industry, particularly regarding the clearing mandate and regulatory requirements that impacted enterprise risk management and front office trading operations. It goes without saying the focus was a crackdown on the systemic risk in derivatives, and the impact, almost ten years later, has been transformational for the industry. The mandatory changes fundamentally altered the context in which market participants made trading decisions, and delivered the realization that the new terms would take large amounts of time, effort and resources to implement.

Research and advisory firm Aite Group authored a valuable report on *XVA and Risk Transformation* that examines how firms have tackled and reacted to the transformational regulatory forces to meet the new market requirements. The report assesses the direct challenges posed by the new regulatory regime, with a focus on the set of derivative pricing valuation adjustments and counterparty risk measures that go under the banner of "xVA"—what we define as the risk adjusted pricing of derivatives instruments to ensure all market, credit, capital and liquidity risks are being accurately captured. Here, I will highlight some key insights from this research and others, as well as share my views from my years of tackling these issues alongside our clients.

While valuation adjustments are nothing new to the capital markets, the steady roll out of new regulations has forced banks to rapidly adapt to the increasingly onerous impacts on balance sheets. Initially, this was responding to just a handful of adjustments; however, today the growing list of xVAs has resulted in billions of dollars of P&L impact across the industry, according to Risk.net. In my view, xVA—and some of the transformative changes it brings—should be at the forefront of a firm's thinking, if not already.

The myriad of adjustments and hits to profitability have driven the industry to begin thinking about these adjustments more holistically, delving into their relationships and their overall impact on not only the profitability of an individual trade, but across the balance sheet.

In addition, the necessity to compute the capital required to support the life of a trade has significantly increased computational complexity, not to mention further demands that require this information to be calculated pre-trade in real-time.

xVA and the core risk measures play a role to various degrees in a wide range of business groups, depending on different requirements. These include sales, xVA desks, trading, risk management, product control, and enterprise risk and treasury. Working out how to organize the management of xVAs is not an innocuous issue. While one could argue the front office or treasury group should oversee the function, a broad set of stakeholders are impacted by it.

THE VAs OF XVA

Banks have had to grapple with a growing number of xVAs, including CVA, DVA, KVA, MVA, FVA, and ColVA, which bring with them a range of complexities that affect the profitability of OTC derivatives trades. The first of these, CVA (credit valuation adjustment), commonly known as the price of your counterparty credit risk, emerged in the early 1990s, but dominated post-2008. In the simplest terms, CVA encompasses calculating the difference between the counterparty risk-free portfolio value and the true portfolio value, assessing the possibility of a counterparty's default.

Banks have had to grapple with a growing number of xVAs, including CVA, DVA, KVA, MVA, FVA, and ColVA, which bring with them a range of complexities that affect the profitability of OTC derivatives trades.

In the years following the crisis, the introduction of new collateral, capital, accounting standards and other forces started to shape new derivatives valuation adjustments, and this has led to the establishment of what is known today as the xVA desk.

In the past, the price of derivatives was computed by just one trader, who evaluated the expected return and risk of the underlying asset. But as Aite points out, today there are many more risks contributing to that value, and this has created an issue in terms of aggregation without double counting. The xVA desk is a centralized location where all data inputs can be received. The desk centralizes the various adjustment models, which, in addition to CVA, can include a range of adjustments, the most common being DVA (debt valuation adjustment), KVA (capital valuation adjustment), ColVA (Collateral Valuation Adjustment), FVA (funding valuation adjustment), and MVA (margin valuation adjustment).

Aite's research, much like our experience at Numerix, has observed how desks can be organized on an enterprise-wide basis or by business line, and the department has organizationally sat anywhere from front office to treasury. As far as best practice, the report also stresses that xVA centralization could offer significant benefits. One such benefit can be seen by aggregating together trades across different trading desks and across different asset classes. Doing this allows an xVA desk to take advantage of netting effects and the collateral effects in counterparty credit risk (CCR). The paper notes that firms could minimize collateral usage at both the overall portfolio level as well as at the specific counterparty level, while also mitigating CCR.

As the xVA adjustments are also continuing to be refined, given the variety of risk factors involved and amount of market data required, sophisticated hybrid frameworks are absolutely needed to model properly. In fact, substantial efforts are currently being expended by market participants to provide an improved and holistic analytical framework for XVA, to improve the efficiency of the massive computational effort required for the analysis, and to implement

the framework necessary to support internal management and broader regulatory demands like FRTB.

