Eyes Wide Shut?
Mortgage Insurance During the Housing Boom

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*Views expressed are those of the authors and do not necessarily represent those of the Federal Reserve Board or its staff
Risk in the Mortgage Market

• Borne across public (GSEs, FHA) and private (banks, investors, borrowers, insurers) sectors

• Popular view: Exposing private capital to more risk will “discipline” the market
  • Lead to appropriate pricing and better risk management

• Essentially all current GSE reform proposals increase the role of private capital in the housing market
Motivating question

Why didn’t Private Mortgage Insurance (PMI) Companies safeguard the GSEs (or their investors)?
PMI firms and Risk Management

• First loss position
  • Most sensitive to fluctuations in the market

• Decades of experience in mortgage markets
  • Should be most wary of changing lending standards, “global savings glut,” or irrational house price expectations

• Ability to review loans prior to origination
  • Could raise the price on insurance or decline to insure certain mortgage contracts
PMI’s Role - An unanswered question

• Almost no academic attention paid to this large and important sector’s role in the housing boom
  • PMI insured over 1.1m purchase mortgages in 2007
    • Roughly ¼ of the market for purchase loans
  • By end of 2007, PMI had outstanding policies on over $800b of mortgage debt

• Virtually all of the riskiest loans the GSEs purchased needed approval by the PMI companies
  → GSEs could not have taken on so much risk if not for PMI
PMI Firms’ Perceived Responsibility

“Mortgage insurers were designed to be review underwriters. Because they are in the first loss position on insured mortgages, they are the second set of eyes looking at potential loans to check and see if it is safe for both the investor and the borrower.”

- Mortgage Insurance Companies of America 2008-2009 Factbook

“MI companies can smell change in the air just as much if not more than lenders can; being on the hook for losses does tend to sharpen one’s wits.”

- Calculated Risk Blog, 03/22/2007
The “PMI Puzzle”

- Instead, we show that the opposite happened:

- In late 2006 and 2007, PMI firms insured
  - High-risk (high-LTV, low-fico, low-documentation) loans
  - In the riskiest markets where prices were already falling or expected to fall based on their own market research
  - With no increase in premiums (!)

- They did this after the “piggyback” market dried up
  - Other informed participants appeared to reduce their willingness to bear housing risk

- Three firms failed, others massively rescinded policies
Outline

• 1) Institutional Details about the PMI Industry
• 2) Data on PMI activity
• 3) PMI activity 2000-2009
• 4) The GSEs, Lenders, and PMI
• 5) Concluding Thoughts
The Private Mortgage Insurance Market

- PMI is often required if the LTV ratio is above 80%
  - Important source of access for low-wealth borrowers
    - Main alternative during boom is private 2nd lien market

- PMI is mandated for all high-LTV GSE-backed loans
  - First-loss position relative to Fannie and Freddie
  - >90% of PMI business in 2007 was through GSEs

- Market consisted of 8 firms (e.g. Genworth, Radian)
  - Monoline industry standard (Jaffee 2006)
  - Set their own underwriting criteria
PMI designed to check GSE risk-taking

GSEs

PMI Firm

Lender

Borrower

Insurance covers GSE losses

Regulates PMI through eligibility rules

Chooses firm

Pays premium
PMI firms did not change premiums:

- 1) When automated underwriting drove down application costs (late 1990s / early 2000s)
- 2) When faced with new aggressive competition from 2\textsuperscript{nd} lien market (2004 - 2006)
- 3) When received tax equalization relative to 2\textsuperscript{nd} liens (2007)
Data on PMI Activity

- **FFIEC PMI company data**
  - Similar to HMDA, collected from all PMI firms, 1993-2013
  - Details on location, loan amount, gender, race, income
  - Whether PMI was approved or not
  - Used first by Canner and Passmore (Fed Bulletin 1994)

- **FFIEC HMDA data**
  - Loan applications, approval rates, by geography
  - Details on location, loan amount, gender, race, income
  - No FICO score, etc.

- **LPS / McDash Analytics**
  - FICO score, LTV, location, documentation, whether has PMI,
  - Sold to GSE vs. private market vs. portfolio
  - Performance of loans
High-LTV Lending in 2004-2006

- Extremely generous financing for “piggyback” 2nd liens
  - Both held on books and securitized
  - Tax advantage from mortgage interest deduction

- PMI companies lost market share
  - Also sounding the alarm about lending and foreclosure risks

- Many obvious and public danger signs as of late 2006
  - Homebuilders stocks down 20-40% from peak
  - Mortgage delinquencies rising (especially in sand states)
  - Prices level or falling (88% of sand state MSAs already peaked)
PMI and Piggyback Shares of Home Purchase Loans

Graph showing the trends of PMI and Piggyback Shares over time from 2000q1 to 2009q1.
Insurers Urge Action On Risky Mortgages

By Kirstin Downey
Washington Post Staff Writer
Saturday, August 19, 2006

"We are deeply concerned about the potential contagion effect from poorly underwritten or unsuitable mortgages and home equity loans," Suzanne C. Hutchinson, executive vice president of the Mortgage Insurance Companies of America, wrote in a recent letter to regulators. "... The most recent market trends show alarming signs of undue risk-taking that puts both lenders and consumers at risk."

