Real Estate Volatility and Mortgage Market Woes: An Analysis of Defaults and Foreclosures

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ABSTRACT

This research examines US mortgage defaults and foreclosures and how default and foreclosure relate to housing price changes and unemployment. State level data are examined to exploit the wide variation in economic and housing conditions across the country. In addition to examining the performance of all mortgage loans, prime and subprime mortgages are analyzed separately to assess differences in performance, as are fixed and variable rate mortgages.

Introduction

Based on historical performance, US consumers had an expectation that housing values would generally increase over time. The Freddie Mac House Price Index (FMHPI) shows an average annual increase in housing values of 5.6% for the period from 1980 through 2006. During this period, the index shows no annual drops in value for the US overall. From 2004 to 2006, US housing values increased at double digit rates, fueled by the low interest rate policies of the US Federal Reserve (Allen and Carletti, 2010). Archer and Smith (2011) argue that the large increases in value led to euphoria on the part of both lenders and borrowers. Some speculative mortgage loans were made and accepted on the assumption that a quick increase in value would soon allow for a profitable sale. Archer and Smith argue that failure to realize the anticipated profit led to a higher probability of default. Further exacerbating the situation, the period of strong growth in home values was followed by a period of falling home values from 2007 to 2012, wreaking havoc in the mortgage industry for both lenders and borrowers. On December 27, 2009, the Wall Street Journal reported that, according to First American CoreLogic, an estimated 5.3 million US households had mortgages with balances at least 20% higher than the value of their homes (Waller). And of those households, an estimated 2.2 million had mortgage balances at least twice the value of their homes. Figure 1 illustrates the timing and magnitude of the change in housing values and its relation to the mortgage problems. Underwater mortgages resulted in reduced mobility of the American workforce, which is particularly troublesome during periods of high unemployment.

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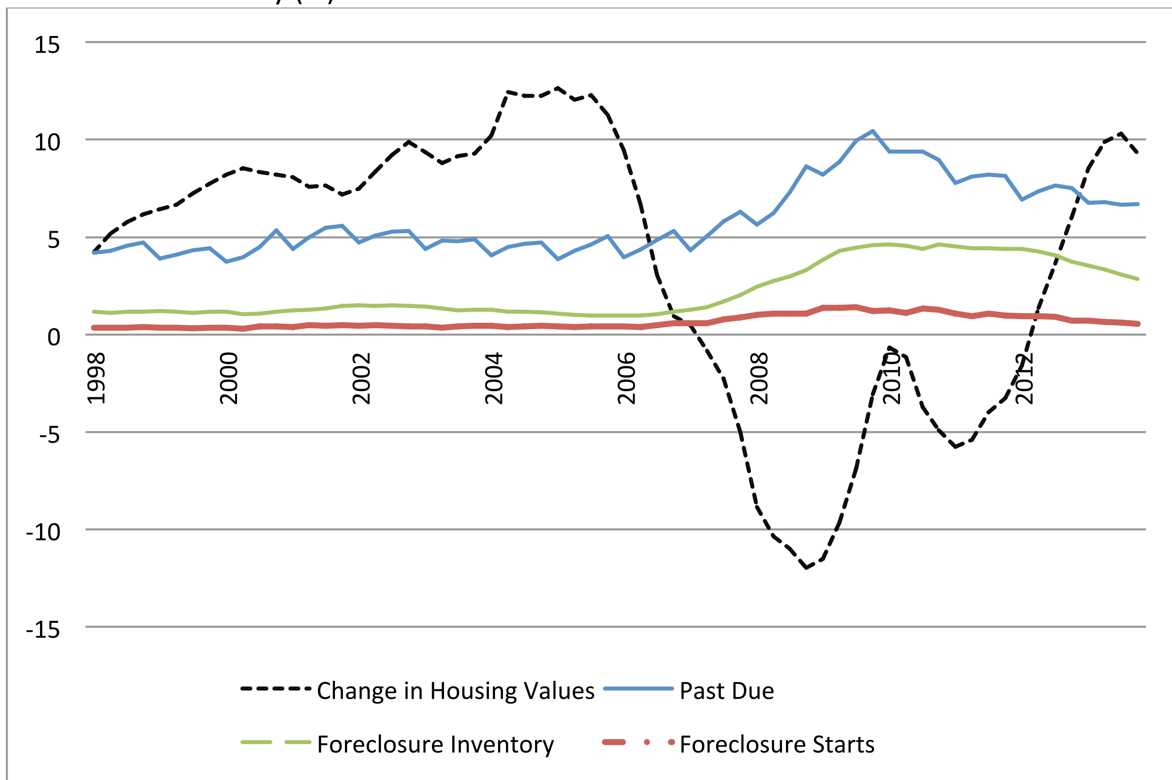
The large drop in home values, combined with the high unemployment and lower investment values associated with the Great Recession of 2008-2009, left a large portion of American households in much weaker financial positions. As a result, personal bankruptcy filings increased, as well as mortgage defaults and foreclosures. Edmonds, Stevenson and Swisher (2011) examine the relationship between state bankruptcy laws and mortgage defaults. They find evidence that is consistent with borrowers in non-recourse states engaging in strategic default at higher rates, while in states that allow the lender recourse bankruptcy rates are higher after controlling for other variables. Thus research shows that American households failed to meet their mortgage obligations at much higher rates during and immediately following the Great Recession of 2008-2009. This research will add to our understanding of the mortgage crisis by examining the performance of various types of mortgages in light of changes in housing values and economic variables.

