Examining REO Sales and Price Discounts in Massachusetts[1]

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Between 2005 and 2009, home sales prices[2] and volume[3] declined by 27 percent, new housing construction dropped by 71 percent,[4] and the rate of foreclosure inventory[5] quadrupled. Given these statistics of a weak housing market, it is not too surprising that close to half of the adults surveyed in the Northeast United States expect a 50 percent or more price discount for a foreclosed property.[6] Even the federal Neighborhood Stabilization Program assumes the availability of a significant price discount for foreclosed properties.[7] While potential buyers have high expectations of discounts, sellers may be hesitant to concede. The underlying questions for the seller are whether to discount a distressed property at all and, if so, by how much. So how much of a discount is really occurring in the current market, and is the level of any price discount associated with the type of property and factors like neighborhood and sales characteristics? This article explores these questions by examining distressed properties in Massachusetts, in particular, bank-repossessed houses, also known as real-estate-owned (REO) properties.[8] These questions, and their answers, are important because many municipalities and nonprofits (as well as private buyers) are trying to negotiate with sellers for the appropriate price for properties.

This article begins with a brief review of the literature on distressed property sales and the limitations of traditional valuation methods. It moves on to describe the terminology and the dataset used in this study. Following a section that describes overall trends in REO sales in Massachusetts, the article then analyzes factors associated with price discounts of REO sales. It closes by discussing policy implications and future research.

What Does Prior Research Tell Us?

The most relevant literature, of which there is rather little, discusses two issues: the sale price discounts of distressed properties and the limitations of applying the traditional residential valuation mechanism on distressed properties.

Many previous studies define the discount as the sale price difference between foreclosure sales and nonforeclosure sales; this definition is related to, but different from, the price differential used in this analysis, as explained in more details in the next section. Table 1 summarizes the key findings from these prior studies. Many of these studies find significant sale discounts in the range of 20 percent. However, recent research argues that the previous research has omitted important variables (such as property conditions), has other methodological shortcomings, and likely exaggerates the level of price discount.[9] The more recent research generally concludes a discount in the 10–20 percent range.

Standard economic reasoning fosters skepticism about deep discounts of distressed property sales. Wouldn't speculators rush to take advantage, bidding up the price to erase the discount? Countering this line of reasoning, Harding et al. argue that economic rationale could also support significant discounts due to[10]

- significant repair cost on foreclosed properties
- the seller's weak bargaining position in a weak market

Table 1
Prior Research on Price Discounts of Foreclosed Properties
(in order of publication date, most recent first)

Authors	Study Market	Study Period	Estimated Price Discounts
Harding, Rosenblatt, Yao[11]	Atlanta, GA; Columbus, OH; Las Vegas, NV; Los Angeles, CA	1990 – 2008	–1% in Las Vegas, –11% in Los Angeles, –14% in Atlanta, and –21% in Columbus
Clauretie and Daneshvary[12]	Las Vegas, NV	2004 – 2007	–7.8%
Campbell, Giglio, Pathak[13]	Massachusetts	1987 – 2008	–21.6% to –47.2% depends on the length of properties' time on market[14]
Chau and Ng[15]	Hong Kong, China	1996 – 2000	–1% to –10% depends on whether the sale happens in an up or down market
Pennington-Cross[16]	U.S.	1995 – 1999	–22% on average, but sensitive to housing conditions, legal constraints, and loan characteristics
Carroll, Clauretie, Neil[17]	Las Vegas, NV	1990 – 1993	No statistically significant discounts
Springer[18]	Arlington, TX	1989 – 1993	–4% to –6%
Hardin and Wolverton[19]	Phoenix, AZ	1993 – 1994	–22%
Forgey, Rutherfold, VanBuskirk[20]	Arlington, TX	1991 – 1993	–23%
Shilling, Benjamin, Sirmans[21]	Baton Rouge, LA	1985	–24%

- higher risk premium on foreclosed properties
- stigma discount of foreclosure.

