New Developments in Housing Policy

Andrew Haughwout

Research

FRBNY

The views and opinions presented here are those of the authors, and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System.

Housing played a crucial role in the crisis

- Unprecedented increases in mortgage defaults and foreclosures 2007-present

- One result has been a sharp decline in homeownership
  - As officially measured
  - Effective (accounting for negative equity)

- High negative equity an ongoing risk for housing, banking sectors
  - And economy

- Much recent policy action thus focused on housing
  - Buyer tax credits, Fed MBS purchase & loan modifications
  - Latter is major ($75B) component of Obama's MHA program
    - 3-4 million foreclosures to be avoided by 12/31/2012

Overview

- Background

- Equity & ownership

- Implications for foreclosure and savings

- Policy response: Mortgage modifications

- What works best?

- Conclusions

Some background

- **Three key determinants of loan performance**
  - Willingness to pay – borrower credit record
  - Ability to pay – debt burden as share of income
  - Incentive to pay – borrower equity position

- **Mortgage default decision is exercise of an option**

- **Axiom: Borrowers with positive equity have better options than default**
  - Sell the house
    - Collect cash
    - Have to move anyway
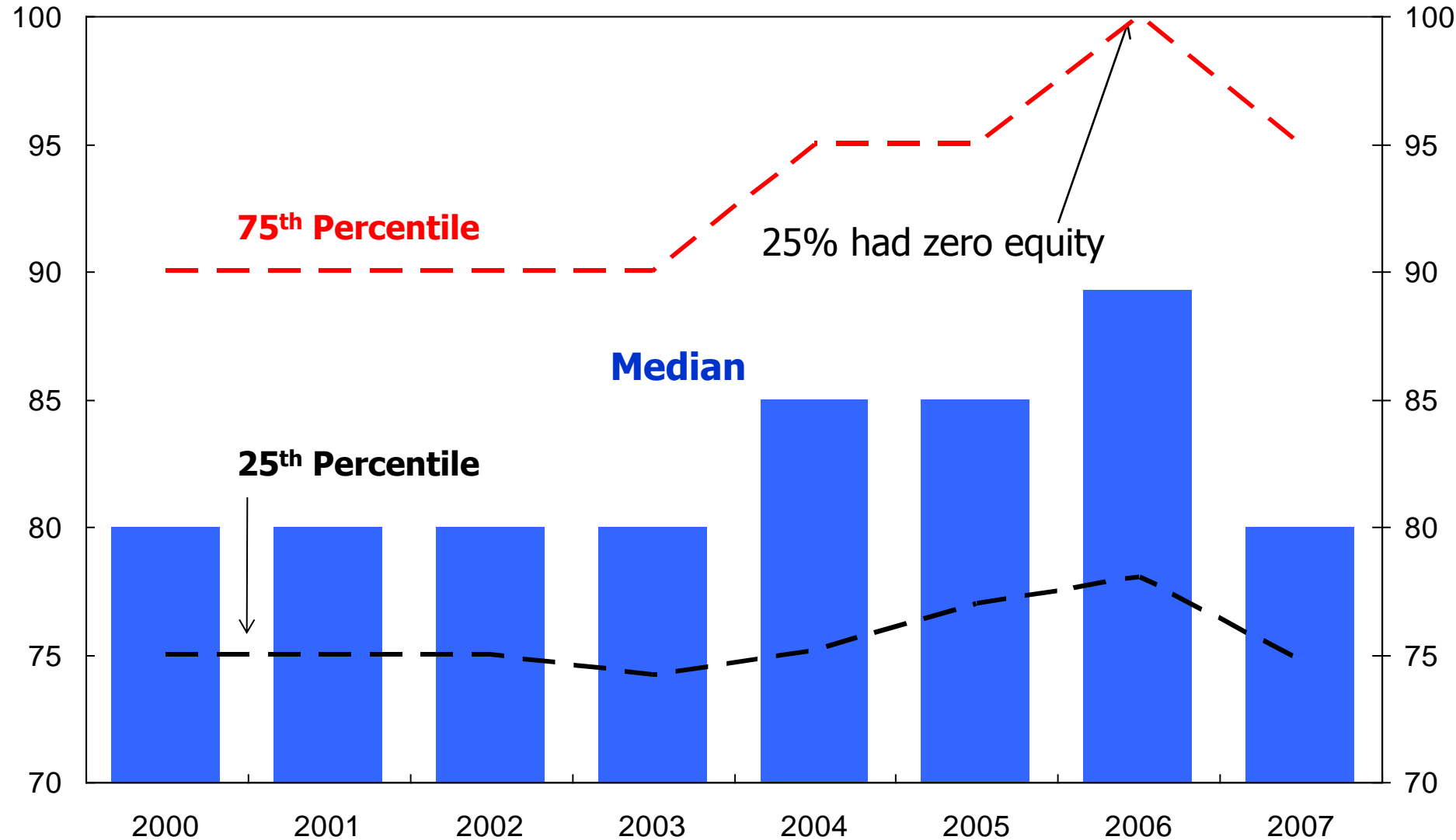   - Preserve credit rating

