Discussant remarks on Andrew Felton and Joseph B Nichols' paper "Commercial real estate loan performance at failed US banks"

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1. Overview and background

This is a very nice paper, well motivated and based on a unique dataset. Using loan-level data from community banks entering Federal Deposit Insurance Corporation (FDIC) receivership, the paper estimates the probability of default (PD) and loss-given default (LGD) of two distinct types of commercial real estate (CRE) loans. The authors also compare commercial real estate loans in community banks to those in commercial mortgage-backed security (CMBS) pools and those in large banks.

One of the main contributions of this paper is that it provides strong implications for supervisory policy. In particular, the paper stresses the need for more granularity in supervisory data, so that we can better understand what drives loan losses of community banks. This paper finds that land and construction loans have higher default and loss rates than loans backed by existing CRE properties. It also shows that more attention is warranted for single-family construction loans, land loans and out-of-footprint loans, which will be defined later.

The BIS has closely monitored developments in the commercial real estate sector since the beginning of the recent international financial crisis. The BIS Annual Reports published in 2008, 2009 and 2010 analysed potential risks stemming from the commercial real estate sector in advanced economies in depth.

In addition to the United States, commercial property prices had accelerated in a number of countries in the years up to 2007. As of early 2010, commercial property values in the United States were down by more than one third from their peak, and the delinquency rate on commercial real estate loans rose to more than 8%, which is greater than four times the rate at the end of 2006. Commercial property markets in many European countries have not fared much better, either. For example, in Ireland and the United Kingdom, commercial property prices have fallen by 40% to 50% from their peaks.

The US banks' exposure to the CRE sector also increased up to 2007. Direct exposures to commercial real estate account for almost 14% of the assets held by US banks, with the share having jumped from 19% to 33% in the case of medium-sized banks over the six years up to 2007. There were also accumulating signs of investors' heightened sensitivity to commercial property risk by 2007. In line with these developments, the issuance volume of CMBSs started to decrease in 2007 and the spreads on CMBSs widened substantially in 2007 and 2008. In response, US banks tightened their lending standards from 2006 across all types of loans.

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2.   Summary of the paper

This paper is motivated by the observation that there are three types of CRE loans: loans on existing CRE properties; land and construction loans (also called land acquisition, development and construction loans (ADC loans)); and CRE loans in CMBS pools and insurance company portfolios. This paper especially focuses on changes in the business environment of community banks in the United States. In particular, the authors observe that securitisation has contributed to moving community banks out of residential mortgages, consumer credit and highest-quality commercial property loans, and into not-easily-securitised CRE loans. Finally, in terms of policy environment, the FDIC, the Office of the Comptroller of the Currency and the Federal Reserve jointly issued a guidance in December 2006, warning banks to expect increased scrutiny if the ratio of construction and development loans to equity capital is greater than one, or if the ratio of CRE loans to equity capital is greater than three.

Before I summarise the main results of the paper, it is important to know the exact definition of the following key terms:

- Loan default: loans that are delinquent for 30 days or more, on non-accrual status or in foreclosure;

- Probability of loan default: the probability that a loan was in default when the bank entered FDIC receivership (that is, when the bank failed);

- Probability of bank failure: the probability estimated by a Logit model using bank capital levels, loan quality, profitability, liquidity and CRE concentration;

- Loss-given-default: loss on the loan in default as a percentage of the loan balance outstanding when the bank failed;

  - Here, loss is measured as "covered loss", including the charge-off amount, loss on sale of foreclosed property, accrued interest, recoveries, legal fees, etc.;

- Out-of-footprint loans: loans with the address of the borrower in a different state than the one where the bank is headquartered.

The main results of the paper can be summarised as follows:

For 11,910 loans backed by existing CRE properties, the average delinquency rate ranges from 12% to 15%. Loans with larger size, higher interest rates and shorter terms are more likely to default. Loans close to maturity are also more likely to default. For a subsample of 91 such loans with consistent LGD data, the average LGD is 19.1%. For this subsample of loans, loans with smaller size and shorter terms have higher LGD.

For 8,917 ADC loans, the average delinquency rate ranges from 43% to 50%. Loans with larger size, higher interest rates and shorter terms, and out-of-footprint loans are more likely to default. For a subsample of 412 such loans with consistent LGD data, the average LGD is 24.9%. For these loans, smaller loans have higher LGD.

The paper also provides an interesting observation that there was actually a strong provision of construction loans in 2008 and 2009. The authors find that these are mostly due to renewals and extensions of existing loans. This is an example of evergreening, which is widely discussed in the banking literature.

3.   Comments

My first comment is on the risk profiles of three types of loans: (1) loans on existing CRE properties, (2) land and construction loans, and (3) CRE loans in CMBS pools and insurance company portfolios. The authors emphasise that these loans are different in terms of cash flow characteristics, uncertainty and monitoring burdens, and ease of securitisation. I would like to add one more important aspect: the correlation between the collateral value and income flows.

Loans backed by existing CRE properties tend to exhibit a low correlation between collateral value and income flows, which are potentially generated by business projects funded by the loan. By contrast, land and construction loans have a very high correlation between collateral value and repayment since the payment of loans depends on the completion of the project and the sale of the property. Loans in CMBS pools are also characterised by a high correlation between collateral value and rental income flow, since the property value and rental income from the property tend to be cointegrated in the long run. Table 1 summarises the differences in the three types of loans along the three dimensions.

Table 1

Classification of commercial real estate loans

Loan type	Cash flow characteristics	Correlation between value and cash flow	Monitoring and securitisation
Loans backed by existing CRE properties	Income potentially not from rentals but from business projects	Potentially low	Not popular for securitisation
Land and construction loans	Loan balance increases over time and cash flow is negative until the project is completed, the property is sold and the bank is repaid Very sensitive to business cycle and more uncertain	Very high	Require strong monitoring, so not for securitisation
Loans in CMBS pools and insurance company portfolios	Positive and predictable rental streams	High correlation between collateral value and rental income	Monitoring burden not so strong, thus popular for securitisation

My second comment relates to empirical approaches taken in the paper. The authors chose to use a cross-sectional concept of PD and a loan-by-loan time series concept of LGD at the same time. Even though the availability of only cross-sectional data makes it difficult to use a typical VaR-type concept of PD, I suggest that the authors might want to think about how to introduce a model with assumptions to calculate the probability that a loan will default within a given amount of time in the future. Also, given that the sample is intrinsically unbalanced and not random, the authors might want to control for the bank-specific effect, for example, by introducing a dummy variable for the largest bank, which takes up 31% of the total assets in the sample of banks, or for the top ten banks, which take up 66% of the total assets in the sample.

Finally, the paper stresses the importance of the predicted probability of bank failure. This probability is estimated by bank capital levels, loan quality, profitability, liquidity and CRE concentration. This variable is viewed as a measure of the quality of the bank's business

model, and is introduced to control for unobservable bank characteristics. We can expect that loans at banks with a higher probability of failure are less likely to be well underwritten than loans at banks with a lower probability of failure. However, the regression results do not seems to support this prediction. One possible reason for this puzzle might be that for some banks, their CRE portfolio could have played a significant role in their failure, while other banks may have failed for reasons completely unrelated to their CRE portfolio, such as subprime or other residential mortgages.

Overall, I enjoyed reading the paper, and hope the authors continue to produce interesting papers in this line of research using the interesting dataset.