Second, can traditional residential valuation mechanisms even reliably appraise distressed properties? One researcher argues that the traditional valuation system is retrospective in nature, and therefore inappropriate and unreliable for valuing distressed properties in the current crisis;[22] the system relies on the assumptions of stable, liquid, open, and competitive markets; complete information; no compulsion to sell or buy; customary marketing periods; and availability of recent comparable sales. But in our current circumstances, there is a large and growing inventory of unsold distressed properties coupled with thin transactions in the market, a rapid and continuing house price decline, and market comparables reflecting previous "bubble" pricing. Other studies concur, further finding that appraisers, even those with more experience and higher reputation risk, tend to produce greater appraisal errors on foreclosed properties than on other types of properties.[23]

The Massachusetts REO Dataset

This article focuses particularly on the REO sale price differential, which is the difference between an REO property's foreclosure auction price and its subsequent REO sale price.[24] This definition of REO sale price differential is *not* the same as the price difference between REO sales and comparable normal sales, which was the focus of some previous studies. The sale price differential is not necessarily a discount. About 10 percent of the REO sales included in this article have higher REO sale prices than their foreclosure auction prices and thus a *positive* price differential.

This article uses the Massachusetts registry of deeds property transaction data and assessor's data, which are digitized by the Warren Group,

a private real estate information company. Some deed offices and the Warren Group have manually identified REO sales in the dataset, but not very consistently. Using a mathematical and logical process, this analysis recaptures omitted REO sales in the dataset.[25] Of the 3,300 REO sales included in this study, only about 55 percent were originally identified as REOs in the Warren Group dataset.

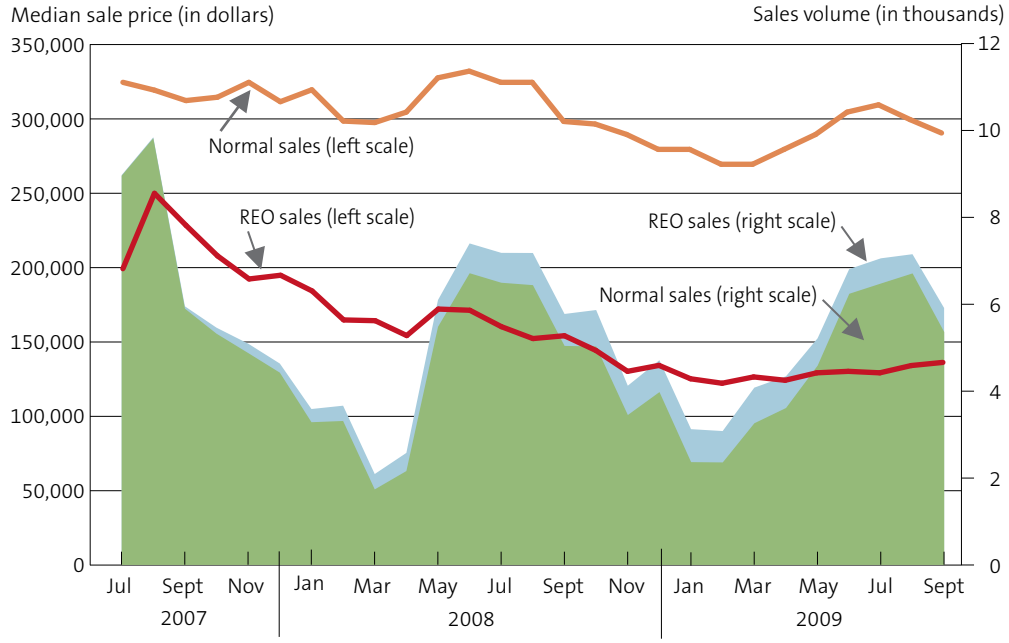
For this analysis, only those properties that entered REO status between June 2007 and May 2008 are included. The 2007 start date is used to focus on the current market trend in the crisis, while the May 2008 end date allows properties sufficient time (less than five quarters) to go through the resale process.[26] Prior research indicates that about 85 percent of Massachusetts's REO properties were resold within five quarters of entering the REO status.[27]

Comparing REO and Normal Sales and Prices

How do REO sales differ from normal sales? Figure 1 compares the sales volume and median sales price of all REO and all "normal" sales between July 2007 and September 2009. Normal sales exclude foreclosure, REO, or nominal sales.[28] While the volume of normal sales displays typical seasonality fluctuation, REO sales volume remains relatively unchanged since mid-2008. Similarly, the median price of normal sales has declined modestly with seasonality fluctuation; but the median price of REO sales has declined more noticeably initially but with almost no obvious seasonality fluctuation later on. This suggests that the REO and the normal market may behave differently in the current housing cycle, possibly due to differences in the expectations of buyers and sellers, and/or supplies and demands in these two markets.