At Numerix, we discuss the value of unified frameworks that can be used to analyze and aggregate all of these adjustments, and what are required for internal pricing, trading, risk management and capital management processes, as well as for regulatory compliance. It is no surprise that with the smorgasbord of costs and adjustments clearly impacting the bottom line, we're seeing a growing trend amongst practitioners introducing the concept of Economic Value Added (EVA)—a global profitability measure—into the derivatives lexicon. Some market participants have even taken it beyond simply mastering calculation and meeting regulatory demands to optimization techniques targeted at reversing losses and capturing increased profitability. Thus, it's our perspective that understanding and managing trade profitability with a complete understanding of the trade lifecycle will continue to be a critical need for our clients going forward.

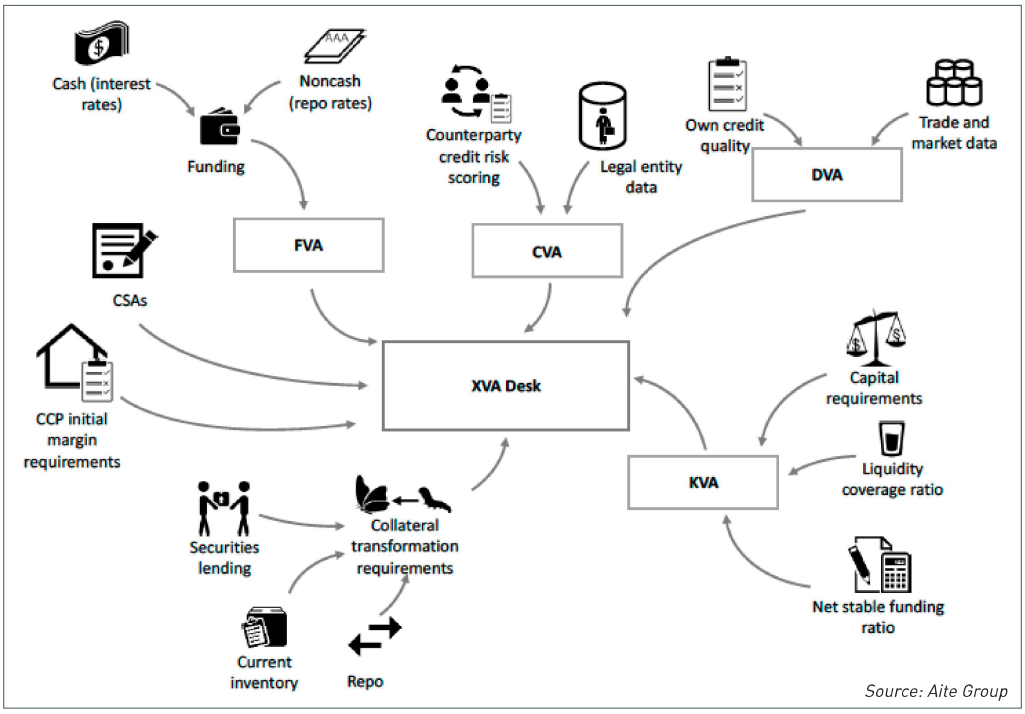
While progress has been made in adopting xVAs, Aite confirms that xVAs are not universal. They have not been consistently adopted by all market participants, and some have not adopted them at all. We often see the differences in adoption align to a few factors, from the size and complexity of the organization to location, with some countries only now beginning to roll out regulatory CVA.

Data-aggregation tasks to support an xVA desk are significant, and the quality of this data is of paramount importance in accurately determining the price of OTC derivatives.

XVA AND THE DATA CHALLENGES

Data-aggregation tasks to support an xVA desk are significant, and the quality of this data is of paramount importance in accurately determining the price of OTC derivatives. This will require previous siloed parts of a bank to come together and work from a unified set of data. As noted in Figure 1, these inputs are gathered from a range of sources across a firm.

Figure 1. What Kind of Data Is Fed to an xVA Desk?



