OFHEO WORKING PAPERS

Working Paper 04-1

The Value of Foreclosed Property: House Prices, Foreclosure Laws, and Appraisals

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January 2004

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December 2003

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Abstract

There are many factors that impact the value of foreclosed property. The simple fact that the property is foreclosed indicates that it will be sold at a substantial discount relative to similar properties. Loans that foreclose early in their life have the largest discounts. This discount is mitigated somewhat if the state allows deficiency judgments by lenders against borrowers. In contrast, the discount is larger if the property is being sold in a state that requires foreclosures to proceed through the judicial system. Lastly, there is indirect evidence that appraisals are more accurate for low down payment loans, leading to smaller discounts at foreclosure.

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Motivation

If the prices of homogeneous properties differ, arbitrage opportunities arise for opportunistic homebuyers and home-sellers. Theory suggests that arbitrage opportunities quickly dissipate and, thus, competition effectively eliminates price deviations and reinforces the market-clearing price.

In many markets, however, substantial variation in prices exists. While much of the variation may be the result of heterogeneity in the real estate itself, other factors beyond the location and attributes of the property may also affect its value.

For example, when a buyer or seller wants or needs to quickly buy or sell a home, the contract price will necessarily be affected. Deviations from a market or average price will occur when costs, both out of pocket and opportunity costs, for buyers and sellers occur.

Foreclosed properties, for example, frequently sell at a discount to the market price. Foreclosed homes may be vacant for a substantial time period before they can be sold as the legal process of foreclosure runs its course. During this period, the seller's opportunity costs of holding onto a foreclosed property increases because a property that should have been generating mortgage revenue, generates none. Until a legal decision has been rendered, the property may not be sold. Enterprising buyers actively seek foreclosed properties in hopes of obtaining a bargain, particularly at an auction. But, the process of foreclosure is different depending on the legal requirements in each state. This leads to spatial variation in the length of time it takes to complete the foreclosure process as well as variations in the value of the property.

This paper estimates the discount at which foreclosed properties sell relative to the market price or average price as reflected in housing indices such as the repeat sales

housing price indices. Repeat sales indices focus on the average growth of prices holding quality constant.

In addition, this paper discusses how to bridge the gap between the average price for a cohort of properties and the price for foreclosed properties. In general, the results show that foreclosed properties sell at a substantial discount and this discount is larger when foreclosure occurs early in the loan's life. The magnitude of the discount varies by the type of house, borrower and seller attributes, loan types, time and locations. Because local governments, not the federal government, define foreclosure laws, spatial variation in how long and how costly the foreclosure process is also has a substantial impact on the size of the discount.

Beyond the impact of legal costs, this paper looks for evidence that borrower and loan characteristics provide information on the value of foreclosed property. Any borrower who provides a small down payment can end up in a negative equity position even if prices only drop slightly thus increasing the likelihood of default and the magnitude of the losses on a default, if it occurs (For example see, Deng et al 2000, Pennington-Cross 2003, and Calem and LaCour-Little 2003). Since defaults and losses are sensitive to down payments, especially as they become small or even approach zero, lenders are likely to be sensitive to the accuracy of the appraisal in low down payment loans. For example, appraisers provide a variety of different types of appraisals ranging from full appraisals, which include a detailed inspection of the property, housing stock, neighborhood, and available comparables to drive-by appraisals and only electronic appraisals. If more accurate appraisal techniques are used on low equity loans then the value of foreclosed property should be higher for loans with smaller down payments.

In addition, the behavior of the homeowner prior to foreclosure (during ownership) may also have an affect on the value of the property. Not all homeowners are the same. Some will more aggressively maintain the property and others will allow it to depreciate over time through a lack of maintenance. This heterogeneity in maintenance practices will lead to different rates of house price appreciation and property value.

