Residential Mortgage Renegotiation During the Great Depression

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Few Modifications of Distressed Residential Mortgages

- Adelino, Gerardi, and Willen (2009): 3% of all seriously delinquent mortgages receive payment-reducing modifications
- White (2009a): 40 significant principal writedowns in over $100,000$ securitized subprime mortgages
- White (2009b): 1100 principal writedowns in 1.5 million subprime and alt-A mortgages

Why So Few Modifications?

- Securitization
  - Cordell, Dynan, Lehnert, Liang, and Mauskopf (2009)
  - Piskorski, Seru, and Vig (2010)
- Redefaults and Self-cures
  - Adelino, Gerardi, and Willen (2009)
- Costly Screening
  - Wang, Young, and Zhou (2009)

This Paper

- Look at frequency of residential mortgage renegotiation during Great Depression
- Very few ($< 5\%$) residential mortgages securitized during Great Depression
- Look for whether the lender either
  - reduced the interest rate on the loan
  - reduced the principal outstanding on the loan
  - exercised forbearance
  - changed the amortization structure to reduce payment

This Paper

Findings

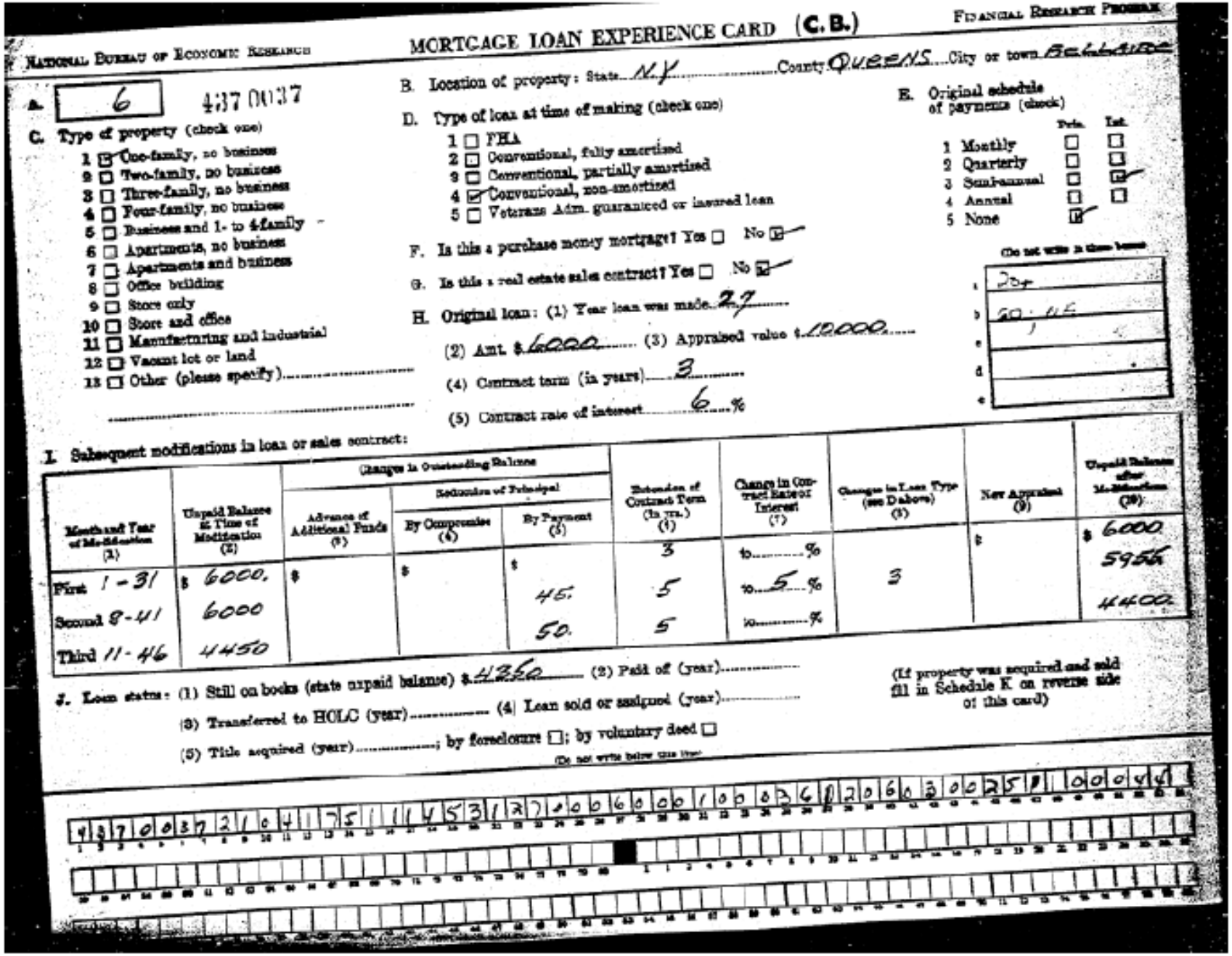
- Very few concessionary mortgage modifications during Great Depression
- Far more loans went into foreclosure than received a concessionary modification
- Lenders seem to have forced borrowers into foreclosure by refusing to roll over their loans

