Another Slant on the Mortgage Crisis

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Presentation at the Brookings Institution, October 16, 2008
Known Causes of the Crisis

- Proximate Causes:
  - Unsustainable boom in house prices caused drastic easing of underwriting requirements
  - Price collapse caused marked rise in defaults
  - Price declines and rising defaults cause drastic tightening of underwriting requirements

- Factors Contributing to Defaults:
  - Rapacious loan providers
  - Dysfunctional principal/agent relationships
  - Toxic and poorly understood mortgages
  - Grossly inadequate disclosures
  - Accommodative appraisals
Causes of the Crisis (Con’d)

- Factors Contributing to Metastisization
  - New instruments, especially CDOs
  - Colossal lack of judgment by credit rating agencies

- But An Elephant Is Left Out of the Story

- The Elephant Is How the System Deals With Default Risk
  - How it prices it
  - What it does with the borrower payments designed to cover it
Mortgage Default Risk

- Default Risk on a Mortgage Has Two Components
- Collateral Risk: Investor Who Forecloses Fails to Recover Unpaid Balance Plus Foreclosure Costs
- Cash Flow Risk: Until Final Resolution, Loan in Default is Non-Performing and Non-Marketable
Borrower Payments For Default Risk

- Borrowers Pay in Two Ways
  - Mortgage insurance premium based on LTV
  - Interest rate risk premium over “prime” rate
Borrower Payments For Default Risk

- Characteristics of Premiums on Traditional Mortgage Insurance (TMI)
  - Covers collateral risk only
  - Premiums are based on loss estimates over long periods, and change infrequently
  - About half of all premiums collected are reserved and available when a default crunch occurs, as right now
Borrower Payments For Default Risk (Con’d)

- Characteristics of Rate Risk Premiums
  - Very little reserving: premiums not used to meet current losses are realized as income
    - Excess premiums on loans originated in 2000-2005 not available to meet losses on 2006-8 vintages
  - Generally higher than premiums based on long-run actuarial loss experience
- An illustration
### Interest Rate Risk Premium Vs Mortgage Insurance Premium

**Characteristics of High-Risk and Low-Risk Loans**

<table>
<thead>
<tr>
<th></th>
<th>Low-Risk Loan</th>
<th>High-Risk Loan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Price:</td>
<td>$444,444</td>
<td>$444,444</td>
</tr>
<tr>
<td>Loan ($) / (LTV):</td>
<td>$400,000 / 90%</td>
<td>$400,000 / 90%</td>
</tr>
<tr>
<td>TMI Coverage:</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Borrower FICO:</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Property Type:</td>
<td>Single Family</td>
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<tr>
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<tr>
<td>Loan Purpose:</td>
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<td>Cash Out Refi</td>
</tr>
<tr>
<td>Documentation:</td>
<td>Full</td>
<td>None</td>
</tr>
<tr>
<td>Loan Rate¹:</td>
<td>6.000%</td>
<td>9.875%</td>
</tr>
<tr>
<td>TMI Premium²:</td>
<td>.67%</td>
<td>1.29%</td>
</tr>
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</table>

¹Based on wholesale prices as of November 21, 2007.
²Based on MGIC Rate Finder.
Interest Rate Risk Premium Vs Mortgage Insurance Premium

- High-Risk Loan Carries Risk Premium of 3.875% Over Low-Risk Loan When Both Have PMI
- High-Risk Loan Carries MI Premium .67% Higher Than Low-Risk Loan
- Incremental Charge by Investor 6 Times Larger
- Incremental Risk Exposure Larger For Insurer, Who Is In First Loss Position
  - PMI incurs loss from foreclosure unless property appreciates substantially
  - Investor incurs no loss unless property depreciates
  - PMI almost always loses more than investor
Why Investors Charge More To Assume Default Risk Than Insurers

- Gaming Analogy: Default Losses Set by Spin of Roulette Wheel Which Has 14 Blue Slots, 1 Red
  - Annual losses from defaults are 0.1% if blue comes up, 6% if red comes up
  - Required reserve allocation over long-run is 0.5%, mortgage insurer will charge about 1%
    - Insurer diversifies over time
  - Investor who is not reserved must charge 6% for complete protection
    - Competition won’t allow this, but premium will exceed 1%
    - Must be high enough to induce investors to assume risk of failure
    - Premium between 1% and 6% is both too large and too small
The Major Systemic Weakness

