Reflections on the Foreclosure Crisis

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Until recently, a foreclosure on an owner-occupied home in the United States was a relatively rare event. According to data from the Mortgage Bankers Association (MBA), foreclosure proceedings were initiated on approximately 0.3 percent of all owner-occupied housing units with a mortgage in each quarter from 1979:Q1 through 2006:Q2 (figure 1). Since mid-year 2006, foreclosure proceedings have more than tripled and now occur at the rate of at least 1 percent per quarter.

To place these percentages in context, in the 27 1/2 year period between 1979 and mid-2006, a cumulative total of 7.5 million foreclosure proceedings had been initiated at a rate of 275,000 per year. In the 3 1/2 year period between mid-2006 and year-end 2009, 6 million foreclosure proceedings had been initiated, at a rate of 1.7 million per year, a more than 6-fold increase. The conditions for high foreclosure rates are in place for at least the next two years, suggesting that another 4 to 5 million owner-occupied homes will enter into foreclosure in 2010 and 2011.

What is a Foreclosure?

A house is seized by a mortgage lender in a foreclosure proceeding after three steps have occurred. First, the homeowner fails to make contractually obligated mortgage payments, a condition commonly known as default. If homeowners fail to make one or two monthly payments, they are known as 30- and 60-days delinquent, respectively. In many of these cases, the homeowner "self-cures" by making the missed payment(s) in full and paying an additional (contractually pre-specified) penalty. Once a homeowner misses three consecutive monthly payments, the homeowner is known as 90-days delinquent and the probability increases that the house will end up in foreclosure (Tanta 2007).

In the second step, the lender initiates foreclosure proceedings. This process varies by state and can take between 6 and 18 months to complete. In the third and final step, the court system assigns the ownership of the house back to the mortgage lender. In some states, after a foreclosure occurs lenders may try to obtain a "deficiency judgment," which implies that the foreclosed homeowner must compensate the lender in an amount equal to the difference between the value of the house after the foreclosure and the outstanding loan balance of the mortgage (Ghent and Kudlyak 2009).

What Factors Lead to Foreclosure?

We learn about the root causes of foreclosure by first exploring how foreclosure rates vary across places and over time. Figure 2 shows a graph of 90-day delinquency rates by state in the second quarter of 2009, when the 90-day delinquent rate ranged from 1 percent to 6.5 percent. Two variables explain almost three-quarters of the cross-sectional variation in delinquency rates across states: (1) the statewide unemployment rate in August 2009; and (2) the percentage change in house prices over the three-year period from 2006:Q2 to 2009:Q2.

Table 1 shows the highest and lowest five states in terms of foreclosure rates in 2009:Q2. The states with the steepest declines in house prices and highest unemployment rates have the highest percentage of seriously delinquent borrowers. The two states with the most disparate outcomes are Nevada and North Dakota. In Nevada, house prices fell almost 50 percent; the unemployment rate was 13.2 percent in August 2009; and the 90-day delinquency rate on mortgages was 6.5 percent. In North Dakota, homes appreciated by 11 percent; the unemployment rate was a low 4.3 percent; and the 90-day delinquency rate on mortgages was only 1.0 percent.

Table 1
Foreclosure Rates for the Bottom and Top Five States by 90-Day Delinquencies, 2009:Q2

State	% Change in House Prices, 2006:Q2-2009:Q2[a]	Unemployment Rate[b]	90-day Delinquency Rate[c]	Model Predicted 90-Day Delinquency Rate[d]
	(1)	(2)	(3)	(4)
Nevada	-46.1	13.2	6.5	5.9
Florida	-35.3	10.7	5.2	4.9
California	-40.9	12.2	5.0	5.5
Michigan	-20.5	15.2	4.9	5.0
Arizona	-33.8	9.1	4.9	4.5
Montana	6.5	6.6	1.5	1.9
Alaska	0.6	8.3	1.4	2.6
Wyoming	9.4	6.6	1.4	1.8
South Dakota	7.3	4.9	1.3	1.5
North Dakota	10.7	4.3	1.0	1.3

Notes:
a. House Price data from the Federal Housing Finance Agency purchase-only house price index.
b. Unemployment rate from the Bureau of Labor Statistics.
c. 90-day delinquency rate from 2009:Q2 MBA.
d. See notes to Figure 2 for details on the predicted 90-day delinquency rate.