But the mortgage insurers, which cover the losses when loans go bad, see big problems. Their trade group, in a plea to regulators delivered in a comment letter last month, alluded to its fear of widespread foreclosures if some of these new borrowers default on their loans. An increase in such problem properties could weaken the real estate market and drive down home values even for those who bought conservatively and diligently paid their mortgages.
PMI Summer 2006 Report

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<th>MSA</th>
<th>Risk Index</th>
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<td>San Diego-Carlsbad-San Marcos, CA</td>
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<td>Nassau-Suffolk, NY (MSAD)</td>
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<td>Las Vegas-Paradise, NV</td>
<td>481</td>
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59.9% chance of price decline in next 2 years
PMI Risk Score is Ex Post Accurate
First line of the PMI Fall 2006 Report: “There is no longer any doubt that the housing market is cooling”
PMI Issuance Growth Late in the Boom

PMI issuance growth occurred sharply in late-2006 and 2007!
PMI and Piggyback Shares of Home Purchase Loans
PMI and Piggyback Shares of Home Purchase Loans
PMI Issuance positively correlated with Risk Index

Change in PMI Issuance 2006 to 2007 vs. PMI Risk Index
PMI expanded where prices were already falling (or slowing growth)
Issuance to Safer Applicants?

• Possible that PMI firms expanded in risky locations but adjusted the composition of policies to safer borrowers and safer loans
  • Trade more house price risk for less individual credit risk

• From the 2007 10-K statement of PMI Co. on mortgage characteristics:

<table>
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<th></th>
<th>2005</th>
<th>2007</th>
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<tr>
<td>LTV&gt;97%</td>
<td>14.3%</td>
<td>24.6%</td>
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<tr>
<td>Alt-A</td>
<td>17.2%</td>
<td>22.8%</td>
</tr>
<tr>
<td>Interest Only</td>
<td>6.2%</td>
<td>14.2%</td>
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<tr>
<td>Over $250k</td>
<td>21.4%</td>
<td>32.1%</td>
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</tbody>
</table>
Huge Losses: >90% of Market Value

Radian: From $67/share in February 2007 to $2.30/share in June 2008

Genworth: From $33/share in January 2007 to $1.60/share in February 2009

Total PMI Industry Market cap estimate:

2006: $26 billion
2008: $1.7 billion
Interpreting these facts

• Massive increase in PMI issuance in 2007

• Growth disproportionately in high-risk markets

• Growth disproportionately toward high-risk contracts

• No change in premiums, no regional pricing

• Waves of defaults, market cap falls by >90%, multiple firms fail
PMI, Lenders, and the GSEs

- Lender
  - Chooses firm
  - Regulates PMI through eligibility rules
  - Pays premium

- Borrower
- PMI Firm
- GSEs

Insurance covers GSE losses

Regulates PMI through eligibility rules
Most of top 100 mortgage lenders work with 4+ PMI firms per year
PMI Underwriting and Moral Hazard

- Competing for lender business, PMI companies aggressively reduced their review process
  - Early 1990s: Could take 7-10 days to review
  - By 2007, goal was decision in 2-3 minutes!
  - MGIC General Counsel: “if it’s good for them, it’s good for us.”

- “Delegated Underwriting” allowed lenders to approve mortgages on their behalf, but reserved right to impose additional standards or further scrutiny

- In some cases, MI firms ceded underwriting outright to GSEs
  - e.g. MGIC: “Beginning in 2000, loans approved by DU or LP were automatically approved for MGIC mortgage insurance...even if the loans were outside of MGIC’s published guidelines.”
Prevalence of Delegated Underwriting

Collected from PMI companies’ 10-K reports
Behavior across PMI firms - Growth
The GSEs take on greater risk in 06-07

Share of home loans with FICO<660 bought by GSEs,
Share of home loans with FICO<660 and LTV>=95 bought by GSEs,
Overall share of home purchase loans, indexed to 100 in Jan 2005
GSE Growth and PMI Growth in lockstep
GSEs and PMI firms created moral hazard problem

- PMI firms did not perform due diligence on loan quality, instead passively followed increase in GSE risk-taking

- Delegated underwriting re-enforced GSE origination policies rather than acting as a check on behavior
  - All PMI firms behaved similarly during the boom

- Both took on tremendous risk in 2007, contributing to their collapse

- Lenders choose PMI firm, but have no incentive to provide check on risk-taking
  - If anything, the opposite!
PMI Industry Responses

1) Review
   - More sophisticated pricing models
   - Sharp increase in denial rates
   - Introduce regional risk-based pricing
     - unlike the GSEs (Hurst, et al. 2016)

2) Rescissions
   - Denial of insurance claims ex post
   - In 2008-2009, issuers denied 20-25% of claims (>6b in claims)
     - (source: American Banker Magazine 12/14/09)
   - Our back-of-envelope calculation suggests all firms fail if rescission rates stay near historical 5% average
Conclusions

• PMI is a huge and understudied market
  • Crucial to accessing the mortgage market for low-wealth HHs
  • >$500b in GSE mortgages are currently covered

• The conventional wisdom about the PMI firms being more astute than the rest of the market was wrong
  • Placed large bets on high-risk borrowers, high-risk contracts, and high-risk markets despite capital exposure and expertise
  • Clear evidence of risk-shifting hypothesis (Jensen-Meckling 1976)

• More evidence that GSEs dictate not just the rules but also market participant behavior in the mortgage market
Contributions

• Results provide new evidence on how the IO of the mortgage market can undermine its stability
  • Ashcraft and Schuermann (2008), Frame and White (2005, 2010)

• Contributes to an IO literature about bargaining and relationship leverage
  • e.g. Clemens and Gottlieb (2017) on Medicare
  • Rogerson (1994) on Dept. of Defense Procurement

• Shows that private capital exposure does not necessarily act as a disciplining device for firm decision-making
  • Extensive theories of financial intermediation, “skin-in-the-game,” and risk-shifting literatures