

Before and After Bank Ownership: An Analysis of Single-Family REO Housing Units

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Getting In and Out of REO

- REO (Real Estate Owned) Units are those that become bank owned during the foreclosure process
- The **dual trigger hypothesis** suggests two things are necessary (and neither is sufficient) for a foreclosure and bank repurchase to occur:
 1. Owner experiences deterioration of finances and/or a personal change
 - Loss of income, increased costs (e.g. medical expenses), or diminishing wealth, perhaps due to unaffordable housing cost burden
 - Marriage, divorce, attractive employment opportunity elsewhere, etc.
 2. Demand for the home is insufficient for it to sell in a timely way for a price that will cover the mortgage or tax liabilities associated with the property.
- Once a property becomes REO it is hypothesized that it is at a disadvantage maintaining or returning to occupancy because
 - Foreclosure stigma
 - “Banks are not in the real estate business”
 - Units languish and depreciate more quickly once they are bank owned



Motivation

- It has been difficult to get data on REO triggers and outcomes for the *entire* housing market.
 - HMDA provides data on originations and some demographic information (Gruenstein Bocian, Li, Reid, and Quercia 2011)
 - Credit bureau data provide some financial and life event data for individuals (Brevoort and Cooper 2010, Molloy and Shan 2012)
 - Deeper descriptions by necessity focus on limited cases and geographies and assumptions about tenure and vacancy (Wardrip and Pelletiere 2008)
 - Bank and Foreclosure records just tell us about ownership, the loan, and general details on the property (Blomquist 2013)
- Combining data sources provides insight into the transition of individuals and the housing market
 - Foreclosure records merged with SIPP provide detailed information on households before and after foreclosure, but not housing units after foreclosure (O'Donnell, Mykyta)



The American Housing Survey and RealtyTrac

- The American Housing Survey (AHS) is well suited to answer some of these questions
 - Longitudinal survey of housing units. Follows housing units, not households.
 - Collected by the U.S. Census Bureau for the Department of Housing and Urban Development
 - National sample surveyed every two years in odd numbered years
 - Statistics on the physical and financial characteristics of housing unit as well as demographic characteristics of households.
- The AHS has little data on foreclosure and trigger events
 - Foreclosure was added as a reason for moving to the sample unit in 2011
 - No information on unemployment or specific dates of trigger events
 - No data on renters' landlords
- Our research links AHS data to RealtyTrac foreclosure data
 - 2003, 2005, 2007, 2009, and 2011 American Housing Surveys (AHS)
 - 2005-2011 RealtyTrac
 - Single Family Detached and Attached Units



Administrative matching

- RealtyTrac
 - Foreclosure events (Notice of Default, Lis Pendens, Notice of Foreclosure Auction, Notice of Bank Ownership (REO). REO events are the focus of this research.
 - Years: 2005-2011
 - Property address, type of event, recording date of event
 - Matched to the Census Bureau's Master Address File (MAF)
- AHS
 - 2009 AHS National cases matched to the MAF
 - Single family units identified and linked from 2003 – 2011
 - Linked to RealtyTrac REO cases by MAFid
- Match Rates
 - Deterministic Match: Realty Trac – MAF
 - Probabilistic Match: AHS - MAF
 - Gross Match Rate (RealtyTrac – MAF): 77%
 - Net Match Rate (RealtyTrac – MAF): 82%
 - Single Family Match Rate (2009 AHS-MAF): 95%
- REO timing
 - Interview dates and REO recording dates used to determine timing of REO event in relation to data collection



Research questions

- Before the REO event
 - What types of housing units were most likely to experience future foreclosure?
 - What evidence is there for the dual trigger?
 - Personal: Cost burden
 - Demand: Vacancy, Underwater
 - Do policies and the regulatory context affect these outcomes?
- After the REO event
 - Do units maintain or return to occupancy?
 - Do local and state policies affect these outcomes?



