

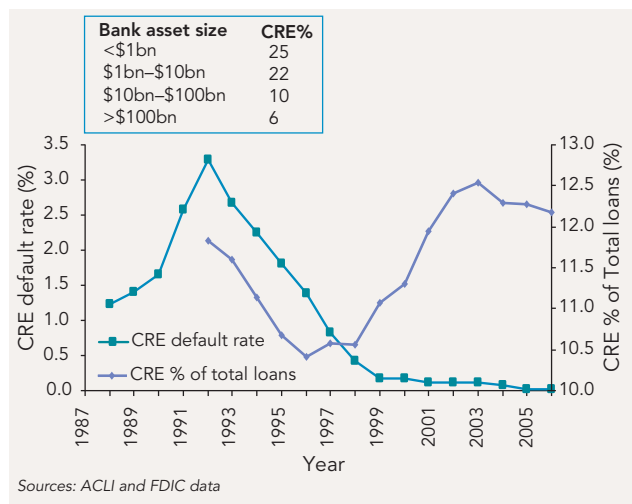
HOW REAL IS YOUR CRE RISK?

How banks can measure and manage the true extent of their commercial real estate (CRE) risk?

For a couple of years, US regulators have been sending out ever more urgent signals of concern over the rising level of CRE linked credit risk in bank portfolios.

The default rate for CRE assets remains low but, as we can see from Figure 1, this apparent lack of risk has encouraged banks to take on more CRE-related risk as a percentage of total loans.

Figure 1: As CRE default rates have fallen, bank CRE exposure has risen



As a result, the industry is now more exposed in absolute terms than it was during the last CRE linked credit crisis in the 1990s, and the risk is concentrated disproportionately in smaller banks, with CRE lending making up over 25% of the portfolios of banks that have under \$1 billion of assets (inset box, Figure 1).

Meanwhile, the combination of low interest rates and rising property values that has led to historically low CRE default rates over the last decade is looking ever more shaky. Default rates have already begun percolating upwards in several regions of the country, most notably in the condominium and retail markets.

This means banks must work harder to:

- Understand CRE concentration risks in terms of economic capital costs
- Track the fundamental drivers of CRE risk to improve expected loss estimates, Allowance for Loan and Lease Losses (ALLL) and capital adequacy decisions

CORRELATIONS AND CAPITAL

Figure 2a, overleaf, helps to show why rising CRE risk is so important from a capital perspective. The figure shows the results of economic capital analysis for a typical illustrative bank with three main portfolios – CRE, C&I and consumer – as calculated by Ambit Abacus, SunGard's enterprise-wide economic capital model.

We can see how the economic capital required by the bank rises sharply as the proportion of CRE lending creeps above 30% of the bank's portfolio, even though the gross lending amount and all the other risk factors (eg, borrower credit rating, collateralisation) are held constant.

CRE lending pushes economic capital up because CRE assets suffer from high correlation risks.

To begin with, defaults on particular kinds of CRE assets within a specific region, eg, hotel lending within the San Francisco Bay Area, tend to be strongly correlated for fundamental economic reasons. The degree of 'project-to-project' correlation varies somewhat depending on the sector in question, for example, hotel-related loans in a particular region often show higher correlations than office-related assets in the same region.

Geographical concentrations partly drive this correlation risk. So a bank that suffered from high correlation between hotel-related assets in the mid-Atlantic region could reduce its correlation risk by combining this portfolio with an equivalent hotel-related portfolio in a geographically distinct area (such as the Pacific region).

CRE lending also suffers from two less obvious correlation risks. Many smaller bank CRE portfolios suffer disproportionately from single-name risk. Figure 2b shows how single name concentrations drive up the credit spread that a bank must demand from its borrowers if it wants to make a risk adjusted profit. We can see that an illustrative portfolio made up of small (eg, \$500,000 or \$1 million) loans need only command a spread of 0.75%. But if the same portfolio is made up of \$50 million loans, then the single-name concentration risk pushes the required credit spread up to nearly 2%.

