

Dangerous perfection

David Rowe argues that an obsessive insistence on academic perfection could limit the benefits of allowing simulation-based counterparty credit exposure methods in Basel II

For more than 10 years, I have advocated simulation-based methods for estimating counterparty credit exposure. Obviously, I was delighted when the Basel Committee on Banking Supervision authorised the use of simulation methods in the advanced approaches to calculating regulatory capital (*Risk* June 2005, page 71). For any such initiative, however, implementation details are crucial. It is here that the Committee must proceed carefully to avoid snatching defeat from the jaws of victory.

It is tempting to think credit exposure simulation only requires a simple extension of Monte Carlo methods used in market risk estimation. Unfortunately, pursuing this logic results in an impractical and commercially unsupportable estimation system. A frequent and damaging consequence is an unrealistic limit on the number of draws in the simulation. For some large and highly sophisticated banks, such simulations are performed using only 1,000 or even 500 draws. This introduces substantial volatility in the estimation of high confidence estimates of maximum potential future exposure (although the impact on confidence bands for expected positive exposure is considerably less severe).

An even more serious drawback of the full re-pricing Monte Carlo approach is that results are not timely. This effectively relegates the information to an after-the-fact reporting role, rather than making it useful as an active decision support tool. Gaining the maximum risk management benefit from counterparty exposure simulation requires the prudent application of several techniques. These include: fast pricing approximations where the loss in accuracy is demonstrably small; analytic exposure approximation for well-behaved classes of transactions;

and the ability to combine analytic and full Monte Carlo methods where necessary.

The computational economies offered by these techniques open the way to producing more types of useful information such as: exposure at dynamically defined simulation dates based on structural events in a counterparty's portfolio; measures of the sensitivity of exposure profiles to specific market events; diagnosis of wrong-way exposure where it is present; and analysis of potential unsecured exposure in collateralised portfolios over a rolling period of arbitrary length.

Another area where practical common sense is essential is in the scope of coverage for the simulation approach. In highly dynamic derivatives markets, credit assessment cannot afford to become an unnecessary obstacle to innovation. Some method must be available to reflect the credit exposure of new structures quickly and conservatively. The most effective means of accomplishing this is through deal-specific exposure value overrides. These take the form of formula driven potential future exposure (PFE) and expected positive exposure (EPE) profiles for individual deals. Typically, such profiles are aggregated without the benefit of diversification effects, thereby resulting in a conservative overstatement of exposure.

Clearly, allowance must be made in implementing the Basel Accord for this treatment of new structures on a temporary basis. Beyond that, some types of deals never catch on in the market, leaving dealers with a handful of transactions that need to be reflected in their risk systems. Realistic allowance for the permanent use of exposure value overrides for such deals is also important, provided the total exposure is modest.

Informal discussion appears to centre around a demand for 90% exposure coverage within the simulation engine. This seems a reasonable benchmark to force inclusion of volume products, even if modelling them is complex and challenging, while providing leeway for simpler treatment of some deals where the total risk involved is acceptably small.

One regulatory alternative would be to impose punitive exposure assessments on deals outside the simulation system if total coverage falls below a specific level. Clearly, however, demanding 100% coverage within the simulation process would be both unrealistic and counterproductive.

The initial and still primary goal of the Basel Accord is to assure adequate capital in the banking system. An important secondary goal, however, has been to promote best practice risk management methods. This secondary goal will not be served if an abstract vision of academic perfection in the modelling of counterparty exposure is imposed.

The Basel Committee would do well to define realistic implementation guidelines in this area in light of the competing priorities of accuracy, completeness, timeliness and cost. Leaving such a complex area to national supervisors is likely to result in inconsistent demands that may well undermine the effective management of counterparty credit risk. ■



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