The Impact of REO Sales on Neighborhoods and Their Residents

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Abstract
The Spillover and School Effects of Residential REO Sales

The foreclosure crisis in the U.S. has resulted in a large number of residential REO sales. A significant percentage of these sales are to investors. This has raised the concern that ex–REOs will be converted into rental units, bringing down neighborhood housing values. There is also interest in the possibility that ex–REOs may open up housing opportunities for lower income and minority families in better school zones. In this paper we report the results from estimating the spillover effects of ex–REOs and their effects on the income and racial composition of neighborhood schools.

I. Introduction

The foreclosure crisis in the U.S. has resulted in a large number of residential REO sales.[2] RealtyTrac, a leading provider of real estate information, reports 498,122 REOs were sold in 2012, accounting for 11 percent of all residential sales during the year.[3] Moreover, the number of REO sales is not likely to decrease anytime soon. CoreLogic, another leading source of real estate data, provides an estimate of the number of residential properties likely to become REOs offered for sale. Their estimate stood at 2.3 million properties as of October, 2012.[4] The magnitude of REO sales has created the concern that investors - who are believed to be the primary purchasers of REOs- will convert much of the formerly owner–occupied housing stock into rentals. Because rentals are believed to be maintained less well than homes occupied by their owners, the fear is that investor–acquired REOs will bring down neighborhood property values.[5] Reinforcing this fear is the belief that as homes transition from owner–occupied to rental tenure, crime will increase, further reducing the attractiveness of individual neighborhoods. While the potential social costs of investor–acquired REOs have caught the attention of policymakers (Mallach, 2012), they may have overlooked a possible social benefit. Namely, REOs sold to become rentals may open up housing opportunities in higher quality neighborhoods for lower–income households that cannot afford homeownership.[6] One important benefit from this would be the ability of these households to send their children to better schools in neighborhoods that previously had little renter-occupied housing. In short, we may see economic and racial segregation at both the neighborhood and

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[2] An REO or Real Estate Owned is a class of property owned by a lender—typically a bank, government agency, or government loan insurer—after an unsuccessful sale at a foreclosure auction.

[3] Wall Street Journal, Market Watch, February 28, 2013, "Foreclosure Sales and Short Sales Account for 43 Percent of U.S. Residential Sales in 2012 According to RealtyTrac," www.marketwatch.com accessed on March 1, 2013.

[4] CoreLogic, January 02, 2013, "CoreLogic Reports Shadow Inventory Continues Decline in October 2012," www.corelogic.com accessed on March 1, 2013. CoreLogic estimates the pending supply of REOs for sale (aka the "shadow inventory") by calculating the number of properties that are seriously delinquent, in foreclosure and held as REO by mortgage servicers but not currently listed on multiple listing services.

[5] While it is commonly believed that homeowners take better care of their properties than renters, there is scant evidence in support of this belief (Harding et al., 2000).

[6] Another possible social benefit that we do not explore is that investor–acquired REOs that become rentals may alleviate excess demand conditions in the rental market that currently exist in some metro areas (Board of Governors of the Federal Reserve System, While Paper, January 4, 2012; Pelletiere, 2010).

school levels falling as investors buy up the large stock of REOs that are offered for sale (Chakrabarti and Arcaya, 2012).

Unfortunately, little is known about the social costs and benefits from investor–acquired REOs; therefore, it remains unclear what role public policy should play. Should investor acquisition of REOs be encouraged or discouraged? At a minimum, it would be useful to have evidence on the negative spillovers experienced by homeowners living in the vicinity of an investor–acquired REO and on the impact these REOs have on the composition and performance of neighborhood schools.[7] This paper is the first to provide such evidence. Using two unique Florida data bases, one at the parcel level and the other for schools, we estimate two sets of models. To explore the spillover effects from investor–acquired REOs, we estimate hedonic price models for single–family homes that include variables measuring their nearness to three types of REOs: current REOs, both on and off the market; properties that were previously in REO status, have been recently liquidated by the foreclosing lender and now qualify for a homestead exemption; and recently liquidated properties that do not qualify for a homestead exemption. We use Florida's property tax homestead exemption, which reduces resident homeowners' assessed value to identify REO investors. The richness of our parcel level data allow us to specify a hedonic price model that measures for each single–family sales transaction the number of each type of REO within specified distance rings surrounding the property. We are also able to minimize omitted variable biases by including relatively small area fixed effects, which are allowed to vary from one year to the next and across neighborhoods.

To explore the impact of the REO stock on schools, we first construct a panel of school socioeconomic and performance characteristics for elementary schools throughout Florida derived from the Florida Department of Education's (FDOE) annual school accountability report. After constructing measures of the stock of each type of REO property within the elementary school attendance boundaries, we estimate models that explain the percentage of an elementary school's students on free or reduced

[7] Regarding the latter, schools may become less segregated, as noted above, but their test scores may fall as well.

price lunch, who are minority, and pass standardized tests as a function of the number of the three different REO types. To control for unobservable heterogeneity across schools, we first difference our annual data that run from 1999 to 2011 and allow each school to have its own trend in each of the dependent variables we analyze. Separate models are estimated for schools at different quality levels, where quality is identified by using the Florida Department of Education's grade letter assigned annually to each school.[8]

In the next section (II), we review studies that have focused on the disposition of REOs and that have estimated the spillover effects of REOs on nearby property values. Section III describes our two data bases—sales transactions used to estimate our hedonic price model and a panel data set on elementary schools used to estimate our FD school models. Section IV presents the methodologies we employed to uncover the spillover and school effects of current and sold REOs. Our results are presented in Section V. The last section (VI) states our conclusions, policy recommendations, and suggestions for future research.

II. Literature Review

Prior studies provide very little evidence pertinent to gauging the social costs and benefits of REO sales to investors. While there have been at least a dozen studies that have estimated the spillover effects of foreclosures (see Table One), none has included the nearness of the property to investor–acquired REOs among the set of explanatory variables. There are also no studies that address the possibility that the latter REOs reduce racial or income segregation within metropolitan areas or have an impact on neighborhood schools.

There are, however, a few studies that estimate the number of REOs that are purchased by investors (in comparison to owner–occupants) and that describe the types of properties and neighborhoods that investors target. These studies are reviewed in Section II.A. In addition to revealing

[8] The school grades are calculated by adding points earned from three criteria: The overall performance on the Florida Comprehensive Assessment Test, the percentage of eligible students who took the test, and whether or not students made progress in reading and math.

the spillover effects that result from having a non–homesteaded ex–REO property nearby, the estimation of our hedonic price models promises to provide more reliable estimates of the spillover effects from foreclosures. To appreciate our contribution it is important to review the studies that have already been done. These studies are reviewed in Section II.B.

II.A. The Disposition of REOs

There is no national source of public data on the disposition of REOs (or for that matter on any type of information on REOs, such as their number or location). The extant evidence on who buys REOs comes entirely from labor–intensive investigations of the property transfer records maintained by the county clerk or tax assessor offices of local governments. The literature is thin and very recent, consisting of studies conducted by Dan Immergluck (2012a, 2012b) and Ingrid Gould Ellen and her colleagues at NYU's Furman Center (2012). Immergluck (2012a) relies upon the seller and buyer names reported in the tax assessor records of Fulton County, Georgia, to identify properties entering REO status (seller name is interpreted as an individual and buyer name as a lender) and REO sales (seller is a lender and buyer is not). Buyers of REOs were classified as "likely investors" if one of two conditions were met: the text of the buyer name contained some type of corporate identifier (e.g., LLC) or the buyer purchased more than two properties in the county in any one calendar year. Immergluck recognized that some investors may not have purchased more than two properties in any one year or have a corporate name; hence, his use of the adjective "likely" and his belief that he had undercounted the true number of investor purchasers. While he provides much information on the dynamics of foreclosed properties, his finding that is most relevant to this study is that a large percentage of REO one to four unit residential properties are sold to likely investors: 43.6 percent in 2005, declining to 39.4 percent in 2009. He also finds that likely investors, especially those that are small, tend to purchase REOs that are of lower value located in lower–income neighborhoods.