Figure 3 shows the time-series patterns of the nationwide 90-day delinquency rate, the national unemployment rate less 4 percent, and an index of house prices commonly tracked called the Case-Shiller-Weiss (CSW) index. The vertical line on the graph at 2006:Q2 marks the height of the housing boom. Over the 2006:Q2 – 2007:Q4 period, nationwide 90-day delinquency rates started rising after house prices started to decline, despite relatively stable unemployment rates. During the recession, unemployment increased, house prices continued to fall, and the 90-day delinquency rate rose dramatically.

Both figures 2 and 3 suggest that foreclosures are associated with two "triggers"—falling house prices and rising unemployment rates. The double-trigger theory of foreclosures posits that the potential for a foreclosure is highest when (1) a homeowner is "under water," meaning the house is worth less than the outstanding loan balance of the mortgage (plus any applicable fees); and (2) the homeowner experiences a significant disruption to income, such as unemployment, divorce, or a health event. In addition to the aggregated state-level and nationwide data shown here, the double-trigger theory of foreclosures has been shown to fit foreclosure patterns in loan-level data sets as well (Foote, Gerardi, and Willen 2010).

The double-trigger theory suggests that being under water is a necessary condition for a foreclosure, because it means the homeowner cannot sell the house unless he or she is willing to write the mortgage holder a check at closing to make up the difference of the value of the house and the outstanding loan balance of the mortgage. Recent estimates by the First American Core Logic company suggest that more than 10.5 million properties—20 percent of all residential properties with mortgages—are currently under water. Many of these properties were purchased between 2005 and 2007.

Figure 4 shows that house prices have declined by 40 percent in nominal terms (50 percent after accounting for overall consumer price inflation) from the peak of the housing market in 2006:Q2 through the end of 2009. Standard underwriting calls for a homeowner to make a 20 percent down payment on a house. Given the decline in house prices, homeowners who bought at the peak of the market using a standard down payment are still approximately 33 percent under water. For example, if a homeowner buys a house for $100,000 with an $80,000 mortgage at origination and it then loses 40 percent of value, it is worth only $60,000. The house is now 33 percent under water ($80,000 - $60,000) / $60,000.

Most economists believe that being under water is not a sufficient condition to lead to a foreclosure, although there is some debate on this issue (Goodman et al. 2009; Foote et al. 2010). As long as the house value is not too far below the outstanding loan balance of the mortgage, there is a nontrivial probability that the house will appreciate such that its price will be greater than the mortgage in a reasonable amount of time, and this probability has value called "option value." Given this value, and given that foreclosure is costly for homeowners, economic theory suggests that many homeowners who are under water should not "optimally" default on their mortgage. In many cases, the available data support this prediction.

Once a homeowner is under water, however, the data suggest that an additional shock to a homeowner's income strongly increases the odds of foreclosure. To understand why, consider the experience of a homeowner who is under water and suddenly loses his or her main source of income due to unemployment or illness. In this case, the house is worth less than the mortgage, so the owner cannot sell or pull equity from the house; and, the homeowner has reduced income, so after depleting his or her savings, he or she cannot make the mortgage payment in full.

To illustrate the quantitative relevance of this point, table 2 shows state-level maximum unemployment benefits (UI) and average mortgage payments for the set of ten states shown in table 1. In many states, UI benefits are not large enough for a one-income family to make a full mortgage payment. In all states, the average mortgage payment consumes a sizeable percentage of monthly UI benefits, leaving little income for food, transportation, clothing, health care, and other essentials.