Data

Sample

- NBER sample of residential mortgages originated by savings and loans, life insurers, and commercial banks
- To my knowledge, data not used since 1950s
- Loan level data from the NYC metropolitan area
- Loans originated 1920-1939
- Exclude FHA loans
- Total of 890 loans

Example



NATIONAL BUREAU OF ECONOMIC RESEARCH

MORTGAGE LOAN EXPERIENCE CARD (C.B.)

FINANCIAL RESEARCH PROGRAM

A. 6 4370037

B. Location of property: State N.Y. County QUEENS City or town BELLAIRE

C. Type of property (check one)

1 ☑ One-family, no business
2 ☐ Two-family, no business
3 ☐ Three-family, no business
4 ☐ Four-family, no business
5 ☐ Business and 1- to 4-family
6 ☐ Apartments, no business
7 ☐ Apartments and business
8 ☐ Office building
9 ☐ Store only
10 ☐ Store and office
11 ☐ Manufacturing and industrial
12 ☐ Vacant lot or land
13 ☐ Other (please specify)

D. Type of loan at time of making (check one)

1 ☐ FHA
2 ☐ Conventional, fully amortized
3 ☐ Conventional, partially amortized
4 ☑ Conventional, non-amortized
5 ☐ Veterans Adm. guaranteed or insured loan

E. Original schedule of payments (check)

	Prin.	Int.
1 Monthly	☐	☐
2 Quarterly	☐	☐
3 Semi-annual	☐	☑
4 Annual	☐	☐
5 None	☑	

F. Is this a purchase money mortgage? Yes ☐ No ☑

G. Is this a real estate sales contract? Yes ☐ No ☑

H. Original loan: (1) Year loan was made 27

(2) Amt. $6000 (3) Appraised value $10000

(4) Contract term (in years) 3

(5) Contract rate of interest 6 %

(Do not write in these boxes)

a 20+
b 50; NE
c
d
e

I. Subsequent modifications in loan or sales contract:

Month and Year of Modification (1)	Unpaid Balance at Time of Modification (2)	Changes in Outstanding Balance: Advance of Additional Funds (3)	Reduction of Principal: By Compromise (4)	Reduction of Principal: By Payment (5)	Extension of Contract Term (in yrs.) (6)	Change in Contract Rate or Interest (7)	Changes in Loan Type (see D above) (8)	New Appraisal (9)	Unpaid Balance after Modifications (10)
First 1-31	$ 6000.	$	$	$	3	to ... %		$	$ 6000
Second 8-41	6000			45.	5	to 5 %	3		5955
Third 11-46	4450			50.	5	to ... %			4400.