Alternatives to Foreclosure

Once a loan has defaulted, which is often defined as being 90 or more days delinquent, both the borrower and the lender still have many options available to them besides proceeding directly to foreclosure. For instance, the borrower can sell the home before foreclosure begins and pay off the mortgage, a pre-foreclosure sale. This is especially attractive if the homeowner has positive equity in the home and can cover the outstanding loan amount through sale of the property. Even in negative equity conditions lenders often allow a short-sale (transaction price is less than the unpaid balance on the loan), because the foreclosure process can take a long time and can be costly. Therefore, a short-sale should be especially attractive in states that require foreclosures to be processed in the state's judicial system.

While rarely used, another low cost option is for a new homebuyer to be found that is willing to assume the mortgage. In this case a new borrower, who presumably is identified as being more likely to make future payments than the current borrower, resumes payments. As is also true with a pre-foreclosure sale, the defaulted borrower has avoided a major deficiency on their credit history record and has reduced the cost of borrowing in the future. This is primarily a viable option when the outstanding mortgage is smaller than the value of the property.

When the value of the property is greater than the outstanding mortgage other options may be explored. One option is to modify the mortgage. The lender may reduce the interest rate on the loan, change the product type, or extend the term of the loans while capitalizing the delinquent payments into the new loan. The objective for the lender is to receive all the money owed while making the loan payments more affordable for the borrower, even if the borrower is in a negative equity position. Of course, the lender is betting or hoping that the borrower will be able to make the payments in the future, even though the borrower has failed in the past.

The borrower can also declare bankruptcy anytime during or before the foreclosure process. The foreclosure is stayed (cancelled or at least postponed) until lifted by the

bankruptcy court. The investor or lender can then file a motion for relief, which is typically granted if the outstanding mortgage is larger then the value of the house (negative equity) (Nemeth and Van Horn, 1994).

Another alternative for the borrower is to hand over the deed of the property to the lender. The lender then agrees not to proceed with the foreclosure. While the lender does end up owning the property and, therefore, must sell it, this approach typically reduces the time it takes to resolve the default and the expenses, relative to foreclosure. When the lender receives the deed or title it becomes responsible for any other issues attached to the title such as second liens, mechanics liens, or unpaid taxes. As a result, deeds in lieu of foreclosure are likely to include borrowers in better financial conditions or borrowers who are more concerned with the stigma of foreclosure and credit deficiencies.

Data

To examine the contributing factors to the foreclosure discount, a data set of over 12,000 sales of real estate are randomly sampled from two large secondary market institutions. The vast majority of the observations are foreclosures. 44 of the sales are identified in the data set as prepaid loans that are investor owned and sold. While it is unclear the exact status of these loans when the property was sold, these observations are going to be treated as deeds in lieu of foreclosure sales in the following analysis. The data include only single-family fixed rate mortgages that were originated from 1995 through 1999. Summary statistics of this data set appear in Table 1.

The percent growth of the foreclosed properties house price is denoted by $\%\Delta hp_{ist}$, where i indexes the property, s time between transactions, and t time. The $\%\Delta hpi_{ist}$ is the percent change in local area house prices from the origination date of the loan through sale as measured by the metropolitan area OFHEO repeat sale house price index. The difference between these two price growth variables ($\%\Delta hpi_{ist}$ - $\%\Delta hp_{ist}$) is the discount associated with being a foreclosed property. For instance, if prices for the foreclosed property went up 10 percent and metropolitan area prices went up 15 percent for the same

time period then the discount was 5 percent. Note that the average discount was 22 percent in the data.

Note that the average age of the loans at foreclosure in the data set was approximately 30 months or 2½ years and the maximum age is 57 months or 4¾ years in the sample. Therefore, the results of the paper should not be used to generalize foreclosure experience for longer-lived mortgages. In addition, since the analysis is limited to the mid and late 1990s, which was a period of strong economic growth, the results may not be applicable to more demanding economic environments.

To better understand the determinants of the relative appreciation or depreciation of properties, a multivariate model of foreclosed prices is postulated.

