

# Did Affordable Housing Legislation Contribute to the Subprime Securities Boom?

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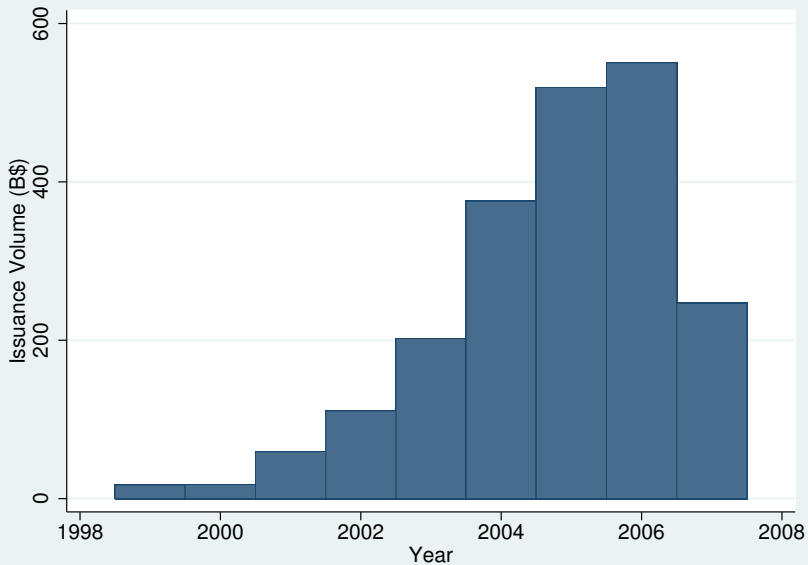
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The views expressed are those of the individual authors and do not necessarily reflect official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors

# Growth of Nonprime PLMBS

Home Equity ABS Issuance, 1999-2007



# Motivation

Michael Bloomberg (2011):

*It was not the banks that created the mortgage crisis. It was, plain and simple, Congress who forced everybody to go and give mortgages to people who were on the cusp.*

...

*But they were the ones who pushed Fannie and Freddie to make a bunch of loans that were imprudent, if you will.*

# Motivation

Alan Greenspan (2010):

*An even heavier demand was driven by the need of Fannie Mae and Freddie Mac, the major U.S. government-sponsored enterprises (GSEs), pressed by the Department of Housing and Urban Development and Congress to meet expanded “affordable housing goals.” Given the size of the GSEs’ expanded commitments to fund low- and moderate-income housing, they had few alternatives but to invest, wholesale, in subprime securities.*

# Motivation

Raghuram Rajan (2010):

*The tsunami of money directed by a U.S. Congress, worried about growing income inequality, towards expanding low income housing, joined with the flood of foreign capital inflows to remove any discipline on home loans.'*

Eugene Fama (2012):

*I think the global crisis was first a problem of political pressure to encourage the financing of subprime mortgages.*

# This Paper

We evaluate whether the Community Reinvestment Act (CRA) and the GSEs' Affordable Housing Goals contributed to the boom in subprime securities by both examining new institutional evidence and using a regression discontinuity approach

We find that neither set of policies altered the number of originations, the pricing, or default rates of mortgages securitized in private label MBS (PLMBS)

# This Paper

## Distinction from Existing Literature

- Matched dataset allows us to examine the borrower level goals
- Focus specifically on loans packaged into non-prime Private-Label MBS (PLMBS)
  - Mortgages securitized by institution other than GSEs
  - Defined by market as non-prime
  - HMDA “high cost loan” definition of subprime not really subprime
  - only half the loans in our data set are “high cost loans”
- New institutional evidence
- Statistical identification strategy recognizes that
  - GSEs get credit for loans they acquire exposure to through purchases of PLMBS, not just loans they originate
  - Depository institutions *may* get CRA credit for loans they acquire exposure to through purchases of specially structured CRA-qualified MBS