Figure 2: CRE concentrations increase required economic capital

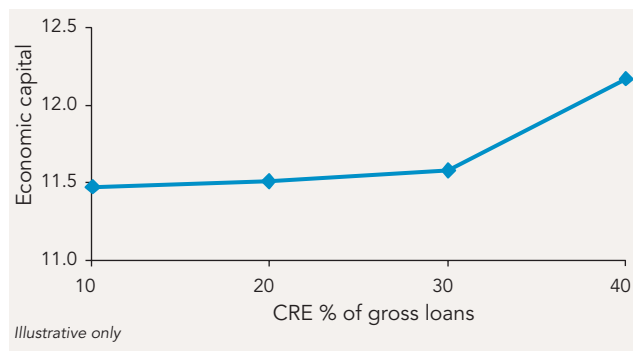
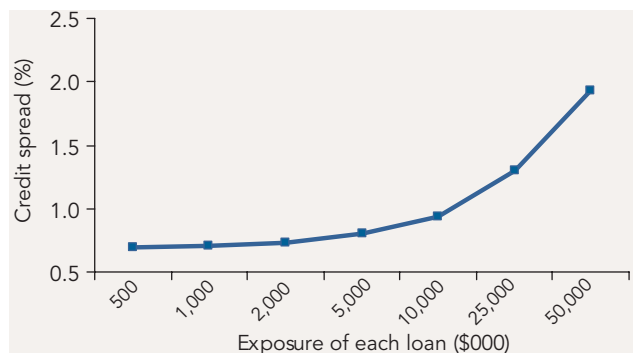


Figure 2b: CRE name concentrations increase the required risk-adjusted spread



There is one final, important driver of CRE correlation risk: the probability of a borrower defaulting is strongly linked to the amount of loss the bank is likely to suffer in the event of a default. For example, banks nationally lost about 35% of each defaulting office development loan in 1994 (when the default rate was high) compared to about 20% of similar loans in the year 2000 (when the default rate was much lower).

This is because any increase in foreclosures in a CRE sector invariably coincides with a drop in property prices, reducing the

bank's recovery rate and prompting a further round of defaults.

Moving beyond DSC and LTV

Estimating CRE risk at the transaction level is tricky because a lot of lending is to shell companies that are set up to develop a particular piece of real estate – and which therefore lack the track record and conventional financial ratios of C&I borrowers.

This kind of lending always looks safe at the outset because lenders insist, as a matter of policy, that the transaction conforms to set standards in terms of two key ratios: the debt service coverage (DSC) and loan-to-value (LTV) ratios.

This approach is conceptually sound. Borrowers that have enough money to service their debt are unlikely to default, and even those that suffer from an eroding DSC ratio will not default so long as they can sell their property for an amount larger than the loan.

But the reliance on DSC and LTV ratios at the outset of a transaction means that it's difficult to use risk-factor based analysis to estimate accurate economic capital, expected loss and ALLL numbers – or to track any rise in risk over time without an impractical level of deal revaluing.

SunGard has worked with many banks over the last few years to identify the risk factors that drive DSC and LTV ratios for each type of property-linked portfolio - and to understand how these factors interact.

The answer is to identify the underlying risk factors that *drive* these ratios so that the bank can:

- estimate the potential effect of these factors on DSC and LTV ratios over time, and therefore more accurate ALLL and economic capital numbers at deal outset
- track the effect of changes in market risk factors (eg, a fall in property prices) on portfolio expected losses, ALLL and economic capital without having to reevaluate individual deals
- stress the underlying risk-factor estimates to explore worst-case scenarios

WHAT DRIVES DSC AND LTV?

SunGard has worked with many banks over the last few years to identify the risk factors.

The factors can be divided into three main classes: the loan-specific and property-type parameters listed in the table opposite, and a set of global/market parameters that define four key variables: occupancy rates, rental rates, property values and interest rates.

