Why Don't Lenders Renegotiate More Home Mortgages?

Redefaults, Self-Cures and Securitization

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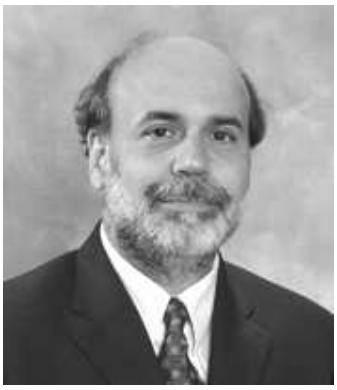
Disclaimer

- I am speaking today as a researcher and as a concerned citizen
- not as a representative of:
  - The Boston Fed
  - or the Federal Reserve System



- When I say "we", I don't mean Ben and me.

Caveat

- Everything I'm about to say could be wrong:
  - Especially the stuff about corporate finance...
- Example:

  Until [the depression], mortgages were not fully amortized, as they are now..., but were balloon instruments in which the principal was not amortized, or only partially amortized at maturity, leaving the debtor with the problem of refinancing the balance. (Fabozzi and Modigliani, 1992)

- Persistent idea:

  Before the Roosevelt era, virtually all mortgages were short term loans of five years or less, typically interest-only, with the principal due and payable at the end. If the homeowner could not roll over the loan, he lost the house. As foreclosures skyrocketed, the New Deal invented the modern, long-term, self-amortizing mortgage. (Robert Kuttner in *The American Prospect*, July 2008.)

- Is this true?

- Essentially no.

	Mutual svgs banks	Life Insurers	Savings and Loans	Commercial Banks	Individuals and Other
By type of loan (1925-1929)					
Fully Amortized		14.3	94.6	10.1	
Partially Amortized		61.5	0	38.3	
Non-amortized		24.1	5.1	50.3	
Percentage of market (1929)	10.5	11.8	40.3	12.1	25.2
As % of dollar value of all loans					

- Just because everyone repeats it...
- Or because someone famous said it...
- Doesn't mean it is right!

Loan Renegotiation

- Loan renegotiation is
  - Safe
  - Legal
  - and RARE!
- We look at loans after they became 60 days delinquent:
  - Over the next year, only about 3 percent of the loans got lowered payments.
  - 97% of borrowers paid as much or more after they got into trouble.
- Broader definition of renegotiation shows more help...
  - Over the next year, only about 9 percent of the loans received some form of modifications
  - But all these incremental "renegotiations" involved the same or higher payments.

The role of securitization

- Contrary to popular belief, this has *nothing* to do with the fact that many loans are securitized.
- Unconditional percentages of mortgages that received a modification within 12 months of first 60-day delinquency:
- Sample Size 66,541
- Results stronger for broader definitions of renegotiations

	Concessionary Mods	All Mods	All Mods + Prepayments
Portfolio	3.2%	8.7%	14.7%
Private-label	2.6%	8.4%	15.5%
Marginal Effect	-0.3%	0.2%	0.9%
(z-stat)	-1.69	0.58	1.95

"Common Sense" and Public Policy

- "Common Sense" often contradicted by data and/or economic theory.
- Examples:
  - Protectionism
  - Central Planning
- Common Sense: Loans with increasing payments are crazy
  - Data: Resets of adjustable rate mortgages played little or no role in causing the crisis.
- Common Sense: Renegotiation of mortgages should be common
  - Economic theory: Moral hazard problem.
  - Data: Very little renegotiation
- Common Sense: Dispersed ownership makes renegotiation difficult
  - Theory: Contracts can solve this problem.
  - Data: Dispersed ownership does not present a big problem

LPS Data

- Dataset formerly known as McDash
- 9 of the top 10 servicers
  - 29 million active residential loans
  - 60% of all active residential loans
  - $6.5 trillion
- Dataset includes
  1. securitized subprime
  2. securitized alt-A
  3. securitized jumbo
  4. securitized conforming
     - FHLMC
     - FNMA
     - GNMA
  5. portfolio

Fields

- Static: All the origination information
  - FICO, DTI, amount, LTV
  - Zip Code, Date
  - ARM, FRM, interest rate
  - lien type
  - NO information about second liens or CLTV
- Dynamic: Updated monthly
  - Balance
  - Monthly payment
  - Interest rate
  - Delinquency status