Table 2

Maximum Unemployment (UI) Benefits and Average Mortgage Payments

for the Bottom and Top Five States by 90-Day Delinquencies, 2009:Q2

State	Maximum Monthly UI benefits, 2009	Average Monthly Mortgage Payment, 2007[a]	Weekly Leftover Income
Nevada	$1,448	$1,722	X
Florida	$1,100	$1,510	X
California	$1,800	$2,326	X
Michigan	$1,460	$1,216	$61
Arizona	$960	$1,408	X
Montana	$1,628	$1,109	$130
Alaska	$1,480	$1,502	X
Wyoming	$1,548	$1,127	$105
South Dakota	$1,140	$982	$40
North Dakota	$1,540	$932	$152

Note: a. Authors' computations from data in the 2007 American Community Survey.

Should Foreclosures Be Prevented?

A foreclosure seems like a simple transfer of an asset (the house) from the current equity holder (the borrower) to the current debt holder (the mortgage holder), which occurs whenever the borrower defaults on a mortgage obligation. If a foreclosure is just a simple transfer of assets across agents in the economy, then a case can be made that society should not care about foreclosures, the same way that normal people typically do not care how many electric guitars trade hands on eBay in any given month.

However, a case can be made that foreclosures are an undesirable outcome for society in some cases. Many economists think that foreclosures have externalities, meaning people not directly involved in the foreclosure process bear costs every time a house enters foreclosure. For example, foreclosures are estimated to reduce the resale value of nearby homes (Lin, Rosenblatt, and Yao 2007). In addition, foreclosures are associated with other costs that may be socially undesirable, such as the well-being of children (Kingsley, Smith, and Price 2009).

Has the Government Prevented Foreclosures?

Since 2007, the federal government has established initiatives and put into place a set of policies to try to reduce foreclosures. One of the first of the major initiatives, called Hope for Homeowners, was established in the spring of 2008. This program tried to address the first trigger directly and reduce the number of homeowners who were under water by encouraging institutions and investors holding mortgages to "write down" principal on those mortgages until homeowners were no longer under water. Participation in the program by mortgage holders was voluntary, and the program was structured in such a way that few mortgage holders participated (Cordell et al. 2009). For example, only one person received assistance in the first six months of the program's launch (Arnold 2009).

In February 2009, the Obama administration announced another major initiative to reduce foreclosures, the Home Affordable Modification Program (HAMP) program, funded with $73 billion of TARP money. Implicit in the HAMP program is the notion that delinquencies and foreclosures have occurred because mortgages underwritten during the housing boom were often exotic, expensive, and ultimately unaffordable.

Until recently, HAMP's solution to reduce foreclosures was to modify the terms of these mortgages (by reducing the interest rate, extending the amortization period, and offering some forbearance) for the purposes of making the mortgage "affordable," meaning the mortgage payment would not exceed 31 percent of the borrower's income after the mortgage was modified. As originally written, the HAMP program did not require the mortgage lender to reduce any of the borrower's mortgage balance, and many unemployed did not qualify to receive a mortgage modification.

Figure 5 shows data from the Mortgage Bankers Association on 90-day delinquency rates for subprime adjustable-rate mortgages and prime fixed-rate mortgages over the 1998–2009 period. It is clear that subprime adjustable-rate mortgages are much more likely to be seriously delinquent than prime fixed-rate mortgages. These data might help explain why policy makers crafting the HAMP program have, until recently, focused on refinancing people out of exotic or expensive mortgages and into more conventional or less expensive mortgages as a method of reducing aggregate foreclosure rates.

These policy makers might have presumed that refinancing people from mortgages associated with high default rates to mortgages associated with low default rates would, by construction, reduce the overall default rate on all mortgages. There are two problems with this logic. First, people most likely to default are least likely to get a prime mortgage. This implies the mortgage choice at origination may be indicative of the underlying default risk of the borrower. In other words, defaults of subprime mortgages are high because, in some cases, subprime mortgage borrowers had high default risk and could only get a subprime mortgage.

