Comments on “Understanding the Subprime Mortgage Crisis”

Chris Mayer
(Visiting Scholar, Federal Reserve Board and NY Fed; Columbia Business School; & NBER)
Discussion

- Summarize results and provide commentary
- Evidence on correlated risks
- Theory: why did this market develop?
- Evidence on geographic concentration of subprime lending
- Economic incidence: prices and new construction
- Policy issues
Very nice paper with careful analysis!

- Examine cohorts of loans in subprime pools
  - Delinquency rates increasing rapidly for ARMs, but also growing for FRMs
  - 2006/2007 vintages are worse for all loan types. WHY?
- Logit model of 1 mm loans from 2001-2006
- Calculate mean residual (actual-predicted) for CLTV category and year
  - Residual on CLTV is much bigger for CLTV > 80%
  - Residual grows over time, especially for CLTV’s > 80%
- Spread between subprime and prime mortgages has grown as loan quality/underwriting criteria deteriorated
Changes in rate spreads over time are interesting and new—riskier loans did get at least some higher interest rates
- Difference between teaser rate & fully indexed rate

- Subprime (and Alt-A) pools are heterogeneous

- Why run regressions on a common pool of loans?
  - Sample is based on when loans are originated
  - Loan risks may be correlated

- Why run separate regressions for ARM vs. FRM in spreads, but not delinquencies?

- Need to think more about why loan terms vary
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“Risk Layering”
Alt-A and Subprime pools

Mortgages with FICO < 620, CLTV > 95%

Source: Calculations from LoanPerformance by Chris Mayer, Karen Pence, & Shane Sherlund, Federal Reserve Board
“Risk Layering”
Alt-A and Subprime pools

Mortgages with “low-doc” or “no-doc” & CLTV >95%

Source: Calculations from LoanPerformance by Chris Mayer, Karen Pence, & Shane Sherlund, Federal Reserve Board
Purchase loans became much riskier
Alt-A and Subprime pools

CLTV by Use of Proceeds and Year

Source: Calculations from LoanPerformance by Chris Mayer, Karen Pence, & Shane Sherlund, Federal Reserve Board
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Why did 2-28, 3-27 ARMs develop?

- Risky borrowers looking for a second chance (or investors looking for a free option)
- Low initial payments (around 7%) to allow borrowers to clean up credit and/or gain housing equity
- As borrowers prepay, remaining borrowers become ever more risky, so
  - Rate adjustment compensates lenders for the reclassification risk
  - Prepayment penalties early in loan ensure that loss of good borrowers in the pool does not happen too quickly
- Tomasz Piskorski & Alexei Tchistyj are developing such a model
ARMs deteriorate more than FRMs: FICO scores peak in 2004

Source: Calculations from LoanPerformance by Chris Mayer, Karen Pence, & Shane Sherlund, Federal Reserve Board
ARMs deteriorate more than FRMs: CLTV rises rapidly over the whole period

Source: Calculations from LoanPerformance by Chris Mayer, Karen Pence, & Shane Sherlund, Federal Reserve Board
Comments

- Need to be careful about claims vs evidence
  “…the rise and fall of the subprime market resembles a classic lending boom-bust scenario, in which unsustainable growth leads to the collapse of the market. We show that the problems in the subprime market were imminent long before the crisis in 2007, securitizers were to some extent aware of it, but a high house price appreciation in 2003-2005 masked the true riskiness of subprime mortgages.“
CDO Issuance as Rated by S&P
2000 to 2006

Source: S&P Ratings Direct.Issuance year is based on the year that S&P issued its first rating. This is an incomplete measure of CDOs as it does not include securities that were rated exclusively by other rating agencies.
2/28, 3/27 mortgages as % of housing units for top-108 MSA’s

2005

Source: Calculations from LoanPerformance data on subprime and Als-A pools by Chris Mayer & Karen Pence (forthcoming 2008 as part of the conference volume from the Lincoln Land Institute Conference held in Honor of Karl Case)
2/28, 3/27 mortgages as % of housing units for CA, NV
2005

Source: Calculations from LoanPerformance data on subprime and Als-A pools by Chris Mayer & Karen Pence (forthcoming 2008 as part of the conference volume from the Lincoln Land Institute Conference held in Honor of Karl Case)
2/28, 3/27 mortgages as % of housing units for Northeast