Modifications

- LPS does not flag a loan as modified or describe changes.
- OCC/OTS has data but won't release it!
  - Not a "Chinese Wall"
  - Nor a "Firewall"
  - A "Chinese Firewall"
  - The "Great Firewall of China"
- But we have detailed payment information, so we can identify changes

Mod Example #1: Fixed-rate loan originated Jan 2007

Date	MBA Delinq. Stat.	Interest Rate	Monthly Payment	Outstanding Balance	Remaining Term in Months
2008m10	9	6.5	907	141,323	340
2008m11	9	6.5	907	141,323	339
2008m12	9	6.5	907	141,323	338
2009m1	C	4.5	660	146,686	479

- This borrower was 90 days delinquent, but then became current
- He then received an interest rate reduction (on a supposedly fixed-rate loan)
- His monthly payment *declined* while his outstanding balance *rose* (to make up for past arrears)
- The borrower also received a term extension to a 40-year loan

Mod Example #2: Hybrid-ARM originated Dec 2006

Date	MBA Delinq. Stat.	Interest Rate	Monthly Payment	Outstanding Balance	Remaining Term in Months
2008m5	6	9.25	1,726	208,192	346
2008m6	9	9.25	1,726	208,192	346
2008m7	9	9.25	1,726	208,192	346
2008m8	C	9.25	1,815	218,316	341
2008m9	C	9.25	1,815	218,184	340

- Borrower rolls into 90-day delinquency in June 2008 and receives a modification in October.
- Standard payment-increasing modification: Payment rises as past arrears are capitalized into loan balance
- No reduction in interest rate

Quality of the Modifications Algorithm

- Data from Wells Fargo Corporate Trust Servicers
- Includes only private securitized loans and has flags for modifications from servicers

	No Mod Using Our Algorithm	Mod Using Our Algorithm	Total
No Mod in WF Data	2,329,187	3,559	2,332,746
Mod in WF Data	3,627	17,514	21,141
Total	2,332,814	21,073	2,353,887

- Overall: 16.9% false positives; 17.2% false negatives

Modification Statistics by Type: 2007:Q1–2008:Q4

	# Loans Modified	Interest Rate Reductions		Principal Balance Reductions		Principal Balance Increases		Term Extensions	
		#	(% total)	#	(% total)	#	(% total)	#	(% total)
2007:Q1	10,940	600	5.3	700	6.2	8,660	76.4	1,380	12.2
2007:Q2	14,600	820	5.4	550	3.7	11,630	77.3	2,050	13.6
2007:Q3	17,720	770	4.1	810	4.3	15,170	81.2	1,940	10.4
2007:Q4	27,150	2,990	9.7	700	2.3	22,520	72.8	4,740	15.3
2008:Q1	36,230	6,010	13.8	900	2.1	32,100	73.8	4,500	10.3
2008:Q2	44,750	9,050	16.4	1,300	2.4	39,750	72.1	5,030	9.1
2008:Q3	62,190	16,280	20.3	940	1.2	56,940	70.9	6,110	7.6
2008:Q4	74,800	28,630	26.7	1,450	1.4	65,960	61.5	11,230	10.5

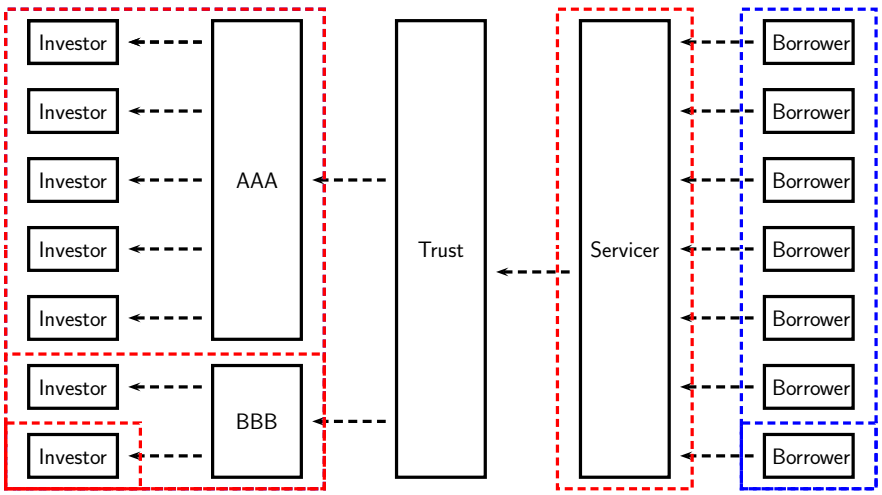
Why so rare?