Information about loan-specific and property-type parameters is generated as part of a bank's underwriting packages, and is therefore readily available for most bank portfolios. However, global and market parameters need to be carefully adapted to reflect the local market and also the nature of the CRE sector in

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question. For example, in industrial and hotel projects, trade activity and tourism activity, respectively, are good forward indicators of occupancy rates. In nursing home developments, the move-in rates of patients and the utilization rate for beds can be good proxies for the occupancy rate risk factor.

Another tricky part of setting up a CRE model is estimating the volatility and correlations of the various global and market parameters. These key inputs vary greatly depending on the nature of the portfolio, but they are usually open to analysis using segment-specific historical market data or benchmarks.

SIMULATING CRE

Banks that understand the risk factors that drive DSC and LTV ratios can build fundamental CRE models capable of simulating the behavior and interaction of the risk factors. Running this kind of simulation – underpinned by a correlation matrix that describes the relationship between the variables – allows the bank to calculate the monthly LTV and DSC ratios for each transaction over a given time horizon, typically a year.

For example, banks might generate 10,000 correlated scenarios of the key variables, capturing many different market and economic conditions. The bank can track the outcomes of these scenarios in terms of monthly DSC and LTV ratios, and then translate this information into a distribution of defaults and loss given default numbers for its CRE portfolio.

What are the loan-specific and property-type inputs in a 'fundamental' CRE risk model?

LOAN	PROPERTY
Balance	Pre-sold units
Credit line	Pre-leased units
Loan rate	Total construction costs
Appraised value	Drawdown %
Term (months)	Occupancy rate
Amortizing term (months)	Average rental rate
Remaining term	Total square footage
Loan type	Fixed expense
Fixed/floating	Variable expense
Spread	Initial cash reserve
Float cap	Speed of variable expense reduction
Float floor	

From this distribution, the bank can determine the expected losses and ALLL numbers associated with the portfolio, as well as calculating the economic capital required to support any unexpected losses.

The model also makes it easy for the bank to look at the effects of projected macroeconomic scenarios in terms of likely losses and bank capital adequacy. For example, a bank with a firm view of the likely trend in occupancy, rental and interest rates can calculate the effect on projected DSC and LTV ratios and let these numbers flow into its projected expected loss, ALLL, and economic capital estimates.

LISTEN TO YOUR EXPERTS

Banks should build in the views of their CRE lending experts during the development and validation of this kind of 'fundamental' CRE model.

For example, loan officers and credit administration experts can be interviewed to see how they rank order a sample of 20 CRE loans on the bank's books. This rank ordering can be compared to a rank order

produced by the fundamental model, so that discrepancies can be explored and the model adjusted accordingly.

The involvement of the bank's credit experts in model development and validation helps the model to gain acceptance across the bank.

The bank's credit experts can also be tapped to identify the key 'nonfinancial' risk factors that drive some CRE portfolios. For example, SunGard has found that including non-financial risk factors such as 'years of management experience', the presence of anchor tenants, or the proximity of properties to a major highway, can improve model accuracy.

It is important that any such non-financial variables are defined in strictly objective terms, and that their usefulness is explored statistically so that they can be weighted appropriately in the final model.

CONCLUSION

Better CRE risk estimates can be used to improve key management information such as expected loss, ALLL, and capital adequacy numbers – and to adjust credit risk limits for each portfolio to reflect the true economic risk of business expansion.

But the point of all this is not simply to improve risk reporting and limit setting – it is to steer the bank towards strategies that improve the bank's risk/reward profile

and thus increase profits. For example, banks that understand the correlation-induced economic capital costs of their CRE portfolio can better decide whether to gain diversification benefits through:

- acquiring new businesses
- lending in new property sectors
- marketing in new geographical areas

Increasingly, banks that can quantify the risks associated with CRE will also be able to design securitization strategies and make use of the emerging property derivative markets to transfer some of their CRE risks to investors.

With the risks managed, banks can leverage their expertise in particular lending niches without incurring undue risk or capital costs.

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