Second, and more important, the recent data suggest that the majority of mortgages currently in default are not subprime mortgages (table 3). Given the current situation, it seems that a program designed to reduce foreclosures in the aggregate should focus on the inherent reasons that households with good mortgages or good credit are defaulting: the double-trigger theory.

Table 3

Breakdown of 90-Day Delinquent Loans by Mortgage Type, 2009:Q2

	All Loans	FHA+VA Loans	Subprime Loans**	Prime Loans
Total loans serviced	44,721,256	5,686,207	4,919,778	34,115,271
percent of total	X	13%	11%	76%
percent > 90 days past due	3.88%	4.74%	**12.00%**	**2.65%**
# Loans > 90 days past due*	1,735,185	269,803	590,373	904,055
percent of total > 90 days past due	X	16%	**34%**	**52%**

Notes: Data are from the Mortgage Bankers Association.

* Numbers do not add to total due to rounding. ** Refers to all subprime loans at fixed and variable rates.

Will We Have More Foreclosures?

Both foreclosure triggers are still in place. Unemployment rates are high, and the Congressional Budget Office (2010) is forecasting the national unemployment rate will remain above 9.0 percent in both 2010 and 2011. And, many homeowners are still under water. Assuming that house prices and housing rents will increase at the same rate over the next few years—not an unreasonable assumption given the behavior of historical rent and price data prior to 1996 (Davis, Lehnert, and Martin 2008)—then house prices should be expected to rise in nominal terms by somewhere between 1 and 2.5 percent per year for the next two years. Given the slow expected pace of house-price growth, many homes that are currently under water will continue to be under water in two years.

Against this gloomy backdrop, Congress and the Obama administration have taken steps recently to prevent more foreclosures. First, on March 26, the administration revised the HAMP program so that the recently unemployed will be offered between three and six months of payment reductions (forbearance). This adjustment to HAMP is in line with the recommendations of a well-known plan to reduce foreclosures, written by economists at the Federal Reserve Board and the Federal Reserve Bank of Boston, commonly called the Boston Fed plan (Foote et al. 2009). It is also similar to an existing plan in the State of Pennsylvania that makes loans to unemployed homeowners to enable them to pay their mortgage, called HEMAP. In addition, mortgage investors will be subsidized by the HAMP program for writing down principal when borrowers are under water.

Second, the Obama administration has set up a "Hardest-Hit" fund distributing $2.1 billion to state housing finance agencies in ten states with severe house price decline and high unemployment rates. The state agencies are free to design programs to reduce foreclosures, subject to some guidelines (Housing Finance Agency 2010).

My colleagues and I have worked on foreclosure relief policy and are hopeful these new initiatives—the modification to HAMP and the Hardest-Hit fund—might significantly reduce foreclosure activity over the next few years.

About the Author

Morris A. Davis is an associate professor in the department of real estate and urban land economics at the University of Wisconsin School of Business, and a fellow at the Lincoln Institute of Land Policy. He was one of the authors of the Wisconsin Unemployment and Foreclosure Relief Plan, which was designed to reduce foreclosure activity of the unemployed. He also maintains and updates the Lincoln Institute Web site database on Land and Property Values in the U.S. (http://www.lincolninst.edu/subcenters/land-values). Contact: mdavis@bus.wisc.edu