Table 1: Tenure Share in Base Year by REO Status in Next Two Years, Single Family Units (weighted percentages)

Base Year	2005		2007		2009	
	Not REO	REO	Not REO	REO	Not REO	REO
Owner-occupied	80%	72%	78%	68%	77%	68%
Renter-occupied	11%	11%	11%	19%	12%	14%
Vacant	9%	17%	10%	13%	11%	18%
Total	100%	100%	100%	100%	100%	100%

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac, 2005, 2006, 2007, 2008, 2009, 2010, and 2011 Foreclosure Records.



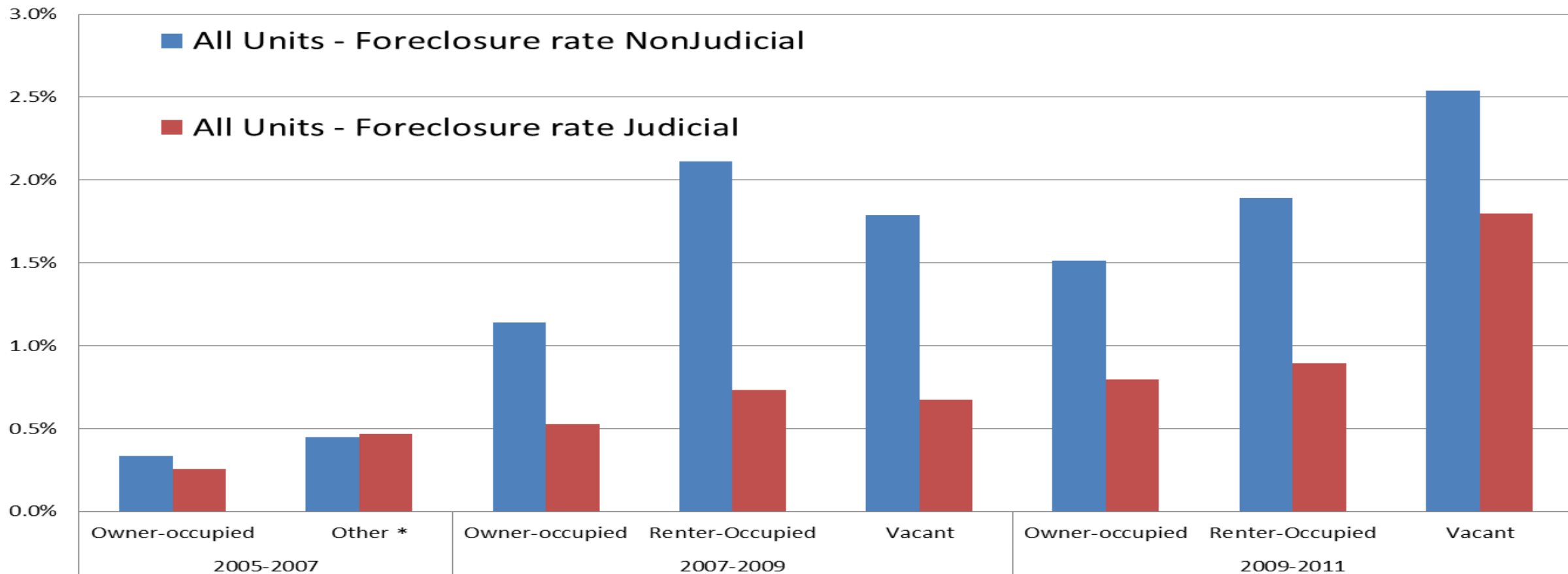
Table 2: REO Rate by Tenure and Vacancy Status in Base Year, Single Family Units (weighted percentages)

Base Year	2005			2007			2009		
Status	Not REO	REO	Total	Not REO	REO	Total	Not REO	REO	Total
Owner-occupied	99.7%	0.3%	100.0%	99.1%	0.9%	100.0%	98.8%	1.2%	100.0%
Renter-Occupied	99.7%	0.3%	100.0%	98.4%	1.6%	100.0%	98.5%	1.5%	100.0%
Vacant	99.4%	0.6%	100.0%	98.7%	1.3%	100.0%	97.8%	2.2%	100.0%

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac, 2005, 2006, 2007, 2008, 2009, 2010, and 2011 Foreclosure Records.