In his second paper, Immergluck (2013) analyzes more recent sales data (2008—2011) than in his first paper (2005—2009) using a similar approach as in his first paper to define "likely investors." He again finds that investor–acquired REOs are concentrated in high poverty neighborhoods. Among the

findings that are new to his second paper are that 1) the more distressed the neighborhood, the higher the probability that the REO investor purchaser is large in size, where large is defined as having purchased more than 10 properties over the 2002—2011 time period, and 2) the share of REOs purchased by likely investors declined countywide over the years 2008 to 2011, from 38 percent to 27 percent, as more foreclosed homes became available in less distressed neighborhoods.

Like Immergluck, Ellen et al. (2012) rely upon local government records from Fulton County, Georgia, but also use such records from Miami–Dade County and New York City to conduct their analysis. They define likely investors using a similar, but not identical, approach to that employed by Immergluck. A likely investor is a purchaser who satisfies one or more of the following conditions:

- Based on a key word search of the grantee name, it appears to be a corporate entity,
- The same grantee name is matched to two or more other REO acquisitions between 2002 and 2011,
- The same grantee name is matched to four or more property acquisitions of any type between 2002 and 2011,
- The purchaser resells an REO property within 12 months of its purchase.

Like Immergluck's papers, Ellen et al. provide detailed information on the size of the REO inventory by neighborhood, but our interest is in their findings regarding the disposition of REOs. In Fulton County, Miami–Dade County and New York City they find that likely investor sales as a percentage of all 2011 REO sales is roughly one–third, one–third, and one–half, respectively. As is true for Immergluck's counts, these percentages are likely to underestimate the true amount of investor activity in the REO market. Regardless, both Immergluck and Ellen et al.'s analyses confirm the importance of investors in the REO market. Also of interest are three of Ellen et al.'s other findings. First, small investors account for more than two–thirds of all REO purchases across all three of their local communities, where a small investor is defined as incorporated entities purchasing fewer than 10 and individuals purchasing from two to nine REO properties. This result echoes those of Immergluck

documenting the importance of small investors as buyers of REOs.[9] Second, despite widespread concern over REOs being "flipped," they find that relatively few REO properties were resold by investors within one year after purchase. This has a bearing on this paper for it suggests that the lion's share of investor–acquired REOs are purchased to be rented.

While the above studies provide useful information on the role of investors in the REO market, concerns arise over the methods used to identify "likely investors." While Immergluck recognizes the potential for undercounting the true number of investor–owners in comparison to owner–occupants, there is a more fundamental problem. Namely, the REO process is enormously complicated and can involve multiple transfers between entry and exit. For example, banks create limited liability companies (LLCs) to hold properties while in REO status, and the transfer from the bank to an LLC can occur well after the passage of the property into REO status. Without exercising extreme caution, it is easy to identify this type of transfer as an REO sale to an investor. In our own work with the Miami–Dade County Clerk records used by Ellen et al., we have found that for some properties there were several interim transfers, like the one identified in the previous example, between entry into and exit from the REO stock that could erroneously be counted as an investor purchase.

Our approach to identifying whether an REO purchase was made by an investor–owner rather than an owner–occupant is to use a county's property tax roll to examine the post–sale homestead status of the REO. A property can only be homesteaded if the owner uses the home as his primary residence. Because the homestead exemption conveys significant property tax savings, it is highly unlikely that

[9] It should be noted that the finding in the existing literature that small investors purchase most REO properties could possibly be an artifact of coding error. The identification of investors in these papers relies on string matching to flag investor purchases and the number of properties that have been purchased by an investor. There are a number of limitations to this approach. First, properties can be held under different corporate names even if they are, for all intents and purposes, owned by the same entity. Second, the buyer and seller fields in transaction data is not generally standardized, so a person's name may occur in several different formats within the database. For instance, if exact string matching is used, "John Doe," "John A Doe," and "John Do" will be three distinct buyers, and none of the properties are treated as investor-purchased. Alternatively, consider a case where a real estate investment group buys 50 properties: 5 of the properties are coded as being owned by "Realty Invest LLC," 4 are coded as being owned by "Realty Investments LLC," and 91 are coded as "Realty Investments." In this case, instead of identifying the fact that the properties are all owned by one large investor, an exact string matching algorithm would identify 2 small investors and one large investor as the purchasers of the REOs.

eligible homeowners would not file for the exemption. Hence, we are confident that we have accurately identified the owner–occupants among REO purchasers. Homes that are not homesteaded are owned by buyers who do not intend to use the home as their primary residence. This, of course, includes investors, but it also includes purchasers of second homes. Note, however, that in Florida the second home market is highly concentrated among condominiums and not single–family homes, which are the focus of our analysis. Nevertheless, as in prior studies our "likely investor" counts are biased downward. However, our counts are likely to be more accurate than those of prior studies, given the "interim transfer problem" plaguing these studies as outlined above.

II.B. Foreclosure Spillovers

The literature investigating the spillover effects of foreclosures has grown rapidly since housing markets began to crash around 2007. The crash dramatically increased the number of foreclosures which heightened interest in what role, if any, the government should play in keeping people in their homes. Economists recommend policy intervention in the case of market failure, which is generally indicated where spillovers are imposing costs on households for which no compensation is paid. Hence, the interest in determining whether foreclosures reduce the value of nearby homes.

Our count of the studies that have estimated the spillover effects of foreclosures consists of the 12 studies listed in Table 1. This table describes each study with column headings for the data used, sample period, measure of foreclosure, methodological approach, findings and whether the time period over which the spillover lasts is investigated. The table reveals that the studies have certain features in common:

- All estimate some variant of a hedonic price model with foreclosures measured at varying distances from the sales observation,
- All find that foreclosures reduce the value of nearby homes, with the magnitude of the effect diminishing with distance,

- All use a foreclosure measure that counts the number of foreclosures that occurred within some time frame prior to the sale of the home.

Apart from these commonalities, the studies are quite different, especially in two respects. First, they differ in how they deal with neighborhood unobservables that may affect both foreclosures and the sales price of the observation. The approaches include controlling for area fixed effects, incorporating a spatial lag, relying upon repeat sales with foreclosures measured at each of the two sales dates, and taking a differences–in–differences approach, in which foreclosure effects are compared between near and far distances and before and after a sale occurs. Each method has its strengths and weaknesses, but perhaps the most convincing approach is to compare two properties, with only one having one or more foreclosures nearby, that share a common neighborhood environment. Data permitting, this can be achieved by using small area fixed effects (FE). It is questionable, however, whether the areas used in prior studies, that have taken the FE route to dealing with unobservables, have been small enough to capture a common neighborhood environment. The smallest area that has been used has been the census tract. Census tracts are "[d]esigned to be relatively homogenous units with respect to population characteristics, economic status, and living conditions and have on average about 4000 inhabitants" (U.S. Census Bureau definition). In densely populated areas (e.g., within central cities) census tracts may be small enough to approximate a common neighborhood environment. However, because tract boundaries are drawn with the aim of capturing a target population size, their geography may be too large to meaningfully represent a common neighborhood environment. To ensure a degree of homogeneity within the geographies utilized to define the fixed effect, we utilize sections from the Public Land Survey System (PLSS) to define our FE geography. Section boundaries typically correspond to a one–mile–by–one–mile square. In all but the densest portions of central cities, sections are smaller than census block groups. In the suburbs, there are commonly 3 to 4 sections within a single block group.