Anyone who has spent time in this industry knows this is one of the tantamount challenges presented by xVAs. Banks culturally and operationally are just not designed to make this an easy task. As Aite points out, risk is a siloed function in most (if not all) financial institutions, and as such, taxonomies, processes, and technologies often differ across silos. Aggregating and marrying data from individual lines of business with no common data models could be more than complex.

Not surprisingly, while the concept of an ideal enterprise-wide risk-data-management end state seems like a pipedream, at Numerix we've pioneered several powerful and effective approaches that have linked the front, middle and back office operations. With real-time, pre-and post-trade risk analytics and a customizable infrastructure at its core, we've succeeded in helping our users reduce compute times and boost efficiency, ultimately leading to better trading and risk decisions.

INTERNAL TEAM TRANSFORMATION

As mentioned, the rise of xVA has been a transformational force for many banks and requires the cooperation of business functions spanning front office, treasury, finance, compliance, and market and credit risk teams. When initiating a new risk transformation project or overhauling systems, IT must also be engaged to help scope the project and determine the various technology designs that are needed.

Aite's research and our experience points out that with so many stakeholders and vested interests, this type of initiative could quickly sink in political quicksand and barely get out of the development gate. That's why it's necessary to get strong support from the C-suite to gain the buy-in of each of the involved functions. For project success, Aite points to a strategy it has seen in practice in some organizations, which is the development of formal committees or informal groups comprising each of the most affected/engaged functions. Collaboration and close communication between lines of business and teams charged with the transformation mandate will be key.

TODAY'S REGULATORY LANDSCAPE AND XVAs

Aite's research encompasses the many aspects and impacts of today's reforms, such as FRTB, SA-CCR and Basel III, including the challenges of implementing the regulations, anticipated increases in overall capital requirements, stricter tests for internal model approvals, and more computationally burdensome risk metrics. It's my view that it's never been more important to have a shared infrastructure, globally supported operations and a single uniting vision to respond to demand wherever it is evolving. The relationship between risk management, capital efficiency and liquidity is crystallized by the new regulatory requirements, forging a direct link between the quality of risk management and the ability to manage capital and liquidity efficiently.

FRTB could again change the XVA landscape with its own flavor of risk management inclusions and the introduction of FRTB-CVA. The regulatory landscape is also quickly shifting focus from counterparty to capital and margin. With the clearing mandate and bilateral (SIMM) margins, MVA is becoming critically important, and with newer capital requirements like SA-CCR in place, KVA is becoming more prominent as well.

IN SUMMARY

The obvious conclusion here is that the current set of xVA valuation adjustments is profoundly changing trading behavior in capital markets. As the regulatory climate continues to evolve, these adjustments and their impact on profitability and risk management continues to evolve as well. It seems clear that xVA practices will range widely across firms depending on their market perspective, but the common denominator is that there are significant issues to tackle.

For more insight on some of the research I referenced and the firm's insights on how banks can adapt, download the Aite Report compliments of Numerix.

ABOUT THE AUTHOR

Satyam Kancharla, Chief Strategy Officer & Senior Vice President, Client Solutions Group, Numerix LLC

Mr. Kancharla, as Chief Strategy Officer and Senior Vice President, is responsible for corporate strategy and currently heads the Client Solutions Group at Numerix. This group is responsible for Product Management, Financial Engineering and Business Analysis. Prior to this, he has served in various roles in Quantitative Software Development, Financial Engineering and Client Services at Numerix. Before transferring to Numerix in New York City, he was the CTO for Numerix Japan LLC in Tokyo, heading the Pre-Sales and Financial Engineering teams for Asia.

Prior to joining Numerix in 2003, Mr. Kancharla worked with Merrill Lynch and GE Capital in Quantitative Finance and Product Development roles.

He holds an MBA degree from New York University's Stern School of Business, an MSc degree in Applied Statistics and Informatics from Indian Institute of Technology, Bombay and a BSc in Mathematics and Computers from the University of Mumbai.

Ready to elevate your business?

Get started →

More than 550 clients and 90 partners across 52 countries rely on Numerix analytics. Headquartered in the financial capital of the world, with offices around the globe, Numerix brings together unparalleled expertise combined with local market understanding.

Numerix LLC Corporate Headquarters

100 Park Avenue
15th Floor
New York, NY 10017
Tel: +1.212.302.2220
Fax: +1.212.302.6934
www.numerix.com