Determinants of Foreclosed House Prices

The data set contains no information on property attributes, beyond single family, but does list the purchase price at origination and the selling price for individual properties. The foreclosure discount, $\%\Delta hpi_{ist} - \%\Delta hp_{ist}$, may be functionally related to the arguments in Equation 1 (See specification III, in Table 2):

$$(\%\Delta hpi_{ist} - \%\Delta hp_{ist}) = \beta_A(A) + \beta_H(H) + \beta_L(L) + \beta_M(M) + \varepsilon_{ist} \quad (1)$$

Equation 1 suggests that discount may be viewed as a conditional random variable with its own distribution. Each capital letter represents a vector of potential explanatory variables. For instance, the discount may be directly related to the age of the loan at foreclosure (A), housing market conditions (H), legal issues (L), and other mortgage factors (M). ε_{ist} is an independently normally distributed error term with a constant variance that includes all other determinants of $(\%\Delta hpi_{ist} - \%\Delta hp_{ist})$ not classified elsewhere. Estimates of the parameters β_A, β_H, β_L, and β_M provide measures of how changes in the associated variables affect foreclosed property values.

To more fully explore the discount we examine three specifications of Equation 1. Specification I and Specification II constrain coefficient estimates (Specification I: $\beta_L = \beta_M = 0$, Specification II: $\beta_M = 0$).

Equation 1 assumes that the discount is conditional and piece-wise linearly dependent upon the age of the mortgage prior to foreclosure and other variables. Age is disaggregated into 11 cohorts.

To proxy for housing market conditions, house price increases for the area as a whole are used (*H*). If local house prices increase, it is expected that foreclosed properties will also experience an increase in prices, but not necessarily all of the area increase. If $\beta_H > 0$, foreclosed property price appreciation rates receive an additional discount when house price increase in general. The metropolitan area OFHEO repeat sales house price index is used to proxy for local area "average" or "market" house price appreciation rates ($\%\Delta hpi_{ist}$). In addition, a dummy variable ($\%\Delta hpi_{ist} < 0$) is added to indicate if prices have decreased. It is expected that in declining housing markets it may be more difficult to sell foreclosed property, leading to an additional discount.

Four variables are used to capture legal distinctions (*L*) between jurisdictions and types of foreclosure. $Judicial_i$ indicates that the loan exists in a state with a judicial foreclosure process. SRR_i indicates that the loan exists in a state where the borrower has the statutory right of redemption. DJ_i indicates that the loan exists in a state where the lender had the right to declare a deficiency judgment against the borrower. DIL_i indicates if the property was sold after being provided to the lender as a deed in lieu of foreclosure. See *Legal Issues* section below for more details and definitions.

Other mortgage related explanatory variables (*M*) might also impact the discount. If the characteristics of the borrower and the lender's identification of the risk characteristics of the borrower are related to or correlated with the propensity of the homeowner to maintain the property then property appreciation rates will also be affected. To test for this affect the spread at origination between the contract rate and the prevailing rate for

fixed rate mortgages ($sato_i$) is included. An individual unable to initially obtain a low rate mortgage may possess a lower propensity to behave responsibly with respect to other obligations, including a willingness to maintain the property values. Ltv_i is the loan to value ratio of the loan at origination and is included to test for any systematic relation between equity at origination (a risk proxy) and the accuracy of the transaction price, as discussed earlier. The *loan amount*$_i$ expressed in 100,000's of dollars and the *loan amount*$_i^2$ complete the list of variables contained in the data set that also appear in Equation 1.

Legal Issues (L)

There is substantial variation across the country in how states treat the rights of the borrowers and lenders during the foreclosure process. Capone (1996) and Pence (2003) provide a comprehensive summary of the variations in foreclosure state laws. Following Pence's (2003) definitions three foreclosure classifications are used in this paper: 1) twenty-one states require a judicial foreclosure process so that the lender must proceed through court to foreclose, while all other states allow a non-judicial procedure called power of sale which is typically simpler, cheaper and quicker; 2) nine states allow a statutory right of redemption so that up to a year after sale of the property the homeowner can redeem the property by paying the foreclosure price plus any foreclosure expenses; and 3) nine states allow a deficiency judgment to be used by the lender to collect any losses on a foreclosure from the borrower's other assets.