Table 2 further illustrates that property, neighborhood, sales, and mortgage characteristics are indeed quite different between REO sales and normal sales. In general, properties in REO sales tend to be older homes with slightly larger living areas, more bedrooms and full bathrooms, but smaller lot sizes. This apparent contradiction between larger living areas and smaller

Figure 1
Median Prices and Volumes of REO and Normal Sales



Source: Author's calculations based on the Warren Group raw data.

Table 2
Profiles of REO and Normal Home Sales

	Mean			Median	
	REO sales	Normal sales	Difference	REO sales	Normal sales
Property characteristics					
Lot size (sq ft)	15,260	33,079	–17,819	6,893	13,504
Living area size (sq ft)	1,857	1,705	153	1,597	1,490
Number of buildings on lot	1.003	1.027	–0.023	1	1
Number of bedrooms	3.845	3.215	0.630	3	3
Number of full bathrooms	2.365	2.24	0.125	2	2
Age of property at sale	75.502	58.214	17.288	83	50
Neighborhood characteristics					
% minorities in tract	31.00%	15.70%	15.3%	19.70%	8.00%
% people in urban tracts	94.54%	94.41%	0.13%	100%	100%
Median household income	$44,138	$59,749	–$15,610	$42,107	$56,365
% home sales price change in tract (2006–2009)	–32.10%	–16.20%	–15.9%	–32.40%	–16.50%
% high-cost highly leveraged mortgages	0.15%	0.08%	0.078%	0.14%	0.06%
Sale and mortgage history					
Days since last normal sale	1,757	3,112	–1,354	1,280	2,016
Days since last mortgage/refinance	1,087	1,288	–200	1,019	1,121

All differences are statistically significant at 1%, except "% people in urban tracts"

lot sizes is mainly attributable to about 33 percent of the REO sales being small multifamily structures (two to four units) as opposed to less than 8 percent in normal sales.[29]

How do REO sales and prices differ by property and neighborhood type? In terms of neighborhood characteristics, REO sales are more likely to be located in neighborhoods with a high percentage of minorities, a lower median household income, a significant decline in recent median home sales prices, and a higher concentration of high-cost, highly leveraged mortgages.[30] This makes sense, as other research reveals that neighborhoods with such characteristics tend to have a higher concentration of foreclosures, which are often precursors to REO sales.[31]

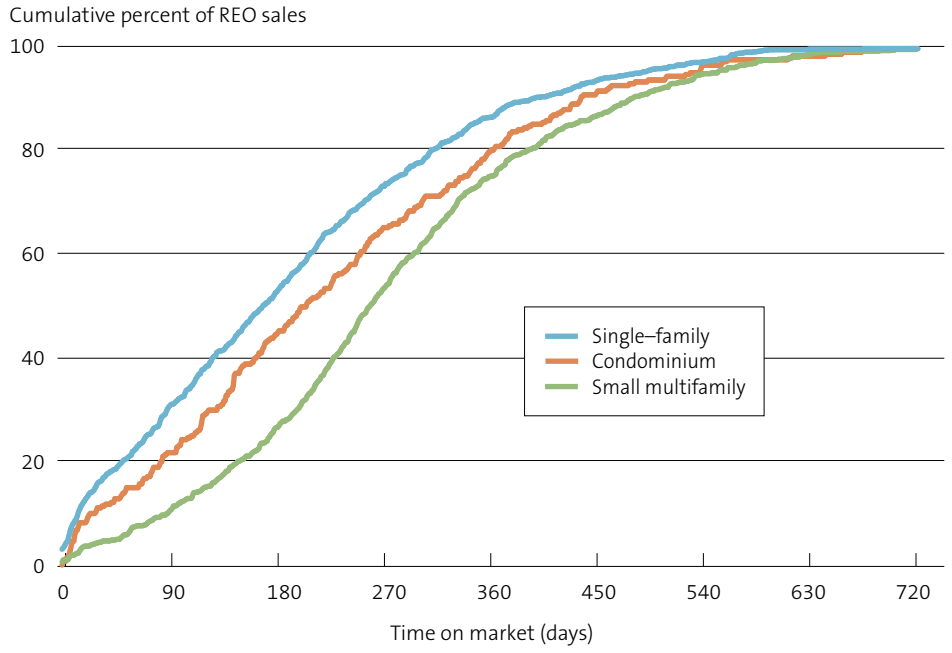
Small multifamily structures merit special attention as they accounted for 23 percent of Massachusetts's housing stock and 33 percent