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Lin, Zhenguo, Eric Rosenblatt, and Vincent W. Yao. 2007. Spillover effects of foreclosures on neighborhood property values. *The Journal of Real Estate Finance and Economics* 38(4): 387–407.
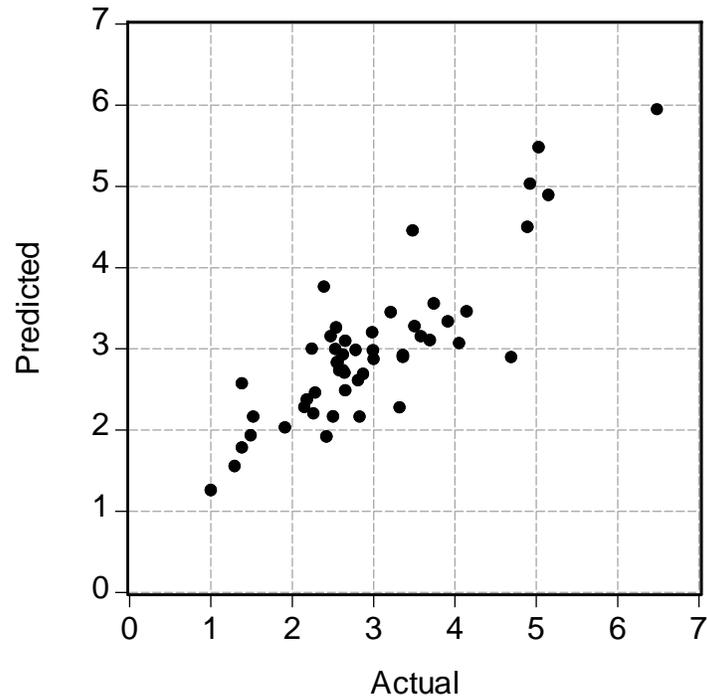
Tanta. 2007. Delinquencies and defaults for ubernerds. Calculated Risk Blog, July 6. www.calculatedriskblog.com/2007/07/delinquencies-and-defaults-for.html

Figure 1

Foreclosure Starts as a Percentage of All Mortgages, 1979:Q1 – 2009:Q4
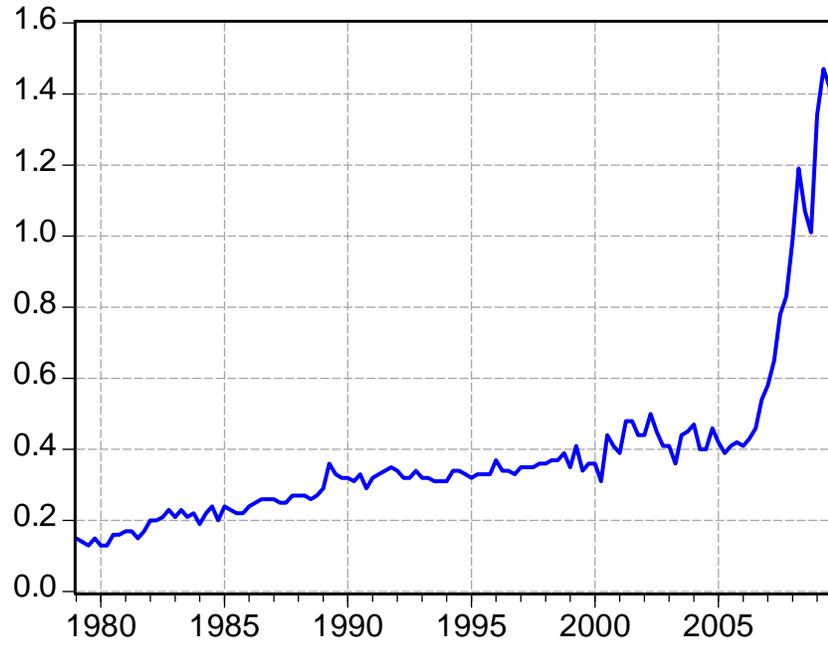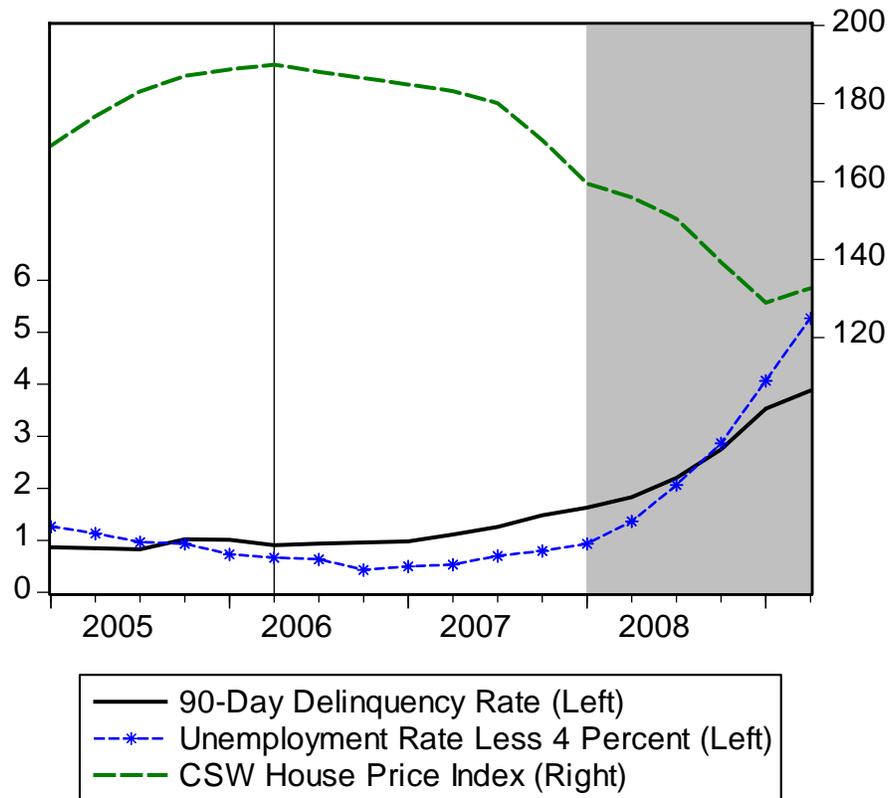