REO Rates by Initial Tenure and Judicial Foreclosure, by survey pairs



* in 2005 Rental and vacant collapsed due to small cell counts.

Source: U.S Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac, 2005, 2006, 2007, 2008, 2009, 2010, and 2011 Foreclosure Records.



Model 1: REO Status 2007-2009 by Tenure, Vacancy, Area, and Housing Characteristics, Single Family Units

Dependent Variable: REO0709 = 1

Independent Variables (in 2007):

Parameter	Odds Ratio	Pr>ChiSq
Intercept	0.01	<.0001
Renter-Occupied (vs. Owner-Occupied)	1.25	0.0545
Vacant (vs. Owner-Occupied)	1.13	0.3464
Judicial	0.63	<.0001
Metro	2.70	<.0001
Condo	1.18	0.522
Year Built (vs. Before 2001)		
2001-2007	1.29	0.0036
-2 Log Likelihood	8740567.1	
Likelihood Ratio	486477.038 (p<.0001)	
Degrees of Freedom	6	
Total Cases	28633	

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac, 2005, 2006, 2007, 2008, 2009, 2010, and 2011 Foreclosure Records



Model 2: REO Status 2007-2009 by Tenure, Area, Housing, Household, and Householder Characteristics, Occupied Single Family Units

Dependent Variable: REO0709 = 1

Independent Variables (in 2007):

Parameter	Odds Ratio	Pr > Chi Sq
Intercept	0.01	<.0001
Burdened Owner (vs. Not Burdened Owner)	1.57	0.0002
Burdened Renter (vs. Not Burdened Owner)	1.52	0.0113
Not Burdened Renter (vs. Not Burdened Owner)	0.66	0.0588
Judicial	0.64	<.0001
Metro	2.24	<.0001
Condo	1.27	0.1752
Year Built (vs. Before 2001)		
2001-2007	1.16	0.1083
Householder Characteristics		
Black Only (vs. Not Black)	1.42	0.0003
Hispanic (vs. Non-Hispanic)	1.56	<.0001
Married	0.95	0.5266
Age (vs. 62+)		
<35	1.97	<.0001
35-44	1.68	<.0001
45-61	1.07	0.593
-2 Log Likelihood	8465789	
Likelihood Ratio	785961.635 (p<.0001)	
Degrees of Freedom	13	
Total Cases	24832	

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac 2005, 2006, 2007, 2009, 2010, and 2011 Foreclosure Records.



Model 3a: REO Status 2007-2009 by Area, Housing, Household, and Householder Characteristics, Owner-Occupied Single Family Units with a Mortgage

Dependent Variable: REO0709 = 1

Independent Variables (in 2007):

Parameter	Odds Ratio	Pr > Chi Sq
Intercept	0.02	<.0001
VLI Owner* (vs. NVLI Owner)	1.14	0.2987
Judicial	0.65	<.0001
Metro	2.13	<.0001
Condo	1.35	0.1023
Year Built (vs. Before 2001)		
2001-2007	1.08	0.5054
Burden (Housing Costs over 30% of Household Income)		
Householder Characteristics		
Black Only (vs. Not Black)	1.50	0.0009
Hispanic (vs. Non-Hispanic)	1.81	<.0001
Married	0.82	0.0263
Age (vs. 62+)		
<35	1.80	0.0003
35-44	1.46	0.0122
45-61	0.94	0.6667
Negative Equity		
Underwater in 2007		
-2 Log Likelihood	4946243	
Likelihood Ratio	450949.577	
Degrees of Freedom	11	
Total Cases	13603	

*VLI (Very Low Income) is defined by HUD as less than or equal to 50% of Area Median Income.

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac 2005, 2006, 2007, 2009, 2010, and 2011 Foreclosure Records.



