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Structured products
The new value chain

As a consequence of enormous technological, regulatory and competitive pressures, the structured products landscape is changing dramatically. Plotting an accurate route across it demands a high level of automation and cutting-edge analytics, says Stéphane Remille, Murex

Structured Products: What are the market conditions you see emerging in the structured products space?
Stéphane Remille: Since the onset of the financial crisis in 2008, the following trends have started appearing in the structured products markets:
- a deep-rooted evolution of the players' landscape and distribution channels;
- smaller ticket sizes;
- thinner margins under high regulatory pressure (on capital charges in particular); and
- greater concentration on near-commoditised structured products.

Autocallables and target redemption forwards (Tarfs) are the usual best sellers. Geographical differences are less pronounced than they were some years ago, but local specifics still exist and can appear, for example, under regulatory pressure. A recent example of this was seen in Taiwan where, for regulatory purposes, issuers added a stop-loss feature on Tarfs. Structured products are also increasingly issued as notes (equity-linked or foreign exchange-linked), with capital investment from counterparties providing protection against both credit and liquidity risk.

Structured Products: How has this landscape evolved?
Stéphane Remille: The players' landscape has evolved in the following ways:
- Some medium-sized sell-side institutions are managing the end-of-life of their books; some have even sold them.
- Larger historic players are seeing their products shift from being unique, bespoke offers into commoditised solutions. This is a response to an upsurge in competition. It can be seen as a way to increase volumes and distribute at a faster pace with competitive pricing, including pre-trade risk analysis such as pre-trade credit valuation adjustment (CVA). It can also be an opportunity to discover new, less capital-intensive niches.
- A number of global players are leaving some local markets, typically in Asia, and remaining only on EUR and USD issuances. This is because clients increasingly opt to deal with local banks, arguing the global issuers lack market knowledge for local currencies.
- Some local middle-sized banks, often in emerging markets, see structured products as an area of expansion. This is due to the fact that they hold key customer relationships but haven't built the human, organisational, quantitative or technical infrastructure to issue such products. They are able to react quickly to market evolutions by distributing structures from global banks. These local banks are facing the challenge of building the capability to issue structured products themselves at a competitive overall cost to increase their margins. This cost issue is mitigated with the emergence of multi-issuance platforms for some end-client business, for example, wealth management.
- Another interesting segment is structured treasury, where we observe a fairly strong demand from semi-public funding institutions that rely on their strong ratings to issue complex funding structures at a competitive cost in the banking book.
- The customer is increasingly at the centre of the value chain – between the issuers and the distributors – with increased sourcing from multi-issuance platforms. This implies a high degree of modularity and connectivity for all systems. We expect to see more and more 'customer-centric platforms', integrated with multiple issuing institutions, being developed.

Structured Products: How has the technology sector evolved to meet new customer demand for solutions, in particular regulation, and how are you adapting your solution?
Stéphane Remille: The technology sector has evolved to tackle three demands and Murex has developed its product roadmap with a specific focus on these three angles:

1. Providing an end-to-end efficient manufacturing and distribution chain, reflecting competition in terms of time to market and prices.
2. Complying with regulation that is increasingly demanding in terms of both model validation and transparency.
3. Capacity to compute different charges and capital requirements – CVA, *Fundamental Review of the Trading Book* (FRTB) and Standardised Approach to Counterparty Credit Risk (SA-CCR).

Structured Products: What are some of the challenges associated with product manufacturing and distribution chains becoming ever-more integrated and complex?
Stéphane Remille: The challenges connected to the product manufacturing and distribution chains of structured products and the role of technology in addressing them include the following:
- For sell-side players, being able to widely expose their structured products offer and propose quotes in a timely manner, either through request-for-quote (RFQ) process or publication to multi-issuer platform, is key.
- Sellers capable of managing timely inclusion of derivatives valuation adjustment (XVA), initial margin and other components of the total cost of trading in pricing will gain a strong competitive advantage.
- Regulations aimed at investor protection and transparency, such as the forthcoming Packaged Retail and Insurance-based Investment Products (PRIIPs) regime or the Markets in Financial Instruments Directive (MiFID) II, are adding complexity to the manufacturing and RFQ chain for risk calculation, documentation and data storage.