Nonprime Market Shares

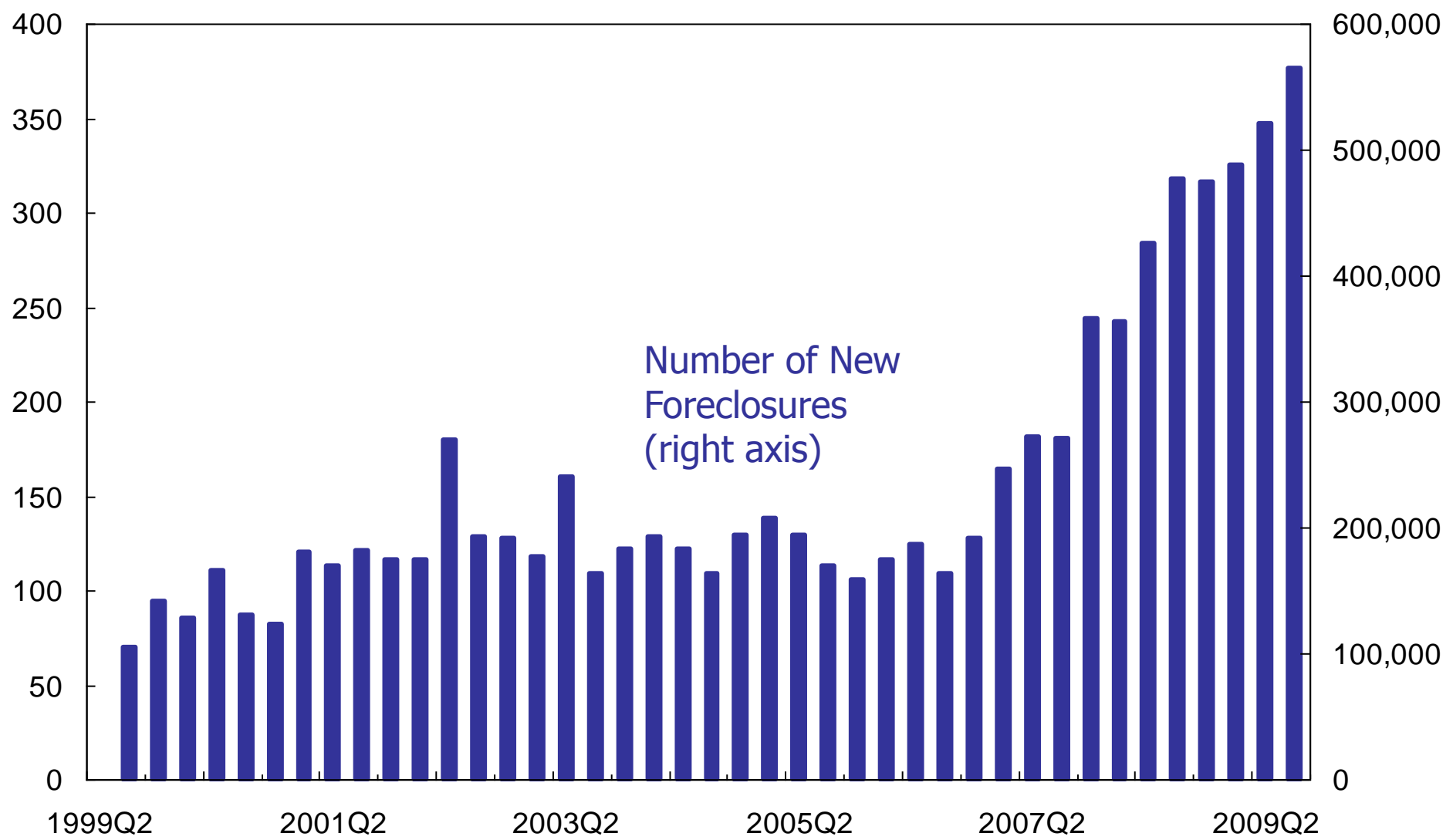Index (1985=100) — Percent of $ Originated

Over 39% in 2006

LP HPI (left scale)

Nonprime market share (right scale)
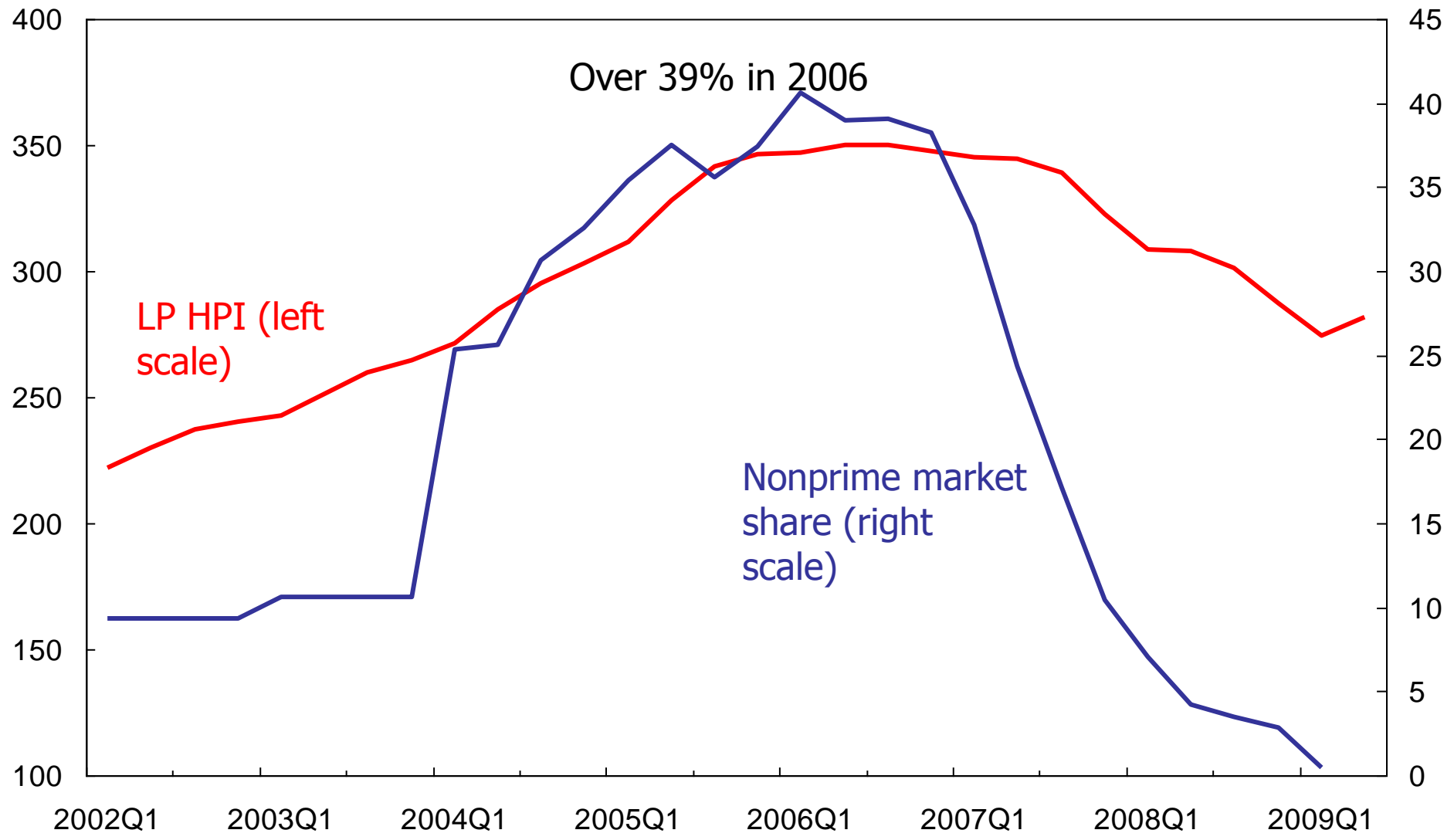
Nonprime CLTV Ratios by Year of Origination

Source: FirstAmerican CoreLogic LoanPerformance

Foreclosures and Home Prices

Foreclosures and Home Prices

Index — LP Home Price Index (left axis)

Number of Foreclosures — Number of New Foreclosures (right axis)

Source: FRBNY consumer credit panel and FirstAmerican CoreLogic

Some policies supporting homeownership

- **Federal Taxes**
  - Interest and p-tax deductible (~$140B per year)
  - Implicit rent exclusion (~$40B per year)
  - Like a business allowed to deduct costs without paying tax on revenue
  - First-time buyer credit (2009)

- **Housing finance**
  - GSEs securitizations and guarantees
  - FHA/VA loan guarantees
  - Fed's MBS purchase program

- **Rhetoric (bipartisan)**

Benefits of homeownership

- Private
  - Participation in a particular asset class
    - Part of mortgage payment a form of saving
    - Possibly too much?