Model 3b: REO Status 2007-2009 by Area, Housing, Household, and Householder Characteristics, Owner-Occupied Single Family Units with a Mortgage

Dependent Variable: REO0709 = 1

Independent Variables (in 2007):

Parameter	Odds Ratio	Pr > Chi Sq
Intercept	0.02	<.0001
VLI Owner* (vs. NVLI Owner)	0.94	0.6418
Judicial	0.65	<.0001
Metro	2.05	0.0001
Condo	1.34	0.1216
Year Built (vs. Before 2001)		
2001-2007	1.04	0.6887
Burden (Housing Costs over 30% of Household Income)	1.52	<.0001
Householder Characteristics		
Black Only (vs. Not Black)	1.46	0.0025
Hispanic (vs. Non-Hispanic)	1.66	<.0001
Married	0.87	0.0997
Age (vs. 62+)		
<35	1.74	0.0005
35-44	1.48	0.0107
45-61	0.98	0.8722
Negative Equity		
Underwater in 2007	1.33	0.0585
-2 Log Likelihood	4869094	
Likelihood Ratio	52809.476 (p<.0001)	
Degrees of Freedom	13	
Total Cases	13603	

*VLI (Very Low Income) is defined by HUD as less than or equal to 50% of Area Median Income.

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac 2005, 2006, 2007, 2009, 2010, and 2011 Foreclosure Records.



Model 4: REO Status 2009-2011 by Tenure, Vacancy, Area, and Housing Characteristics, Single Family Units

Dependent Variable: REO0911 = 1

Independent Variables (in 2009):

Parameter	Odds Ratio	Pr>ChiSq
Intercept	0.01	<.0001
Renter-Occupied (vs. Owner-Occupied)	0.83	0.102
Vacant (vs. Owner-Occupied)	1.72	<.0001
Judicial	0.74	<.0001
Metro	1.87	<.0001
Condo	0.75	0.1199
Year Built (vs. Before 2001)		
2001-2009	1.24	0.0047
-2 Log Likelihood	11218198	
Likelihood Ratio	405809.240 (p<.0001)	
Degrees of Freedom	6	
Total Cases	28669	

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac, 2005, 2006, 2007, 2008, 2009, 2010, and 2011 Foreclosure Records



Model 5: REO Status 2009-2011 by Tenure, Area, Housing, Household, and Householder Characteristics, Occupied Single Family Units

Dependent Variable: REO0911 = 1

Independent Variables (in 2009):

Parameter	Odds Ratio	Pr > Chi Sq
Intercept	0.01	<.0001
Burdened Owner (vs. Not Burdened Owner)	1.90	<.0001
Burdened Renter (vs. Not Burdened Owner)	0.86	.3874
Not Burdened Renter (vs. Not Burdened Owner)	0.75	0.0678
Judicial	0.72	<.0001
Metro	1.44	0.0007
Condo	0.82	0.3642
Year Built (vs. Before 2001)		
2001-2009	1.08	0.3817
Householder Characteristics		
Black Only (vs. Not Black)	1.38	0.0004
Hispanic (vs. Non-Hispanic)	1.49	<.0001
Married	0.90	0.159
Age (vs. 62+)		
<35	1.86	<.0001
35-44	1.85	<.0001
45-61	0.92	0.4585
-2 Log Likelihood	7062009	
Likelihood Ratio	941372.502 (p<.0001)	
Degrees of Freedom	13	
Total Cases	24857	

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac 2005, 2006, 2007, 2009, 2010, and 2011 Foreclosure Records.



