The Subprime Crisis

by

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Empirical Design & Challenge

- Great Question: Is Securitization Good?
- Empirically Showing A Casual Effect
  - Exogenous increase in securitization
  - Securitization → Higher defaults

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Evolution of Endogeneity in Finance Empirical Work

- Ignore It
- Mention, Then Ignore
- IV by Labeling
- Real Instrumental Variables [Today]
  - Exogenous instruments
  - Economic justification for instruments

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Logic of Endogeneity: The Problem

- The Identification Problem
- Cause or correlation? “We identify the causal effect of expansion in the supply of mortgage credit on subsequent changes in loan originations, house prices, and defaults.”
- Hospitals kill people

\[
\text{Default} = \alpha \text{ObsCreditQuality} + \beta \text{Securitization} + [\text{UnobsCreditQuality} + \varepsilon] \\
\text{Securitization} = \gamma \text{ExogenousChange} + [\text{UnobsCreditQuality} + \eta]
\]

- Requirement: Exogenous Instruments
- Uncorrelated with residual
- Correlated w/ securitization

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Identifying Assumption: Instrument: FICO>620

- Text and Logic:
  - \( \text{Pr[Sec]} \) discretely jumps @ FICO>620

- Numbers: Less Clear
  - # jumps @ 620
  - # plummets @ 690
  - Data is not a probability

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Instrument: FICO > 620

Numerical Example

<table>
<thead>
<tr>
<th>FICO</th>
<th>610</th>
<th>630</th>
<th>650</th>
<th>700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Mortgages (#)</td>
<td>100</td>
<td>200</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>Securitized (#)</td>
<td>80</td>
<td>160</td>
<td>400</td>
<td>160</td>
</tr>
<tr>
<td>Securitized (p)</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Data: Only Have Securitized Loans

“Since our results are conditional on securitization...”

Georgia/NJ Natural Experiment

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Securitization Effect on the Mortgage Market

- Defaults Jump @ 620
- Loan Rates Don’t Jump @ 620
  - Good news – Econometrics
  - Bad news – Market failure
- Where Do Bad Loans Go?
  - Keep the good, sell the bad
  - If sell all loans, why the same story

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Question: Securitization Supply → Problems?
Identifying Assumption: Its Supply not Demand

- High Latent Demand (HLD)
- It’s Not Demand
  - Assume no change in demand
    “...the key identifying assumption of our empirical methodology is that high 1996 latent demand zip codes do not experience future increases in economic opportunities or income shocks.”
  - Control for demand factors
    “...our zip code data on income, employment, and crime allow us to perform tests that mitigate concerns that omitted credit quality variables are polluting the estimates of the supply effect.”
- Changes in Quantity Are Supply Driven

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Its Supply

- Quantity Grows Faster In HLD Markets
Its Supply: Are You Sure?

- Economic Conditions in HLD
  - Low income and lower income growth
  - House prices continue to rise
- Does HLD Measure $\Delta$s in Demand Also?

$$Loans = \alpha \text{ObsDemand} + \beta \text{Supply} + [\text{UnobsDemand} + \varepsilon]$$

$$Supply = \gamma \text{ExogenousChange} + [\text{UnobsDemand} + \eta]$$

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If Its Supply, Is It Securitization?

- Link to Securitization is Far from Obvious

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Policy Implications: The Importance of Caution

- Securitization is the Root of the Crisis?
  - More risky loans or different distribution?
  - Hospital example revisited

- If More Risky Loans, Is this Bad?
  - Default rate is higher (surprise)
  - Was risk priced correctly?
  - Who is responsible?

No single raindrop believes it is to blame for the flood

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