## Community Reinvestment Act

- 1977 Act
- Encourages **depository institutions** to provide credit to low-income communities and low-income households
- Assessed by four different agencies: FDIC, FRS, OCC, or (now defunct) OTS
- Regulators look at a depository institution's CRA compliance record when deciding whether an institution can expand
- Depository institutions can get credit for loans they acquire exposure to through purchases of mortgage securities **specifically structured as CRA-qualified** (not just whole loans they originate)

# Community Reinvestment Act

## Evaluation Procedure

- Evaluations occur on a regular schedule
- Every 2 or every 5 years depending on institution's size
- Evaluations are not shocks
- Data for evaluation is lending activity since last CRA exam until 1-3 quarters before current evaluation
- Evaluations can sometimes be delayed for institutions during a merger

## Community Reinvestment Act

- Institutions get credit for loans made to either of the following populations:
  1. Households that live in Census tracts that have median income of 80% or less of MSA median income (CRA1)
  2. Households with income of 80% or less of MSA median income (CRA2)
- Institutions must satisfy **both** the tract- and borrower-level goals
  - cannot cherry-pick the high income borrowers in the low income neighborhoods



## GSEs' Affordable Housing Goals

- Created by 1992 GSE Act
- Mandates that GSEs do a certain percentage of their lending to target populations
- Annual targets for each goal set yearly by Congress
- GSEs get credit for loans they acquire exposure to through purchases of mortgage securities (not just whole loans)
- GSEs must satisfy **both** the tract- and borrower-level goals

# GSEs' Affordable Housing Goals

The goals:

## 1. Underserved Areas Goal (UAG)

- UAG1: Loans to borrowers living in Census tracts with a minority population of 30% or more and median tract to MSA income of 120% or less.
- UAG2: Loans to borrowers living in Census tracts with median tract to MSA income of 90% or less.

## 2. Special Affordable Goal (SAG)

- SAG1: Loans to borrowers with incomes of 60% or less of the median MSA income.
- SAG2: Loans to borrowers with incomes of 80% or less of the median MSA income and who live in Census tracts with median tract to MSA income of 80% or less.

## 3. Low and Moderate Income Goal (LMIG)

- Loans to borrowers with incomes of 100% or less of the median MSA income.

# Data

We combine mortgage data from two datasets for California and Florida originated during 2004-2006

- HMDA (Home Mortgage Disclosure Act)
- CL (CoreLogic)

We analyze all of the affordable housing goals including the **borrower-specific ones**

- CRA
- GSEs Affordable Housing Goals



## HMDA Data

- Publicly available data on most mortgages
- Borrower's race and ethnicity
- Limited information on borrower and loan characteristics
  - borrower's income
  - loan amount
  - loan type (conventional or government-insured)
  - loan purpose (purchase or refinance)
  - limited information on loan prices
  - property location (Census tract)
  - Census tract median income relative to metro area income
  - Census tract minority population share

# CL Data

- Proprietary data on loans securitized as nonprime
- Extensive information on loan characteristics
  - interest rate
  - mortgage type
  - loan terms (amortization scheme, rate reset period)
  - prepayment penalties
  - private mortgage insurance
  - property location (zip code)
  - dynamic information on default and prepayment



# Product Definitions

We focus our analysis on the most popular product in our data, 30 year ARMs

- First liens only
- Owner-occupied only

# Originators

56% of 30 year ARMs originated by **non-depository** institutions

For all products, 55% originated by **non-depository** institutions

CRA only applies to institutions with FDIC insurance (**depository** institutions)

If CRA has an effect, it must be through depository institutions' purchases of CRA-qualified MBS