- The leading explanation:

  The complex webs that securitization weaves can be a trap and leave no one, not even those who own the loans, able effectively to save borrowers from foreclosure. With the loan sliced and tranched into so many separate interests, the different claimants with their antagonistic rights may find it difficult to provide borrowers with the necessary loan modifications, whether they want to or not. In the tranche warfare of securitization, unnecessary foreclosures are the collateral damage.

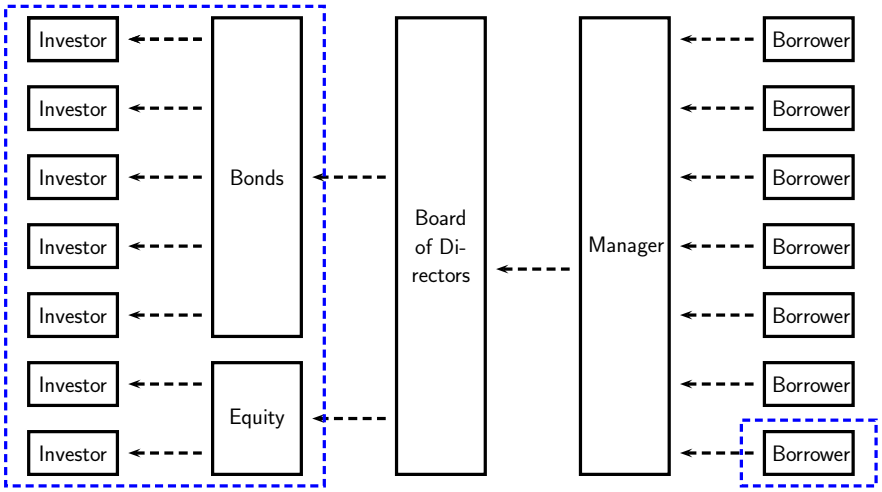
  Kurt Eggert
  in *Housing Policy Debate*
  (2007)

Where are the frictions?



- Modifications makes a borrower better off
  - And investors as a group
  - "In the best interests of the investor."
- Problem 1: Hold-out
  - All BBB investors are worse off.

Where are the frictions II?



- Modifications makes a borrower better off
  - And investors as a group
- Fortunately, it has been shown
  - A corporate structure perfectly aligns interests of investors and
  - Accounting rules provide an unbiased, accurate picture.
  - Compensation rules are perfectly rational.

Our evidence

- Using our baseline specification, we find no statistically meaningful difference.
- Are our result robust?
  1. What if we look at subsamples? Unobserved heterogeneity?
  2. Maybe we are looking too late – maybe portfolio servicers assist before borrower gets to 60 days.
  3. Maybe portfolio lenders do "better" modifications – less likely to default.
  4. Maybe our algorithm completely misses something.

(1) Different Subsamples

- Subprime loans – 7% of the loans in McDash (underrepresented) and 40% of the seriously delinquent.
- Subsamples less likely to have unobsserved heterogeneity
  - $<$ 620 FICO – better screening (see Keys et al. (2009) and Bubb and Kaufman (2009))
  - Sample with more information

(1) Different Subsamples

- Logit model with dep. variable is probability of modification in 12 mos. after first serious delinquency.