J. Loan status: (1) Still on books (state unpaid balance) $4350 (2) Paid of (year)

(3) Transferred to HOLC (year) (4) Loan sold or assigned (year)

(5) Title acquired (year); by foreclosure ☐; by voluntary deed ☐

(If property was acquired and sold fill in Schedule K on reverse side of this card)

(Do not write below this line)

4370037210417511145312700060001000361206030025 1 00044

Collection Procedure

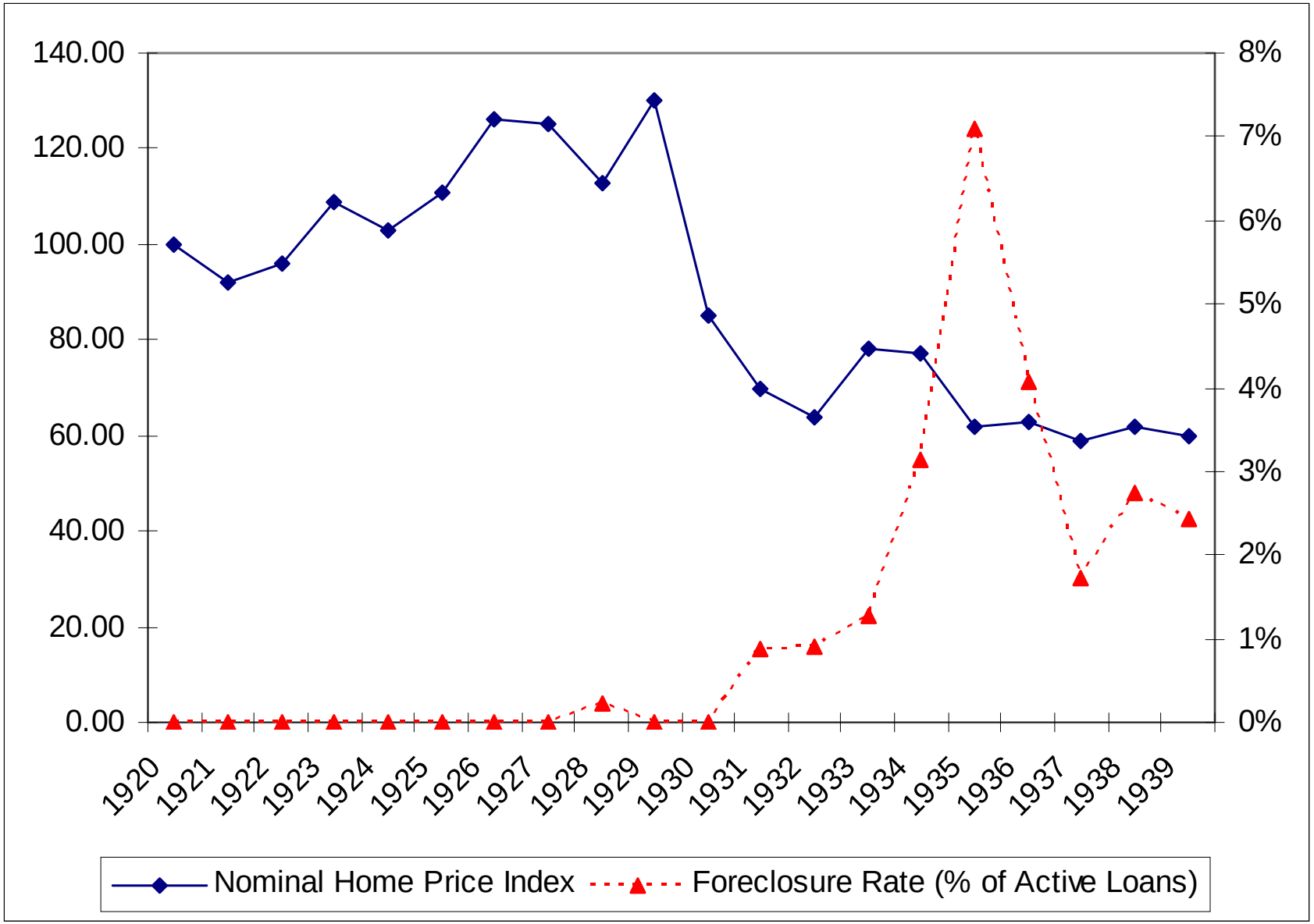
- In late 1940s, NBER asked urban mortgage lenders to provide them with a 1% sample of their loans originated since 1920
- NBER selected institutions to generate a nationally representative 1% sample of mortgages as of *1944*
- Very little survivorship bias for life insurers
- Some survivorship bias for commercial banks and especially S&Ls
  - loans from 1920s and 1930s are those of healthier institutions
- Sample overrepresents life insurers and underrepresents S&Ls
  - in sample, 52% of loans come from LIs and 25% from S&Ls
  - actual market shares of LIs and S&Ls were around 10% and 40%