Another feature that distinguishes the studies reviewed in Table 1 is whether the time period over which the spillover effect lasts is investigated. Seven of the studies conduct such an investigation while

five do not. Those that do study the duration of the spillover effect measure spatial and temporal lags by including as regressors distance–temporal foreclosure rings around each sales observation. For example, a simple ring structure might be the number of foreclosures (F) within one mile in the year preceding the sales date, F within one mile prior to the preceding year, F beyond one mile in the preceding year, and F beyond one mile prior to the preceding year. What is most striking about the findings reported in the last column of Table 1 is that most studies find that foreclosure spillover effects last for a very long time. Lin et al. (2009) allow for the longest lags and find that within 0.1 km at 0—2 years prior to the sale, the discount is 9.8 percent; at 2—5 years it is 6.6 percent; and at 5—10 years it is 4 percent. None of the studies follow foreclosures over time to investigate what might explain these long–lasting effects. Harding et al. (2009), in speculating why they find a discount as large 9—12 months after an REO sells as when it first enters REO status, state, "This could be because it takes some time to repair the home and offset the previous owner's neglect, but it could also reflect a tendency for purchasers of foreclosed properties to either rent the home or invest less in maintenance and renovation than would the purchaser of a non–distressed property" (p. 172). There is, therefore, some recognition that long–lasting foreclosure effects may be the result of investor acquisitions.

Our estimated hedonic models improve upon those estimated in prior studies in three respects. First, as noted above, we include FE at a finer level than those employed in previous work; hence, we better control for unobservable neighborhood or locational factors that may be correlated with both sales price and the number of REOs. Second, we encircle each sales observation with both current and past REO distance rings, with the latter broken down by homestead status. Finally, we employ an improved measure of foreclosures. We noted above that foreclosures are commonly measured as the number of properties entering REO status over some specified time period. That is, it is the flow of foreclosures that is related to nearby home values. But conceptually the more attractive measure is the actual number of properties in REO status (i.e., the stock of foreclosures) in the vicinity of the sales observation at the time of the sale. Define the exit rate of REOs as the percentage of the stock in time period t that is sold to a third party in time period $t + 1$. If the exit rate is uniform across observations, it makes no difference

whether the flow or stock of REOs is the foreclosure measure, because if the flow is, for example, twice as high, the stock will also be twice as large. But if the exit rate varies, as is likely the case, the cross–observation correlation between the flow and stock of REOs may be too low for the flow to reliably proxy the stock, resulting in attenuation bias in the estimated foreclosure spillover effects. To avoid this potential bias, all of our foreclosure variables (current REOs, ex–REOs homesteaded, and ex–REOs non–homesteaded) are measured as stocks rather than flows. The methodology we followed to construct our REO stocks is described below in Section III.

III. Data

Separate databases were assembled to estimate our hedonic price and school models. Each of these is described in turn below.

III.A. Parcel Level Data

Our REO stock variables and sales data are derived from the DataQuick transaction history database for 10 counties in Florida: Alachua, Broward, Dade, Duval, Palm Beach, Hillsborough, Lee, Leon, Pinellas and Volusia. These counties - each of which is located in a metropolitan area - represent a cross section of Florida's highly heterogeneous housing markets. Alachua and Leon County are both relatively small in terms of population and have large student populations. Broward, Dade, and Palm Beach County are located in the densely populated South Florida metropolitan area that anecdotes have suggested is popular with international investors and retirees. Duval, Hillsborough, Pinellas and Volusia County are moderately-sized counties that are generally not as popular with retirees as counties in the southeast portion of Florida. Lastly, Lee County, which contains Fort Myers, experienced an incredible amount of overbuilding during the housing boom that was followed by a wave of defaults that has been documented in the national media.

The DataQuick database contains information on financing and sales activity on residential real property. The starting date of coverage for this database in our 10 counties ranges from 1996 through 1998, with the transaction history in all counties running through 2011. For the purposes of this study,

this transaction database is restricted to single–family homes. This database includes many of the standard property characteristics used in valuation studies such as the property's exact location, the property's structural characteristics (e.g., number of bedrooms), the sales price, and the date on which the transaction took place. A critical piece of information provided by DataQuick for the present study is a variable indicating whether a transaction was "distressed" in some way. This distressed field indicates if the transaction fell into any of the following classifications: (1) the buyer was identified as a bank, lender, or government entity and title was transferred via a trustee's deed; (2) a trustee's deed was filed and the buyer was not a bank, lender, or government entity; (3) the property was transferred between a financial institution and government agency or government–sponsored enterprise (GSE) (e.g., Fannie Mae); (4) the property was transferred from a financial institution to a guarantor; (5) the property was transferred from a financial institution, government entity, or GSE to a private buyer; or (6) the sale was likely a short sale.[10] To construct the REO stock, we start by identifying all possible transitions into the REO stock ("REO starts"), which we define using cases (1), (2), and (3) above.[11] Following the identification of the REO starts, we then search the transaction history for the date on which the property transitioned out of the REO stock ("REO exits"). For a given REO start date, the REO exit date is defined as the earliest date of the following two dates: the earliest subsequent type–(5) transaction on the property and 3 years after the entry into the REO stock.[12] At any given point in time, the REO stock is defined as those properties that have entered into, but have yet to exit from, REO status.

[10] DataQuick classifies a sale as a short sale if the sales price is more than 5 percent less than the estimated total loan balance at the time of the sale.

[11] In Florida, after a lender files suit against a borrower for defaulting on a note, if the default is not cured, the obligor's property is put up for sale at a public auction. At this auction, the lender is given a credit at the auction equal to the amount of the final judgment handed down by the court. A property then enters REO status if there is no other party that outbids the lender; such a situation will generally be categorized as a type–(1) transaction under the typology above. However, after reviewing a large number of the documents underlying the distressed sale field, we identified that in a non–trivial number of cases, type–(2) and type–(3) transactions also represented an entry into the REO stock, which is why we include such transactions in the universe of REO starts. Experimentation with other REO–start classification systems (e.g., using only type–(1) observations) revealed that our empirical results are largely insensitive to the inclusion of type–(2) and type–(3) REO starts in the REO stock; such a finding is consistent with a high repossession rate conditional on a property being put up for auction. For more on the foreclosure process in Florida, see: http://www.realtytrac.com/foreclosure-laws/florida-foreclosure-laws.asp

[12] The 3–year limitation is imposed to guard against cases in which DataQuick's distressed sale algorithm identifies an REO start but fails to identify the REO exit. In a small number of cases, a sale that is categorized as non–

Ex–REOs are properties that have exited REO status by having been sold to a third party that is not classified as a financial institution. Florida Department of Revenue county tax rolls are used to divide ex–REOs into those that are and are not homesteaded at the time a target sale occurs. To study the impact of REOs on property values, we construct concentric rings around each of the target sales in our sample; for a particular sale, we separately count the number of current REOs, ex–REOs that are homesteaded, and ex–REOs that are not homesteaded located within each of these rings. Following Harding et al. (2009), we use the following distances to construct our rings: 0—300 feet, 300—500 feet, 500—1000 feet, 1000—2000 feet, and 2000—3000 feet.

The sales data for each county include all single–family, arms–length transactions. As noted above, each sale is geocoded and assigned to a PLSS section. Because we control for unobservable neighborhood traits using fixed effects, it is important to keep in mind the size of our fixed effect geography relative to some of those used in previous studies: the block group is commonly 1/4 to 1/3 the size of a census tract and the PLSS section is commonly 1/4 to 1/3 the size of a block group.