of its REO sales.[32] Figure 2 reveals that their REO sales experience is also noticeably longer than that of single-family properties and condominiums in terms of time on the market.[33] The median time on the market for small multifamily (262 days) is more than 50 percent longer than that of single-family properties (171 days). This gap is more conspicuous immediately after the foreclosure sale, narrowing later, suggesting that small multifamily REO properties may have more difficulties in attracting buyers initially, possibly because of factors like higher upfront financial commitment and higher risk. From the community perspective, longer time on the market for small multifamily structures means that they exert negative effects on communities for a longer period of time, delaying the recovery in communities with a high concentration of these properties.

Figure 3 shows the REO sale price differentials by property type. As expected, most properties, regardless of their type, sell for a discount (the distribution is skewed left). This figure also reveals that small multifamily REOs are more likely to experience greater price discounts than single-family and condominium REOs. The median sale price differentials for small multifamily, single-family, and condominium REOs are –40.6 percent, –19.9 percent, and –29.2 percent, respectively.

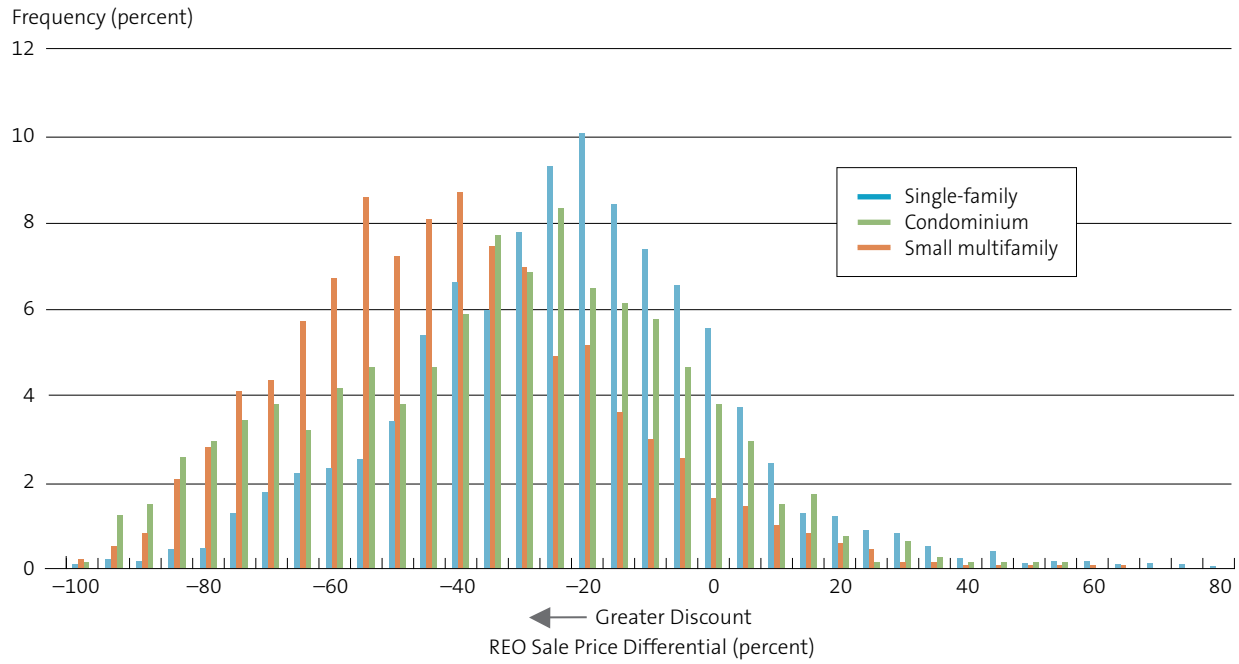
Figure 4 further illustrates that REO sale price differentials are associated with various neighborhood characteristics, including the percent of home sales that are REO sales, median household income, the percent of racial or ethnic minorities in the tract, and the percent of high-cost mortgages. Two sets of lines are used in the chart to examine the experiences of different types of neighborhoods. The solid lines represent the experience of neighborhoods with a higher likelihood of foreclosure and the dashed lines represent the experience of neighborhoods with a lower likelihood of foreclosure.[34] Quite clearly, REO sales in neighborhoods with high foreclosure likelihood (high share of REOs, high share of high-cost loans, high share

Figure 2
Time on Market of REO Sales
(Massachusetts properties that entered REO status in 2007)



Note: Time on market is defined as the number of days between foreclosure sale and REO sale.
Source: Author's calculations based on the Warren Group raw data.

