

Structured products

PRICING ■ ASSET ALLOCATION ■ RISK MANAGEMENT



Structured
products
TECHNOLOGY RANKINGS 2015

**Numerix ranked #1
Technology Vendor overall
for fourth consecutive year**



Numerix Analytics named best in business for multiple pricing categories, credit risk and market risk

Shifting investment horizons among consumers and demand for more in-house hedging sophistication among buy-side firms have kept software vendors in the structured products markets busy in the past year. Clive Davidson reports on the *Structured Products* technology rankings 2015

Despite the broadly sunnier market conditions of the past 12 months, participants in all parts of the structured products landscape continue to face challenges that demand more robust and up-to-date software from their vendors across all aspects of the product life cycle.

The computational demands of variable annuities hedging, increased volumes at issuers seeking to expand their market share, as well as the need to analyse and report risk and capital metrics more frequently are just some of the reasons many structured products market participants are demanding better performance from their vendors.

Leading the pack in this year's *Structured Products* technology rankings is New York-based Numerix, which came first overall once again, as well as securing either victory or a top-five place in the majority of the pricing and analytics and risk management categories. Steve O'Hanlon, chief executive of Numerix, says the firm has had its work cut out attempting to serve all jurisdictions around the globe in an industry that remains heavily regionalised. "To serve such a diverse market successfully requires highly flexible technology with the ability to handle both vanilla and more exotic products across multiple asset classes," says O'Hanlon.

Despite the overall buoyancy of the structured products market globally over the past 12 months, investor appetite has varied considerably across



Steve O'Hanlon, Numerix

different regions, he adds. Divergent responses to instances of low market growth have also been in evidence, with some firms – most prominently Royal Bank of Scotland (RBS) in the UK – pulling back from the market. Others, meanwhile, are scaling up their issuance – with the consequence that heightened demands are being placed on systems performance and data management.

Some investors have chosen to shift their investment horizons in a bid to bolster returns – for instance buying callable and autocallable structured products with longer maturities and dual underlyings – which requires more sophisticated hedging approaches and advanced pricing and risk analytics on the part of issuers.

"Low rates and low volatility makes it more difficult to generate structures with high yield but, at the same time, it opens the door for innovation," says José Ribas, London-based global head of derivatives and structured products at Bloomberg.

In the past year, Bloomberg has released a simplified scripting language for product creation and launched a platform for the structuring, pricing and risk management of derivatives, structured products and dynamic strategies, all of which helped it score well across most pricing and analytics and trading systems categories, and to secure second place overall in this year's rankings.

"Difficult market conditions, cost pressures and new regulation continue to drive demand for more sophisticated reporting and risk analytics solutions, as well as tools that support the further automation of workflow," says Ribas.

Top 10 Technology Vendors

2015	2014	Company
1	1	Numerix
2	4	Bloomberg
3	2	Thomson Reuters
4	3	Misys
5	5	Murex
6	10	Calypso
7	8	IBM
8	7	SunGard
9	–	Fincad
10	–	Quantifi

• '–' denotes where firms did not appear among the top institutions in 2014

Converging demands

Vendors report increasing convergence of user requirements across structuring, trading and risk functions. Structurers and traders now desire the aggregation abilities that were once the preserve of risk managers; risk managers, in turn, demand the granular, instrument-level detail previously confined to structurers and traders, says Matthew Streeter, capital markets strategist at Fincad in British Columbia.

“Structuring teams no longer want to look just at the instrument level. They also want the ability to aggregate instruments to examine the risk characteristics of the portfolio so they can look at things like profit and loss attribution, or profitability, or how exposed they are to different markets. This is especially true where the structuring team is working closely with the trading desk and the risk team – they will all want to have a consistent view across the board,” says Streeter.

Fincad polled in the top five in several pricing and analytics and risk management categories, and came ninth overall in this year’s rankings. The company attributes its consistent performance to using the same core analytics engine for calculating risk for single instruments as it does for portfolios, he says.