III.B. School Data

Our data on school performance and demographics are drawn from the Florida Department of Education's (FDOE) school accountability reports. These reports, which have been published annually since 1998, include information on: the percentage of the student body comprised of minorities; the percentage of students receiving free or reduced lunch; a number of different metrics summarizing students' performance on standardized tests; and a "grade" for the school that is assigned by the FDOE. These variables serve as the dependent variables in a series of empirical models that are described in more detail below. The independent variables in these models are the stock of the three types of REO properties that were described above that fall within the school's attendance boundaries. To construct these stock measures, after identifying the REO and post-REO properties in the DataQuick data, we assigned each

distressed occurs within the 3–year REO start window. In these cases, this non–distressed sale is coded as an REO exit.

home to an elementary school attendance zone using elementary school boundaries provided by the vendor Maponics.

IV. Methodology

To assess the spillover effects of REOs (both current and exited) on nearby property values, we estimate hedonic price models. These models are described below in subsection IV.A. The FD models we estimate to explore the effects that REOs have on elementary schools are described in IV.B.

IV.A. Hedonic Price Models

To successfully identify the impact of REO properties on nearby housing values, we must be very careful to guard against omitted variable bias. To that end, in addition to including structural variables commonly found in property valuation studies (e.g., bathrooms and bedrooms) and indicators for whether the sale was distressed (e.g., a short sale or a foreclosure sale), the models that we estimate contain a large number of neighborhood–year fixed effects.[13] These fixed effects should control for any shocks (e.g., rising unemployment, improving schools) that would affect property values throughout the neighborhood. Because these fixed effects vary by year, our models effectively identify the impact of REOs on housing values by comparing properties transacting in the same neighborhood in the same year. To capture the seasonality of property markets, monthly fixed effects are also included. Consistent with previous studies, our empirical models allow for the impact of a distressed property on a transacting property to vary with distance. Specifically, we utilize the concentric ring structure of Harding et al. (2009). The specific empirical property value model that we estimate is Equation (1):

[13] Models estimated with neighborhood–specific trend terms yielded similar results to those reported here.

$$\ln P_{i,j,t} = \omega_{j,t} + \lambda_m + \sum_{k=1}^{5} REO_{i,t,k}\beta_k^{REO} + \sum_{k=1}^{5}\sum_{g=1}^{2} XREO\_H_{i,k,g}\beta_{k,g}^{XREO\_H}$$

$$+ \sum_{k=1}^{5}\sum_{g=1}^{2} XREO\_NH_{i,k,g}\beta_{k,g}^{XREO\_NH} + FORECLOSURE_{i,t}\beta^{F} + SHORTSALE_{i,t}\beta^{SS}$$

$$+ X_i B^S + \varepsilon_{i,j,t}, \qquad (1)$$

where the variables in Equation (1) are defined in Table 2.

Our models include fixed effects that are constructed by interacting the PLSS section in which a property is located with the year in which it sells. To investigate the time pattern of ex–REO effects, we count the number of REOs in each ring that exited REO status in the year preceding the sale (g=1) and 1 to 2 years before the sale (g=2). In comparison to REOs that were sold 1 to 2 years before a target sale, REOs that were sold in the year before the sale may have a weaker spillover effect because it takes time for investors to rent out their newly acquired properties and buyers may not lower their bid prices until the presence of renters becomes apparent. On the other hand, newer ex-REOs may have a stronger effect than older ex-REOs because it may take some time for investors to make needed repairs. Regardless of the relative magnitudes of the spillovers generated by older and newer ex-REOs, the latter are best viewed as in transition to a more permanent state.

IV.B. School Models

As hypothesized above, REOs purchased by investors within a higher quality school's attendance zone may alter the composition of the school in favor of students from lower income and minority families by increasing the number of rental units within the zone. These compositional changes may also cause student test scores at the school to fall. Current REOs, on the other hand, may have just the opposite effects. Because foreclosures are concentrated among lower income and minority families, more REOs within the school's attendance zone may decrease the number of students from these families who attend the school, unless suitable alternative housing can be found within the zone for families who are displaced by foreclosures.

To empirically investigate these effects, we estimate models explaining the percentage of a school's students on free or reduced lunch, who are minority, and who pass standardized exams as a function of the number of current REOs, ex–REOs that are homesteaded, and ex–REOs that are not homesteaded located within the school's attendance zone. To control for unobserved heterogeneity across schools, we first difference our annual school data and allow each school to have its own trend in each of our three dependent variables:

$$\Delta Y_{i,t} = \alpha_i + \gamma_t + \beta_1 \Delta REO_{i,t} + \beta_2 \Delta XREO\_H_{i,t} + \beta_3 \Delta XREO\_NH_{i,t} + \varepsilon_{i,t}, \quad (2)$$

where $Y_{i,t}$ is the log of one of three dependent variables measured for the *i*th school in year *t*, α_i are school fixed effects, γ_t are year fixed effects, and the REO variables are as defined above that are located within the *i*th school's attendance zone. The sample is stratified by the level of school quality, as measured by the letter grade assigned to each school by the Florida Department of Education. Equation (2) is estimated for each stratum.

V. Results

V.A. Summary Statistics

The summary statistics for select characteristics of the sales used to estimate the hedonic price models are reported in Table 3 and Table 4. As expected, the average sales prices of homes in the large urban counties in coastal southern Florida are higher than those of the smaller, non-coastal counties. Perhaps the most striking difference between the housing markets in our sample is the difference in the amount of distressed sale activity across markets. In Alachua, Duval, and Leon County (all counties located in the northern part of the state), less than 3 percent of the transactions in our database were foreclosure sales. In Lee County, on the other hand, more than 16 percent of the sales in our database were classified as foreclosure sales. An inspection of the means of the REO terms reveals that the variance in foreclosure activity results in differential exposure to foreclosure-related externalities across

markets. For instance, the average number of REO properties within 300 feet of a sale in our sample ranges from 0.17 in Lee County to 0.037 in Alachua County.

In Table 5 we report the post-REO homestead status for the REO properties that are used to construct the post-REO count variables Across the entire sample, 64 percent of REO properties are in non-homesteaded status a year after liquidation. In addition to heterogeneity in the overall level of foreclosure activity across the 10 markets that we study, there is also substantial variance in ownership patterns of foreclosed properties; the percentage of properties in non-homesteaded status one year after liquidation ranges from a low of 56 percent in Leon County to a high of 71 percent in Lee County. Although some of these non-homesteaded properties may be held as second homes, the preponderance of REOs transitioning to non-homesteaded status is consistent with media coverage indicating large amounts of REOs being sold to investors that plan to rent out or resell the homes. The difference in the non-homesteaded rate across counties may reflect investors attempting to maximize yield by targeting markets where foreclosure discounts are the highest. As in the case of the active REO stock, inter-county differences in the probability of an REO transitioning into non-homesteaded status result in differences in the exposure of sales in our sample to possible externalities; the mean number of ex-REO non-homesteaded properties within 300 feet of a transacting property in our sample ranges from 0.025 in Alachua County to 0.098 in Lee County.