- Public
  - "Homevoter" concept
    - House values affected by LT prospects of place
    - Homeowners have financial stake in LT
    - Homeowners participate more, LT-oriented
    - Classic example: Childless hh supports schools

Aggregate Measured Homeownership Rate

Percent
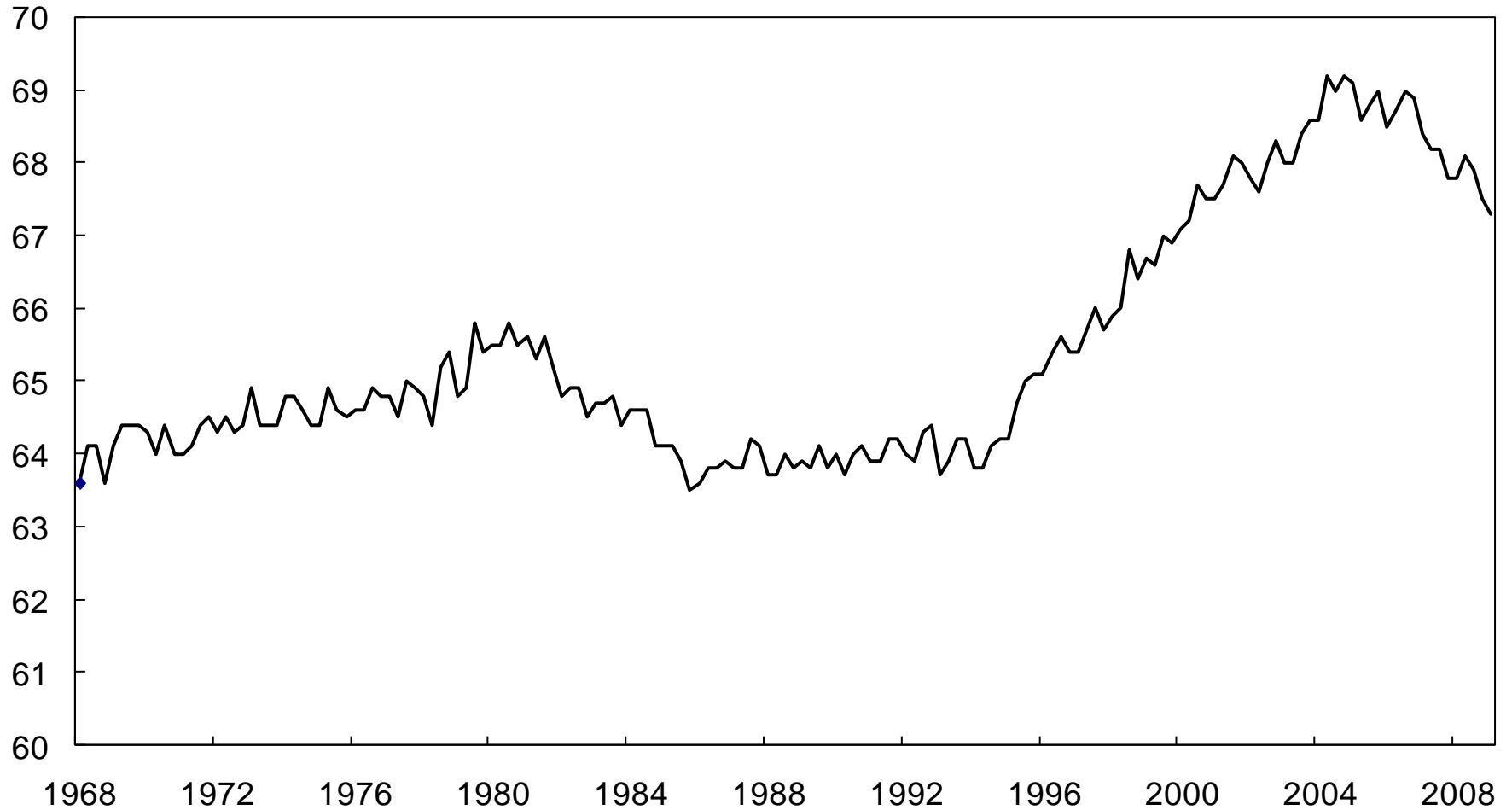
Source: U.S. Census Bureau, Housing and Economic Statistics Division.

Definitions of homeownership

- **Official: Census Bureau**

$$h = \frac{\#OwnerOcc}{\#Occ}$$

- Rapid increase after 1996

- **Alternate: Owners with equity stake in unit**

$$\tilde{h} = \left(h - \frac{\#NE\ OwnerOcc}{\#Occ}\right) = \frac{\#PE\ OwnerOcc}{\#Occ}$$

- Excludes negative equity households

Defining negative equity homeowners

- Borrower Equity:
    - Current house value – mortgage balance (all liens)

- Mortgage data give us good estimate of 1st lien balance
    - Probable undercount of junior liens

- Change in value since origination estimated
    - FHFA (comprehensive but limited)
    - Case-Shiller (limited geography, more complete)

Why exclude negative equity "owners"?

- **Equity determines financial interest**
  - E>0: Increase in HV go to owner
  - E<0: Less clear; depends on how much
  - For borrower X% underwater, first X% of HV appreciation goes to lender