Note: Data are from the Mortgage Bankers Association.

Figure 2

Actual and Predicted 90-day Delinquency Rate by State, 2009:Q2

Note: Each dot represents one of the 50 states or the District of Columbia. "Actual" data are from the Mortgage Bankers Association. "Predicted" data are based on a simple regression of the statewide 90-day delinquency rate on a constant—the percentage change in house prices in that state from 2006:Q2 to 2009:Q2—and the state unemployment rate in August 2009. The R^2 of the regression is 0.73.

Figure 3

Nationwide 90-day Delinquency Rate, Unemployment Rate Less 4 Percentage Points, and the

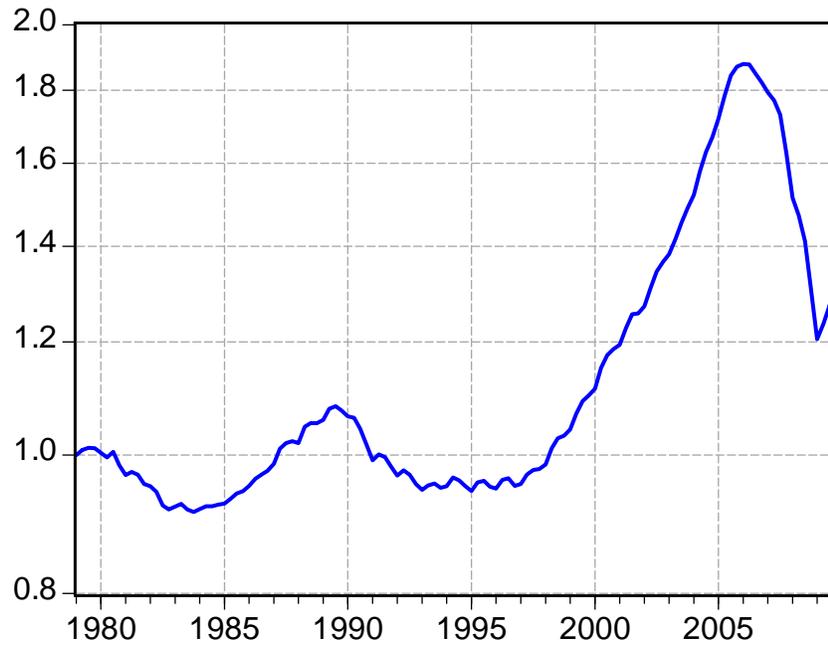Case-Shiller-Weiss (CSW) House Price Index, 2005:Q1 – 2009:Q2