2005

Source: Calculations from LoanPerformance data on subprime and Als-A pools by Chris Mayer & Karen Pence
(forthcoming 2008 as part of the conference volume from the Lincoln Land Institute Conference held in Honor of Karl Case)
Results from a simple regression of ARM purchases and refines as a proportion of total housing units, zip-code level

<table>
<thead>
<tr>
<th></th>
<th>ARM Purchases / # Units</th>
<th>ARM Refinances / # Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Per Capita Income / 1000)</td>
<td>-0.03**</td>
<td>-0.05**</td>
</tr>
<tr>
<td></td>
<td>(-12.26)</td>
<td>(-21.86)</td>
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<tr>
<td>(Per Capita Income / 1000)$^2$</td>
<td>0.00010**</td>
<td>0.00032**</td>
</tr>
<tr>
<td></td>
<td>(3.52)</td>
<td>(11.99)</td>
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<tr>
<td>% Black (2000)</td>
<td>1.94**</td>
<td>2.05**</td>
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<tr>
<td></td>
<td>(42.87)</td>
<td>(44.59)</td>
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<tr>
<td>% Hispanic (2000)</td>
<td>2.80**</td>
<td>2.44**</td>
</tr>
<tr>
<td></td>
<td>(55.81)</td>
<td>(36.17)</td>
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<tr>
<td>%Ownership (2000)</td>
<td>0.81**</td>
<td>0.65**</td>
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<tr>
<td></td>
<td>(15.04)</td>
<td>(12.76)</td>
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<tr>
<td>%Unemployed (2005)</td>
<td>0.62</td>
<td>2.04**</td>
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<tr>
<td></td>
<td>(0.70)</td>
<td>(2.54)</td>
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<tr>
<td>%Change in HPI (2000 - 2005)</td>
<td>5.74**</td>
<td>9.66**</td>
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<tr>
<td></td>
<td>(51.39)</td>
<td>(96.49)</td>
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<td>City Core</td>
<td>-0.03*</td>
<td>-0.19**</td>
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<td></td>
<td>(-1.65)</td>
<td>(-12.47)</td>
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<tr>
<td>MSA Fixed effects</td>
<td>no</td>
<td>yes</td>
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<tr>
<td>MEAN</td>
<td>1.2687</td>
<td>1.4024</td>
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</table>

* Year Fixed Effects included for 2004, 2005. N= 48272

Source: Calculations from LoanPerformance data on subprime and Als-A pools by Chris Mayer & Karen Pence (forthcoming 2008 as part of the conference volume from the Lincoln Land Institute Conference held in Honor of Karl Case)
Conclusions

- Subprime ARM’s are substantially more prevalent in high minority counties
- Subprime purchase ARM’s are much more prevalent at the edge of MSAs
- Subprime cash-out ARM’s are somewhat more likely at the edge of MSAs and in high unemployment MSAs
- House price appreciation is more heavily correlated with cash-out refis than purchases
### House Price Appreciation, Housing Construction and Subprime Lending
#### 2004-2006

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>% Change in House Prices</th>
<th>Permits as % of Total Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Lagged (ARM Purchase Loans/Total Purchase Loans)</td>
<td>5.4** (6.22)</td>
<td>6.2** (12.06)</td>
</tr>
<tr>
<td>Lagged (% Change House Prices)</td>
<td></td>
<td>0.85** (75.96)</td>
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<tr>
<td>Lagged (Permits as % of Total Units)</td>
<td></td>
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<tr>
<td># Obs.</td>
<td>1081</td>
<td>1081</td>
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<tr>
<td></td>
<td>Avg.= 7.2%</td>
<td></td>
</tr>
</tbody>
</table>

(t statistics in parentheses)
* p < 0.10, ** p < .05

Source: Calculations from LoanPerformance data on subprime and Als-A pools by Chris Mayer & Karen Pence (forthcoming 2008 as part of the conference volume from the Lincoln Land Institute Conference held in Honor of Karl Case)
Conclusions

- Both new construction and house price appreciation are positively correlated with the percentage of non-prime, but the construction effect is much larger.
Policy issues

- Do we ban terms associated with subprime ARMs?
  - Why do we allow prepayment anyway?
  - Complicated to require underwriting on fully-adjusted rate
- How can we harness the good parts of this market without reducing credit for the most vulnerable? (my sister-in-law)
- What can the government do to enhance credit in the interim? (rely more heavily on the FHA!!)
- Securitization and origination markets require fundamental reforms, which will happen no matter what
- How do we get banks back in the business of writing mortgages?