

Broaden valuation options

In the same way credit risk managers used to question how a loan would be repaid if the primary means of payment were to fail, so banks ought to ask if there is another way to value structured credit investments if market liquidity were to dry up, argues David Rowe

The scientific triumphs of the modern world make it tempting to view ancient wisdom as obsolete and irrelevant. Moreover, as the pace of innovation has accelerated, the past horizon of what is to be viewed as ancient keeps shortening. In the world of capital market innovations, it now seems to have shrunk to about 20 years!

As the subprime collateralised debt obligation (CDO) crisis unfolded, I was struck yet again by the chasm that divides the two worlds of credit risk management. When I entered the banking world in the mid-1980s, credit risk management involved detailed microanalysis of companies. Fixed-interest coverage, liquidity ratios, competitive threats and a myriad of other company-specific factors were at the heart of the analysis. The contrast of this with industry-standard formulas for pricing CDO tranches, such as the Gaussian copula model and its variants, is little short of breathtaking.

One persistent mantra I recall from my early days in banking was: what is the second means of repayment? The general idea was that there should always be a fallback if the primary means of repayment fails. A commercial loan usually relied on the continued financial success of the company as its primary means of repayment. The purpose of a lien on fixed assets was to provide a second means of repayment – namely, liquidation of the collateral – if the financial resources of the company itself proved insufficient to meet the obligation. A parent guarantee or a letter of credit could also serve as a second means of repayment.

A relevant concept for innovative financial instruments would be a second means of valuation. In general, a derivative's value is based on (that is, it is derived from) the price of another instrument or the value of some market variable. This is why bespoke derivatives generally can be valued within a small range of variability, even though each one is unique.

There is effectively an arbitrage relationship that prevents these values from deviating significantly from what is derivable from the price of the underlying instrument or index. The active market for new interest rate swaps could disappear and there would be no problem defining an objective value for pre-existing transactions.

The valuation of various tranches of a CDO, however, presents quite a different situation. First, the waterfall payment structure means the value of each tranche can respond in a highly non-linear fashion to changes in the current condition of, and future expectations about, the underlying collateral. In particular, market perceptions about the co-variability of credit quality across the underlying obligors play a powerful role. Unfortunately, this co-variability is poorly understood and can be highly unstable in periods of economic stress. This results in compound sources of instability. Over certain ranges, the value of a tranche responds non-linearly to movements in a variable that is hard to model structurally and can be highly unstable under stress.

In effect, the market standard Gaussian copula model is not a structural model: it is a shorthand mechanism for expressing the market's consensus in terms of pseudo-structural parameters linked to observed prices. The lack of any true explanatory structure is apparent in the internal inconsistency of the necessary parameter values required to match the prices for different tranches. In essence, as has often been noted, the Gaussian copula model is effectively just a means for traders to communicate differing views on behaviour of the underlying portfolio, particularly co-variability. As long as there is an active two-way market, this works fine. Tranches can be bought and sold on this basis and the process produces objective values for mark-to-market purposes. The problem is that market liquidity is the only source of objective valuation. There is no satisfactory second means of valuation. The non-linear sensitivity of tranche values to poorly understood and volatile co-variability results in significant uncertainty around any model-based price.

None of this is to say that products with no secondary means of valuation should never be traded. After all, for the right price, loans can reasonably be made with no second means of repayment. It was always recognised, however, that such loans are riskier than more fully secured credits. For this reason, their outstanding volume was correspondingly limited. The hard lesson of the subprime CDO meltdown should be that the fair value of an instrument with no second means of valuation will be highly uncertain if market liquidity fails. This uncertainty can have severe consequences if an excessive share of the balance sheet is involved. This is why such instruments should be identified in advance and their volume constrained to acceptable levels before a crisis occurs. ■

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