Summary Statistics

- Average original LTV: 57%
- Average original maturity (excluding demand loans): 7 years
  - Lowest for CBs (3.5 years), highest for S&Ls (13 years)
  - Lower earlier in sample
- Amortization structure:
  - 50% interest only, 16% balloon, 34% fully amortizing
  - more fully amortizing for S&Ls
- Average number of modifications per loan (any type): 0.91
  - 1.25 for LIs, 0.54 for CBs, 0.56 for S&Ls
- **Percent terminated through foreclosure (by end of NBER sample): 16.5%**

Foreclosure Rate and Home Prices

Home Prices from Nicholas and Scherbina (2010)



Modifications

All Recorded Modifications By Lender Type

	All	Maturity Change	Rate Reduction	Rate Increase	Change in Loan Type	Prin. Write Down	Partial Prepay	Prin. Increase	Maturity Change Only	# of Loans
All	**583**	**501**	**177**	**29**	**194**	**0**	**71**	**62**	**191**	**890**
By Institution Type:										
Life Insurers	437	404	122	26	142	0	32	5	180	461
Commercial Banks	56	39	48	0	33	0	28	3	2	202
Savings & Loans	90	58	7	3	19	0	11	54	9	227

All Recorded Modifications By Year

	All	Maturity Change	Rate Reduction	Rate Increase	Change in Loan Type	Prin. Write Down	Partial Prepay	Prin. Increase	Maturity Change Only	# of Loans
All	**583**	**501**	**177**	**29**	**194**	**0**	**71**	**62**	**191**	**890**
By Year:										
1920	1	1	0	0	0	0	0	0	1	9
1921	0	0	0	0	0	0	0	0	0	22
1922	0	0	0	0	0	0	0	0	0	43
1923	2	1	0	0	0	0	0	1	1	75
1924	4	2	0	0	1	0	0	2	1	125
1925	13	9	1	0	4	0	0	5	3	189
1926	15	14	1	0	1	0	0	4	9	285
1927	25	22	0	1	3	0	1	7	14	367
1928	36	34	1	3	5	0	2	10	19	423
1929	52	45	3	5	7	0	3	5	28	483
1930	40	36	4	2	5	0	1	8	20	536
1931	34	33	7	0	5	0	7	5	14	567
1932	63	61	4	4	31	0	11	3	21	554
1933	36	34	1	5	20	0	5	0	11	545
1934	26	21	4	4	7	0	2	0	13	544
1935	44	39	23	4	16	0	6	1	9	493
1936	45	35	28	0	15	0	3	6	9	493
1937	47	42	32	1	24	0	14	1	6	463
1938	46	39	35	0	24	0	7	1	7	472
1939	39	28	26	0	21	0	6	1	2	491
Year Unknown	15	5	7	*0*	5	0	3	2	3	

Lender Concessions

- No principal forgiveness
- What about other changes to the contract designed to make the mortgage more affordable?
- Try to identify other modifications that might be one of three types of concessions:
  1. Concessionary interest rate reductions
  2. Changes in amortization
  3. Principal increases due to forbearance
- Generous definition of concessionary