Aggregate Measured and Effective Homeownership
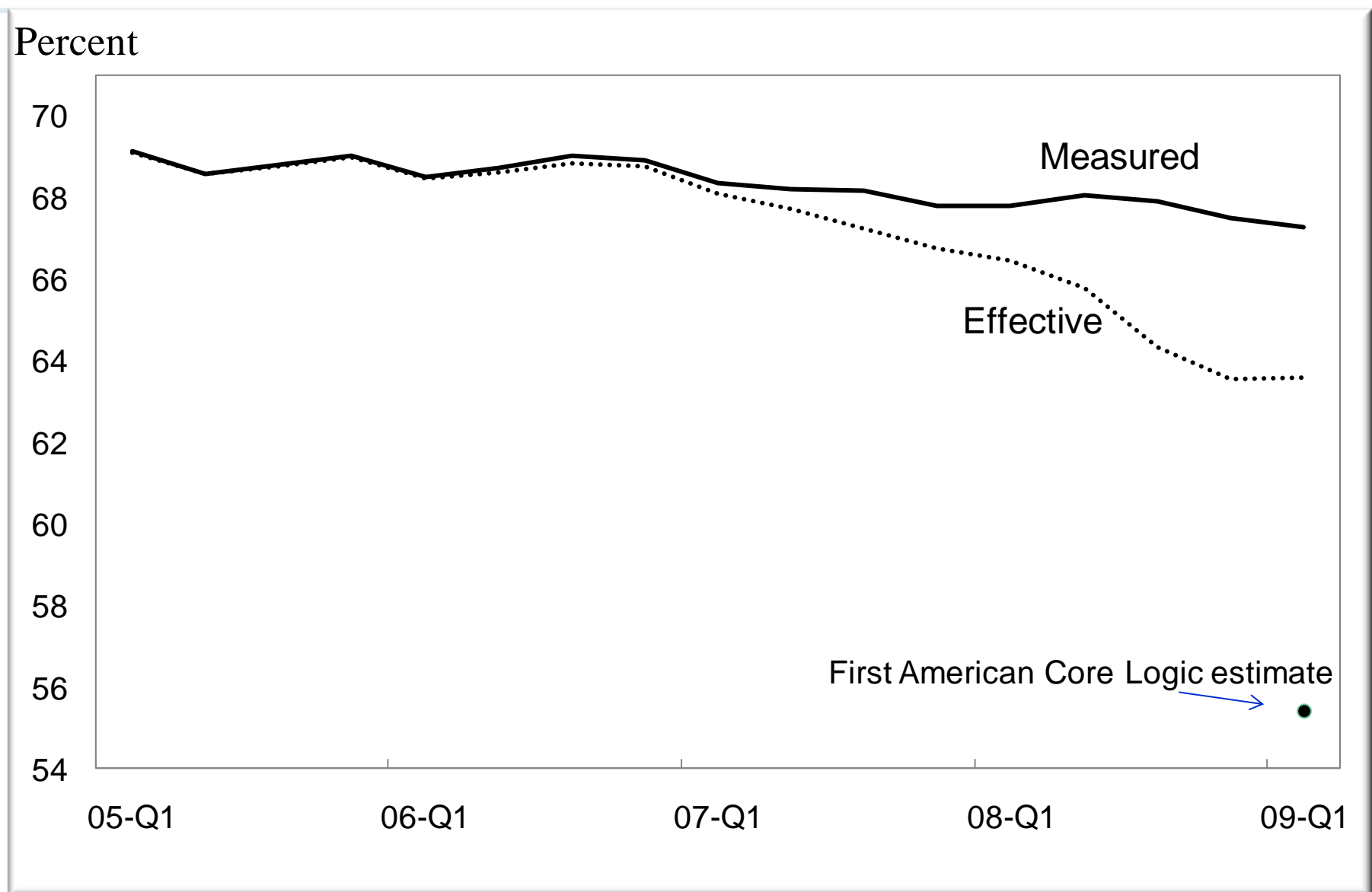
Table 2. MSA Measured and Effective Homeownership Rates

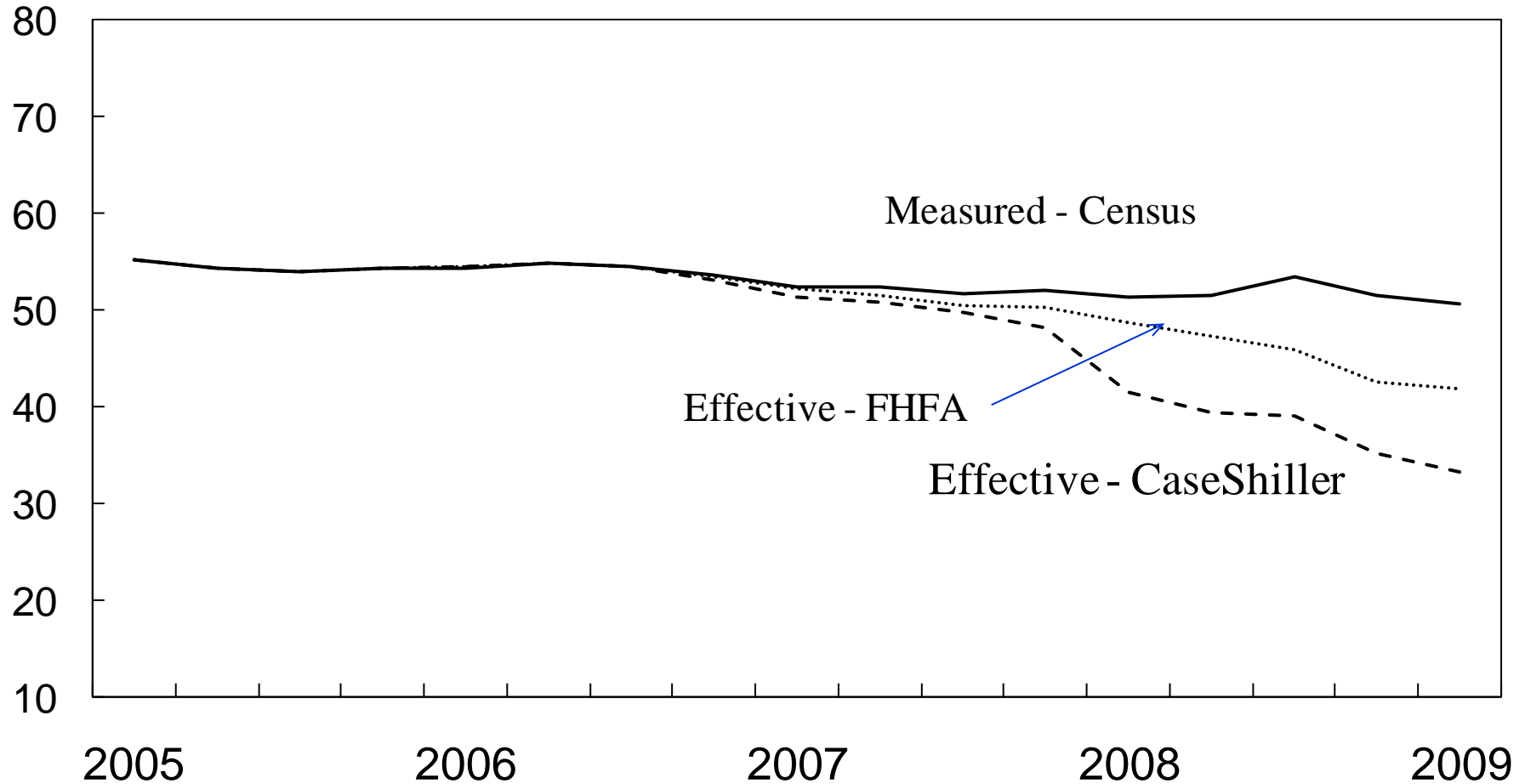| MSA	Measured Homeownership Rate		Effective Homeownership Rate	Homeownership Gap
	Peak	Current	Case-Shiller	Case-Shiller
Atlanta	70.8	68.5	53.9	14.6
Boston	67.7	64.9	60.9	4.0
Charlotte	68.3	66.4	60.8	5.6
Chicago	71.3	69.5	54.7	14.8
Cleveland	78.6	67.2	58.8	8.3
Dallas	64.5	60.1	52.0	8.0
Denver	72.0	68.3	59.7	8.6
Detroit	78.4	72.6	**42.2**	**30.3**
Las Vegas	65.0	60.4	**15.7**	**44.6**
Los Angeles	55.2	50.7	**33.2**	**17.5**
Miami	71.0	66.9	**42.0**	**25.0**
Minneapolis	74.8	68.8	**42.6**	**26.2**
New York	55.9	51.1	**46.9**	**4.2**
Phoenix	74.9	70.9	**37.5**	**33.4**
Portland	72.7	61.0	53.7	7.2
San Diego	63.3	57.7	**31.7**	**26.0**
San Francisco	61.7	57.1	**34.7**	**22.4**
Seattle	65.7	62.7	54.4	8.3
Tampa	74.1	68.2	50.2	18.1
Washington DC	70.9	67.7	**46.0**	**21.6**

