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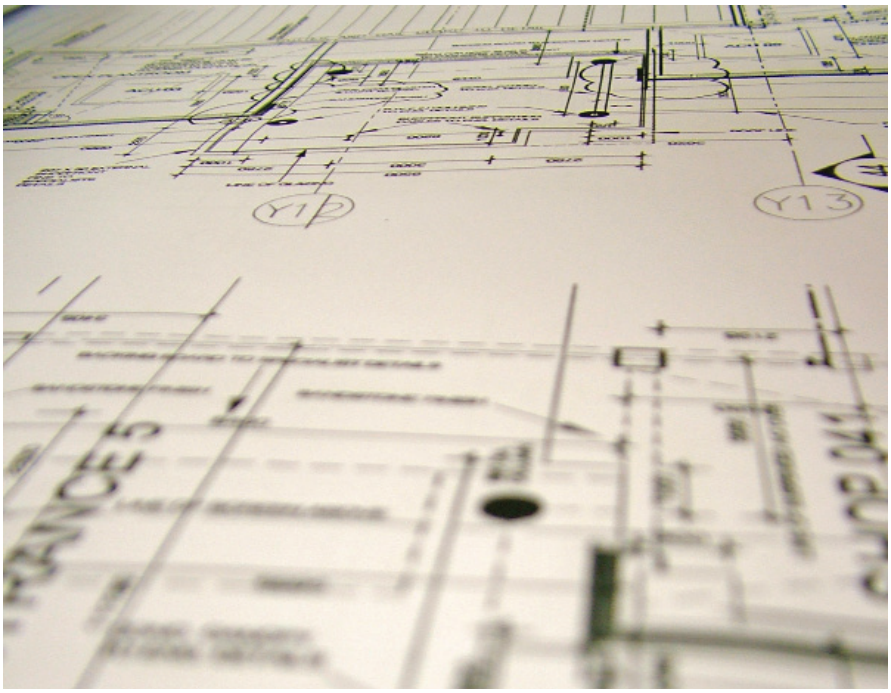
Property Markets

Stress Testing Commercial Real Estate Loan Portfolios

Commercial real estate is often seen as a highly volatile asset class. In times of stress, such as downturns in the economic cycle, loss rates in the CRE class can jump considerably compared with the behaviour of other loan types. The Federal Reserve has recently made its concerns clear about banks active in commercial real estate lending. This includes concerns that CRE losses tend to cluster in times of stress, with even the best loans adversely affected. Banks have improved their exposure-by-exposure credit risk management since the problems of the 1980s, but sound risk management, on a collective basis, is vital to fully understanding the risk of CRE concentration. In several speeches this fall, the Federal Reserve has urged banks to upgrade their risk management practices, by way of stress testing their CRE portfolios.

Stress tests are one of the three main types of analyses used by portfolio risk managers. One summarizes the composition of the portfolio in terms of the volume of loans to a particular sector or geography. This provides an idea of what the portfolio looks like, but leaves it to the intuition of the reader to extrapolate the embedded risk. Another uses statistical analyses (such as those used for calculating capital requirements) to generate hard numbers, estimating the probability distribution of future losses. But the complexity of statistical reports makes them less accessible to normal users.

The third type of analysis is stress testing. It asks, “What if . . .?”, and produces quantitative answers. For income-producing commercial real estate, typical stresses include increases in interest rates, drops in property values, drops in market rents, increases in vacancy rates or the default of a single large tenant. In new construction deals, stresses include cost over-runs, delays and contractor defaults. Although stress tests do not provide statistical measures of risk, they do have the great advantages of being intuitive and therefore they are quickly understood.



Stresses are often applied to individual deals in the credit application process to give an idea of the deal's ability to withstand adverse events. But at the portfolio level, stress tests are useful in revealing the extent of the portfolio's potential exposure to systematic risk factors and as such are of great interest to senior management, investors, and regulators, who fear that a particular negative change in the market could simultaneously wipe out a large part of the bank's assets. In each case we can examine what the impact would be of this stress across all assets in the portfolio.

A bank that finds its CRE portfolio vulnerable to one particular risk may use the information to change its policies. It might diversify the types of CRE lending it conducts by geography or by asset type. Banks could also adjust their policies on the provision of floating-rate loans if a sharp rise in interest rates would drive too many customers into default.

A sample stress test might assume interest rates increase by 2% per year for the next 4 years. Such neat simplification allows it to be easily understood. The complication comes in calculating the consequences across the whole portfolio.

In principle this can be done by feeding the stress scenario into a cashflow model that contains the full income, debt, and collateral cascade. The results are familiar metrics such as projected LTV and DSCR per year plus less familiar metrics such as dollar-shortfall per seniority. The following graph show typical results from a stress test.

In this example the stress is an increase in interest rates combined with a fall in property values. The graph shows the portfolio debt outstanding and underlying collateral in both the nominal and stress case. Note that the balance and value fall off rapidly in the stressed case as loans default and are written off.

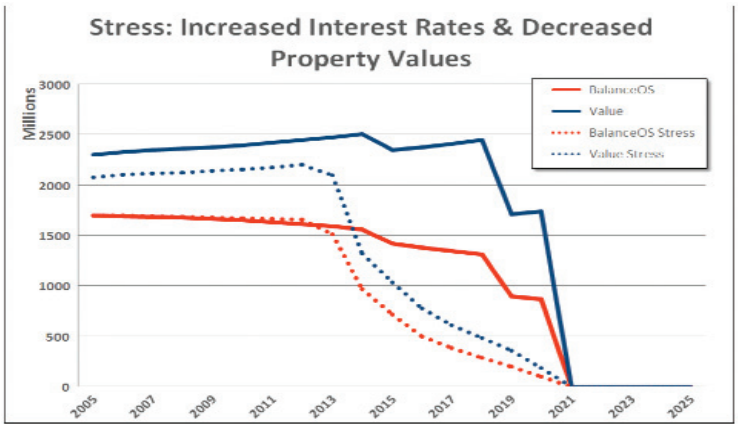


Figure 1: Portfolio debt outstanding and underlying collateral in both nominal and stress cases.

Stress testing a whole portfolio in this way requires deal data, comprehensive cashflow models and a technical framework to run those models on the thousands of deals in a portfolio. Such systems are now coming to the forefront.

With the advent of Basel II, many banks have invested in implementing enterprise risk management systems for calculating regulatory capital. Diversified banks for whom real estate is a relatively small portion of the overall portfolio have implemented simple models that take into account a few deal factors and give an estimate of the risk that is not very sensitive at the level of individual deals, but adequate for estimating the capital for the portfolio as a whole.

The leading real estate banks have modeled their risks in significantly more detail to allow them to structure the portfolio to maximize profit. To address Basel II they have pulled together the data on financial structure, collateral value and lease information into a single risk engine. This can be used not only in the statistical calculation for capital, but also for detailed portfolio reports, including stress testing.

The ability to stress test the whole portfolio quickly both improves the bank's efficiency and provides comfort to the investors and regulators. ■

This week's guest column was written by Chris Marrison, CEO of Risk Integrated, a consulting firm focusing on risk measurement for specialized lending and technology.