V.B. Hedonic Price Model Results

The results for the hedonic models estimated separately for each county are reported in Table 6 and Table 7. In each of the 10 counties, the regression models provide support for the hypothesis that a property's value is negatively impacted by having neighboring properties that are currently in REO status. The presence of an REO property within 300 feet, for instance, is found to reduce a property's value by between 1 percent and 4 percent. Consistent with previous work on REO spillovers, the negative REO externality generally declines with distance from the transacting property. The coefficients on variables measuring the count of properties that transitioned from REO status to homesteaded status in the past year

indicate that such properties have a less deleterious effect on their neighbors than do properties that are currently in REO status. In 8 of the 10 counties, the coefficient on the innermost homesteaded-ex-REO ring is not statistically significant, and in the two counties where the coefficients are statistically significant (Alachua and Pinellas), the spillovers from the homesteaded properties are smaller in magnitude than those of the properties currently in REO status. Although some of the coefficients on the variables measuring the spillovers of more distant properties that recently transitioned from REO status to homesteaded status are statistically significant, these coefficients are typically quite small in magnitude. The coefficients on the counts of properties that transitioned from REO status to homesteaded status between 1 and 2 years prior to the sale tell a similar story; the coefficients on these terms are generally statistically insignificant, and in the cases where such terms are significant, they are quite small.

In contrast to the estimated coefficients on the ex-REO-homesteaded variables, the coefficients on the ex-REO-non-homesteaded terms suggest that such properties generate negative spillovers that are equal in size or exceed those generated by properties that are in REO status. For instance, in Alachua County, REO properties within 0 to 300 feet and 300 to 500 feet are found to reduce property values by approximately 4 and 2 percent, respectively; properties within the same distance rings that have transitioned to non-homesteaded status within the past year, on the other hand, are found to reduce property values by approximately 5 percent. In other counties, when comparing the active-REO and REO-to-non-homesteaded coefficients, the impact of the non-homesteaded properties on neighborhood values appears to be very similar to that of properties currently in REO status. The coefficients on the variables measuring the spillovers of non-homesteaded properties that exited REO status between 1 and 2 years prior to the sale indicate that the contagion effect of ex-REO-non-homesteaded properties is also long-lived; in each of the 10 counties in our sample, the coefficients on at least one of the innermost ring terms is negative and statistically significant. Though the estimated spillovers from the non-homesteaded properties that exited REO status between 1 and 2 years before the sale are generally smaller than the spillovers from the more recent ex-REO-non-homesteaded properties, in many cases the difference in the

magnitude of the coefficients is small, suggesting that any decline in the externalities generated by non-homesteaded REO properties is slow.

In sum, the results from out hedonic models provide evidence - consistent with previous work - that properties currently in REO status reduce the value of surrounding properties. This negative spillover effect appears to disappear when the properties are sold to owner-occupiers. When the REOs are sold to non-owner-occupiers, on the other hand, the negative spillover appears to persist for several years.

V.C. School Model Equations

Due to complications associated with the data collection, results for this section are not currently available.

VI. Conclusion

The recent collapse of the U.S. housing market resulted in an unprecedented wave of residential mortgage foreclosures and a dramatic increase in the stock of bank-owned housing. A quickly growing literature suggests that these bank-owned properties generate significant negative externalities and depress the values of surrounding properties. Little is known, however, about how these REO properties affect neighborhoods after they are liquidated by the banks. A small collection of studies of the distressed property market has found that a significant portion of REO properties are sold to investors. Because investor-owned properties are likely to be rentals - and rentals, like REOs, are believed to generate negative externalities - there is a fear that a widespread conversion of REOs to rental units could have a deleterious impact on property values. In this paper, we provide evidence that these fears may not be unfounded. Whereas properties that are sold out of REO status to owner-occupiers do not appear to have deleterious effects on the values of neighboring homes, properties that we have identified as likely to be investor-owned generate externalities of roughly the same magnitude of properties that are still in REO status; perhaps even more troubling, we find these spillovers to be quite persistent over time. It should be emphasized that this study does not establish a causal link between investor-owned status *per se* and

negative externalities. For instance, our results may simply reflect investors targeting REOs in the worst physical condition because of the deep discounts associated with such properties. The persistence of the spillovers from the non-homesteaded ex-REO properties, however, indicates that whatever unobservable defects that may have attracted investors to the property are not remedied quickly.

Though our estimates suggest that the widespread conversion of REOs into rentals - a policy being actively pursued by several large financial institutions - may impose large costs on incumbent homeowners, there are also potential social benefits from such policies: namely, creating rental housing opportunities for lower income and minority families in better school zones. In future iterations of this paper, we plan on exploring the extent to which investor-owned REOs may generate such opportunities.

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Table 1: Summary of Literature on Foreclosure Spillovers

Study	Data	Sample Year(s)	Foreclosure Measure	Method	Results	Estimate of How Long Spillover Lasts?
Leonard and Murdoch [2009]	Single–family sales transactions from Dallas County, TX	2006	Properties that entered some stage of the foreclosure process between 2005 and 2007	Cross–sectional hedonic price model with spatial lag	Additional foreclosure within 250 feet in neighborhoods with homeownership rate below 80% reduces value by 0.5%	No
Rogers and Winter [2009]	Single–family sales transactions from St. Louis County, MO	1998—2007	New REO properties by year	Pooled cross–section hedonic price model with spatial error correction	Additional foreclosure within 200 yards and within 6 months of sale reduces value by 2%	Yes, within 200 yards, at 0—6 months discount is 3%, falls to 2% at 18—24 months
Campbell, Giglio and Pathak [2011]	Single–family, multi–family and condo sales transactions from Massachusetts	1987—2009	New REO properties by year	Differences–in–differences hedonic model with Census–tract–year fixed effects	Additional foreclosure within 0.05 miles reduces value by 1%; only condos experience negative spillover when sample is split	Yes, within 0.1 mile, at 0—12 months discount .06%, at 12—24 months discount .064%
Schuetz, Been and Ellen [2008]	Single–family and multi–family sales transactions from NYC	2002—2005	New foreclosure filings by year	Hedonic price model with zip code fixed effects; future foreclosures control for unobservables	Additional foreclosure within 500 to 1000 feet and within 18 months of filing reduces value by 2.8%	Yes, discounts at more than 18 months generally as large or larger as discounts between 0—18 months
Lin, Rosenblatt and Yao [2009]	Single–family sales transactions from Chicago MSA	2006	New REO properties	Cross–section hedonic price model with county and zip code fixed effects	Foreclosures have a negative effect up to 0.9 km away from sale and up to 5 years after the foreclosure	Yes, within .1 km, at 0—2 years discount 9.8%, at 2—5 years discount 6.6%, at 5—10 years discount 4%
Mikelbank [2008]	Single–family sales transactions from Franklin County, OH	2006	Number of foreclosure filings in year of transaction	Cross–section hedonic price model with spatial error specification	Additional foreclosure reduces value by 2% within 250 feet; spillover declines to 1% at 1000 feet	No

Immergluck and Smith [2006a]	Single–family sales transactions from Chicago, IL	1999	New foreclosures in 1997 and 1998	Cross–section hedonic price model	Additional foreclosure within 1/8 of a mile reduces value by 0.9%	No
Harding, Rosenblatt and Yao [2009]	Single–family repeat sales from 7 MSAs	1998—2007	Foreclosure stock in year of transaction by foreclosure phase	Change in price function of change in number of nearby foreclosures	Additional foreclosure within 300 feet reduces value by 1%; estimates vary by MSA	Yes, within 300 feet, discount within one year of foreclosure the same as discount 9—12 months after the sale of REO
Wassmer [2011]	Single–family sales transactions from Sacramento area	2008—2009	Number of new REOs in quarter before sale	Cross–section hedonic price model with spatial error specification	Within 0.1 mile, additional foreclosure reduces value by .61%	No
Rogers [2010]	Single–family sales from St. Louis County, MO	2000—2007	Foreclosure sales plus sales during default stage	Hedonic price model with zip code fixed effects and spatial error correction	The spillover effect of foreclosures substantially declined between 2000 and 2007, which is attributed to a thicker market	Yes, within 200 feet, at 0—1 year 3.4% discount, at 3—4 years 2.7% discount
Anenberg and Kung [2012]	Single–family sales from San Francisco	2007—2009	REO listed for sale in MLS	Difference–in–differences hedonic price model comparing list and sale prices before and after an REO is listed nearby	A discount of 1% within 0.1 mile of new REO listing; suggestion that spillover effect due to a competitive effect rather than a disamenity effect	Yes, spillover temporary—after listed REO sells, prices return to pre–REO–listing values
Daneshvary and Clauretie [2012]	Single–family sales from Las Vegas	2008—2009	New REOs and short sales	Autoregressive spatial model with autoregressive error term used to estimate cross–sectional hedonic price model	On average, foreclosure sales within past 6 months reduce home value by 10%; short sales do not produce spillover effects	No

