

Counterparty Credit Risk

Until recently, counterparty credit risk (CCR) – the chance that a counterparty to a market transaction such as an interest rate swap might not fulfil their part of the bargain – was something that very large banks and investment banks worried about but that smaller banks largely ignored. However, bank awareness of CCR is rising fast as risk management standards improve and transaction volumes grow. The industry's current counterparty credit exposure increased \$10bn from the first quarter to \$199bn in the second quarter, according to the OCC's most recent report.

This rise in awareness is good so long as banks approach CCR measurement in a sound way. Unfortunately, some smaller banks are tempted to put a number against the potential for CCR exposures in their portfolio using a simple but flawed two-step approach:

Step One: The bank takes each of its transactions and, for each, generates market scenarios that change the value of the contract, eg, shocking interest rates up and down in the case of an interest rate swap.

Step Two: The bank then discards any "negative value" results, under the logic that these cannot create bank CCR, and uses the average positive values for each transaction as the inputs into a credit portfolio model that then computes portfolio-wide CCR.

There are two big problems with this approach and both are caused by risk correlations.

■ **Market prices move together:** The first problem is that the approach treats the risk factors that drive each instrument's CCR – interest rates, foreign exchanges rates, etc – as if they are completely independent of each other.

This is a wrong assumption, for reasons that are clearest when the market factor is the same for two instruments. For example, to generate the worst-case CCR scenario for two differently structured interest rate instruments, the bank might assume under the two-step approach that interest rates can simultaneously go up for one instrument and down for the other – a logical impossibility. Even where instruments are based on different market rates, any accurate calculation should take into account the varying degrees of correlation between market factors.

For example, the two-step approach fails to take account of the correlation between Canadian interest rates and US dollars when separately measuring the exposures of two interest rate swap transactions denominated in those currencies.

Sometimes banks answer this criticism by saying that they are at least erring on the

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side of conservatism by assuming that all their instruments might be subjected to worst-case market factor CCR scenarios.

But while the end result is often an inflated risk number, it is impossible for the bank to know how conservative this number really is – or to identify the scenarios that drive the real level of CCR up and down across its portfolio.

■ **Market risk drives credit risk:** The second big problem is that the two-step approach wrongly assumes that the market risk factors that drive CCR in Step 1 of the calculation are unrelated to the credit risk factors that drive the bank's credit

portfolio model in Step 2. For example, a sudden change in interest rates might well affect a company's financial condition at the same time as driving up the amount that it owed to a derivative counterparty – a risk correlation that clearly increases the counterparty's potential for loss.

The same can be said of sudden changes in energy prices and the creditworthiness of certain companies in the energy industry; commodity prices and the creditworthiness of the agricultural sector; and so on.

When banks ignore the correlation between market risk factors and credit risk, the CCR number they compute will be wrong. The direction of the error depends on the nature of the bank's portfolio and whether the correlations are positive or negative, but the issue can lead to a significant underestimate of bank risk.

The answer to these problems is to abandon the two-step solution and build an integrated approach that models how the bank's *whole portfolio* of instruments changes in value under a range of market scenarios. In such an integrated model, the credit risk of the portfolio is calculated at the same time, taking account of the interaction between market and credit risk factors.

Even quite a simple integrated approach will prove more accurate than the two-step approach and, importantly, this is the only way that banks can understand how risk factors drive CCR up and down across their portfolios.

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