Notes: Current Population Survey data, LPS Applied Analytics and LP data; authors calculations

Los Angeles

Percent

Measured - Census

Effective - FHFA

Effective - CaseShiller

Miami
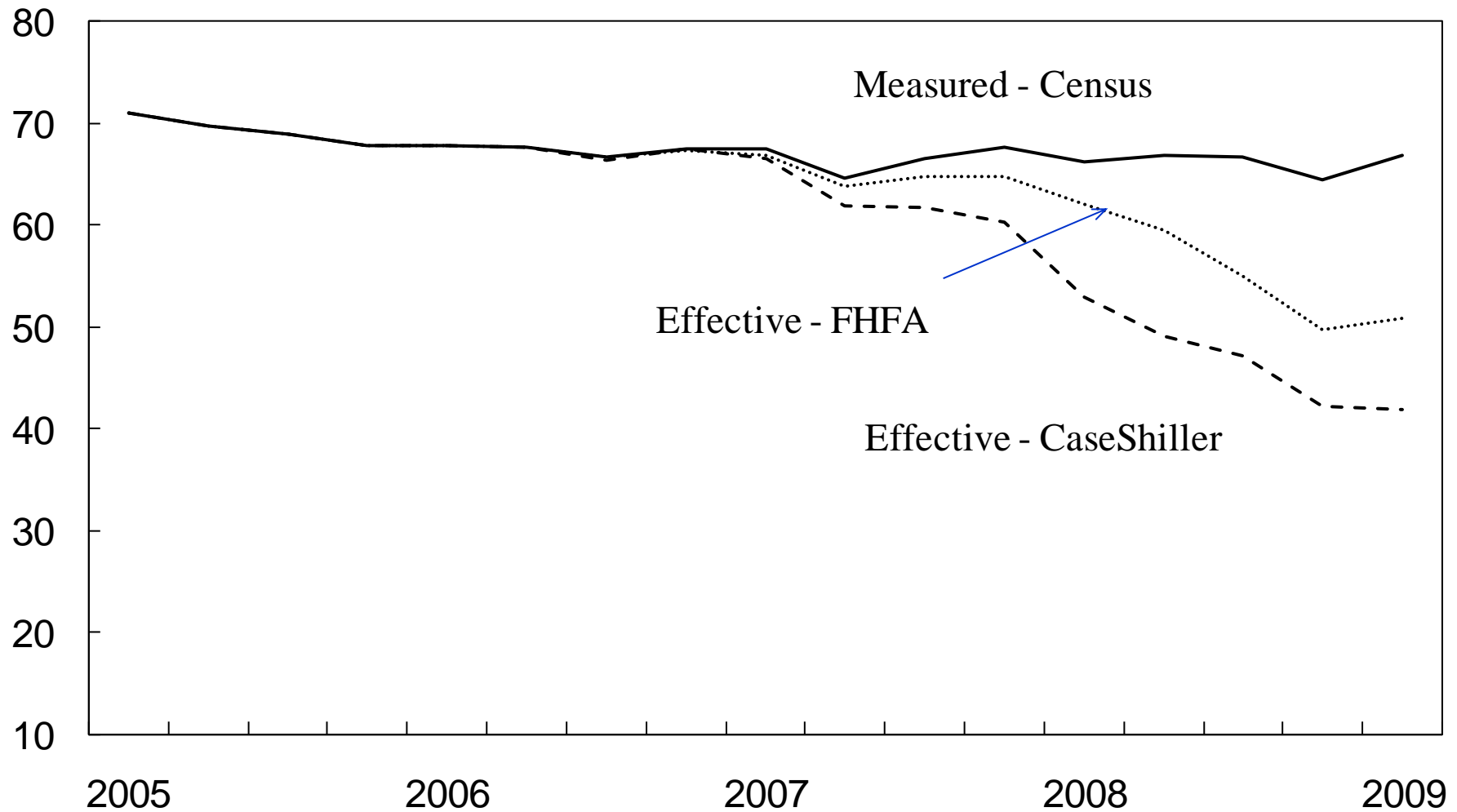
Percent

Phoenix

Percent
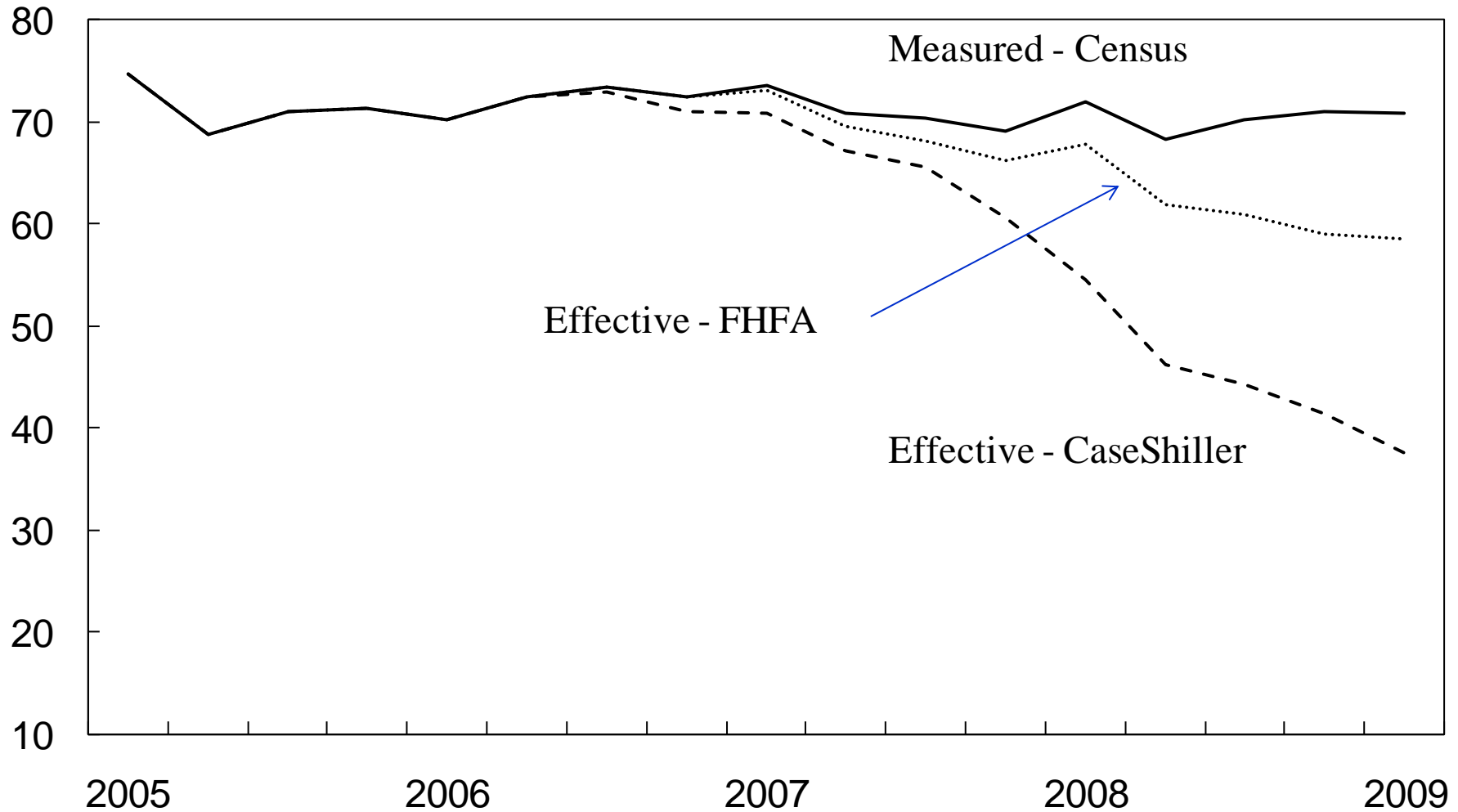
Las Vegas

Percent
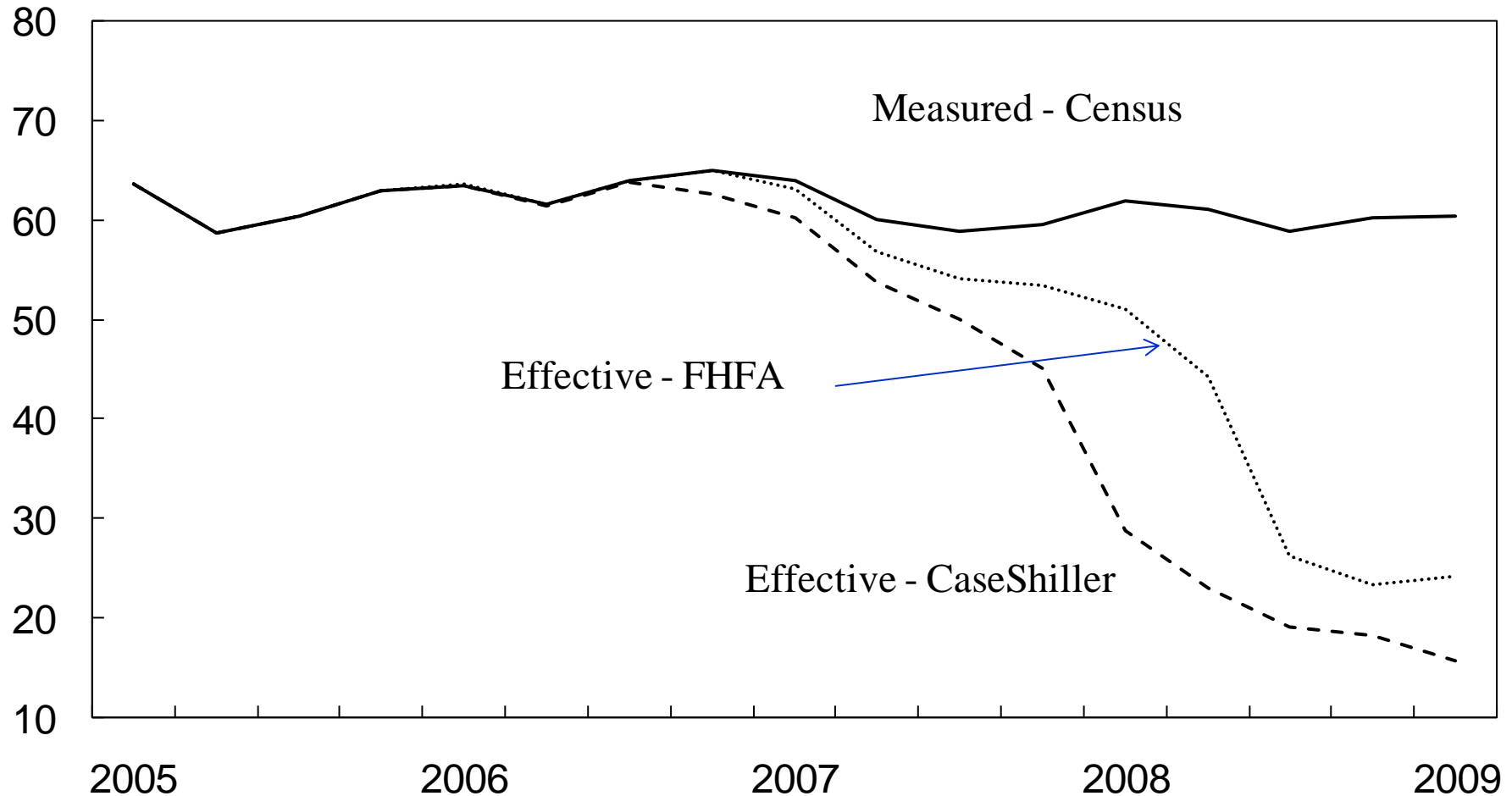
Implications of the Homeownership Gap

- **How the gap closes depends on:**
  - Flow into homeownership
    - "First-time" buyers (former renters)
  - Flow out of homeownership
    - Foreclosures, unlikely to lead to continued ownership
    - Sale from negative equity, ditto
  - In order to remain a homeowner, NE borrower must remain current on mortgage plus save:
    - New down payment (20%-ish)
    - Transactions cost (6%-ish)
    - Pay off NE
  - Debt amortization helps a little
  - But (lots of) additional savings likely required

Resaving a downpayment

	Monthly ($)	Annual ($)	Aggregate ($billion)	% Δ 2009Q1 savings ($464.2 B)
3 year horizon	1,436	17,232	163.9	35.3
5 year horizon	847	10,164	96.7	20.8

Policy responses: Modifications

- High costs of foreclosure to all parties, possibly including "innocent bystanders"

- Private servicers' traditional response to problems with a borrower is modification
  - Add missed payments to balance
  - Bring borrower status back to "Current"
  - Start over

- 2007/2008: servicers and investors begin wholesale subprime mortgage mods

- 2009: Obama Administration adds a public plan: HAMP

- What are the features of these mods?