Foreclosure laws plainly affect the cost of foreclosing and the time it takes for the foreclosure process to be completed, but the effects on the selling price of the home are less transparent. However, in locations where the borrower has the right to buy back the home even after foreclosure and sale of the property to a new homeowner, one would expect the selling price of the property to be depressed, because the new owner cannot immediately obtain clear title on the property.[1]

[1] Note that while the redemption option exists in nine states, it is rarely exercised by the household (Capone 1996).

In addition, the requirement of a judicial foreclosure process may lower the resale price of the property because it is vacant or rented for a longer period of time, which should increase the opportunity cost of holding the property under the lender's ownership. However, this effect is probably smaller than the effects of the right of redemption, because the new owner of the property at least has a clean title. In addition, deficiency judgment provides more power to the lender and therefore may lead to a quicker resolution of the foreclosure process, providing less time for the property to deteriorate. Again, this effect should be much less important than the right of redemption in terms of house prices and the recovery from sale.

Previous research has focused on the relationship between how much of the outstanding balance on a loan is recovered and state foreclosure loans. For example, Wood (1997) finds evidence that Fannie Mae recovery rates are higher in right of redemption states and lower in deficiency judgment states, a counter-intuitive result. Overall, the econometric evidence of the relationship between foreclosure laws and recovery on sales is mixed (for example, Crawford and Rosenblatt (1995), Clauretie (1989), Ciochetti (1997), and Clauretie and Herzog (1990)).

Empirical Results

Ordinary least squares is used to estimate a model of the appreciation rate of property that has been foreclosed (from origination through sale of property following foreclosure or deed in lieu of foreclosure). Specification I includes the appreciation rate for the metropolitan area as a whole and a series of age indictors that provide a flexible parametric approach to identify the relationship between the discount and the age of the loan at foreclosure. All continuous variables are designed in the estimation data set as mean deleted. For example, the mean ltv is 0.93, therefore, each observation in the estimation data set has 0.93 subtracted from the observed ltv. As a result, in the estimation data set the mean of the mean deleted ltv is zero.

In specification I foreclosed properties only capture 89 percent of metropolitan area wide appreciation ($1-\beta_H$). Also note that in locations where prices have decreased specification

I indicates that they have lower discounts, but as more information on the loans type and legal environment are added the sign switches to positive. Using Specification I, loans that foreclose early and late in their lives have the largest discounts. All ten of the age indicator variables have large and statistically significant coefficients. To gauge the importance of age, consider an example where house prices have increased 50 percent for the metropolitan area as a whole. If the loan was 9 months old when foreclosed then the expected appreciation is 18.5 percent (0.5-0.11*0.5 - 0.26). There is a discount of 26 percentage points for the early foreclosure and 89 percent of the area wide appreciation rate is realized. For loans 15 to 19 months old and a 50 percent area appreciation rate the discount is 6 percentage points lower, leading to an expected appreciation rate of 24.5 percent (1-0.11*0.5-0.20).

Specification II introduces indicators of the legal rules that the foreclosure process operates under. Note that the when this information is added most other coefficients are stable except for the indicator that house prices have declined. The impacts of the foreclosure laws conform to prior expectations. The discount for selling foreclosed property is 3 percentage points higher when the foreclosure must use the judicial process. This is expected because the judicial process should take longer and should increase the opportunity cost for the lender. In contrast, loans that are in states where the borrower has a statutory right to redeem the property has a discount that is 3 to 4 percentage points higher. This result is as expected because the new owner of the property does not have a "clean" title until the period of redemption is concluded. States that allow deficiency judgments against defaulted borrowers experience lower discounts of 3 to 6 percentage points. Lastly, if the borrower avoids a foreclosure sale and instead trades the deed to the lender in exchange for not having the property foreclosed on, or a deed in lieu sale, the discount is 4 to 8 percentage points smaller.