Model 6a: REO Status 2009-2011 by Area, Housing, Household, and Householder Characteristics, Owner-Occupied Single Family Units with the Mortgage

Dependent Variable: REO0911 = 1

Independent Variables (in 2009):

Parameter	Odds Ratio	Pr > Chi Sq
Intercept	0.03	<.0001
VLI Owner* (vs. NVLI Owner)	1.19	0.0942
Judicial	0.75	<.0001
Metro	1.37	0.0057
Condo	0.95	0.8229
Year Built (vs. Before 2001)		
2001-2009	1.01	0.9408
Burden (Housing Costs over 30% of Household Income)		
Householder Characteristics		
Black Only (vs. Not Black)	1.44	0.0005
Hispanic (vs. Non-Hispanic)	1.53	<.0001
Married	0.85	0.0463
Age (vs. 62+)		
<35	1.71	0.0013
35-44	1.45	0.0023
45-61	0.75	0.0243
Negative Equity		
Underwater in 2009		
-2 Log Likelihood	6208103	
Likelihood Ratio	338345.659 (p<.0001)	
Degrees of Freedom	11	
Total Cases	13431	

*VLI (Very Low Income) is defined by HUD as less than or equal to 50% of Area Median Income.

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac 2005, 2006, 2007, 2009, 2010, and 2011 Foreclosure Records.



Model 6b: REO Status 2009-2011 by Area, Housing, Household, and Householder Characteristics, Owner-Occupied Single Family Units with a Mortgage

Dependent Variable: REO0911 = 1

Independent Variables (in 2009):

Parameter	Odds Ratio	Pr > Chi Sq
Intercept	0.03	<.0001
VLI Owner (vs. NVLI Owner)	1.01	0.8944
Judicial	0.75	<.0001
Metro	1.33	0.013
Condo	0.88	0.5626
Year Built (vs. Before 2001)		
2001-2009	0.97	0.7558
Burden (Housing Costs over 30% of Household Income)	1.39	0.0002
Householder Characteristics		
Black Only (vs. Not Black)	1.38	0.0019
Hispanic (vs. Non-Hispanic)	1.37	0.0011
Married	0.88	0.1568
Age (vs. 62+)		
<35	1.59	0.0077
35-44	1.41	0.005
45-61	0.80	0.0935
Negative Equity		
Underwater in 2009	1.65	<.0001
-2 Log Likelihood	6022473	
Likelihood Ratio	523975.654 (p<.0001)	
Degrees of Freedom	13	
Total Cases	13431	

*VLI (Very Low Income) is defined by HUD as less than or equal to 50% of Area Median Income.

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac 2005, 2006, 2007, 2009, 2010, and 2011 Foreclosure Records.



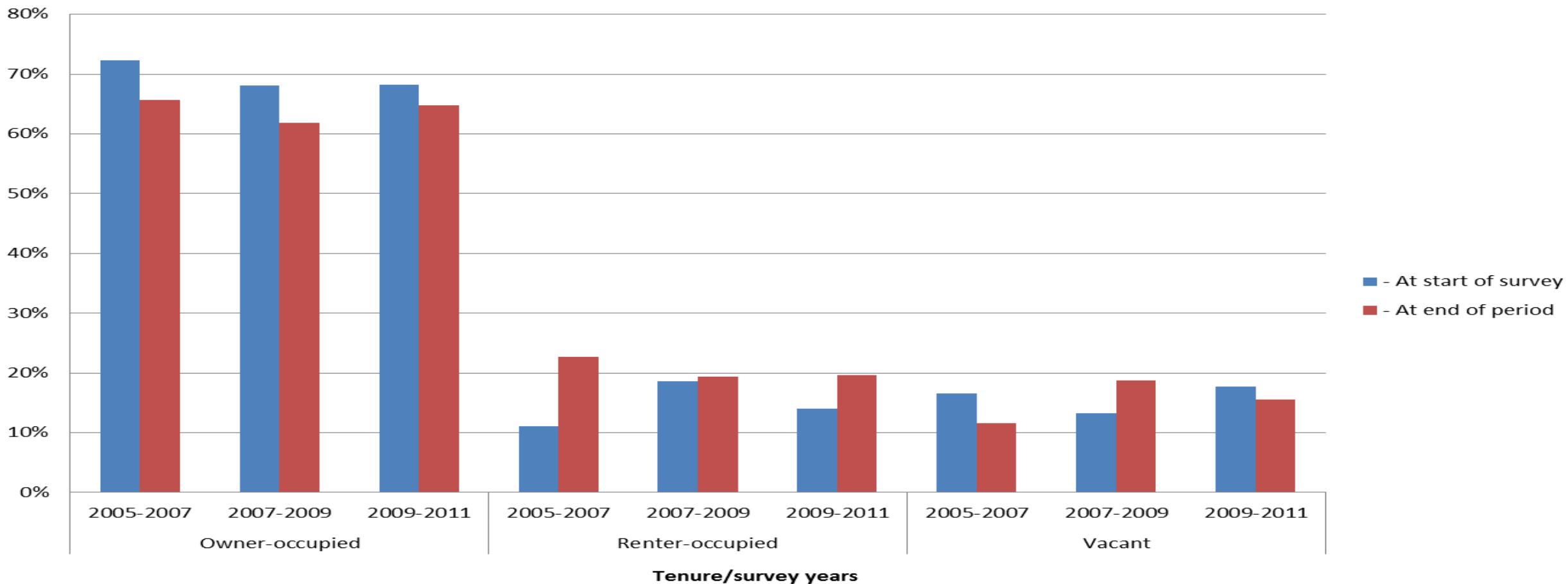
Table 3: Tenure Composition of Single Family Units Before and After Becoming REO (weighted percentages)