Figure 1. Annual change in housing values, mortgages past due, foreclosure starts and foreclosure inventory (%)



Source: Freddie Mac and Mortgage Bankers Association

Data and Methods

The Mortgage Bankers Association collects data from its 2,200 member companies on the performance of various types of mortgage loans in the US. According to their data, 10.4% of US mortgages were past due in the fourth quarter of 2009 and foreclosure inventory peaked at 4.6% in the first quarter of 2010 (figure 1). The US data, however, fail to show the wide variation across the states. Table 1 reports descriptive statistics for mortgage performance across the states for the fourth quarter of each year from 1998 to 2013. The maximum

percentage of loans past due is 20.81%, reported in the fourth quarter of 2005 for Louisiana. The high level of past due loans followed Hurricane Katrina's devastating strike on the gulf coast on August 29, 2005. Aside from the problems related to Hurricane Katrina, the highest percentages of past due mortgages were in Nevada (14.92%) and Mississippi (14.69%) in the fourth quarter of 2009. The problems, however, were not limited to a few states, but were widespread. Overall, 19 states had past due loan levels that topped 10% during the time period examined, with most of the high levels occurring during 2009 and 2010. The mean and median percentage of past due loans for all states peaked in the fourth quarter of 2009 with 9.34% and 9.48%, respectively.

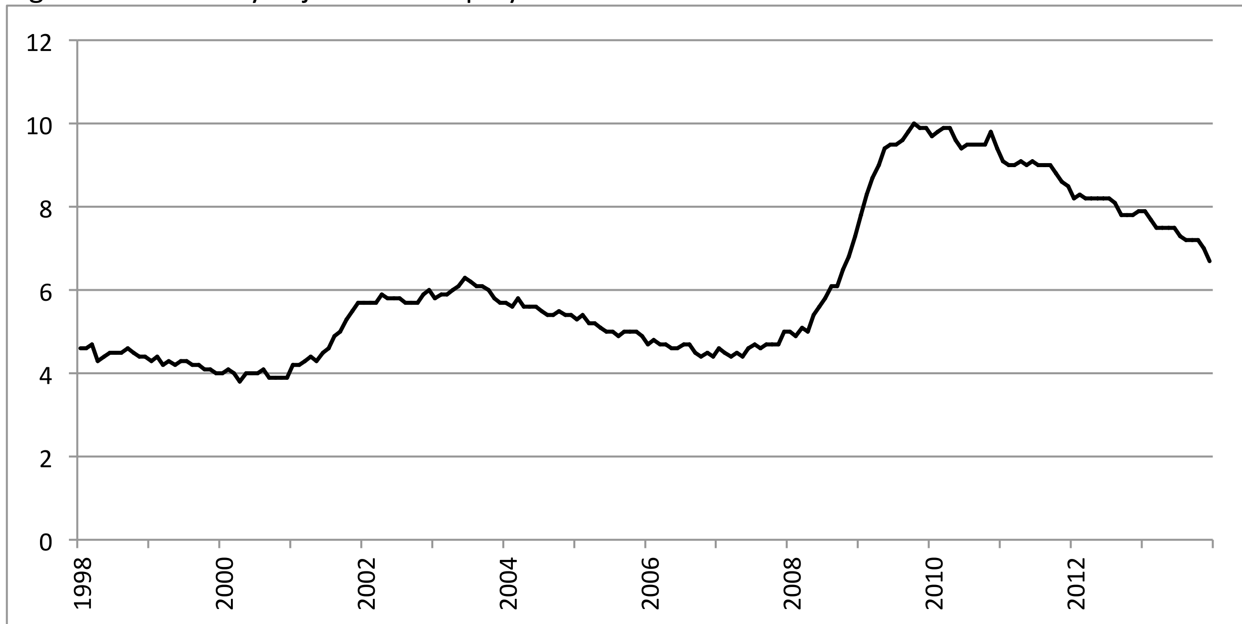
Table 1. Descriptive statistics for mortgage performance across the states for the fourth quarter of each year from 1998 to 2013