Identifying *Potentially* Concessionary Modifications

- Interest rate reductions:
  - mortgage rates falling throughout 1930s
  - reduction to new rate close to average rate likely represents a standard refi
  - define a concessionary rate reduction as a reduction to a rate one or two standard deviations below average rate on new originations in that year
- Change in amortization structure that reduces the payment
  - e.g., change from fully amortizing to partially amortizing
- Principal increase of less than 15%
  - possibly amortization of forbearance
  - exclude construction loans

Potentially Concessionary Modifications by Lender Type

	Rate Reduction 1 (One Std. Dev.)	Rate Reduction 2 (Two Std. Dev.)	Reduction in Amortization	Prin. Increase <15%	# of Loans	All Concessions (rate reduction 2 definition) as % of Loans	Foreclosures as % of Loans
All	**59**	**18**	**19**	**11**	**890**	**5.4%**	**13.8%**
By Institution Type:							
Life Insurers	38	12	16	1	461	**6.3%**	**17.6%**
Commercial Banks	20	6	1	1	202	**4.0%**	**14.4%**
Savings & Loans	1	0	2	9	227	**4.8%**	**5.7%**
Average basis points below average rate on new originations	65	78					
Max basis points below average rate on new originations	202	202					

Potentially Concessionary Modifications by Year

	Rate Reduction 1 (One Std. Dev.)	Rate Reduction 2 (Two Std. Dev.)	Reduction in Amortization	Prin. Increase <15%	# of Loans	All Concessions (rate reduction 2 definition) as % of Loans	Foreclosures as % of Loans
All	**59**	**18**	**19**	**11**	**890**	**5.4%**	**13.8%**
By Year:							
1920	0	0	0	0	9	**0.0%**	**0.0%**
1921	0	0	0	0	22	**0.0%**	**0.0%**
1922	0	0	0	0	43	**0.0%**	**0.0%**
1923	0	0	0	0	75	**0.0%**	**0.0%**
1924	0	0	0	1	125	**0.8%**	**0.0%**
1925	1	1	1	0	189	**1.1%**	**0.0%**
1926	1	0	0	0	285	**0.0%**	**0.0%**
1927	0	0	2	0	367	**0.5%**	**0.0%**
1928	0	0	1	0	423	**0.2%**	**0.2%**
1929	2	1	5	0	483	**1.2%**	**0.0%**
1930	4	0	1	2	536	**0.6%**	**0.0%**
1931	7	7	0	1	567	**1.4%**	**0.9%**
1932	4	4	0	1	554	**0.9%**	**0.9%**
1933	2	1	0	0	545	**0.2%**	**1.3%**
1934	4	0	1	0	544	**0.2%**	**3.1%**
1935	10	1	3	1	493	**1.0%**	**7.1%**
1936	15	1	1	3	493	**1.0%**	**4.1%**
1937	1	0	3	1	463	**0.9%**	**1.7%**
1938	1	0	1	0	472	**0.2%**	**2.8%**
1939	7	1	0	0	491	**0.2%**	**2.4%**
Year Unknown				1			

Concessionary Modifications and Distress

- How closely related are potentially concessionary modifications with mortgage distress?
- What factors indicate distress in 1920s and 1930s?
- To identify mortgage distress, transform data into panel
  - each observation a loan-year
- Use probit model to identify factors that make it likely a mortgage will terminate badly (foreclosure or HOLC)
- Dependent variable in probit takes a value of 1 if loan terminates badly, 0 otherwise