Dealers seeking to boost their structured products market share need to ensure they have the infrastructure to cope with greater volumes – most obviously in terms of operational risk management.

London-based Misys, which took fourth place overall and polled strongly across a number of pricing and analytics, trading systems and risk management categories, highlights its solution which allows tools for creating structures as well as generating the workflow for their processing through the front, middle and back office. “This decreases operational risk through front-to-back integration, helps bring new structured products to market quickly, and reduces costs, because even the most complex trades can be processed with straight-through processing rather than custom programming,” says Sadiq Javeri, head of product strategy, capital markets and enterprise risk at Misys.

The company’s derivatives and structured products system, called FusionCapital Summit, allows users to script any exotic payoff for processing with the associated front-to-back workflow, he says.

Misys has recently undertaken a major revamp of its technology, with specialised applications such as Summit now part of the Fusion-Capital component-based architecture, says Javeri. “We have developed a solution whose main functionalities can be found in a new family of components that can be rapidly and incrementally added to Misys or non-Misys core trading systems without major system overhaul. The components offer real scalability and a faster time to market. Our approach minimises upgrade costs and risks while maximising adaptability, making clients more resilient and agile to change in evolving markets.”

Sophisticated structuring

The structuring process has also been an area of focus this year for Pennsylvania-based SunGard, which took eighth place overall in the rankings. The company introduced product templates along with a simple and user-friendly interface that aims to make dialogue with customers easier and product development more fluent, says Jens Persson, product manager for cross-asset trading at SunGard.

The firm’s templates for building structured products allow users to react flexibly to interesting trends and benefit from opportunities in the market – for instance, allowing a bank to provide its customers with tools for speedy creation of products, says Persson. The new functionality supports transparent allocation of profit and loss between sales and trading, while the templates and user-friendly interface enables swift joint pricing decisions, he adds.

Many technology vendors are seeking to build intuitive solutions in order to capitalise on the opportunities arising from a regulatory regime that aims to promote disclosure and ensure that participants are as fully informed as possible about a product’s mechanics and their implications.

“Regulations aim to ensure greater levels of transparency in structured notes and the broader derivatives market,” says Jayme Fagas, New York-based global head of valuations and transparency services at Thomson Reuters, which took third place overall in the rankings this year.

Thomson Reuters has been integrating the pricing and risk technology that came with its acquisition of Pricing Partners in 2013 with its Datascope pricing, reference data and derived analytics platform and the Eikon news, data and analytics platform to offer additional transparency into evaluated prices and the methodology and market data associated with a particular price, says Fagas.

It is not only regulation directly focused on structured products or investment services – such as European Union rules on packaged retail and insurance-based investment products and the revised Markets in Financial Instruments Directive – that are affecting the market, but also tighter rules on risk and capital for banks. Catherine Marin-Verger, head of processing at Paris-based Murex, cites the example of institutions that still manage their structured products via a disparate collection of systems and spreadsheets with many associated manual processes.

“These businesses will be particularly impacted by the Basel Committee on Banking Supervision’s principles for effective risk data aggregation and reporting. They will have to implement significant infrastructure investments and revamp their data management processes,” she says. Murex maintained its fifth-place overall position in the rankings this year, scoring strongly in the trading systems categories.

Avadhut Naik, head of solutions at New Jersey-based Quantifi, which came 10th in the rankings overall, adds: “Bank regulators have put in place onerous capital requirements for holding structured products, so many banks are scaling back on the business and liquidating existing portfolios. Other market participants, including buy-side organisations, are stepping in and taking on this risk. But these firms have not traditionally been equipped to quantify and manage the risk of complex structured products.”

The challenges involved in modelling these products are forcing these firms to look for more sophisticated analytics and risk capabilities – a driver of Quantifi’s growth this year, adds Naik.