Stéphane Remille, Head of Murex Trading and Financial Engineering Product Division

Murex offers a comprehensive and flexible set-up to overcome these challenges. Functionalities already in production include RFQ workflows (with clients and sales), electronic distribution of prices and pre-trade real-time CVA computation.

Structured Products: How are regulatory initiatives around banks' approaches to internal modelling affecting model development and risk management?
Stéphane Remille: A number of regulations are impacting model risk management, particularly the US Federal Reserve Board's supervisory guidance on model risk management, the Basel Committee's supervisory guidance for assessing banks' financial instrument fair value practices and the European Banking Authority's regulatory technical standards on prudent valuation. This is not new, but the scope and focus of regulation has evolved. From regulation to product valuation, reporting on risk metrics has increased dramatically over the past 10 years.

Risk model regulations require periodic review and revalidation, thus increasing the cost. To help customers overcome this challenge, Murex has developed an automated product and model validation framework to execute customers' model validation policies at a reduced cost.

Murex's offering comes with pre-packaged and customisable tests, covering calibration fit and stability, convergence rate, payoff and model degeneration, sensitivities replication and smoothness, profit and loss (P&L) attribution, stress-testing, and more. It also provides benchmarks against alternative analytics (out-of-the-box, third-party or proprietary models) with key indicators for prudent valuation reserve calculation.

Murex has co-ordinated with a specialised actor to audit its validation and documentation chart, and align it with industry best standards.

Regulation requires banks to control each step of the calculation chain, examining the impact of various parameters, sensitivity of models to exogenous parameters, market price uncertainty and more.

When developing a model, Murex delivers specific features in addition to analytics, including full audit of the calculation chain (calibration and evaluation), ability to stress parameters individually at each step of the chain, and drill-down capabilities to analyse and explain the various risk outputs.

Structured Products: What implications do ongoing regulatory changes have for dealers' technology requirements?
Stéphane Remille: Although FRTB, SA-CCR and CVA charges present a number of challenges for all products, the challenges are particularly acute for highly complex products.
- The FRTB internal approach requires the front office and risk to align in terms of data and model consistency, otherwise regulatory approval (based on back-testing/P&L attribution) would become extremely complex. Murex is naturally positioned to address this need, offering an integrated platform that provides consistency to the risk engine and in the data underlying these calculations.
- Regulations like FRTB or CVA pose many computational challenges. For FRTB, Murex has invested in the latest industry technology, such as in-memory analytics and specific value-at-risk optimisations, to address performance challenges (the number of calculations being multiplied up to 50 times in the worst cases observed). For CVA, the optimisation of engines has been achieved through long-dated investment in graphics processing units, further boosted by the concurrent usage of flash-based storage, IBM's General Parallel File System, distributed cache and InfiniBand networks.
- The complexity of SA-CCR mapping is a challenge for which Murex offers an off-the-shelf solution to accelerate clients' regulatory compliance.

Structured Products: What are the most important characteristics that a technology vendor needs in order to succeed in the valuation, pricing and risk management of structured products and other complex derivatives today?
Stéphane Remille: Murex believes that vendors need to offer the following to firms operating in the structured products landscape:
- The capacity to support the chain for a very wide range of products, across asset types, with best-of-breed analytics to be delivered with competitive time to market.
- A well-integrated chain with a high level of automation for cost efficiency and competitive pricing and product offering – from pay-out structuring and price discovery, to price distribution or automatic request for quotes, client account management and the full life cycle of the products.
- The ability to provide a comprehensive pre-trade analysis framework to accurately compute the total cost of a transaction (inclusion of CVA, initial margin and other components of the total cost of trading).
- Technology to support computational challenges required by both pricing and risk management, but also market risk (FRTB) and credit risk (CVA). The cloud is becoming essential to providing the required elasticity in resource allocations.
- Capabilities to manage post-trade workflows, including deal life-cycle management, within the same platform. This is as important as pre-trade workflows, as they bring natural consistency from an evaluation, risk management and cost perspective.
- Excellent end-customer experience, with broad and high-quality digitalisation throughout the whole value chain.

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