

ETRM Software and Enterprise Risk

By Thurstan Bannister, CEO, Sakonnet Technology

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As demand for energy trading and risk management (ETRM) software testifies, most organisations in the sector are no strangers to the concept that technology can deliver gains and rein in trading risk. They recognise it can enable them to take early leadership in a new high-margin markets without suspending controls and allow faster changes to book positions and production. But in addition to these potential gains, ETRM software has the capacity to reduce a host of enterprise level risks. These risks are not as simple and immediate as being caught long in a down-market; generally they are low probability/high-loss tail risks.

But not all software is created equal. The capacity for applications to control tail risks is often overlooked: both in their original design, and in the selection criteria used by purchasers.

There are a number of sources of potentially major loss to trading organisations that can be countered by the right systems. The first is of the rogue trader: an individual violating trading limits or perpetrating a fraud. As the world found out, a single futures trader in a small office in Singapore was capable of bringing down the UK's oldest merchant bank. With Nick Leeson's help, Barings went from solidity to bankruptcy in days. His unauthorised positions in Nikkei 225 and Japanese Government Bonds (JGB) futures, were hidden in a Barings error account, and huge intracompany borrowings to fund margin calls against him went unnoticed – with catastrophic results.

Of course Leeson is not alone in the hall of infamy. The head copper trader at Sumitomo, Yasuo Hamanaka, managed to disguise losses totalling \$1.8 billion over a ten year period. During that time he performed as much as \$20 billion notional amount of unauthorised trades a year.

Hamanaka was able to hide his activities because he headed his section and had trade confirmations sent directly to himself, neatly by-passing the back office.

However, an application that included real-time capture of all trades within the system and required independent back office verification before processing, might well have prevented this. In addition, enabling risk managers to monitor all trading activity by direct independent access to the same application used by the traders, might have further protected Sumitomo. While a trading platform and set of operating arrangements cannot necessarily prevent a deliberate fraud, they can certainly raise the hurdle for anyone trying start or continue one.

The risk of credit default by major trading partners looms ghostlike over large forward books. A system that captures potential exposures, based on market volatilities and correlations, accurate modelling of corporate hierarchies and legal agreements, can provide early warnings at a macro level. If things are really heading South, the system that tracks the latest collateral posting or physical delivery may save the day.

Beyond basic delta risk, second-order market risks such as correlation breaks can present a significant problem – as hedge fund LTCM discovered when its partial hedges failed. However, software is available that offers well-designed scenario reports to visualize correlations between markets and sectors along individual curves, and analyse P/L consequences if expected correlations and curve shapes vanish.

A US merchant energy company operating in Europe apparently experienced substantial losses caused by power grid imbalance penalties and covering short positions in the spot market – another major source of corporate risk. Software that provides real-time link to scheduling activities might have gone a long way to prevent these losses.

There are also threats encountered by trading incorrectly owing to undetected errors in book position reports. Systems that can swiftly drill down and allow for multiple trial End of Day runs during the day to find the causes of any position discrepancy, can minimize this source of risk.

If systems go down, firms run the risk of suffering losses caused by the inability to hedge their books, e.g. dynamically cover a short option position, during a major market move. This freeze on executing delta hedges can be countered by ensuring that the system concerned is robust and resilient, having failover mechanisms that will come into play when necessary, to ensure the continuous availability. End-to-end security is vital to protect the system from accidental or deliberate sabotage, and to ensure the integrity of all data that is transmitted and stored within the system.

Firms also face potential losses from uncoordinated corporate positions, for example a 'double-long' from two affiliates. This kind of co-ordination failure can be prevented by real time, multi-unit and multi-company reporting of risk. However it is also dependent on shared ETRM software being rapidly installed at new acquisitions. Although this seems to be an obvious solution, the majority of the applications available have not been designed with rapid implementation specifically in mind: indeed some take months or years to deploy, exposing conglomerates to a wide range of such risks in the interim.

Finally, management failure to understand the nature and level of risk exposure can lead to significant losses – as Metallgesellschaft AG discovered in the early 90s. Having decided to sell long-dated fuel and oil supply commitments to its end users, the company had used a 'stack and roll' futures programme to hedge its market risk. Some time later, liquidity problems alarmed the supervisory board which instructed unwinding the futures position. Hindsight shows us that the management were not seeing a delta matched physical/financial book and some curve and liquidity risk. More timely and accessible risk reports might have illuminated the nature of their risk far earlier.

There are, therefore, many elements of functionality which will help any trading firm to avoid all these potential causes of loss beyond the day-to-day trading P/L. A subtle last factor in preventing disasters is simply giving risk managers and traders the time and means to reconsider what they are doing. People on the trading floor need to be freed from repetitive manual operations, dull tables, report building, checking and sending. With convenient tools, they can review the trading mandate, horizons for hedging, gaps in limit structure and new sources of risk.

Systems that offer flexibility, extensibility, ease of position viewing and comprehensive risk control suites can add profit opportunity, control mainstream market risks and all but eliminate tail risks. Firms that take this on board when selecting an ETRM system can climb closer to the efficient frontier of risk and return, and steer clear of the rocks on which others have needlessly foundered.

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