

Expected shortfall's silver lining

Despite continuing to insist that replacing value-at-risk with expected shortfall in the Basel capital rules is wrongheaded and potentially dangerous, David Rowe argues that the shift may have an important silver lining

Readers of this column will not be surprised that I consider the shift from value-at-risk to expected shortfall (ES) in the Basel Committee on Banking Supervision's revised trading book rules to be at best useless and at worst dangerous. In my view, regulators wanted to give the impression they were doing something about what we have come to call black swans. Uninformed politicians and the general public would easily be lulled into thinking that "incorporating assessment of the complete tail of simulated loss distributions" would substantially reduce the future likelihood of major systemic events, such as the collapse of the subprime mortgage market.

This viewpoint smacks of what Jacques Barzun called scientism, "the fallacy of believing that the method of science must be used on all forms of experience and, given time, will settle every issue". Although statistically based distributional methods failed to warn of the last crisis, those in thrall to scientism believe a little tinkering with their methods will correct the problem. In truth, analysis of black swans requires structural analysis and seasoned judgement rather than more complicated statistical calculations on the same types of data we have utilised all along. Shifting to expected shortfall is dangerous in that it is likely to recreate the same groundless belief among the technically uninitiated that once surrounded VAR, namely that it represents some kind of 'worst-case loss'.¹

My sermonising against expected shortfall has however left me feeling like a lone voice crying in the wilderness. The Basel Committee and regulators around the world have made up their minds. At this point, to quote Tennyson, ours is "not to reason why". Banks and system vendors simply need to get on with the necessary steps to achieve compliance. Despite the frustration of this position, it does prompt an important question. Can our efforts to meet this regulatory requirement yield some significant advantages beyond being allowed to continue in business? On this score I believe the answer is yes.

The Basel Committee is demanding several procedural requirements for calculation of expected shortfall, three of which are crucial:

- calculation of simulation results at the individual trade level;
- demonstrated consistency between risk results and trading desk P&L reports; and
- auditable ability to reconcile results from individual trades to trading desk aggregates and all the way up to enterprise-wide risk estimates.

The requirements are likely to have profound implications. The ideal approach to meeting them is deployment of a centralised, highly flexible and massively parallelised valuation engine accessible to both trading and risk applications. This would automatically guarantee consistency between accounting and risk systems and between desk-level and enterprise-wide risk results. Any other approach is bound to degenerate into a massively expensive and ultimately futile process of continuous reconciliation.

Achieving this type of broad accessibility to a centralised pricing engine is not plausible using legacy system architecture with heavily coupled logical components. Only a modern, highly decoupled architecture that allows incremental enhancements with little or no risk of disruption to existing processes will work.

Calculating ES is such a massive exercise, and the demands for demonstrable reconciliation are so daunting, that deploying dedicated hardware for this process alone is unlikely to make commercial sense. The leverage that massive parallelisation brings to the process can only be fully exploited in a multi-use cloud environment.

Once established, such a simulation and detailed results storage system could supply answers to a wide variety of questions relevant to risk managers.

In particular, it would permit investigation of results in the tail of the distribution for any segment of the organisation, right down to which trades contributed the largest losses. With a well-designed scenario generator, it also would be ideal for performing stress analysis grounded in full trade-level valuations.

In brief, a well-designed system to perform the calculations required to produce mandated expected shortfall results could serve many other valuable purposes. Among other things, it could be the catalyst for banks to begin an urgent transition to twenty-first century information system architecture. It could centralise pricing in one place for all accounting, trading and risk management functions, and introduce an agility and flexibility that is unthinkable in legacy system architecture.

The surest sign of the success of a bank's Basel III market risk efforts would be to discover that satisfying regulatory compliance is the least of its many contributions. **R**



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¹ For more detailed analysis of my criticism of expected shortfall see – Rowe, D: Beyond Distributional Analysis, Risk magazine, July 2010 (www.risk.net/1687069) and Rowe, D: The False Promise of Expected Shortfall, Risk magazine, November 2012 (www.risk.net/2216891)