- What features are most effective?

Table 4: Nature of Modifications

Variable	(a) Total modifications:		
	Reduction	No Change	Increase
Monthly payment	65	16	19
Balance	30	5	64
Excluding small balance reductions	5	30	64
Interest rate	70	28	2

Table 4: Nature of Modifications – Estimation sample

(d) Dataset used in analysis (51,626)

	Reduction	No Change	Increase
Monthly payment	**100**	-	-
Balance	9	0	90
Excluding small balance reductions	7	3	90
Interest rate	97	3	0

Table 4: Nature of Modifications – Estimation sample

(d) Dataset used in analysis (51,626)

Average payment reduction: 20%

	Reduction	No Change	Increase
Monthly payment	**100**	-	-
Balance	9	0	90
Excluding small balance reductions	7	3	90
Interest rate	97	3	0

Table 4: Nature of Modifications – Estimation sample

(d) Dataset used in analysis (51,626)

	Reduction	No Change	Increase
Monthly payment	100	-	-
Balance	9	0	90
Excluding small balance reductions	**7**	**3**	**90**
	Unusual for mods to "right" underwater borrowers		
Interest rate	97	3	0

Table 4: Nature of Modifications – Estimation sample

(d) Dataset used in analysis (51,626)

	Reduction	No Change	Increase
Monthly payment	100	-	-
Balance	9	0	90
Excluding small balance reductions	**7**	**3**	**90**
	Mean balance reduction=20%		
Interest rate	97	3	0

Table 4: Nature of Modifications – Estimation sample

(d) Dataset used in analysis (51,626)

	Reduction	No Change	Increase
Monthly payment	100	-	-
Balance	9	0	90
Excluding small balance reductions	7	3	90
Interest rate	**97**	**3**	**0**

Table 4: Nature of Modifications – Estimation sample

(d) Dataset used in analysis (51,626)

	Reduction	No Change	Increase
Monthly payment	100	-	-
Balance	9	0	90
Excluding small balance reductions	7	3	90
Interest rate	**97**	**3**	**0**

Mean rate reduction=300bps

Kaplan-Meier Survival Plots

Kaplan-Meier Survival Plots

Kaplan-Meier Survival Plots

By reduction in monthly payments

large_reduction = 0   large_reduction = 1

Kaplan-Meier Survival Plots

By negative equity

analysis time

neg_equity = 0   neg_equity = 1

Kaplan-Meier Survival Plots

By origination FICO

low_fico = 0   low_fico = 1

analysis time

Table 5. Proportional hazard estimates of re-default

Variable	Cox proportional hazard		Step-function proportional hazard
	(1)	(2)	(3)
Reduction in monthly payment (10%)	−0.135**	−0.128**	−0.128**
	(0.006)	(0.006)	(0.006)
Local unemployment rate lagged 6-months less average local rate	0.002	0.009	0.009
	(0.006)	(0.007)	(0.007)
Current LTV:			
100 – 104	0.237**	0.218**	0.218**
	(0.029)	(0.029)	(0.029)
105 – 109	0.277**	0.235**	0.234**
	(0.034)	(0.034)	(0.034)
110 – 114	0.387**	0.330**	0.330**
	(0.038)	(0.038)	(0.038)
115+	0.508**	0.444**	0.444**
	(0.021)	(0.025)	(0.025)

Total at risk months 217,847. Fixed rate mortgage indicator as well as four property type indicators included. Reference property is a single family residence with an adjustable mortgage with positive equity and an origination FICO score of 620 or higher.
**significant at the 5 percent level *significant at the 10 percent level

Table 5. Proportional hazard estimates of re-default

Variable	Cox proportional hazard		Step-function proportional hazard
	(1)	(2)	(3)
Reduction in monthly payment (10%)	-0.135^{**} (0.006)	-0.128^{**} (0.006)	-0.128^{**} (0.006)
Local unemployment rate lagged 6-months less average local rate	0.002 (0.006)	0.009 (0.007)	0.009 (0.007)
Current LTV: 100 – 104	0.237^{**} (0.029)	0.218^{**} (0.029)	0.218^{**} (0.029)
105 – 109	0.277^{**} (0.034)	0.235^{**} (0.034)	0.234^{**} (0.034)
110 – 114	0.387^{**} (0.038)	0.330^{**} (0.038)	0.330^{**} (0.038)
115+	0.508^{**} (0.021)	0.444^{**} (0.025)	0.444^{**} (0.025)

Total at risk months 217,847. Fixed rate mortgage indicator as well as four property type indicators included. Reference property is a single family residence with an adjustable mortgage with positive equity and an origination FICO score of 620 or higher.
**significant at the 5 percent level *significant at the 10 percent level

Table 5. Proportional hazard estimates of re-default

Variable	Cox proportional hazard		Step-function proportional hazard
	(1)	(2)	(3)
Reduction in monthly payment (10%)	−0.135**	−0.128**	−0.128**
	(0.006)	(0.006)	(0.006)
Local unemployment rate lagged 6-months less average local rate	0.002	0.009	0.009
	(0.006)	(0.007)	(0.007)
Current LTV:			
100 – 104	0.237**	0.218**	0.218**
	(0.029)	(0.029)	(0.029)
105 – 109	0.277**	0.235**	0.234**
	(0.034)	(0.034)	(0.034)
110 – 114	0.387**	0.330**	0.330**
	(0.038)	(0.038)	(0.038)
115+	0.508**	0.444**	0.444**
	(0.021)	(0.025)	(0.025)

Total at risk months 217,847. Fixed rate mortgage indicator as well as four property type indicators included. Reference property is a single family residence with an adjustable mortgage with positive equity and an origination FICO score of 620 or higher.
**significant at the 5 percent level *significant at the 10 percent level