Variable	Description
$P_{i,j,t,m}$	Sales price of home i on date t
$\omega_{j,y}$	Neighborhoood– j year–y fixed effect
λ_m	Sale month fixed effect
$REO_{i,t,k}$	Active REO stock in ring k at time of sale
$XREO\_H_{i,k,g}$	Ex–REO that exited REO status either one year before the sale (g=1) or between 1 and 2 years before the sale (g=2) and is homesteaded at the time of the sale
$XREO\_NH_{i,k,g}$	Ex–REO that exited REO status either one year before the sale (g=1) or between 1 and 2 years before the sale (g=2) and is not homesteaded at the time of the sale
$FORECLOSURE_{i,t}$	Foreclosure sale indicator
$SHORTSALE_{i,t}$	Short sale indicator
X_i	Structural characteristics of home i
$\varepsilon_{i,j,t,m}$	Error term
i	Property identifier
t	Sale date
m	Month of sale
j	Neighborhood identifier
y	Year of sale
g	Date of REO exit

Table 3: Summary Statistics

	County Name				
Variable	Alachua	Broward	Dade	Duval	Palm Beach
Sales Price	154259.6	247937.2	246642.3	139969.2	256676.2
	(100587.9)	(174339.3)	(181755.3)	(113637.2)	(177954.1)
Foreclosure Sale?	.0372	.0823	.0928	.089	.0609
	(.1893)	(.2748)	(.2901)	(.2848)	(.2392)
Short Sale?	.0246	.0438	.0344	.0261	.0469
	(.1549)	(.2047)	(.1821)	(.1594)	(.2115)
Interior Square Footage	1640.867	1862.106	1799.909	1623.324	1860.027
	(618.9214)	(787.6213)	(705.282)	(610.8372)	(714.3003)
Active REO Count Variables					
Ring 1: 0-300 Feet	.0369	.1253	.1357	.1203	.0822
	(.2076)	(.425)	(.5275)	(.403)	(.4468)
Ring 2: 300-500 Feet	.0421	.152	.1795	.1565	.0939
	(.2208)	(.4793)	(.584)	(.4632)	(.4554)
Ring 3: 500-1000 Feet	.145	.6252	.724	.6083	.371
	(.4489)	(1.3179)	(1.6388)	(1.1745)	(1.2651)
Ring 4: 1000-2000 Feet	.3783	2.0626	2.3171	1.8904	1.1048
	(.7868)	(3.5669)	(3.8891)	(2.9829)	(2.9997)
Ring 5: 2000-3000 Feet	.4936	2.9487	3.3321	2.6538	1.4251
	(.9177)	(4.8129)	(4.8979)	(4.0562)	(3.0206)
Properties Exiting REO Status in Past Year					
Homesteaded					
Ring 1: 0-300 Feet	.0245	.0885	.0854	.059	.056
	(.1617)	(.3429)	(.3493)	(.2873)	(.336)
Ring 2: 300-500 Feet	.0284	.1058	.1108	.0737	.0617
	(.1783)	(.3781)	(.4029)	(.2976)	(.3169)
Ring 3: 500-1000 Feet	.095	.4329	.444	.2757	.2433
	(.3458)	(.9369)	(.9972)	(.6318)	(.8748)
Ring 4: 1000-2000 Feet	.2624	1.4125	1.4063	.8523	.7145
	(.6112)	(2.3999)	(2.3908)	(1.3513)	(1.83)
Ring 5: 2000-3000 Feet	.3427	2.0173	1.9924	1.1755	.9223
	(.7308)	(3.2813)	(2.9915)	(1.7208)	(1.8589)
Not Homesteaded					
Ring 1: 0-300 Feet	.0292	.1151	.12	.1245	.0762
	(.1989)	(.4658)	(.5376)	(.4317)	(.4406)
Ring 2: 300-500 Feet	.0331	.1359	.1578	.1566	.0887
	(.2032)	(.5082)	(.627)	(.4879)	(.4908)
Ring 3: 500-1000 Feet	.1161	.5693	.6261	.631	.3547
	(.4384)	(1.465)	(1.5935)	(1.3728)	(1.4191)
Ring 4: 1000-2000 Feet	.2952	1.8639	2.0076	1.9571	1.0346

	(.7419)	(4.0151)	(3.7982)	(3.6635)	(3.3163)
Ring 5: 2000-3000 Feet	.3682	2.6422	2.8659	2.7493	1.3074
	(.8381)	(5.2414)	(4.5719)	(4.9529)	(3.0492)
First Sale Date	March, 1998	January, 1999	January, 1999	August, 1996	January, 1999
Final Sale Date	November, 2011	November, 2011	November, 2011	November, 2011	November, 2011
Observations	34314	271669	236809	172715	187801
Standard deviations in parentheses					

Table 4: Summary Statistics (Continued)

	County Name				
Variable	Hillsborough	Lee	Leon	Pinellas	Volusia
Sales Price	172435.7	195589.4	156684.5	170640	144010.2
	(130537.8)	(171707.2)	(99279.76)	(128481.4)	(100470.5)
Foreclosure Sale?	.076	.1603	.0381	.0643	.0869
	(.265)	(.3669)	(.1914)	(.2453)	(.2817)
Short Sale?	.0447	.0704	.025	.0383	.0382
	(.2067)	(.2559)	(.1563)	(.192)	(.1918)
Interior Square Footage	1739.57	1734.573	1564.064	1497.341	1539.985
	(693.3149)	(574.2853)	(608.7352)	(604.3362)	(565.5535)
Active REO Count Variables					
Ring 1: 0-300 Feet	.1211	.1727	.053	.0683	.0678
	(.455)	(.6064)	(.2874)	(.2851)	(.306)
Ring 2: 300-500 Feet	.1208	.2638	.0503	.1137	.0997
	(.4575)	(.6911)	(.2685)	(.3858)	(.3637)
Ring 3: 500-1000 Feet	.54	.9245	.1655	.43	.3674
	(1.2636)	(1.8061)	(.5327)	(.9348)	(.8519)
Ring 4: 1000-2000 Feet	1.7189	3.2061	.4497	1.4483	1.1509
	(3.316)	(4.651)	(.9211)	(2.4817)	(1.9233)
Ring 5: 2000-3000 Feet	2.3997	4.8918	.5904	2.107	1.6312
	(4.2316)	(6.9277)	(1.0434)	(3.3618)	(2.9807)
Properties Exiting REO Status in Past Year					
Homesteaded					
Ring 1: 0-300 Feet	.089	.098	.0445	.0463	.0431
	(.4409)	(.3907)	(.2589)	(.2251)	(.2183)
Ring 2: 300-500 Feet	.0877	.1522	.0427	.0721	.0633
	(.4081)	(.4689)	(.2458)	(.2795)	(.2698)
Ring 3: 500-1000 Feet	.3752	.5433	.1403	.2735	.2305
	(1.1705)	(1.1294)	(.5076)	(.5932)	(.5678)
Ring 4: 1000-2000 Feet	1.0982	1.8458	.3549	.9025	.7146
	(1.8939)	(2.9981)	(.7755)	(1.2831)	(1.279)
Ring 5: 2000-3000 Feet	1.5188	2.8201	.4602	1.2985	.99
	(2.2212)	(4.4526)	(.8649)	(1.6603)	(1.6983)
Not Homesteaded					
Ring 1: 0-300 Feet	.1229	.219	.0402	.0739	.0755
	(.4484)	(.8735)	(.257)	(.3113)	(.3214)
Ring 2: 300-500 Feet	.1216	.3289	.0396	.1257	.1083
	(.4448)	(.8459)	(.2444)	(.4502)	(.3921)
Ring 3: 500-1000 Feet	.5632	1.1688	.1249	.4747	.3967
	(1.3845)	(2.4326)	(.4706)	(1.1809)	(.9143)
Ring 4: 1000-2000 Feet	1.7798	3.9941	.35	1.5981	1.2234