Support for product distribution and secondary market-making have also been areas where participants looked for support from technology vendors in the past year. “Market players acting as distributors of structured products from the sell side to the buy side have grown in sophistication and need more tools to support both pre- and post-trade workflow,” says Bloomberg’s Ribas. “These include solutions to support idea generation, due diligence and, critically, more sophisticated and efficient risk analysis and reporting mechanisms.”

In particular, firms are looking for a simple way to evaluate risk across the trade life cycle, from making an initial risk assessment of a particular product to monitoring it post-trade and generating risk metrics such as value-at-risk and credit value adjustment via a single integrated platform, Ribas adds.

The ability to provide secondary market pricing and execution increases the attractiveness of a bank's structured products offerings, since it means consumers are not locked into the investment, says SunGard's Persson. It also makes comparing products easier and more transparent. "Our solution includes support for market-making, which means banks can quote and set prices for structured products on a secondary marketplace such as an exchange or on an internal market," he says.

One area where vendors have sought to respond quickly to market developments is in the resurgence of demand for collateralised debt and loan obligations (CDOs and CLOs). Providing analytics for complex credit derivatives was a starting point for Quantifi, for example. It is not only hedge funds and broker-dealers that are increasingly active and looking for technological support for the products; vendors also report enquiries from firms such as insurance companies and pension funds that are considering the use of CDOs and CLOs as they embark on the quest for yield in a low interest environment, particularly senior and super-senior tranches.

As a consequence, many firms are seeking to upgrade their analytical capabilities to make credit derivatives processing cost effective and better risk managed, says Quantifi's Naik. "If they're not doing too many deals, buy-side firms can rely on dealer quotes for the valuation of these instruments. But as soon as a firm starts doing more and wants to take advantage of the difference between the basis of those instruments and the underlying contracts, then they have to be able to perform analysis at the underlying level and not just at the security level. They need to analyse the components that make up the structures and see how they can tease out returns while limiting exposure to acceptable risks. Previously, only banks and sophisticated hedge funds had these kinds of tools, but now buy-side firms need them as well," he says.

Hedge control

In the US, meanwhile, insurance products such as variable annuities and fixed index annuities, with their capital guarantees and potential for upside, are competing with structured products for investor attention.

The embedded optionality and complexity of many of these products can make them hard to hedge. Traditionally, insurers have outsourced the hedging to consultants or relied on hedge analysis applications from actuarial system vendors. But the growing size of variable annuities and fixed index annuities books, and the major impact that hedging decisions can have on financial reporting, mean insurers are increasingly seeking greater control of decision-making – in some cases, bringing it in house.

At the same time, the increased complexity of the capital markets where the hedging is undertaken, with the requirements for alternative discounting measures and pricing adjustments for credit, funding and other risks, is driving firms to look more towards capital markets analytics specialists for hedging support, say vendors.

Fincad confirms it is working with a number of life insurers on their variable annuity hedging. "We have the ability to hook into their actuarial systems and take their cashflow projections and run this through many different market scenarios, calculating measures such as bucketed deltas and duration, to see how they can most effectively hedge their variable annuity portfolios," says Streeter.

Meanwhile, Numerix has gone a step further, and developed proprietary actuarial models of liability risks – such as longevity – that enable insurers to model their liabilities and assets on the same platform. "Having a unified modelling framework and single platform for actuarial risk and capital markets risk has significant advantages for insurers," says Satyam Kancharla, chief strategy officer and senior vice-president of the client solutions group at Numerix.

Kancharla says the single platform approach gives greater consistency compared with modelling individual risks on different systems and using different assumptions, then attempting to bring them together. Furthermore, because Numerix has designed its platform for scalability – including access to cloud service providers for demanding computations, and integration with big data management capabilities to handle the output – it can provide the performance necessary for large portfolios of variable annuities and other complex products, he adds.