Figure 3
Distribution of REO Sale Price Differential
By property type



Source: Author's calculations based on the Warren Group raw data.

of minority population, and lower income) command greater discounts. It is strikingly evident that these eight distributions cluster into two shapes, one for lines representing characteristics of high foreclosure likelihood and the other for low likelihood. This is mostly because that these variables are highly correlated with each other, a phenomenon stemmed from the fact that high-cost mortgages were more common in racial minority and lower-income neighborhoods.[35]

The Facts about REO Discounts

This section summarizes the results of applying several regression models to analyze factors related to the REO price differential.[36] Major findings include:

- Steeper price discounts for REO properties were associated with certain neighborhood characteristics. Specifically, lower household incomes, a higher share of minorities, and steeper overall house-price declines saw comparatively lower prices for REO sales.
- An REO property's sale price differential is negatively associated with its time on the market. REOs show little evidence of seasonality in sales trends.
- Using a composite model that controls for property, neighborhood, and sales characteristics, it reveals that, on average, a small multifamily REO sale is associated with a 4.6 percentage discount, everything else being equal. This affirms the earlier trend analysis that small multifamily REO properties face a more challenging market and that they are more likely to experience a greater sale price discount.
- In the composite model, the negative association between REO sale price differential and the concentration of REOs has the greatest magnitude. In addition, REO sale price differential is associated, in this case upward, with stronger housing market conditions (that is, a smaller decline in median home sale price in higher-income neighborhoods). Moreover, the model also indicates that, on average, every additional day an REO property is on the market lowers its price.

Limitations and Future Research

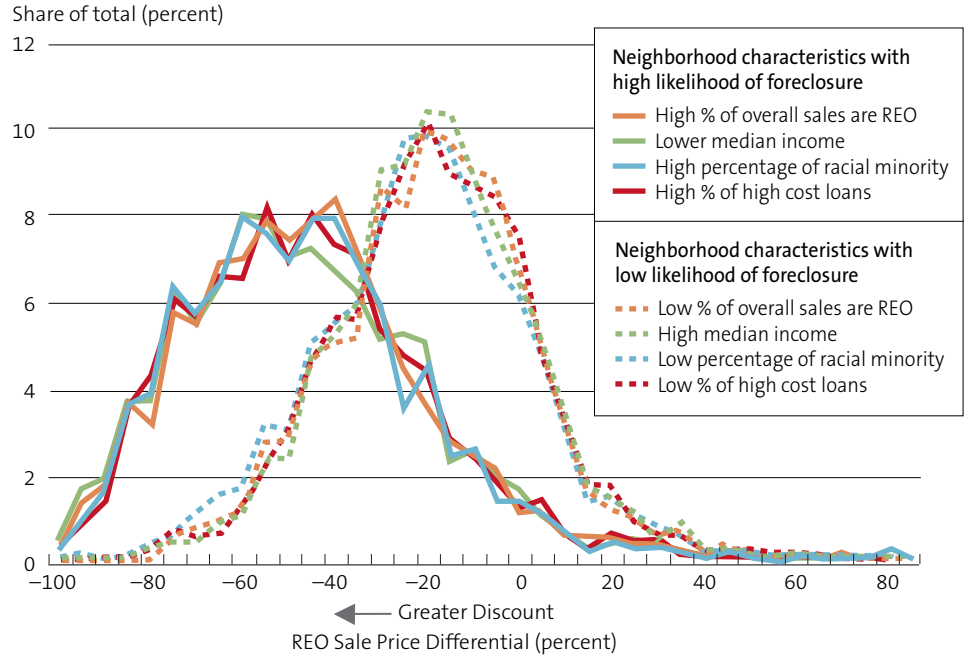
The analysis in this article has several limitations. First, it includes only REO properties with a successful subsequent REO sale and may have left out the less-desirable REO properties, possibly introducing an upward bias in its estimated sale price differential. Second, properties that entered REO status near May 2008 may still lack sufficient time to complete the REO sale process and may not be correctly captured in this study. Third, the regression models cannot successfully control for spatial interdependence and property conditions, which are likely to have an impact on sale price. Moreover, there may be variance in the duration between foreclosure sale date and the actual date the property was listed for REO sale. As time on the market is counted from the date of foreclosure sale onward in this article, such variance could affect its accuracy. Lastly, the models cannot control for lenders' motivation in foreclosure and REO sales (for example, expedited sales of distressed properties for accounting reasons), and some may be willing to concede to greater-than-usual discounts.[37] Future research can help address these limitations, and can also ascertain another type of sale price differential between the prices of REO sales and that of comparable nondistressed sales.