Panel A: Concessionary Modifications

	All Loans	Subprime	*FICO* $<$ 620	Non-missing Documentation and DTI	Fully Documented
Portfolio Mean	0.032	0.047	0.034	0.028	0.023
Private-label Mean	0.026	0.037	0.031	0.033	0.037
Marginal Effect	-0.003	-0.004	-0.003	0	0.007
(private-label)	-1.69	-0.94	-0.77	-0.14	1.46
# Mortgages	66,541	33,719	27,639	25,543	18,097

Panel B: All Modifications

	All Loans	Subprime	*FICO* $<$ 620	Non-missing Documentation and DTI	Fully Documented
Portfolio Mean	0.087	0.111	0.097	0.092	0.077
Private-label Mean	0.084	0.103	0.109	0.107	0.124
Marginal Effect	0.002	0.004	0.007	0.006	0.025
(private-label)	0.58	0.61	1.06	0.97	2.94
# Mortgages	66,541	33,719	27,639	25,543	18,097

(2) Different definition of delinquency

- Transition from 30 days delinquent to modification:

Panel A: Concessionary Mods

	All Loans	Subprime	*FICO* < 620	Non-missing Documentation and DTI	Fully Documented
Portfolio Mean	0.014	0.025	0.016	0.014	0.012
Private-label Mean	0.014	0.021	0.016	0.017	0.019
Marginal Effect	-0.003	-0.005	-0.001	-0.002	0.001
(Logit)	-2.72	-2.31	-0.55	-1.57	0.37
Hazard Ratio	1.03	1.147	1.027	0.969	1.237
(Cox)	0.59	1.83	0.31	-0.42	2.34
# Mortgages	120,558	51,285	43,550	47,993	34,403

Panel C: All Mods + Prepayment

	All Loans	Subprime	*FICO* < 620	Non-missing Documentation and DTI	Fully Documented
Portfolio Mean	0.145	0.195	0.152	0.147	0.13
Private-label Mean	0.174	0.211	0.218	0.185	0.198
Marginal effect	0.023	0.021	0.044	0.016	0.029
(Logit)	7.31	2.98	6.46	3.47	4.54
Hazard Ratio	1.158	1.05	1.181	1.098	1.202
(Cox)	9.09	1.69	5.72	3.88	6.56
# Mortgages	120,558	51,285	43,550	47,993	34,403

(3) "Better" versus More Renegotiation

- Differences in manner in which modifications are performed?
  - Not a contract issue – PSAs don't restrict behavior of servicer on intensive margin.
- Look at re-defaults after modification:

Panel A: Payment Reducing Mods

	All Loans	Subprime	*FICO* < 620	Non-missing Documentation and DTI	Fully Documented
Portfolio Mean	0.308	0.386	0.332	0.228	0.249
Private-label Mean	0.358	0.392	0.371	0.362	0.359
Marginal effect	0.016	-0.001	-0.015	0.03	-0.004
(Logit)	0.66	-0.03	-0.35	0.81	-0.1
# Mortgages	4,626	2,514	1,562	1,475	1,135

Panel B: All Mods

	All Loans	Subprime	*FICO* < 620	Non-missing Documentation and DTI	Fully Documented
Portfolio Mean	0.393	0.53	0.444	0.404	0.403
Private-label Mean	0.449	0.5	0.501	0.482	0.482
Marginal effect	0.008	-0.023	-0.009	-0.021	-0.033
(Logit)	0.58	-0.84	-0.38	-0.97	-1.24
# Mortgages	14,796	7,073	5,344	4,594	3,620

(4) Broadest possible definition of renegotiation

- Possible our algorithm is completely missing some renegotiation
  - Forbearance?
  - Repayment Plans?
  - Errors must be substantially biased toward portfolio.
  - PSAs do not limit these!
- Successful renegotiation $\Rightarrow$ Cure
- Broadest possible definition

	All Loans	Subprime	$FICO < 620$	Non-missing Documentation and DTI	Fully Documented
Portfolio Mean	0.300	0.257	0.320	0.280	0.299
Private-label Mean	0.256	0.289	0.328	0.289	0.324
Marginal effect	-0.022	0.043	0.004	0.022	0.025
(Logit)	-4.32	4.31	0.44	2.8	2.43
# Mortgages	66,451	33,719	27,639	25,543	18,097

