Challenges to Commercial Real Estate Stress Models

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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

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