Year	Past Due				Foreclosure Starts				Foreclosure Inventory			
	Mean	Median	Max	Min	Mean	Median	Max	Min	Mean	Median	Max	Min
1998	4.45	4.46	6.98	2.57	0.34	0.35	0.78	0.13	1.02	0.93	2.69	0.40
1999	4.18	4.24	7.32	2.30	0.33	0.34	0.59	0.14	1.07	0.99	2.79	0.44
2000	5.11	5.11	8.20	2.83	0.41	0.39	0.80	0.18	1.09	1.03	2.00	0.41
2001	5.24	5.38	8.35	2.85	0.45	0.46	0.78	0.20	1.39	1.34	2.62	0.54
2002	5.08	5.22	7.73	2.63	0.41	0.43	0.64	0.18	1.39	1.37	2.92	0.52
2003	4.71	4.53	9.15	2.22	0.44	0.42	0.91	0.16	1.27	1.20	3.30	0.37
2004	4.53	4.08	9.18	2.07	0.44	0.40	0.94	0.13	1.14	1.07	3.40	0.23
2005	5.03	4.06	20.81	1.97	0.39	0.35	0.98	0.13	0.97	0.91	3.22	0.20
2006	5.06	4.52	10.64	2.40	0.52	0.53	1.06	0.20	1.14	1.05	3.38	0.34
2007	5.78	5.59	11.07	2.98	0.72	0.68	1.54	0.25	1.73	1.67	3.88	0.67
2008	7.67	7.75	13.11	3.56	0.88	0.82	2.65	0.30	2.50	2.17	8.95	0.72
2009	9.34	9.48	14.92	4.00	1.01	0.92	3.04	0.37	3.51	3.09	13.44	1.13
2010	8.17	8.49	13.51	3.36	1.12	1.03	2.96	0.44	3.71	3.30	14.21	1.08
2011	7.71	8.00	13.13	3.30	0.90	0.89	1.68	0.39	3.57	3.22	14.27	1.03
2012	7.21	7.76	12.59	2.87	0.64	0.63	1.34	0.26	3.17	2.68	12.15	0.64
2013	6.56	7.01	11.52	2.61	0.53	0.53	1.02	0.20	2.52	2.06	8.56	0.63

Source: Mortgage Bankers Association

The Great Recession of 2008-2009 led to an increase in unemployment, which reduced the ability of households to meet their financial obligations. In addition, unemployment remained stubbornly high following the recession despite efforts of the Federal Reserve to stimulate economic growth. Figure 2 shows that unemployment for the US peaked at 10% in October 2009, but persisted into 2012 at double digit levels for California and Rhode Island and into 2013 for Arizona.

Figure 2. Seasonally adjusted unemployment rate for the US



Hypotheses

This research will examine the factors that affect mortgage defaults and foreclosures by state, including changes in housing values and unemployment rates. We will also extend our analysis to analyze prime and subprime mortgages separately, as well as fixed and variable rate mortgages. We hypothesize that the probability of default and foreclosure will be positively related to the unemployment rate and negatively related to the change in housing values.

References

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Freddie Mac Home Price Index (FMHPI) retrieved from the Freddie Mac web site on September 29, 2014: www.freddiemac.com/finance/fmhpi/archive.html.

Mortgage Bankers Association database was obtained on May 15, 2014. For information, see www.mortgagebankers.org.