Differences with Previous Research

- Using the same data, Piskorski, Seru, and Vig (2009) argue that securitized lenders renegotiate less often.
- We find no effect.
- They don't actually identify renegotiation – look at the likelihood of foreclosure and attribute the difference to renegotiation.
  - Identifying assumption [No Foreclosure] $\Leftrightarrow$ [Renegotiation]
  - But data is right censored – [No Forec.] often $= F$ or $90DQ$.
  - Right definition: [Renegotiation] $\Rightarrow$ [Cure]

	2008		2009					Reneg=	
	N	D	J	F	M	A	M	No Forc.	Cure
Loan 1	6	9	9	F	F	F	C	Reneg.	Reneg.
Loan 2	6	9	9	F	F	X	X	No Reneg.	No Reneg.
Loan 3	6	9	9	F	F	F	F	Reneg.	No Reneg.
Loan 4	6	C	3	6	9	F	X	No Reneg.	Reneg.

Why do we focus on modification

- Everyone has focused on loan modifications for the last two years.
- Repayment plans and forbearance agreements don't help borrowers facing permanent shocks.

  Historically, forbearance or repayment agreements have been the most common form of loss mitigation when foreclosure is avoidable. However, these methods are appropriate only when it is expected that the borrower will be able to make the scheduled payments. When a borrower becomes delinquent as a result of a payment shock at reset, it is likely that he is simply unable to afford the new payments. As a result, a forbearance or repayment plan would not make the payments any more affordable. In such cases, a loan modification is a possible long-term solution

- Legal barriers to modification
- But not forbearance or repayment...

  For example, the servicer may be concerned about legal liabilities, especially if modification is not done correctly in the sense that it may end up benefiting some borrowers at the expense of others. Since the servicers received little guidance on the modification process due to the infrequent use of modification in the past, there is little consensus among servicers as to what is legally permissible and what is not. In addition, tax and accounting laws introduce further barriers to the loan modifications.

- Loan modifications are expensive

  Unlike the foreclosure process in which servicers are generally reimbursed for the associated costs through cash flows of the securitization trust, loss mitigation techniques such as loan modification do not, in most cases, enable servicers to either funnel the costs through to borrowers or receive compensation for their expenses for securitized loans. Since loan modification costs can be substantial, servicers might not respond appropriately to rising delinquencies due to both higher servicing expenditures per loan and increased manpower.

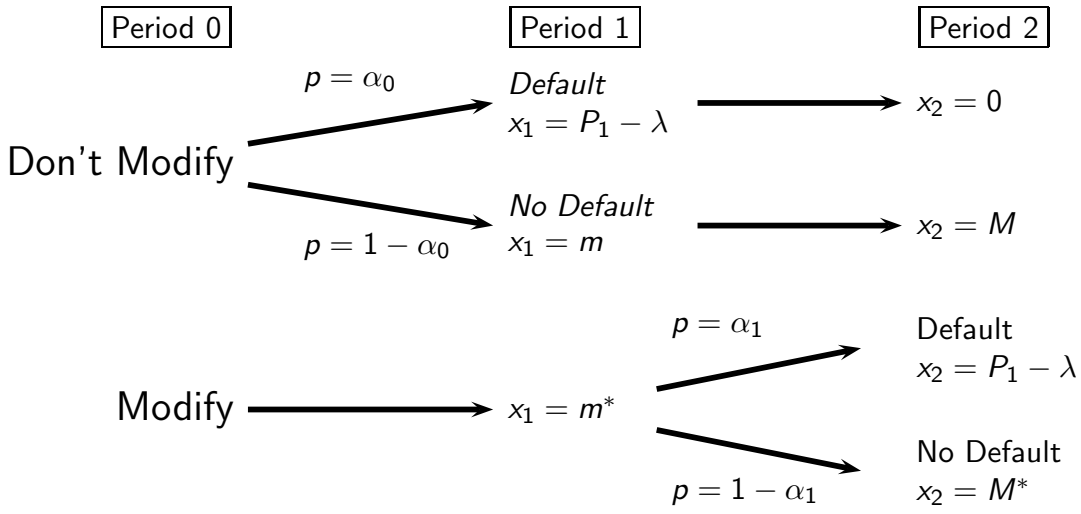
- All quotes from Piskorski, Seru and Vig (2009), version 1.0.
- Written before we showed that there was no difference in modifications.
- Version uses the word "modification" 49 times
  - "repayment plan" 4 times
  - "forbearance" 3 times
  - "short sale" 0 times
  - "deed-in-lieu" 0 times
- Still completely ignore accounting issues which make portfolio lenders reluctant to recognize losses by foreclosing.