- For Every Risk-Based Dollar Paid by Borrowers That Is Subject to Reserving, They Pay Ten or More Risk-Based Dollars That Are Not Subject to Reserving
- The Remedy Is to Switch to a System in Which All Risk-Based Charges to Borrowers Are Subject to Reserving
  - We call this “Mortgage Payment Insurance”
How MPI Would Work

- Covers *Cash Flow Risk*: the Risk That Borrower Default Will Interrupt Cash Flow
  - PMI makes scheduled payments on behalf of borrower From default to foreclosure
  - Any cure payments are credited to the PMI
  - MPI will have time limits on scheduled payments

- Covers *Collateral Risk*: the Risk That Lender Fails to Recover the Balance Plus Foreclosure Costs
  - At foreclosure, PMI pays any deficiency not recovered by foreclosure sale up to limitation of coverage
  - Same protection now provided by existing policies
Managing and Pricing Risk: TMI vs. MPI

**TMI**
- Lender has collateral loss protection at foreclosure
- Lender *vulnerable* to cash flow interruption
- Borrower pays insurance premium
- Borrower also pays interest rate risk premium
- Loan rate varies with risk prem
- Lender and PMI underwrite, investor sets required coverage
- Credit risk transferable

**MPI**
- Lender has collateral loss protection at foreclosure
- Lender *protected* against cash flow interruption
- Borrower pays insurance premium
- Borrower does *not* pay an interest rate risk premium
- All insured loans priced as prime
- PMI underwrites, investor sets required coverage
- Credit risk retained by PMI
Benefits of MPI

- Wider Reserving Reduces Systemic Risk
  - Losses during default crunch episode reduce reserves rather than capital
- Lower Cost to Non-Prime Borrowers
- Elimination of Major Principal/Agent Problem
  - Mortgage insurers underwrite all mortgages and take 100% of default risk
  - Insurers cannot pass the risk along to the next party in a chain of ownership transfers
Benefits of MPI (Con’d)

- Insurers Become Ally of Borrowers
  - Insurers have incentive to prevent lenders from over-charging borrowers, which increase losses to insurers
  - Insurers will have the power to prevent over-charges
    - An MPI commitment equals loan approval which can be given directly to borrowers
    - This positions insurers to refer borrowers to lenders
    - Insurers will use referral power to protect borrowers
Benefits of MPI (Con’d)

- Strengthen Position of PMI Industry
  - Cannot now control rates/points charged borrowers, which affects losses
  - Cannot now take account of rates/points in setting insurance premiums
  - Now vulnerable to increased losses from lending excesses that generate defaults and house price declines
  - Short-term: increased flow of premium income will help stave off disaster
How Much More Will MPI Cost?

- In Most Cases, MPI Will Cost Less Than TMI!
- MPI Cash Flow Payments Are Recovered At Settlement
  - Principal payments advanced are recovered in smaller balance
  - Interest payments advanced are recovered in smaller accrued interest
  - Only net loss to insurer is interest opportunity loss on payment advances
- MPI Costs Reduced By Lower Interest Rates
  - Unpaid interest charge due at settlement will be lower
  - Loan balance due at settlement will be lower
  - Largest cost savings on riskiest loans carrying highest rates
## Loans Used to Illustrate Costs on MPI vs. TMI

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\(^2\)Based on MGIC Rate Finder.
Breakdown of Cost Savings: MPI At 6% vs. TMI At 9.875%

Assumptions:

- Loan defaults after 24 months
- Foreclosure completed 12 months after default
- Lender disposes of property 9 months after foreclosure
- House value at disposition is 20% lower than at origination

- Risk premium on high-risk loan is eliminated
  - High-risk rate becomes 6%
  - Interest loss on cash flow advances calculated at 6%
Breakdown of Total Cost Savings: MPI At 6% vs. TMI At 9.875%

