Challenges to Commercial Real Estate Stress Models

Joseph Nichols, Federal Reserve Board

Stress Testing Model Symposium

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The opinions expressed in this discussion are mine alone. They do not represent the opinions of the Board of Governors of the Federal Reserve System or of its staff.

What stress should we be modeling?

- Risk to the cash flow of an income generating property.
  - Recent additional source of risk is the ability to finance balloon payments at maturity.
- Risk to the business in an owner occupied property.
  - What happens to the property if the business fails?
  - Has the property been customized to the current owner?
- Risk a construction project may not be completed.
  - Or even if it is completed successfully the market value of the completed property is less than was anticipated.

What stress have we been modeling?

- Almost all research has focused on the risks to income generating properties.
  - Early work used proprietary databases from large institutional lenders.
  - Later work utilized CMBS data.
- The traditional approach is to model the probability a loan survived to the next period.
  - What types of models are appropriate for owner-occupied and construction loans?
- Does the range of CRE loan types suggest the use of a range of stress models with different methodologies?

Linking CRE Outcomes to Macro-Economic Factors

- How should stress models capture the cyclical nature of the CRE market?
- Are our models too heavily influenced by recent economic events?
- What is the relationship between market CRE drivers and an individual property's rental income and vacancy rate?
- Are the relationships between macro-economic factors and CRE outcomes time-varying?
  - Are CRE outcomes more sensitive to macro shocks during stress period when credit is less available?

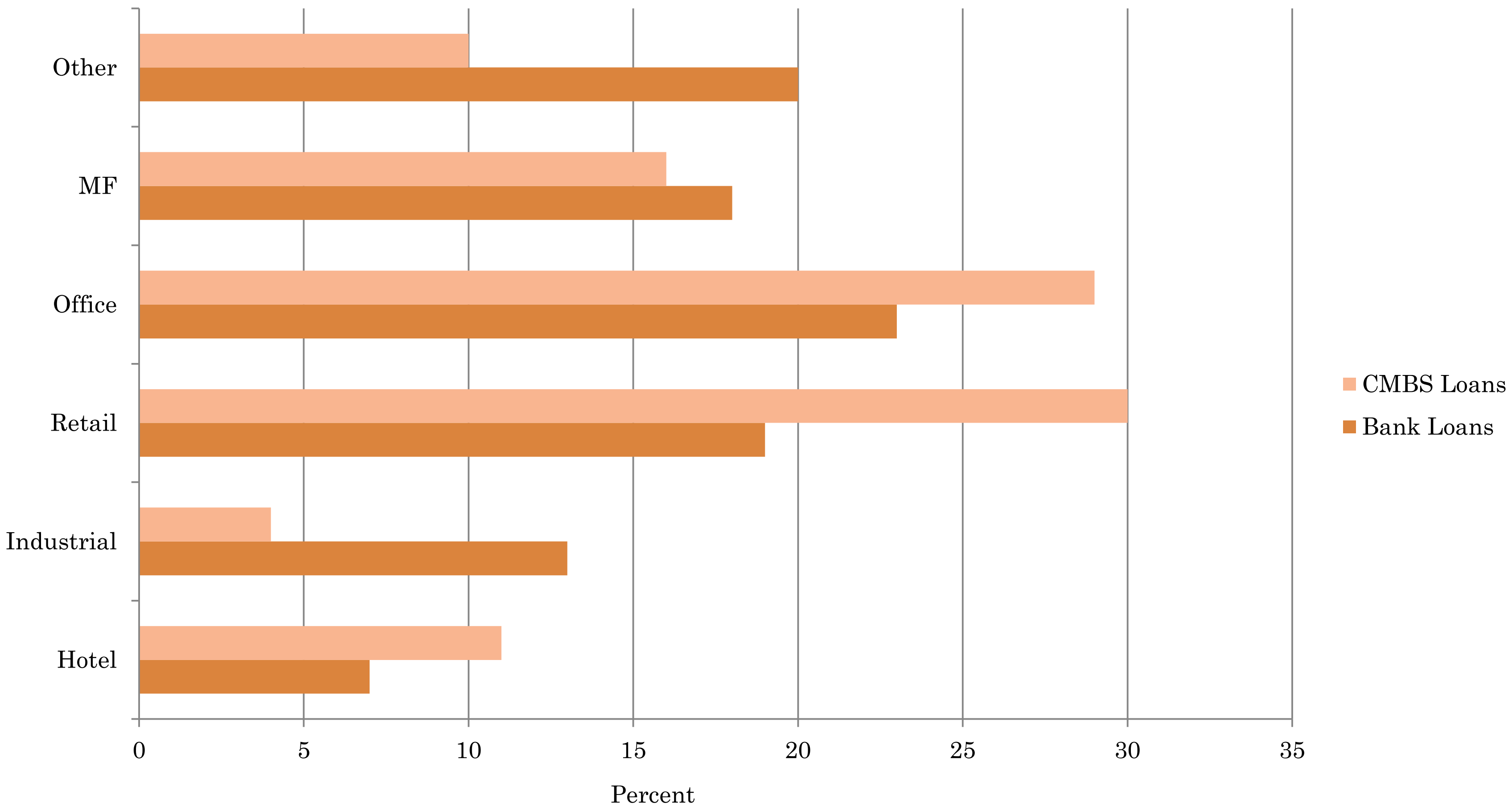
Key Modeling Questions

- What is the economic value of recourse?
- What is the impact of cross-collateralization within a given bank's portfolio?
- Are we measuring economic or accounting losses?
- Should stress models also model loss mitigation strategies?
- Should stress models also model the evolution of loan balances?
- Are bank income generating loans similar to those in CMBS?
  - Are bank more likely to fund transitional properties with different risk profiles than CMBS collateral?