		2005	2007	2009	2011
All Units	Owner-occupied	80%	78%	77%	76%
	Renter-occupied	11%	11%	12%	13%
	Vacant	9%	10%	11%	11%
	Total	100%	100%	100%	100%
REO in Next Two Years	Owner-occupied	72%	68%	68%	NA
	Renter-occupied	11%	19%	14%	NA
	Vacant	17%	13%	18%	NA
	Total	100%	100%	100%	NA
REO in Previous Two Years	Owner-occupied	NA	66%	62%	65%
	Renter-occupied	NA	23%	19%	20%
	Vacant	NA	12%	19%	16%
	Total	NA	100%	100%	100%

Source: Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac, 2005, 2006, 2007, 2008, 2009, 2010, and 2011 Foreclosure Records.



Tenure Transitions for Units becoming REO Between Surveys



Source: U.S Census Bureau, U.S. Department of Housing and Urban Development, 2003, 2005, 2007, 2009, and 2011 American Housing Survey Internal Use and Public Use National Files; RealtyTrac, 2005, 2006, 2007, 2008, 2009, 2010, and 2011 Foreclosure Records.



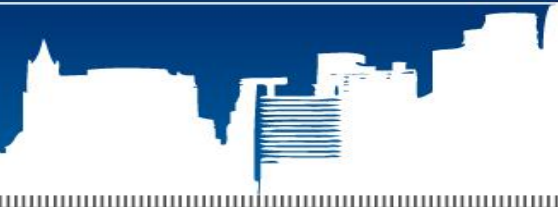
Concluding Thoughts

- Foreclosure crisis affected more than homeowners
 - Nearly a third of these single-unit properties that became REO in 2007-2009 and 2009-2011 had been renter-occupied or vacant prior to becoming REO
- Units generally maintained or regained occupancy after the REO
- Vacant units were much more likely to become REO than owner-occupied units in 2009 and a significant proportion of properties that experienced REO were vacant, pointing to the role played by a lack of demand for the unit.
- Changing signs and significance of renter-occupied variables over period point to strengthening of rental market
- For homeowners, housing burden and negative equity increased the likelihood of REO
- VLI owner-occupied units were not more likely to be REO after controlling for dual triggers
- Black, Hispanic, and Younger Householders were more likely to experience REO in our analysis
- REO events were less likely in judicial states in our analysis



Next Steps

- Mortgage Characteristics
- Upkeep
- REO Units on the Market
- Tenure Transitions
- Other Stages in the Foreclosure Process
- Time to REO



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