	(3.7682)	(6.0981)	(.8415)	(3.4009)	(2.2438)
Ring 5: 2000-3000 Feet	2.4996	6.074	.4672	2.343	1.6948
	(5.0367)	(9.1429)	(1.0369)	(4.6818)	(3.0329)
First Sale Date	April, 1998	March, 1998	February, 1998	January, 1999	March 1998
Final Sale Date	November, 2011	November, 2011	November, 2011	November, 2011	November, 2011
Observations	213920	162338	46999	167719	99604
Standard deviations in parentheses					

Table 5: Post-REO Homestead Status

	Post-REO Homestead Status		
County	**Homesteaded (%)**	**Not Homesteaded (%)**	**Total**
Alachua	1104 (43%)	1445 (57%)	2549
Broward	17520 (42%)	23886 (58%)	41406
Dade	15892 (38%)	25531 (62%)	41423
Duval	9274 (32%)	20104 (68%)	29378
Hillsborough	12636 (40%)	18723 (60%)	31359
Lee	15495 (29%)	38822 (71%)	54317
Leon	1582 (44%)	1976 (56%)	3558
Palm Beach	9431 (39%)	15084 (61%))	24515
Pinellas	7648 (38%)	12271 (62%)	19919
Volusia	5422 (36%)	9730 (64%)	15152
All Counties	96004 (36%)	167572 (64%)	263576

Table 6: Hedonic Regression Results

	Dependent Variable: ln(Sales Price)				
	County				
	(1)	(2)	(3)	(4)	(5)
Variable	Alachua	Broward	Dade	Duval	Palm Beach
Active REO Count Variables					
Ring 1: 0-300 Feet	-0.0386***	-0.0239***	-0.00977***	-0.0230***	-0.0192***
	(0.0112)	(0.00225)	(0.00168)	(0.00328)	(0.00345)
Ring 2: 300-500 Feet	-0.0195*	-0.00808***	-0.00696***	-0.00642**	-0.00824**
	(0.0108)	(0.00164)	(0.00154)	(0.00264)	(0.00381)
Ring 3: 500-1000 Feet	-0.00924	-0.00532***	-0.00254***	-0.00354**	-0.00770***
	(0.00593)	(0.00100)	(0.000745)	(0.00141)	(0.00232)
Ring 4: 1000-2000 Feet	-0.00180	-0.00245***	-0.00183***	-0.00258***	-0.00369***
	(0.00378)	(0.000517)	(0.000430)	(0.000838)	(0.000909)
Ring 5: 2000-3000 Feet	-0.00607**	-0.00251***	-0.00179***	-0.00163**	-0.00356***
	(0.00274)	(0.000443)	(0.000311)	(0.000717)	(0.000754)
Properties Exiting REO Status in Year Before Sale					
Homesteaded					
Ring 1: 0-300 Feet	-0.0273**	0.000298	-0.00135	0.00416	0.00559
	(0.0124)	(0.00324)	(0.00209)	(0.00396)	(0.00450)
Ring 2: 300-500 Feet	-0.0188	0.00376	-0.00318*	-0.00602*	0.00763*
	(0.0116)	(0.00271)	(0.00172)	(0.00326)	(0.00413)
Ring 3: 500-1000 Feet	0.00295	0.00348***	0.000992	-0.00288	0.00734**
	(0.00656)	(0.00127)	(0.00106)	(0.00184)	(0.00291)
Ring 4: 1000-2000 Feet	-0.00712	0.000312	-0.00118*	0.000437	0.00255
	(0.00476)	(0.000739)	(0.000643)	(0.00123)	(0.00190)
Ring 5: 2000-3000 Feet	-0.0154***	-0.00123**	-0.00173***	0.000532	0.000600
	(0.00368)	(0.000560)	(0.000527)	(0.000947)	(0.00118)
Not Homesteaded					
Ring 1: 0-300 Feet	-0.0504***	-0.0256***	-0.00787***	-0.0232***	-0.0186***
	(0.0126)	(0.00365)	(0.00196)	(0.00366)	(0.00375)
Ring 2: 300-500 Feet	-0.0534***	-0.0110***	-0.00589***	-0.0133***	-0.0164***
	(0.0124)	(0.00304)	(0.00183)	(0.00287)	(0.00357)
Ring 3: 500-1000 Feet	-0.0168***	-0.0101***	-0.00401***	-0.00785***	-0.0113***
	(0.00587)	(0.00121)	(0.000803)	(0.00148)	(0.00192)
Ring 4: 1000-2000 Feet	0.00843**	-0.00357***	-0.00274***	-0.00426***	-0.00638***
	(0.00410)	(0.000693)	(0.000474)	(0.000939)	(0.000931)
Ring 5: 2000-3000 Feet	0.000540	-0.00348***	-0.00214***	-0.00391***	-0.00430***
	(0.00357)	(0.000551)	(0.000401)	(0.000794)	(0.000840)
Properties Exiting REO Status 1-2 Years Before Sale					
Homesteaded					
Ring 1: 0-300 Feet	0.0117	0.00182	-0.000236	-0.00598	-0.00180

	(0.0130)	(0.00254)	(0.00213)	(0.00413)	(0.00457)
Ring 2: 300-500 Feet	-0.0157	0.00274	-0.000663	0.000249	0.00266
	(0.0133)	(0.00221)	(0.00185)	(0.00368)	(0.00337)
Ring 3: 500-1000 Feet	-0.0184***	0.00349***	0.00249**	-0.00174	0.000612
	(0.00702)	(0.00121)	(0.00113)	(0.00201)	(0.00218)
Ring 4: 1000-2000 Feet	-0.00606	0.00401***	0.000986	-0.000176	0.00240
	(0.00569)	(0.000830)	(0.000651)	(0.00123)	(0.00208)
Ring 5: 2000-3000 Feet	-0.0152***	0.00182***	-0.000252	-3.07e-05	-0.00161
	(0.00465)	(0.000592)	(0.000529)	(0.00109)	(0.00110)
Not Homesteaded					
Ring 1: 0-300 Feet	-0.0361**	-0.0207***	-0.00391	-0.0305***	-0.00210
	(0.0169)	(0.00376)	(0.00254)	(0.00369)	(0.00334)
Ring 2: 300-500 Feet	-0.0282**	-0.00725***	-0.00531***	-0.0144***	-0.0174***
	(0.0136)	(0.00262)	(0.00177)	(0.00307)	(0.00361)
Ring 3: 500-1000 Feet	-0.0252***	-0.00578***	-0.00456***	-0.00598***	-0.00880***
	(0.00893)	(0.00134)	(0.000989)	(0.00162)	(0.00207)
Ring 4: 1000-2000 Feet	0.00652	-0.00278***	-0.00183***	-0.00432***	-0.00764***
	(0.00536)	(0.000834)	(0.000596)	(0.00110)	(0.00149)
Ring 5: 2000-3000 Feet	-0.000221	-0.00329***	-0.00201***	-0.00271***	-0.00391***
	(0.00367)	(0.000634)	(0.000416)	(0.000876)	(0.00109)
Foreclosure Sale?	-0.290***	-0.201***	-0.222***	-0.341***	-0.215***
	(0.0141)	(0.00361)	(0.00373)	(0.00514)	(0.00450)
Short Sale?	-0.138***	-0.104***	-0.117***	-0.157***	-0.102***
	(0.0155)	(0.00373)	(0.00497)	(0.00692)	(0.00478)
Observations	34,314	271,669	236,809	172,715	187,801
Includes Monthly Dummies?	Yes	Yes	Yes	Yes	Yes
Includes PLSS Section-Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
Number of PLSS Section-Year Combinations	2,301	4,845	7,084	8,044	5,983
All models include the following variables: a pool indicator, square footage, lot size, bedrooms, bathrooms, and age					
Standard errors are clustered at the PLSS section level					
*** p<0.01, ** p<0.05, * p<0.1					