## Summary Statistics

Variable	Mean	Definition
Borrower Income	1.73	Borrower/MSA median income
<b>Borrower Income (\$)</b>	<b>102,320</b>	<b>Borrower Income (\$)</b>
Tract Income	0.927	Tract/MSA median income
Tract Percent Minority	0.47	Minority share of tract population
Origination Amount	\$294,984	Loan amount
Default within 2 Yrs	0.15	90DPD+ within 2 years of orig.
CRA1 eligible	0.40	Tract/MSA income $\leq 0.8$
<b>CRA2 eligible</b>	<b>0.14</b>	<b>Borrower/MSA income <math>\leq 0.8</math></b>
UAG1 eligible	0.56	% Minority $\geq 0.3$
UAG2 eligible	0.54	Tract/MSA income $\leq 0.9$
<b>SAG1 eligible</b>	<b>0.05</b>	<b>Borrower/MSA income <math>\leq 0.6</math></b>
<b>SAG2 eligible</b>	<b>0.09</b>	<b>Borr.&amp;tract/MSA income <math>\leq 0.8</math></b>
LMIG eligible	0.27	Borrower/MSA income $\leq 1.0$
Not goal eligible	0.30	Does not satisfy any goal
<b>Depository Inst.</b>	<b>0.44</b>	<b>Originated by a depository inst.</b>

# Three Ways Goals Effect on Market may Manifest Itself

## 1. Did Goals Lead to More Loans?

- Look at whether there are more loans per capita in tracts that satisfy the affordable goals
- Appropriate only for the tract-specific goals (CRA1, UAG1, and UAG2)

# Three Ways Goals Effect on Market may Manifest Itself

## 2. Did Goals Lead to Cheaper Loans?

- Look at whether there are differences in the initial contract rates due to goals

# Three Ways Goals Effect on Market may Manifest Itself

## 3. Did Goals Lead to Laxer Underwriting Standards?

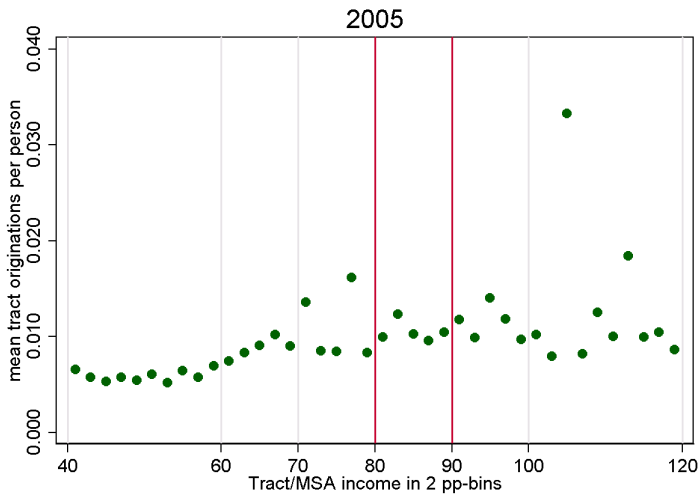
- Look at whether there are differences in default rates due to goals
- Definition of default is a 90-day delinquency, foreclosure, or REO (bank-owned) within two years of origination
- Estimate default using a Probit model
  - 1 = default within two years of origination

# Regression Discontinuity Approach

- All goals have discrete eligibility cutoffs
- Exploit cutoffs to identify effect of goals on outcomes
- E.g., CRA1:
  - Lenders get credit for loans made to borrowers with median income of 80% or less of MSA median income
  - Idea is that a loan to a borrower with 79.9% of MSA median income should not differ much from a loan to a borrower with 80.1% of MSA median income except through the effect of the goal
  - If CRA1 has an effect, expect to see difference between borrowers with income right below 80% and right above 80%