Conclusion and Implications

The large amount of REO properties nationwide is a unique event of the past 50 years, and there is relatively little literature on their sales price. The analysis in this article reveals that REO properties' time on market is strongly associated with their sale price differential, so a quick sale is important. This could be achieved by making sales information more transparent, by having lenders provide direct REO contacts, by standardizing paperwork in the REO sales process, and by working proactively with nonprofits with the capability and interest in bulk purchases (a rare occurrence thus far) to minimize lengthy individual negotiation.

Second, this article demonstrates that small multifamily REO properties merit additional policy attention for their longer time on market and greater sale price discount. These small

Figure 4
REO Sale Price Differential by Neighborhood Characteristics



Source: Author's calculations based on data from the U.S. Census, HMDA, and the Warren Group.

multifamily properties are a critical component of the housing stock in Massachusetts, especially for the socially and financially vulnerable populations.[38] Stabilization of these properties is not only critical for the health of New England's housing market, but also for minimizing the negative impact on these most vulnerable occupants.

Last, this study reveals that racial minorities and lower-income neighborhoods have a disproportionate share of the REO sales in Massachusetts, likely due to their higher concentration of foreclosures and high-cost, highly leveraged mortgages. Stabilization in these neighborhoods requires a more comprehensive approach going beyond REO properties to the root causes. Fair access to safer mortgages and better financial education on home purchasing are some of the preventive and complementary efforts to REO rescue efforts.

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Endnotes

1 This is an abridged version of the full paper, which can be accessed at www.bos.frb.org/commdev/pcadp/index.htm.

2 S&P/Case-Shiller Home Price Index, National Association of Realtors.

3 National Association of Realtors.

4 U.S. Census Bureau.

5 Mortgage Bankers Association.

6 RealtyTrac and Trulia, "New Survey from Trulia and RealtyTrac Shows Investors, Trade-up Buyers and Renters Most Likely to Consider Foreclosure Purchase," (December 15, 2009).

7 Section 2301(d)(1) of the Housing and Economic Recovery Act of 2008 initially established a minimum 15 percent discount requirement for aggregate foreclosed property acquisitions in the Neighborhood Stabilization Program. This requirement was eliminated a year later.

8 In this article, "REO sale" refers to the sale of a property, previously foreclosed, by a lender to a private buyer. The REO sale can occur anytime after a foreclosure auction in which usually the bank has retained ownership of the property.

9 John P. Harding, Eric Rosenblatt, and Vincent Yao, "The Foreclosure Discount: Myth or Reality?" Working Paper. (January 11, 2010); and Terrence M. Clauretie and Nasser Daneshvary, "Estimating the House Foreclosure Discount Corrected for Spatial Price Interdependence and Endogeneity of Marketing Time," *Real Estate Economics* 37(1) (2009): 43-67.

10 Harding, Rosenblatt, and Yao (2010).

11 Harding et al. (2010).

12 Clauretie and Daneshvary (2009).

13 John Y. Campbell, Stefano Giglio, and Parag Pathak, "Forced Sales and Housing Prices," Discussion Paper.

14 The Campbell et al. study also includes other types of "forced sale," but the figures cited here are for foreclosed properties only.

15 Kwong Wing Chau and R. Ng, "Agency Theory and Foreclosure Sales of Properties," *International Journal of Property Sciences* 1 (1) (2008): 16-24.