Why is renegotiation so rare?

- Logic is that foreclosure costs lender a lot
- Wouldn't a concession to borrower cost less
- What's the risk of giving the borrower a chance?
  - Redefault risk: Renegotiate and borrower defaults anyway – house price falls
  - Self-cure risk: Borrower repays with assistance. Lender wastes money helping borrower who doesn't need it.

A model

- Three periods: $t = 0, 1, 2$
- Mortgage is a stream of payments x_1, x_2



The gains to renegotiation

t	Mortgage	House Price	Foreclosure	Renegotiation
1	m	P_1	$P_1 - \lambda$	m^*
2	M	P_2	$P_2 - \lambda$	M^*

- Value of loan without renegotiation:

$$V_{\text{no mod}} = \alpha_0(P_1 - \lambda) + (1 - \alpha_0)[m + (1/R)M].$$

- Value of loan with renegotiation:

$$V_{\text{mod}} = m^* + (1/R)\alpha_1(P_2 - \lambda) + (1/R)(1 - \alpha_1)M^*.$$

- NPV Test: Modify if $V_{\text{mod}} > V_{\text{no mod}}$

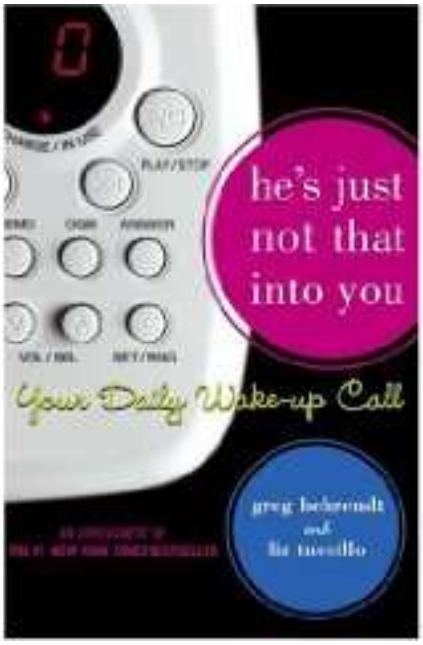
$$V_{\text{mod}} - V_{\text{no mod}} = (\alpha_0 - \alpha_1)[m^* + \tfrac{1}{R}M^* - (P_1 - \lambda)] - (1 - \alpha_0)[m + \tfrac{1}{R}M - (m^* + \tfrac{1}{R}M^*)] + \alpha_1[m^* + \tfrac{1}{R}(P_2 - \lambda) - (P_1 - \lambda)] > 0 \quad (1)$$

$\boxed{1 - \alpha_0}$	$\boxed{\alpha_0 - \alpha_1}$	$\boxed{\alpha_1}$
Borrower always repays	Renegotiation effective	Borrower never repays
Lender loses because borrower would have paid in full	Lender gains because modified payments worth more than foreclosure	Foreclosure is delayed May or may not help lender
$\boxed{m + \frac{1}{R}M - (m^* + \frac{1}{R}M^*)}$	$\boxed{m^* + \frac{1}{R}M^* - (P_1 - \lambda)}$	$\boxed{m^* + \frac{1}{R}(P_2 - \lambda) - (P_1 - \lambda)}$
"Self-cure risk" Costly assistance to borrowers who can pay	Successful Renegotiation Don't help borrowers who would have defaulted	"Redefault risk" Lender loses if R is large or if $P_2 - P_1$ is big

The decision to renegotiate

- Proponents of renegotiation focus on:
  - Costs of foreclosure
  - Benefits of renegotiation
- Advocates rarely discuss the costs of renegotiation
  - COP Report – Does not mention self-cure in 187 pages!
  - White (2009a,b)
  - Piskorski, Seru and Vig (2009)
  - Attention paid to this paper – had never occurred to reporterswho have covered this story since 2007.

Maybe the investors just aren't that into modification



The slide you've all been waiting for...

- The end.