# Originations by Tract Income

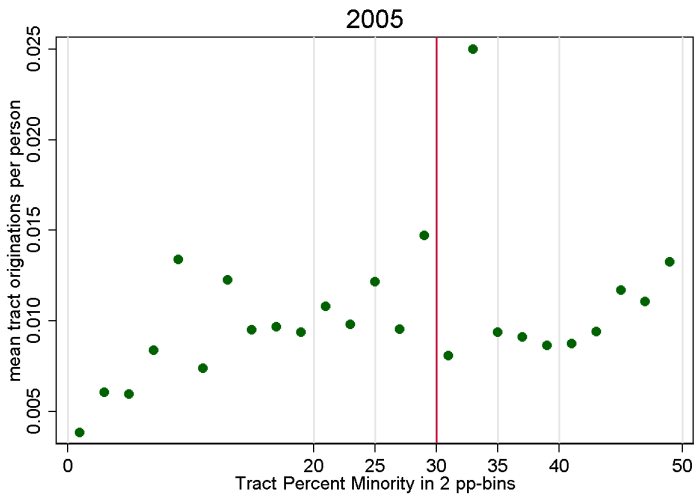
Discontinuity at 80% (CRA1) or 90% (UAG2)?





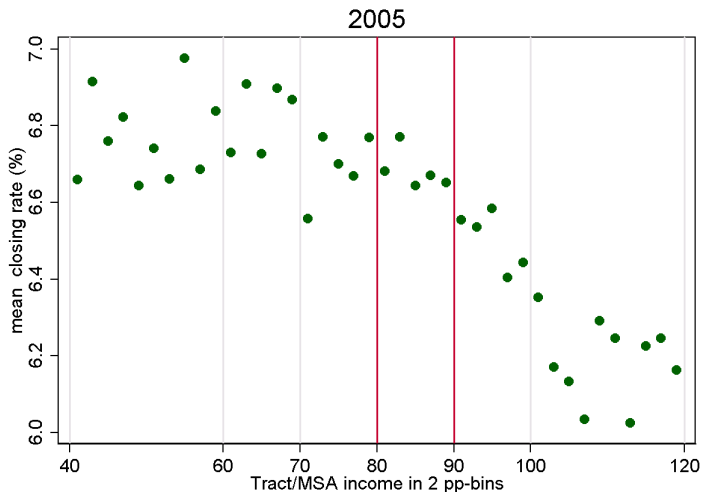
# Originations by Tract Percent Minority

Discontinuity at 30% (UAG1)?



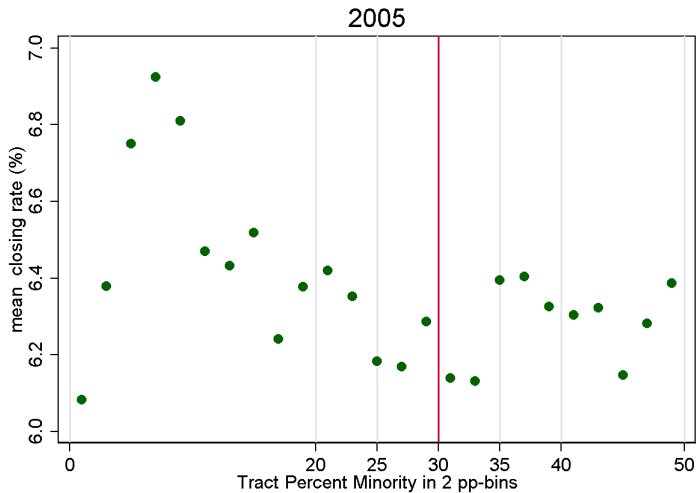
# Contract Rate by Tract Income of Borrower

Discontinuity at 80% (CRA1) or 90% (UAG2)?