16 Anthony Pennington-Cross, "The Value of Foreclosed Property," *Journal of Real Estate Research* 28 (2006): 193-214.

17 Thomas M. Carroll, Terrence M. Clauretie, and Helen R. Neil, "Effect of Foreclosure Status on Residential Selling Price: Comment," *Journal of Real Estate Research* 13 (1) (1997): 95-102.

18 Thomas Springer, "Single Family Housing Transactions: Seller Motivation, Price, and Marketing Time," *Journal of Real Estate Finance and Economics* 13 (3) (1996): 237-254.

19 William G. Hardin and Marvin L. Wolverton, "The Relationship between Foreclosure Status and Apartment Price," *Journal of Real Estate Research* 12 (1996): 101-109.

20 Fred A. Forgey, Ronald C. Rutherfold, Michael L. VanBuskirk, "Effect of Foreclosure Status on Residential Selling Price," *Journal of Real Estate Research* 9 (3) (1994): 313-318.

21 James D. Shilling, John D. Benjamin, and C.F. Sirmans, "Estimating Net Realizable Value for Distressed Real Estate," *Journal of Real Estate Research* 5 (1990): 129-139.

22 Charles S. Laven, "Pricing and Valuation of Vacant Properties: Developing a Neighborhood Stabilization Approach," Presented at the NeighborWorks Training Institute. (December 11, 2008).

23 Shuang Zhu and R. Kelly Pace, "Distressed Properties: Valuation Bias and Accuracy," presented at the Critical Issues in Real Estate Symposium, Florida State University, April 2010.

24 "Lender" is used loosely in this article, which also includes lenders' representatives such as servicers and trustees. In some states, properties in court-imposed "strict foreclosures" often bypass the foreclosure auction step to enter REO status directly. In those cases, no foreclosure auction prices are observed. However, Massachusetts does not allow "strict foreclosures," so these exceptions are not a concern for this article.

Technical Note on Regression Models

This section presents further detail on five hedonic regression models assessing the correlation between the price differential and the property, neighborhood, and sales characteristics of these REO sales.

Hedonic regression model is a commonly accepted method to study factors correlated with property pricing, including distressed properties.[39] The general form of the models is:

$$PD_{ij} = \beta_0 + \beta_1 \mathrm{PC}_i + \beta_2 \mathrm{NC}_j + \beta_3 \mathrm{SC}_i + \varepsilon_{ij,}$$

where the dependent variable, PD_{ij}, is the sale price differential of REO property i in census tract j. Sale price differential is, as defined earlier, the percentage difference between the property's foreclosure sale price and its subsequent REO sale price. There are three bundles of independent variables: 1) PC_i is a vector of property characteristics for property i, including lot size, living area size, number of buildings on lot, number of bedrooms and full bathrooms, age of property, and dummy variables for small multifamily and condominium structures; 2) NC_j is a vector of neighborhood characteristics for tract j, including the percentage of racial and ethnic minorities in the tract, the percentage of residents who live in urban areas, median household income, the percentage of home sale price change between 2006 and 2009, and the percentage of sales in tract that are REO sales in the same period; and 3) SC_i is a vector of sales characteristics for property i, including the days on market and dummy variables for the quarter in which the property is sold.

The property and neighborhood characteristics included are typical in hedonic pricing models, with the exceptions of property type dummies and the percent of home sales that are REO sales. The property type dummies are included because of their prominence in Massachusetts' housing stock and REO sales. The percent share of REO sales in a tract's home sales controls for local spillover effects within a tract from nearby distressed sales, which recent studies have widely documented as a factor in driving down an individual property's sale price.[40]

In addition to the models controlling for various bundles of these variables, the last composite model includes a set of census tract dummy variables (714 in total) to control for the time-invariant fixed effects from omitted and unobserved neighborhood factors, such as the school districts for these properties and the neighborhood's overall physical attractiveness.

This study attempted to control for, albeit unsuccessfully, REO properties' conditions at sale in two ways: the most recent assessor's record for property conditions and records of renovation. Further investigation into assessors' records revealed that their records on these two variables are not sufficiently consistent to be included.

[25]The full version of the paper, which is accessible at http://www.bos.frb.org/commdev/pcadp/index.htm, includes a detailed description of the algorithm.