Specification III introduces borrower and loan information. The coefficient estimates are again very stable. Loans with higher LTVs have lower discounts. This result likely reflects increased accuracy of the appraisal for loans with low down payments. For example, loans with small down payments are likely to require full appraisals, while

smaller down payment loans may require only a drive-by or electronic appraisal. If one of the jobs of an appraiser is to identify if the purchase price is below the appraisal amount when borrower equity is small, then high LTV loans will on average have lower initial purchase prices (relative to the average or market price) leading to higher average appreciation rates and smaller discounts if foreclosed.

The spread between the contract rate on the mortgage and the market rate at origination ($sato_i$) is also systematically associated with the discount of foreclosed properties. For example, if a home buyer is paying a rate of 10 percent when the prevailing market rate is 8 percent then the discount on a foreclosed property would be 7.4 percentage points higher than if the borrower paid the prevailing rate. This results may reflect the desire or ability of the borrower to maintain the property. Lastly, larger loans also have lower discounts until the loan amount reaches approximately $146,000. After this point the discount shrinks. This may reflect the higher transaction costs associated with selling a lower priced home.

Conclusion

Using data on over 12,000 foreclosed single-family property sales, the value of foreclosed property is found to be substantially less than the value of other similar property. The average price appreciation rate for foreclosed properties was 22 percentage points lower than for typical homes. By age of loan, the results indicate that the lowest discount, 20 percentage points, is associated with loans that lived approximately a year and a half and the highest discount is associated with longer lived loans and loans that were foreclosed very quickly.

In addition, while foreclosed properties are responsive to local area house prices, they do not capture all of the area wide appreciation. In addition, when local area house price are dropping the discount increases. The results of the paper also find indirect support for the existence of more accurate or careful appraisals (property valuation) when homeowner

equity is low. In addition, borrowers who are identified at application as higher risks also tend to own homes that sell at an even higher discount than typical foreclosed property.

State level foreclosure laws can also have impacts on the appreciation of foreclosed property. For instance, if a loan is foreclosed in a state that allows the borrower the right to redeem the property after paying the foreclosure expenses for up to a year after the foreclosure date the discount increases. But the impact of foreclosure laws is different for each type of law. For instance, if a state requires that the foreclosure proceed through the judicial system the discount also increases, but the discount is smaller in states that allow the lender to recoup any losses from other assets beyond just housing.

In summary, there are many factors that impact the value of foreclosed property. The simple fact that the borrower has defaulted indicates that it generally will be sold at a substantial discount relative to similar properties. This discount is mitigated somewhat if the state allows deficiency judgments by lenders against borrowers. In contrast, the discount is increased if the property is being sold in a state that allows statuary right of redemption. Lastly, foreclosed properties tend to follow the movement of house prices in the area but in a muted fashion. For instance, if house prices in general increase by 100 percent then the sale price of foreclosed property will increase by 89 percent plus any other discounts discussed above. Therefore, the discount becomes larger the more prices have increased.

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Table 1: Summary Statistics

Variable	Mean	Std Dev	Minimum	Maximum
$\%\Delta hpi_{ist} - \%\Delta hp_{ist}$	0.22	0.19	-1.29	1.24
age_{it}	30.26	10.81	4	57
$age_{it} \leq 10$	0.03	0.17	0	1
$10 < age_{it} \leq 15$	0.07	0.25	0	1
$15 < age_{it} \leq 20$	0.11	0.31	0	1
$20 < age_{it} \leq 25$	0.15	0.35	0	1
$25 < age_{it} \leq 30$	0.16	0.37	0	1
$30 < age_{it} \leq 35$	0.16	0.37	0	1
$35 < age_{it} \leq 40$	0.14	0.35	0	1
$40 < age_{it} \leq 45$	0.10	0.30	0	1
$45 < age_{it} \leq 50$	0.06	0.24	0	1
$age_{it} > 50$	0.03	0.16	0	1
$\%\Delta hpi_{ist}$	0.10	0.06	-0.17	0.44
$\%\Delta hpi_{ist} < 0$	0.05	0.21	0	1
$Judicial_i$	0.42	0.49	0	1
SRR_i	0.06	0.23	0	1
DJ_i	0.27	0.44	0	1
DIL_i	0.00	0.06	0	1
ltv_i	0.93	0.05	0.36	1.00
$sato_i$	0.06	0.05	-0.42	0.35
loan $amount_i$	0.97	0.44	0.16	3.05
$(\text{loan amount}_i)^2$	1.12	0.97	0.03	9.28
Number of Observations	12,280			