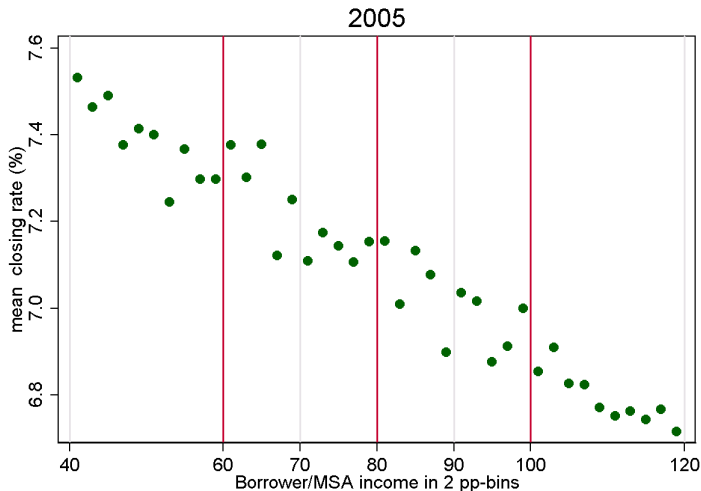
# Contract Rate by Tract Percent Minority of Borrower

Discontinuity at 30% (UAG1)?



# Contract Rate by Borrower Income

Discontinuity at 60% (SAG1), 80% (CRA2 and SAG2) or 100% (LMIG)?





# Regression Results: Originations per Tract

2 percentage-point band

	Goal Dummy	Tract Income	Tract % Minority	R- Squared	No. of Obs.
CRA1 (tract/MSA income $\leq$ 0.8)	0.00039 (0.00055)	0.0105 (0.0240)	0.0016*** (0.0005)	4.1%	1,547
UAG1 (tract minority share $\geq$ 0.3)	-0.00157 (0.00111)	0.0028* (0.0016)	-0.0139 (0.0488)	2.5%	1,145
UAG2 (tract/MSA income $\leq$ 0.9)	0.00033 (0.00057)	0.0165 (0.0250)	0.0021*** (0.0006)	4.2%	1,399

# Regression Results: Interest Rates and the Affordable Housing Goals

2 percentage-point band

	Goal Dummy	Tract Income	Tract % Minority	Borrower Income	R-Squared	No. of Obs.
CRA1	-0.009 (0.037)	-0.965 (1.535)	-	-	42.8%	40,442
CRA2	-0.005 (0.039)	-	-	1.584 (1.688)	46.5%	15,925
UAG1	0.007 (0.330)	-	-0.27 (1.29)	-	42.2%	36,000
UAG2	-0.042 (0.033)	-1.651 (1.426)	-	-	41.6%	39,660
SAG1	-0.050 (0.460)	-	-	-1.069 (1.980)	47.4%	9,750
SAG2	-0.040 (0.116)	-4.08702 (3.590)	-	-1.817 (3.758)	49.0%	1,176
LMIG	0.063 (0.040)	-	-	4.178** (1.851)	45.6%	18,687

# Probit Results: Default and the Affordable Housing Goals

2 percentage-point band

	Goal Dummy	Tract Income	Tract % Minority	Borrower Income	Pseudo R-Squared	No. of Obs.
CRA1	-0.005 (0.009)	-0.260 (0.353)	-	-	17.2%	40,442
CRA2	-0.011 (0.010)	-	-	-0.221 (0.429)	13.6%	15,925
UAG1	-0.007 (0.006)	-	-0.018 (0.259)	-	17.3%	36,000
UAG2	0.019* (0.010)	0.450 (0.473)	-	-	16.6%	39,660
SAG1	0.013 (0.014)	-	-	0.508 (0.605)	11.0%	9,750
SAG2	-0.033 (0.027)	0.236 (0.879)	-	0.002 (0.002)	14.1%	1,176
LMIG	-0.020** (0.010)	-	-	-0.868* (0.450)	15.4%	18,687



# Robustness

- Alternative bandwidths
- Multidimensional goal comparison
  - goals are not mutually exclusive (get credit for loan meeting more than one goal) such that RD approach with unidimensional goal valid
  - more powerful test is to compare loans that satisfy two goals (usually one geographic and one borrower-level) with loans that satisfy no goal
- Full documentation loans only
- Excluding Goal-Defining Variable
  - e.g., for CRA 2, exclude borrower income from the regression





# Robustness

- Alternative product types
- All products combined
- Estimate separately each year
- Three year default horizon