[26]This time frame also minimizes the potentially distorting impacts of the Massachusetts 90-day right to cure protection for foreclosed homeowners (Chapter 206) that went into effect in May 2008.

[27]Willen, Paul. "REO Retention Rates in Massachusetts." Presented at the Furman Center Roundtable, New York University (May 2008).

[28]A "normal" sale is generally called an arm's-length sale, referring to a transaction in which sellers and buyers of the property act independently without undue pressure or interest from the other party. A nominal sale usually refers to a mere transfer of ownership, such as adding a spouse's name.

[29]About one-third of the normal sales are condominium properties and it is likely that some of them are units of small multifamily properties.

[30]Based on convention, loans are considered "high-cost" loans if their annual interest rates are 6 points or above Treasury securities. Some studies use high-cost loans as a proxy for subprime loans. Loan underwriters typically would like to see 20 percent equity when underwriting a mortgage, but this threshold for "high leverage" is more fluid, especially in tight and expensive housing markets (e.g., Manhattan) where underwriting mortgages with loan-to-value ratio greater than 0.8 are more common.

[31]Michael Grover, Laura Smith, and Richard Todd, "Targeting Foreclosure Interventions: An Analysis of Neighborhood Characteristics Associated with Higher Foreclosure Rates in Two Minnesota Counties," *Journal of Economics and Business* 60 (1-2) (2008): 91-109; and Kristopher Gerardi and Paul Willen, "Subprime Mortgage, Foreclosures, and Urban Neighborhoods," *The B.E. Journal of Economic Analysis and Policy* 9 (3) (2009).

[32]Historical Census of Housing Tables. 2000 Census. U.S. Census Bureau.

[33]Days elapsed between a property's initial foreclosure auction and its sale as an REO. Figure 2 includes only properties that entered REO status in 2007, to allow sufficient time to age and clear the REO sale process.

[34]For the purpose of this figure, "high level" is defined as the top quartile and "low level" is the bottom quartile. For instance, a neighborhood with a "high percentage of home sales are REO sales" refers to the tracts with such percentage in the top 25 percentile rank among all tracts.

[35]Paul S. Calem, Kevin Gillen, and Susan Wachter, "The Neighborhood Distribution of Subprime Mortgage Lending," *Journal of Real Estate Finance and Economics* 29 (4) (2004): 393-410; William Apgar and Allegra Calder, "The Dural Mortgage Market: The Persistence of Discrimination in Mortgage Lending." In Xavier de Souza Briggs, ed., *The Geography of Opportunity: Race and Housing Choice in Metropolitan America* (Washington, D.C.: The Brookings Institution, 2005): 101-123; and Kristopher Gerardi and Paul Willen, "Subprime Mortgage, Foreclosures, and Urban Neighborhoods," *The B.E. Journal of Economic Analysis and Policy* 9 (3) (2009).

[36]For those who wish greater detail and a discussion of caveats, a technical appendix can be found online at www.bos.frb.org/commdev/pcadp/index.htm.

[37]See Michael Glower, Donald R. Haurin, and Patric H. Hendershott, "Selling Price and Selling Time: the Impact of Seller Motivation," *Real Estate Economics* 26(4) (1998): 719–740, which provides a more detailed analysis on the impact of sellers' motivation on the selling price.

[38]For instance, about one in six small multifamily units in the Boston metropolitan area was occupied by seniors and more than a quarter (27 percent) of the residents of these units lived in poverty. U.S. Department of Housing and Urban Development and U.S. Census Bureau, *U.S. Census Bureau Current Housing Reports, Series H170/07-3, American Housing Survey for the Boston Metropolitan Area: 2007* (2009).

[39]For instance, see Zhenguo Lin, Eric Rosenblatt, and Vincent Yao, "Spillover Effects of Foreclosures on Neighborhood Property Values," *Journal of Real Estate Finance Economics* 38 (4) (2009); and Jenny Schuetz, Vicki Been, Ingrid G. Ellen, "Neighborhood Effects of Concentrated Mortgage Foreclosure," *Journal of Housing Economics* 17 (2008): 306-319.

[40]Kai-yan Lee, "Foreclosure's Price-Depressing Spillover Effects on Local Properties: A Literature Review." Community Affairs Discussion Paper 2008-01 (Federal Reserve Bank of Boston, 2008).