Characteristics of Bad Loans

	Foreclosure or Deed-in-Lieu	Foreclosure or Deed-in-Lieu	Foreclosure, Deed-in-Lieu, or HOLC
Original LTV	2.15***	2.05***	1.50***
	(3.84)	(3.57)	(3.31)
Original Amt ($100)	-0.00013	-0.00016	-0.00037
	(-0.39)	(-0.49)	(-0.94)
Single Family	-0.11	-0.09	-0.017
	(-0.94)	(-0.94)	(-0.2)
Held by Life Insurer	0.50***	0.021	-0.22
	(3.47)	(0.08)	(-0.98)
Held by Commercial Bank	0.23	-0.30	-0.46*
	(1.43)	(-1.05)	(-1.91)
Fully Amortizing		-0.58**	-0.52**
		(-2.37)	(-2.50)
Partially Amortizing		-0.13	-0.041
		(-1.26)	(-0.47)
Original Maturity (Years)	0.0069	0.0049	0.0006
	(1.42)	(1.01)	(0.14)
% Change in NS Index Since Origination	-1.99***	-1.95***	-1.64***
	(-8.50)	(-8.31)	(-8.98)
# of Observations	6,665	6,665	6,665

Concessionary Modifications and Mortgage Distress

- Use probit to identify relationship between whether the loan received a modification and distress factors
- Dependent variable takes on a value of 1 if the loan received a potentially concessionary modification in that year, 0 otherwise
- Exclude HOLC years in some specifications since HOLC may have altered private incentives to renegotiate

Concessionary Modifications and Mortgage Distress

	1920 - 1932	1920 - 1939	1920-1932 and 1936-1939
Original LTV	2.67**	0.90	0.94
	(2.45)	(1.35)	(1.33)
Fully Amortizing	-0.20	-0.28*	-0.25
(Lagged)	(-0.91)	(-1.69)	(-1.46)
% Change in NS Index	-0.17	-0.08	-0.08
Since Origination	(-0.54)	(-0.33)	(-0.30)
Constant	-4.00***	-2.99***	-2.99***
	(-6.23)	(-7.64)	(-7.18)
Pseudo R-Squared	2.5%	1.0%	0.9%
# of Observations	3,432	6,665	5,200

Refusals to Refinance

- Harriss (1951) suggests part of the increase in foreclosures during Depression was refusal of lenders to roll over loans
- Lenders in our sample usually do not record term extensions only
- Instead, look at whether a loan that's *original* term is due to expire is more likely to go into foreclosure
- Variable Term_expiry takes a value of 1 if term is set to expire in that loan, 0 otherwise

Refusals to Refinance

	Foreclosure or Deed-in-Lieu
Original LTV	1.36*
	(1.84)
Fully Amortizing	-0.52*
	(-1.91)
Original Maturity (Years)	0.0630**
	(2.58)
% Change in NS Index Since Origination	-1.41***
	(-4.13)
Term_expiry	0.493***
	(2.62)
Constant	-3.92***
	(-8.48)
Pseudo R-Squared	11.2%
# of Observations	4,025

Why Did Lenders Refuse to Refinance?

- Concern with concessionary modification is that grant an unnecessary modification
- If lender refuses to refinance, borrower that has negative equity has no choice but to default
- Little risk lender would confuse borrowers that don't need to roll over loans with those that do!
- Did lenders refuse to refinance because they expected to off-load their loans to the HOLC?

Why Did Lenders Refuse to Refinance?

	Foreclosure or Deed-in-Lieu	Foreclosure or Deed-in-Lieu
Original LTV	1.36*	1.62**
	(1.84)	(2.08)
Fully Amortizing	-0.52*	-0.44
	(-1.91)	(-1.63)
Original Maturity (Years)	0.0630**	0.0523**
	(2.58)	(2.05)
% Change in NS Index Since Origination	-1.41***	-1.59***
	(-4.13)	(-4.35)
Term_expiry	0.493***	0.004
	(2.62)	(0.01)
Term_expiry * HOLC Year		1.227***
		(4.98)
Constant	-3.92***	-4.05***
	(-8.48)	(-8.34)
Pseudo R-Squared	11.2%	18.1%
# of Observations	4,025	4,025

Conclusions

- Principal forgiveness exceptionally rare
- Few concessionary modifications of other types
- HOLC may have led to lenders forcing borrowers into foreclosure by refusing to roll over the loan
- Since very few loans were securitized, securitization cannot be the only reason lenders are reluctant to renegotiate mortgages in current foreclosure crisis

Thank You