# Away from the Threshold 1:

## Deal Prospectuses

- We carefully examine a random sample of 100 subprime / Alt-A deal prospectuses that the loans in our sample were packaged into for discussions of the GSEs affordable housing goals and the CRA
- Typical prospectus is 200-300 pages in length

# Away from the Threshold 1:

## Deal Prospectuses

- Typical prospectus provides extensive statistics on the underlying loans regarding
  - geography
  - FICO score
  - LTV
  - loan purpose
  - mortgage interest rates
  - property type
  - documentation level
- Not one prospectus we examined made any mention of either of the two sets of affordable housing policies
- Securities **were not** CRA-qualified

## Away from the Threshold 2:

Evolution of GSEs' Affordable Housing Goals over Time

	UAG	SAG	LMIG
1996	21%	12%	40%
1997	24%	14%	42%
1998	24%	14%	42%
1999	24%	14%	42%
2000	24%	14%	42%
2001	31%	20%	50%
2002	31%	20%	50%
2003	31%	20%	50%
2004	31%	20%	50%
2005	37%	22%	52%
2006	38%	23%	53%
2007	38%	25%	55%
2008	39%	27%	56%
2009	32%	18%	43%

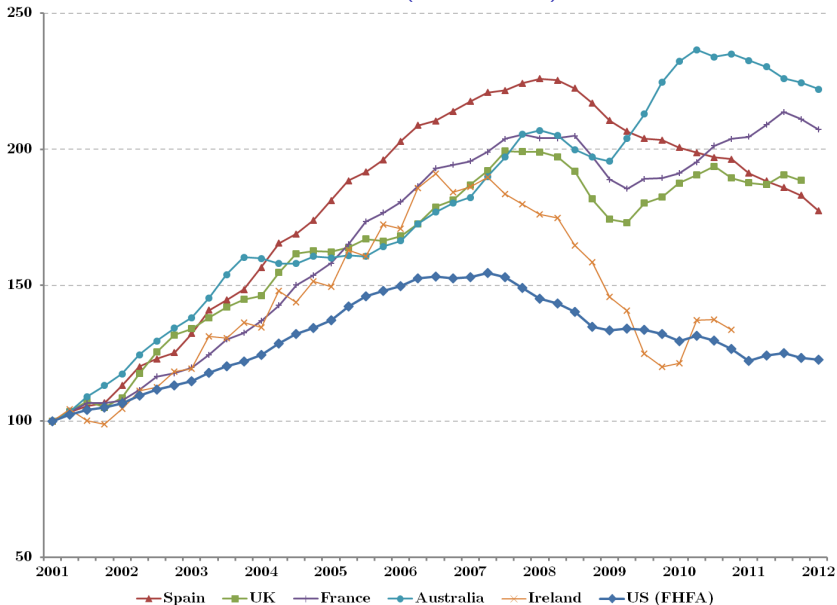
## Away from the Threshold 3:

### Borrower Income vs. Tract Income

- Many of the goals are specific to the borrower's income
  - get credit for loans to low-income borrowers
- Evidence in our sample suggests that borrowers reported much higher income than income in the MSA but that borrowers live in low income census tract
  - average (median) reported borrower income is 173% (144%) of the median income in the MSA
  - average census tract income is 93% (87%) of the median income in the MSA
- If goals really affected the market, would expect borrowers to be *underreporting*, not overreporting income

# Away from the Threshold 4:

Home Prices (2001Q1=100)



## Conclusions

- Institutional evidence from prospectuses dispositive that CRA was not responsible for growth of PLMBS market
- Institutional evidence strongly suggests that GSEs' affordable housing goals did not cause the PLMBS boom
- Results from regression discontinuity approach to identify effect of affordable housing mandates on subprime loans securitized into PLMBS consistent with institutional evidence
  - Found no discontinuities in originations, rates, or defaults around goal thresholds
- Broader role of GSEs in the crisis remains unclear