Incremental Costs of MPI
- Payment Advances, Default to Foreclosure: $28,778
- Interest Opportunity Cost to Insurer of Payment Advances
  Total: $29,583

Cost Savings of MPI
- No Accrued Interest Charges Due at Foreclosure: $39,025
- Lower Loan Balance at Default: $5,327
- Insurer Principal Payments, Default to Foreclosure: $5,537
- Interest Earned by Investor on Payment Advances
  Total: $50,694

Net Saving on MPI: $21,111
## Loss Reduction on MPI as a Function of Interest Rate Reduction

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<th>Loss Reduction to Investor</th>
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<tr>
<td>3.875%</td>
<td>$21,111 (12.2%)</td>
<td>$4,473</td>
<td>$16,638</td>
</tr>
<tr>
<td>3.000%</td>
<td>$16,648 (9.9%)</td>
<td>$3,357</td>
<td>$13,291</td>
</tr>
<tr>
<td>2.000%</td>
<td>$11,368 (6.9%)</td>
<td>$2,037</td>
<td>$9,331</td>
</tr>
<tr>
<td>1.000%</td>
<td>$5,876 (3.7%)</td>
<td>$664</td>
<td>$5,212</td>
</tr>
<tr>
<td>0.500%</td>
<td>$3,043 (2.0%)</td>
<td>-$44</td>
<td>$3,087</td>
</tr>
<tr>
<td>0.000%</td>
<td>$151 (0.0%)</td>
<td>-$767</td>
<td>$918</td>
</tr>
</tbody>
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Summary Statement

- PMIs Can Insure Default Risk Using MPI For Less Than the Cost of Insuring Collateral Risk Alone

- Long-Run Consequences:
  - Lower financing cost to non-prime borrowers
  - Reserving pervasive, reducing systemic vulnerability
  - Concentrates underwriting responsibility, eliminates principal/agent problem
  - PMIs become ally of borrowers to prevent over-charges

- Short-Run Consequences:
  - Increase affordability to non-prime borrowers
  - Increase premium income of PMIs, helping them survive crisis
Implementation

- MPI Impossible in Portfolio System
  - Lenders would never delegate underwriting and pricing discretion
- MPI Workable in Secondary Market System
  - Requires that investors price loans with MPI at prime (wholesale)
  - Lenders add markup to cover retail costs
  - We are discussing it with Fannie Mae
Why Should Fannie Mae Support MPI?

Long-Run

- Reduced systemic vulnerability
- Eliminates political issues associated with risk-based pricing by Fannie
  - The market served by Fannie is whatever PMIs are willing to insure
- Aligns Fannie’s interest with PMIs’ and borrowers’
  - Fannie and PMIs could integrate counseling tools and underwriting

Short-Run

- Increase premium income of PMIs, help stabilize PMIs, which is critically important to Fannie
Concluding Comment: The Reserving Principle

- MPI Applies to PMIs But Reserving Principle Has Broader Applicability
- Principle Is “Reserving Over Time” (ROT)
  - Amount reserved tied to risk of loss
  - Reserve allocation is transaction specific
- Capital Requirements Have a Pro-Cyclical Bias
  - Firm can increase risk without increasing required capital by shifting to riskier assets within asset categories
- With ROT, a Shift to Riskier Assets Increases Reserve Allocations
ROT as Replacement or Supplement to Capital Requirements

- Illustrative Rule For a Depository
  - Required allocation to contingency reserve is 50% of the risk-based portion of any charge
    - EG, if prime mortgage is 6% and zero points, reserve on a 7% 2 point loan is ½% plus 1 point
    - EG, on credit default swaps, 100% of premium is risk-based, reserve allocation is 50% of premium
  - Principal role of regulator is defining the part of various types of charges that is risk-based
Advantages of ROT Relative to Capital Requirements

- ROT Is Immune to Cyclical Swings in Market Sentiment
  - During euphoric upswing, reserve allocations rise
  - With capital requirements, risk exposure increases with no increase in required capital

- ROT Has Wider Applicability
  - Credit default swaps would have faced a requirement to reserve 50% of premiums