Note: Data for the nationwide 90-day delinquency rate are from the Mortgage Bankers Association. The nationwide unemployment rate is from the Bureau of Labor Statistics. The CSW house price index is from Macromarkets, LLC.

Are more specific sources needed???

Note to graphic designer: add a gray shaded key labeled Period of Recession
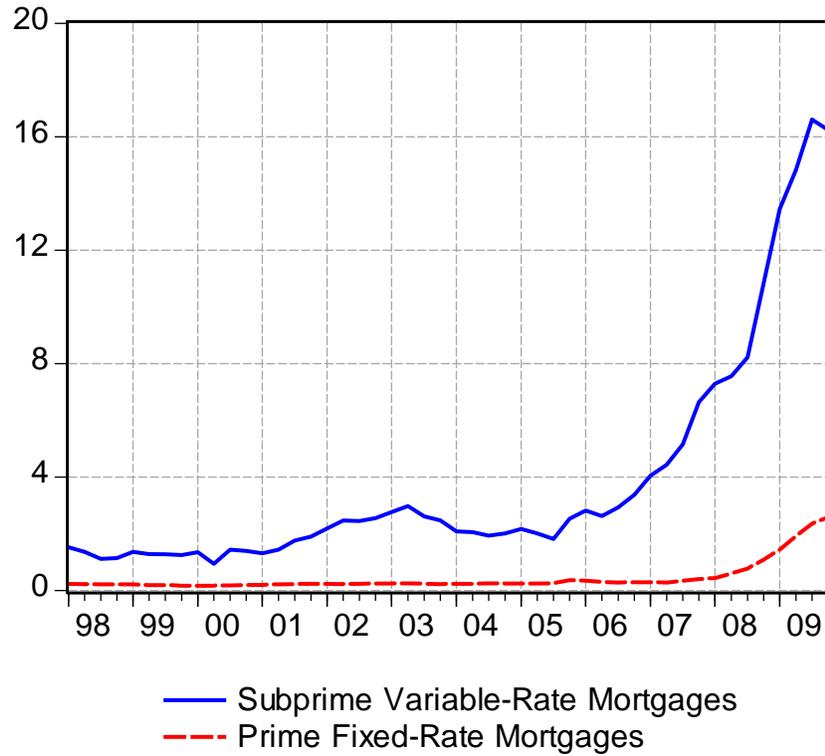
Figure 4

Index of Inflation-Adjusted House Prices for the United States, 1979:Q1 – 2009:Q4, Log Scale

Note: Nominal house price data are taken from the Federal Housing Finance Agency purchase-only house price index (1979:Q1–1986:Q4) and the Case-Shiller-Weiss (CSW) house price index (1987:Q1–2009:Q4). The consumer price index for consumption excluding food and energy is used to adjust nominal house prices for inflation. The CSW index is from Macromarkets, LLC. The consumer price index is from the Bureau or Economic Analysis.

Figure 5

Nationwide 90-day Delinquency Rates for

Subprime Variable-Rate Mortgages and Prime Fixed-Rate Mortgages,

1998:Q1 – 2009:Q4

Note: Data are from the Mortgage Bankers Association.