Table 7: Hedonic Regression Results (Continued)

	Dependent Variable: ln(Sales Price)				
	County				
	(6)	(7)	(8)	(9)	(10)
Variable	Hillsborough	Lee	Leon	Pinellas	Volusia
Active REO Count Variables					
Ring 1: 0-300 Feet	-0.0135***	-0.0159***	-0.0221***	-0.0366***	-0.00776
	(0.00309)	(0.00285)	(0.00564)	(0.00396)	(0.00539)
Ring 2: 300-500 Feet	-0.00542**	-0.00855***	-0.0146***	-0.0260***	-0.0116***
	(0.00252)	(0.00193)	(0.00565)	(0.00281)	(0.00327)
Ring 3: 500-1000 Feet	-0.00579***	-0.00291**	-0.00914**	-0.0144***	-0.00287
	(0.00108)	(0.00118)	(0.00409)	(0.00159)	(0.00297)
Ring 4: 1000-2000 Feet	-0.00242***	-0.00191***	-0.00851***	-0.00756***	-0.00258*
	(0.000606)	(0.000450)	(0.00249)	(0.000927)	(0.00135)
Ring 5: 2000-3000 Feet	-0.00225***	-0.00118***	-0.00560***	-0.00462***	-0.00192**
	(0.000557)	(0.000346)	(0.00193)	(0.000730)	(0.000836)
Properties Exiting REO Status in Year Before Sale					
Homesteaded					
Ring 1: 0-300 Feet	-0.00160	-0.00232	-0.00510	-0.0155***	-0.00754
	(0.00235)	(0.00264)	(0.00567)	(0.00479)	(0.00501)
Ring 2: 300-500 Feet	0.00149	-0.00596***	0.00310	-0.0143***	-0.000487
	(0.00293)	(0.00220)	(0.00654)	(0.00358)	(0.00350)
Ring 3: 500-1000 Feet	-0.00287*	-0.00249**	0.00444	-0.00734***	-0.00273
	(0.00156)	(0.00125)	(0.00306)	(0.00225)	(0.00235)
Ring 4: 1000-2000 Feet	-0.000933	-0.00117*	0.000537	-0.00389***	0.00168
	(0.000740)	(0.000710)	(0.00244)	(0.00137)	(0.00186)
Ring 5: 2000-3000 Feet	-0.000299	-0.000850	0.00649***	-0.00266**	0.00110
	(0.000641)	(0.000545)	(0.00207)	(0.00104)	(0.00155)
Not Homesteaded					
Ring 1: 0-300 Feet	-0.0210***	-0.0112***	-0.0354***	-0.0440***	-0.0198***
	(0.00259)	(0.00312)	(0.00881)	(0.00417)	(0.00487)
Ring 2: 300-500 Feet	-0.0131***	-0.00906***	-0.0154**	-0.0266***	-0.0132***
	(0.00258)	(0.00193)	(0.00764)	(0.00304)	(0.00250)
Ring 3: 500-1000 Feet	-0.00984***	-0.00320***	-0.0182***	-0.0176***	-0.0129***
	(0.00130)	(0.00117)	(0.00439)	(0.00174)	(0.00200)
Ring 4: 1000-2000 Feet	-0.00465***	-0.00120***	-0.0118***	-0.00618***	-0.00662***
	(0.000748)	(0.000432)	(0.00294)	(0.000945)	(0.00134)
Ring 5: 2000-3000 Feet	-0.00323***	-0.000587*	-0.00824***	-0.00376***	-0.00400***
	(0.000722)	(0.000315)	(0.00222)	(0.000620)	(0.00112)
Properties Exiting REO Status 1-2 Years Before Sale					
Homesteaded					
Ring 1: 0-300 Feet	0.000793	-0.00227	-0.00106	-0.0222***	-0.00158

	(0.00217)	(0.00281)	(0.00587)	(0.00448)	(0.00459)
Ring 2: 300-500 Feet	0.00191	-0.00580***	0.0110*	-0.0107***	0.00159
	(0.00239)	(0.00211)	(0.00561)	(0.00376)	(0.00309)
Ring 3: 500-1000 Feet	-0.000619	-0.00177	0.00579	-0.0117***	-0.000199
	(0.00119)	(0.00128)	(0.00362)	(0.00224)	(0.00205)
Ring 4: 1000-2000 Feet	0.000158	0.000837	0.00278	-0.00225	-0.00118
	(0.000853)	(0.000794)	(0.00257)	(0.00141)	(0.00119)
Ring 5: 2000-3000 Feet	0.000466	-0.000159	0.00144	-0.00116	-0.00137
	(0.000675)	(0.000547)	(0.00231)	(0.000989)	(0.00133)
Not Homesteaded					
Ring 1: 0-300 Feet	-0.0175***	-0.00866***	-0.0163**	-0.0322***	-0.0209***
	(0.00293)	(0.00318)	(0.00769)	(0.00418)	(0.00426)
Ring 2: 300-500 Feet	-0.0117***	-0.00717***	-0.0240***	-0.0232***	-0.0122***
	(0.00251)	(0.00166)	(0.00803)	(0.00308)	(0.00331)
Ring 3: 500-1000 Feet	-0.00522***	-0.00254**	-0.0145***	-0.0137***	-0.0102***
	(0.00142)	(0.00111)	(0.00452)	(0.00168)	(0.00202)
Ring 4: 1000-2000 Feet	-0.00243***	-0.000192	-0.0123***	-0.00309***	-0.00342***
	(0.000800)	(0.000480)	(0.00292)	(0.000912)	(0.00101)
Ring 5: 2000-3000 Feet	-0.00166***	0.000136	-0.00663***	-0.00119*	-0.00346***
	(0.000589)	(0.000367)	(0.00212)	(0.000713)	(0.00101)
Foreclosure Sale?	-0.244***	-0.240***	-0.233***	-0.302***	-0.232***
	(0.00384)	(0.00352)	(0.00935)	(0.00474)	(0.00720)
Short Sale?	-0.119***	-0.159***	-0.123***	-0.101***	-0.0934***
	(0.00496)	(0.00441)	(0.0114)	(0.00574)	(0.00847)
Observations	213,920	162,338	46,999	167,719	99,604
Includes Monthly Dummies?	Yes	Yes	Yes	Yes	Yes
Includes PLSS Section-Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
Number of PLSS Section-Year Combinations	10,347	6,784	2,596	6,515	4,520
All models include the following variables: a pool indicator, square footage, lot size, bedrooms, bathrooms, and age					
Standard errors are clustered at the PLSS section level					
*** p<0.01, ** p<0.05, * p<0.1					