Table 5. Proportional hazard estimates of re-default

Variable	Cox proportional hazard		Step-function proportional hazard
	(1)	(2)	(3)
Reduction in monthly payment (10%)	−0.135**	−0.128**	−0.128**
	(0.006)	(0.006)	(0.006)
Local unemployment rate lagged 6-months less average local rate	0.002	0.009	0.009
	(0.006)	(0.007)	(0.007)
Current LTV:			
100 – 104	0.237**	0.218**	0.218**
	(0.029)	(0.029)	(0.029)
105 – 109	0.277**	0.235**	0.234**
	(0.034)	(0.034)	(0.034)
110 – 114	0.387**	0.330**	0.330**
	(0.038)	(0.038)	(0.038)
115+	0.508**	0.444**	0.444**
	(0.021)	(0.025)	(0.025)

Total at risk months 217,847. Fixed rate mortgage indicator as well as four property type indicators included. Reference property is a single family residence with an adjustable mortgage with positive equity and an origination FICO score of 620 or higher.
**significant at the 5 percent level *significant at the 10 percent level

Probability of re-default within 12 months

Variable	Change in re-default rate
Reduction in monthly payment (10%)	-0.044^{**} (0.002)
Local unemployment rate lagged 6-months less average local rate	0.003 (0.003)
Current LTV:	
100 – 104	0.076^{**} (0.010)
105 – 109	0.082^{**} (0.012)
110 – 114	0.115^{**} (0.013)
115+	0.155^{**} (0.009)

Probability of re-default within 12 months

Variable	Change in re-default rate
Reduction in monthly payment (10%)	–0.044** (0.002)
Local unemployment rate lagged 6-months less average local rate	0.003 (0.003)
Current LTV:	
100 – 104	0.076** (0.010)
105 – 109	0.082** (0.012)
110 – 114	0.115** (0.013)
115+	0.155** (0.009)

Probability of re-default within 12 months

Variable	Change in re-default rate
Reduction in monthly payment (10%)	-0.044^{**} (0.002)
Local unemployment rate lagged 6-months less average local rate	0.003 (0.003)
Current LTV: 100 – 104	0.076^{**} (0.010)
105 – 109	0.082^{**} (0.012)
110 – 114	0.115^{**} (0.013)
115+	0.155^{**} (0.009)

Modification Programs and their Effects

	Original		Mod 1		Mod 2
House value	$	207,250	$ 169,945	$	169,945
Mortgage balance	$	200,000	$ 200,000	$	152,951
LTV		96.5	117.7		90.0
Interest rate		8.44%	5.60%		8.24%
Income	$	4,341	$ 4,341	$	4,341
Taxes & insurance	$	207	$ 207	$	207
Principal & interest	$	1,529	$ 1,148	$	1,148
PITI	$	1,737	$ 1,355	$	1,355
DTI		0.40	0.31		0.31
% decline in payment		---	-25%		-25%
ΔPr(Re-default, 12mo)		---	-11.0%		-26.5%

Modification Programs and their Effects

	Original		Mod 1		Mod 2
House value	$	207,250 $	169,945 $		169,945
Mortgage balance	$	200,000 $	200,000 $		152,951
LTV		96.5	117.7		90.0
Interest rate		8.44%	5.60%		8.24%
Income	$	4,341 $	4,341 $		4,341
Taxes & insurance	$	207 $	207 $		207
Principal & interest	$	1,529 $	1,148 $		1,148
PITI	$	1,737 $	1,355 $		1,355
DTI		0.40	0.31		0.31
% decline in payment	---		-25%		-25%
ΔPr(Re-default, 12mo)	---		-11.0%		-26.5%

Conclusions

- Housing boom-bust cycle pushed many borrowers into negative equity

- Absent increases in house prices, most will remain underwater for years

- Possible effects include

  - Reduced mobility
  - Reduced maintenance of housing stock
  - Reduced participation in local public affairs

- Loss of household wealth will be difficult to recover in medium term (3-5 years)

  - Doing so would imply large increases in already elevated savings rates
  - And reduced consumption

Conclusions

- Modification programs are becoming very important

- Borrower equity remains important even after modification

- An effective anti-foreclosure program would exploit this fact

- How general are these results?

- Limitations
  - Subprime only
  - Voluntary mods are selected

- Hard to draw definitive conclusions about likely effect of HAMP

END

Reference Slides

An example – effects of principal mod

(a) Mortgages and Modifications		Original		Modification 1		Modification 2
House value	$	181,818	$	181,818	$	181,818
Mortgage Balance	$	200,000	$	200,000	$	181,818
Interest rate		7.0%		4.8%		5.6%
Mortgage Principal, Interest, Taxes and Insurance (PITI)	$	1,700	$	1,382	$	1,382
Monthly Income	$	4,474	$	4,474	$	4,474
DTI		38%		31%		31%

An example – effects of principal mod

(b) Saving for a new down payment	Original	Modification 1	Modification 2
Borrower equity after 5 years*	$ (3,822.83)	$ (1,312.06)	$ 13,387.86
Downpayment req'd to buy a house of this price	$ 36,363.64	$ 36,363.64	$ 36,363.64
Transactions costs @ 6%	$ 10,909.09	$ 10,909.09	$ 10,909.09
Savings required to buy again in 5 years	$ 51,095.55	$ 48,584.78	$ 33,884.86
Savings per month (5 years, assuming 1.6% interest rate)	$ 818.55	$ 778.33	$ 542.84
"Full" housing cost to income ratio**	56.3%	48.3%	43.0%

Equity at t

$$E_t = [HV_o - \sum_{l=1}^{L} M_o^l] + [\Delta HV_t - \sum_{l=1}^{L} \Delta M_o^l]$$

Table 5. Proportional hazard estimates of re-default

Variable	Cox proportional hazard		Step-function proportional hazard
	(1)	(2)	(3)
House price change in 12-months prior to modification (10%)		0.027	0.027
		(0.018)	(0.018)
House price index relative to 2000 average (10%)		0.030**	0.030**
		(0.003)	(0.003)
2-year variance in house price changes (1%)		−0.005	−0.004
		(0.037)	(0.037)
FICO at origination:			
< 560	0.126**	0.040*	0.040*
	(0.022)	(0.022)	(0.022)
560 – 589	0.112**	0.061**	0.061**
	(0.022)	(0.022)	(0.022)
590 – 619	0.052**	0.019	0.019
	(0.021)	(0.021)	(0.021)
Missing	0.216*	0.209*	0.209*
	(0.117)	(0.117)	(0.117)
Months current in year prior to modification		−0.050**	−0.050**
		(0.003)	(0.003)
Full documentation at origination	−0.201**	−0.152**	−0.152**
	(0.016)	(0.017)	(0.017)
Age of mortgage (6 months)	−0.077**	−0.078**	−0.078**
	(0.004)	(0.004)	(0.004)
90+ delinquency rate in MSA (10%)		0.082**	0.082**
		(0.011)	(0.011)