Market Failure and the Need for Regulation
Conference on Regulating Consumer Financial Products, January 6, 2010

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Faculty Director, Furman Center for Real Estate and Urban Policy
Theories of Market Failures Underlying the Mortgage Crisis

- In the underwriting/securitization of mortgages
- In consumers’ understanding of or ability to choose between owning and renting, or between financial products
- In the investors’/servicers’ decision to foreclose or modify
- In the regulation of mortgage products
Failures in Consumers' Understanding of, and Choices Between, Options/Products

- Overestimating the potential for house price appreciation/underestimating the risk of stagnation or depreciation
- Overestimating the potential for refinancing
- Underestimating the risk of interest rate increases
- Underestimating the risk of income shocks
- Underestimating the ability to secure credit on better terms
- Overestimating the benefits/underestimating the costs of homeownership
Furman Center/FRBNY "Pathways" Project using New York City Data Set

LoanPerformance mortgage data, merged with:
- Deeds records from NYC Dept. of Finance
- Property characteristics from tax assessment records
- Neighborhood characteristics from the Census
- Neighborhood foreclosure data
- Community District level repeat-sales house price indices
- HMDA

Work by Sewin Chan, Mike Gedal and Vicki Been at NYU's Furman Center; Andy Haughwout at FRBNY
Purpose is to study the determinants of delinquency, foreclosure and aftermath

- Data allows us to jointly explore the role of:
  - Borrower characteristics
  - Loan characteristics
  - Property and neighborhood characteristics

- And to incorporate very local house price dynamics
But the work can tell us something about consumer choices

- First lien mortgages originated 2004-2008 in NYC, observed until December 2008
- Mortgages include both 30 year fixed rate mortgages and 2/28 and 3/27 adjustable rate mortgages
- Total of 1,236,262 monthly observations, representing 59,735 mortgages
### Borrower and loan characteristics

<table>
<thead>
<tr>
<th></th>
<th>FRMs</th>
<th>ARMNs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default rate</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Averages at origination:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FICO credit score</td>
<td>667</td>
<td>621</td>
</tr>
<tr>
<td>Debt-to-income (DTI)</td>
<td>40%</td>
<td>42%</td>
</tr>
<tr>
<td>Combined LTV</td>
<td>70%</td>
<td>77%</td>
</tr>
<tr>
<td>Interest rate</td>
<td>6.9%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Original loan amount</td>
<td>$360,000</td>
<td>$352,400</td>
</tr>
<tr>
<td>ARM margin</td>
<td>5.9%</td>
<td></td>
</tr>
<tr>
<td>Fraction &gt;20% payment shock:</td>
<td></td>
<td>9.2%</td>
</tr>
</tbody>
</table>
## Borrower race and gender

<table>
<thead>
<tr>
<th>Primary borrower:</th>
<th>FRMs</th>
<th>ARMs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>39%</td>
<td>43%</td>
</tr>
<tr>
<td>Hispanic white</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>Black</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>Asian</td>
<td>9%</td>
<td>8%</td>
</tr>
</tbody>
</table>

NYU's Furman Center for Real Estate and Urban Policy
## Neighborhood characteristics

<table>
<thead>
<tr>
<th></th>
<th>FRMs</th>
<th>ARMs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Census tract averages:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median income</td>
<td>$42,000</td>
<td>$40,500</td>
</tr>
<tr>
<td>Residential units foreclosed</td>
<td>0.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>HMDA denials in past 6 months</td>
<td>55%</td>
<td>54%</td>
</tr>
<tr>
<td>Hispanic residents</td>
<td>8%</td>
<td>6%</td>
</tr>
<tr>
<td>Black residents</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Asian residents</td>
<td>8%</td>
<td>6%</td>
</tr>
</tbody>
</table>
Empirical specification

- Cox proportional hazard model
- Dependent variable: hazard of becoming 90 days delinquent
- Explanatory variables:
  - borrower, loan, neighborhood characteristics
  - time fixed effects
Hazard model results: borrower and loan characteristics

We broadly confirm results from the literature that default increases with:

- higher current combined LTV
- lower credit scores
- higher DTI
- higher interest rate at origination
- higher loan amount
- higher ARM margin
- large ARM payment shocks
Borrowers may underestimate the risk of depreciation

- For FRMs, having a current LTV higher than 95 is associated with a default hazard that is $3 \frac{1}{2}$ times higher than FRMs with LTVs lower than 60.
- For ARMs, the effect is more than twice as large.
Borrowers may under-estimate the risk of interest rate shocks

- Even for hybrid ARMs with less than 20% increase in payments, from 7 months after the initial adjustment, the default hazard is 50% higher than before the adjustment.

- For those with payment shocks greater than 30%, the default hazard is over twice as high 5 months post adjustment compared with before adjustment.

- 3/27 ARMs have significantly lower default rates overall than do the 2/28 ARMs.
Borrowers may under-estimate the costs of homeownership

- Home purchase loans have higher default rates than do refinance loans, perhaps because refinancers have longer housing tenure & are not 1st time borrowers.

- Owner-occupiers have higher default rates for ARMs compared with investors (though owner-occupancy is self-reported and maybe unreliable).

- Single family homes have higher default rates than buildings with 5 or more units, including condos, perhaps because multi-unit buildings often provide additional financial controls on buyers.
Behavioral law & economics must consider:

- Role of Race
- Role of Neighborhood
Race

- 40% of subprime ARM borrowers, and 30% of subprime FRM borrowers, are African American
  - Only 25% of population of NYC was African American in 2000
  - Only 13% of home purchase borrowers in NYC were African American in 2007

- Nationwide and in NYC, African Americans are more likely to have subprime loans

Can behavioral law & economics explain those disparities?
Racial Disparities in High Cost Lending

Characteristics of HMDA Borrowers

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<tbody>
<tr>
<td>% 1st Lien Home Purchase loans that are High Cost</td>
<td>17.7%</td>
<td>53.3%</td>
<td>46.2%</td>
</tr>
<tr>
<td>% Refinance loans that are High Cost</td>
<td>25.5%</td>
<td>51.7%</td>
<td>38.6%</td>
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<tbody>
<tr>
<td>% 1st Lien Home Purchase loans that are High Cost</td>
<td>7.8%</td>
<td>40.8%</td>
<td>30.1%</td>
</tr>
<tr>
<td>% Refinance loans that are High Cost</td>
<td>17.5%</td>
<td>37.3%</td>
<td>29.5%</td>
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Neighborhood characteristics

The risk of default increases with:
- higher neighborhood foreclosure rates
- lower neighborhood median income
- higher percentage of black residents in the neighborhood

Can behavioral law & economics explain those effects?
Why is it important to regulate?

- Effects on families in delinquency and foreclosure
- Effects on lenders and their shareholders
- External effects:
  - Neighbors who suffer declines in the value of their homes
  - Neighbors who suffer declines in the quality of life because of vacancies & reductions in maintenance, which may increase crime, health threats such as rodents or mosquitoes, neighborhood social capital, and aesthetic affronts
The importance of regulation, continued

- Effects on children forced to move homes and perhaps schools in the middle of the school year, or in off-years
- Effects on their classmates, whose own education may be disrupted by classmates' mobility
- Effects on the tax revenues of local governments
- Effects on the expenditures local governments must make for policing, fire, maintenance