Technology innovation

Numerix

It was not that long ago that technological innovation meant developing fancy pricing models for the latest exotic derivative or complex structure. But times change, and so do the priorities of banks, securities houses, wealth managers and other product structurers. Now they are looking for the sharpest pricing models for vanilla products. They want transparency – the ability to look inside the models and examine the assumptions and cashflows. And they want tools to manage the risks of structures and the trades that comprise them.


Satyam Kancharla

But that does not mean there is no longer a need for sophisticated analytical development. The regulators have seen to that, with the requirement to calculate complex risk measures such as credit valuation adjustment (CVA), potential future exposure and incremental risk charge. Nor has the underlying technology stood still, with so-called cloud computing offering huge online networks of high-performance computing resources.

New York-based Numerix made its name as a developer of leading edge models for pricing complex products. But the company knew the winds had changed with the financial crisis of 2008. It realised there would be a flight to more standardised products and a requirement to have a consistent platform for vanilla as well as exotic products. It saw there would be a greater need for senior management to understand pricing models and firms would have to demonstrate their understanding of the models they use to regulators.

"Education is more important now than it was before, and it is more important in Asia than elsewhere because it is the biggest emerging market for financial products," says Satyam Kancharla, senior vice-president of client solutions at Numerix. "Nowadays, analytics software is as much about implementing best practice as it is about performance, accuracy and the other traditional factors."

As part of this educational and support process, Numerix has opened offices in Mumbai and Taipei over the past year and now has a physical presence in eight Asian countries. "It is critical that we have local people on the ground. That is why we are aggressively opening offices in the region," says Steven O'Hanlon, New York-based president and chief operating officer of Numerix. This has paid off in terms of increasing market penetration. In the last 12 months, the company added 21 new clients in the region, while the proportion of company revenues generated in Asia grew from 5% to 32% over the past six years.

Among the recent product developments that Numerix's Asian clients have found useful are the extension of its commodities pricing functionality, with the addition of a two-factor Gabillon model for complex energy and commodities instruments, and a two-factor spread model that is particularly relevant in the active Korean spread option market.

Universal concerns over counterparty credit risk and Basel III regulatory demands for its quantification led Numerix to develop a dedicated CVA application, to which it has added functionality for debt valuation adjustment and fund valuation adjustment. To make these computationally demanding calculations more tractable, the company introduced an innovative single-step stochastic approach rather than the traditional two-step Monte Carlo pricing.

The single-step stochastic approach greatly reduces the computational demands of CVA, but not all complex pricing and risk calculation challenges can be solved that way and many in-house IT infrastructures struggle to meet the performance demands of these tasks. To overcome this, Numerix has been working with partners such as New Zealand-based GreenButton and the high-performance computing division of Microsoft to adapt its software to operate in cloud environments. Other recent regional partnerships Numerix has established include providing analytics for India's Dion Global Solutions' valuation and risk management services and for Singapore-based JustCommodity Software Solutions' trading and risk system.

Among Numerix's recent clients in the region is a major Chinese bank that turned to the company because its enterprise risk system was not able to satisfactorily revalue structured derivatives. Not wanting to go through the daunting and expensive task of replacing its risk system, the bank opted instead for the Numerix Bloomberg Edition, an Excel add-in that uses Bloomberg data, which it was able to integrate with the risk system to give it the ability to mark-to-model its structured products, says the head of middle office at the bank. In addition, the bank is using Numerix CVA to calculate counterparty credit exposure for its internal model for regulatory capital and risk reporting.

Like the Chinese bank, a leading Taiwanese securities house has adopted Numerix CVA for counterparty credit risk, and has added Numerix Portfolio for market risk management. But its key requirement was for a consistent, accurate pricing framework across all products. "We chose Numerix because we believe it has the most professional models for vanilla instruments and structured products pricing," says the market risk system project manager at the securities house.