



# Another Slant on the Mortgage Crisis

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Presentation at the Brookings  
Institution, October 16, 2008



# Known Causes of the Crisis

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- 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)

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- 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

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- 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

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- Borrowers Pay in Two Ways
  - Mortgage insurance premium based on LTV
  - Interest rate risk premium over “prime” rate



# Borrower Payments For Default Risk

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- 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)

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- 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

	Low-Risk Loan	High-Risk Loan
Purchase Price:	\$444,444	\$444,444
Loan (\$) / (LTV):	\$400,000 / 90%	\$400,000 / 90%
TMI Coverage:	25%	25%
Borrower FICO:	700	700
Property Type:	Single Family	Single Family
Occupancy:	<b>Primary Residence</b>	<b>Investment</b>
Loan Purpose:	<b>Purchase</b>	<b>Cash Out Refi</b>
Documentation:	<b>Full</b>	<b>None</b>
Loan Rate <sup>1</sup> :	6.000%	9.875%
TMI Premium <sup>2</sup> :	.67%	1.29%

<sup>1</sup>Based on wholesale prices as of November 21, 2007.

<sup>2</sup>Based on MGIC Rate Finder.





# Interest Rate Risk Premium Vs Mortgage Insurance Premium

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- 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

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- 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

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- 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

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- 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

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- 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)

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- 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)

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- 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

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

	Low-Risk Loan	High-Risk Loan
Purchase Price:	\$444,444	\$444,444
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# Breakdown of Cost Savings: MPI At 6% vs. TMI At 9.875%

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- Assumptions:
  - Loan defaults after 24months
  - Foreclosure completed 12 months after default
  - Lender disposes of property 9 months after foreclosure
  - House value at disposition is 20% lower than at origination
  - Foreclosure expenses estimated using HUD data in Providing Alternatives to Mortgage Foreclosure: A Report to Congress, March 1996.
  - 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%

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## Incremental Costs of MPI

■ Payment Advances, Default to Foreclosure:	\$28,778
■ Interest Opportunity Cost to Insurer of Payment Advances	805
<b>Total</b>	<b>29,583</b>

## 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	805
<b>Total</b>	<b>50,694</b>

Net Saving on MPI **\$21,111**

# Loss Reduction on MPI as a Function of Interest Rate Reduction

	<b>Loss Reduction From Using MPI Rather Than TMI</b>		
<b>Interest Rate Reduction</b>	<b>Total Loss Reduction</b>	<b>Loss Reduction to Insurer</b>	<b>Loss Reduction to Investor</b>
<b>3.875%</b>	<b>\$21,111 (12.2%)</b>	<b>\$4,473</b>	<b>\$16,638</b>
<b>3.000%</b>	<b>\$16,648 (9.9%)</b>	<b>\$3,357</b>	<b>\$13,291</b>
<b>2.000%</b>	<b>\$11,368 (6.9%)</b>	<b>\$2,037</b>	<b>\$9,331</b>
<b>1.000%</b>	<b>\$5,876 (3.7%)</b>	<b>\$664</b>	<b>\$5,212</b>
<b>0.500%</b>	<b>\$3,043 (2.0%)</b>	<b>-\$44</b>	<b>\$3,087</b>
<b>0.000%</b>	<b>\$151 (0.0%)</b>	<b>-\$767</b>	<b>\$918</b>



# Summary Statement

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- 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

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- 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?



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## ■ 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

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- 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

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- 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

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- 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