$\%\Delta hpi$ is the fractional change in house prices from the origination date of the loan through the foreclosure date as measured by the OFHEO repeat sale house price index (hpi), $\%\Delta hp$ is the fractional change is the value of the house from loan origination through foreclosure sale, $\%\Delta hpi_{ist} < 1$ is a dummy variable indicating that the hpi has decreased, age is the age of the loan at foreclosure in months, Judicial indicates that the loan exists in a state with a judicial foreclosure process, SRR indicates that the loan exists in a state where the borrower has the statutory right of redemption, DJ indicates that the loan exists in a state where the lender had the right to declare a deficient judgment against the borrower, DIL indicates that the loan was exchanged in lieu of foreclosure and sold, ltv is the loan to value ration of the loan at origination, sato is the spread at origination between the contract interest rate and the market interest rate on the loan divided by 10, and loan amount expressed in 100,000's of dollars. In the estimation all continuous variables are mean deleted (actual value-mean value), so that the mean value during estimation is zero.

Table 2: Results

	Spec I		Spec II		Spec III	
Variable	Coef	T-stat	Coef	T-stat	Coef	T-stat
$age_{it} \leq 10$	0.26	25.78	0.27	26.52	0.26	26.72
$10 < age_{it} \leq 15$	0.22	31.39	0.22	31.02	0.21	30.39
$15 < age_{it} \leq 20$	0.20	37.97	0.21	36.57	0.20	37.13
$20 < age_{it} \leq 25$	0.21	45.80	0.21	41.47	0.21	41.95
$25 < age_{it} \leq 30$	0.21	49.52	0.21	43.34	0.21	43.87
$30 < age_{it} \leq 35$	0.22	51.30	0.22	43.88	0.21	44.76
$35 < age_{it} \leq 40$	0.22	47.40	0.21	41.04	0.21	42.32
$40 < age_{it} \leq 45$	0.22	41.08	0.22	36.76	0.21	37.07
$45 < age_{it} \leq 50$	0.25	35.60	0.25	32.87	0.24	32.80
$age_{it} > 50$	0.24	23.00	0.24	22.29	0.23	22.11
$\%\Delta hpi_{it}$	0.11	3.29	0.15	4.27	0.11	3.09
$\%\Delta hpi_{ist} < 0$	-0.02	-1.93	0.03	2.81	0.03	3.27
$Judicial_i$			0.03	6.94	0.03	6.57
SRR_i			0.04	4.97	0.03	3.93
DJ_i			-0.06	-13.79	-0.03	-7.06
DIL_i			-0.08	-2.72	-0.04	-1.53
ltv_i					-0.25	-8.47
$sato_i$					0.37	11.43
$loan\ amount_i$					-0.35	-22.06
$(loan\ amount_i)^2$					0.12	16.64
Adjusted R^2	0.5790		0.5953		0.6318	

The dependant variable ($\%\Delta hpi_{ist}$ - $\%\Delta hp_{ist}$) is defined as the difference between percent change is the value of the house prices in the location and the percent change in the foreclosed property from loan origination through sale. This can be interpreted as the discount associated with foreclosed property. All continuous variables are mean deleted (actual value-mean value), so that the mean value during estimation is zero.