Top Level Comparison of Bank and CMBS Markets

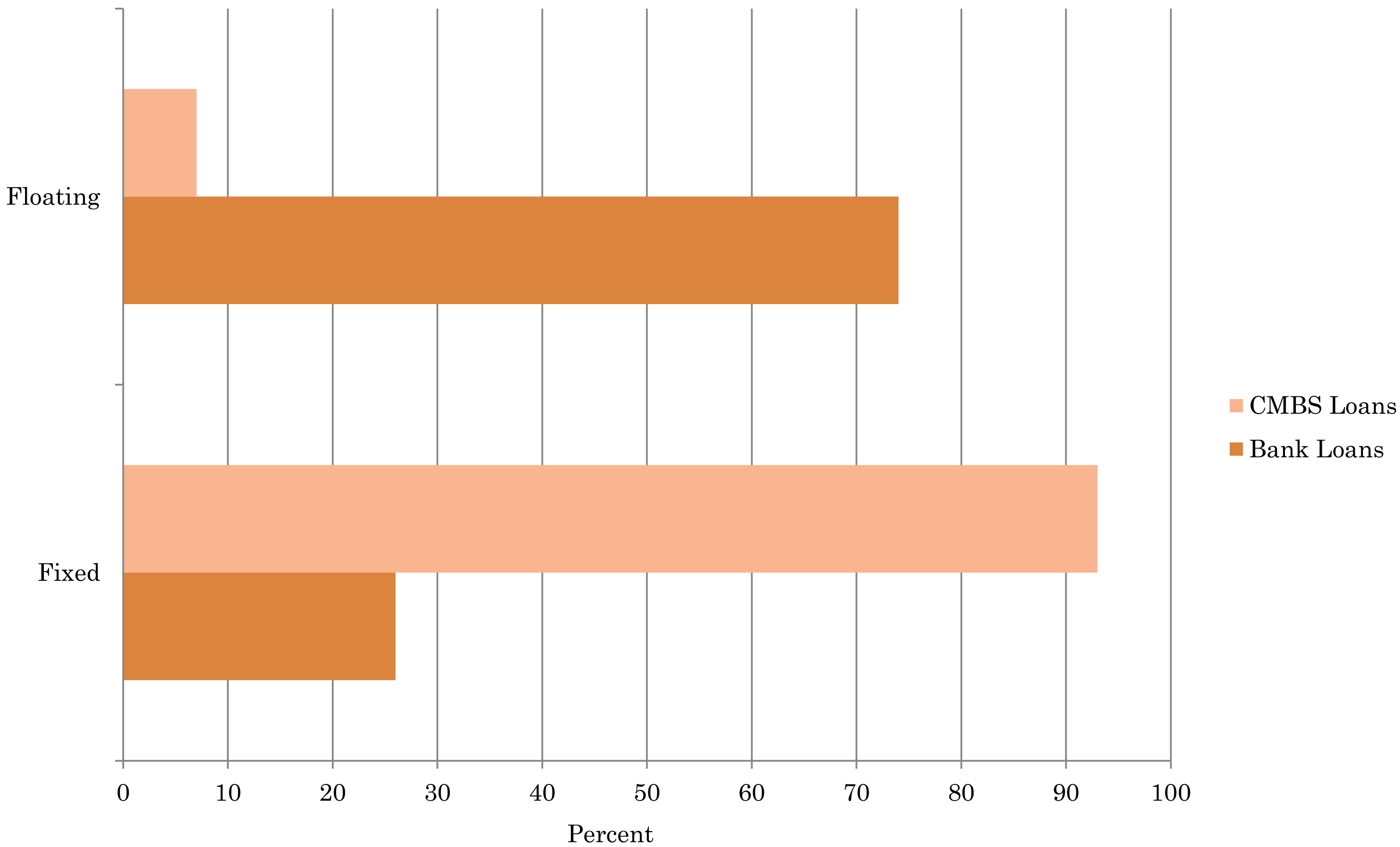
Characteristic	Bank Loans	CMBS
Borrower / Lender Relationship	Relationship oriented	Transaction oriented
Recourse	Full or partial	None (except “bad boy” carve-outs
Interest rate variability	Floating	Fixed
Term	One to Five years	Five to ten years
Cross-collateralization of loans	Common	Rare
Income Producing	Including income producing as well as non-income producing	Almost all income producing
Cash Flow Stabilization	Stabilized and unstabilized	Stabilized
Contingent Draws	Some revolving lines and contingent commitments	None
Construction loans	Common	None

Portfolio Share by Property Type



Note: CMBS data from Morningstar, Bank data from FR Y 14-Q. Portfolios as of 20XX:QX.

Portfolio Share by Loan Type



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Dealing with the Data Question

- Public data is available over a much longer period, with more consistent structure.
  - Alternate sources of public data are becoming available, including transaction databases, property based surveys, and others.
- Internal data may be better suited for development of stress models, but are limited to individual firms and/or are available over limited periods and may lack consistent data definitions.
- The optimal approach may require the use of both data sources.