Alex Marion, vice-president for product management at Numerix, says: "With variable annuities, having the ability to simulate a hedging strategy and optimise it by having the same modelling platform for assets and liabilities is powerful. It can improve product development because the product developers can sync with the hedge team and make sure they incorporate the true cost of hedging, taking into account how it will impact reserves and capital. This is the sort of holistic risk management framework that insurers are trying to achieve."

Analytics evolving

Vendors have taken several approaches to improving the performance of their pricing and risk analytics in recent years. One is to take advantage of the vast processing resources offered by cloud service providers such as Microsoft, Google and Amazon, either by outsourcing entire computations, or else turning to the cloud when in-house systems cannot meet spikes of demand.

Another approach is to adopt graphics processing units and rewrite modelling algorithms to take advantage of their high-speed parallel processing capabilities. More recently, vendors such as California-based Calypso and advanced modelling teams in some institutions have turned to adjoint algorithmic differentiation – a mathematical method that propagates backwards from an output to calculate sensitivities in a simultaneous, rather than sequential, manner.

"Within our recognition of the need for faster risk solutions, we have greatly expanded our use of adjoint algorithmic differentiation for calculating risk related to structured products, including the most multi-dimensional and complex products," says Rick Phillips, principal product manager for interest rate derivatives at Calypso, which took sixth place overall in this year's rankings – up from 10th last year. **SP**

Pricing and analytics

Commodities

2015	2014	Company	%
1	2	Thomson Reuters	18.9
2	1	Numerix	13.9
3	3	Bloomberg	13.0
4	–	Quantifi	10.4
5	4	Murex	8.0

FX

2015	2014	Company	%
1	1	Numerix	22.3
2	5	Bloomberg	17.4
3	2	Thomson Reuters	13.9
4	3=	Murex	10.1
5	–	SciComp	7.0

Credit

2015	2014	Company	%
1	1	Numerix	20.5
2	2	Thomson Reuters	15.7
3	4	Bloomberg	11.4
4	–	Lexifi	10.0
5	3	Murex	6.4

Rates

2015	2014	Company	%
1	1	Numerix	19.0
2	2	Thomson Reuters	17.0
3	3	Misys	14.4
4	4	Murex	11.6
5	–	Fincad	6.9

Equities

2015	2014	Company	%
1	4	Bloomberg	19.9
2	2	Thomson Reuters	16.8
3	1	Numerix	12.5
4	3	Misys	10.5
5	–	Murex	8.8

Cross-asset

2015	2014	Company	%
1	1	Numerix	20.0
2	2	Thomson Reuters	17.7
3	3	Misys	15.2
4	5	Bloomberg	12.7
5	4	Murex	8.0

Risk management

Credit

2015	2014	Company	%
1	1	Numerix	25.0
2	–	Fincad	22.6
3	2	Misys	11.3
4=	5	Bloomberg	4.8
4=	–	Quantifi	4.8

Market

2015	2014	Company	%
1	1	Numerix	21.6
2	–	Calypso	18.0
3	2	Misys	15.2
4	4	Murex	9.1
5	–	Fincad	6.4

Credit valuation adjustment/debit valuation adjustment/funding valuation adjustment calculation

2015	2014	Company	%
1	2	Thomson Reuters	23.4
2	1	Numerix	21.1
3	–	Allegro	17.0
4	3	Bloomberg	8.3
5	–	Fincad	5.0

Limits

2015	2014	Company	%
1	1	Misys	20.0
2	–	Numerix	13.1
3	5	Moody's Analytics	10.9
4	2	IBM	9.2
5	–	Calypso	6.4

Systems implementation efficiency and support

2015	2014	Company	%
1	n/a	WallStreetDocs	19.7
2	–	Numerix	16.0
3	–	Thomson Reuters	14.7
4	–	Bloomberg	11.3
5	–	Misys	5.5

- 'na' denotes a category that was not run in 2014
- '–' denotes where firms did not appear among the top institutions in 2014