The Effect of Foreclosures on Owner-Occupied Housing Prices: Supply or Dis-Amenity?

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Abstract

Several studies have measured negative price effects of foreclosed residential properties on nearby property sales. However, these studies do not address which mechanism is responsible for these effects. I decompose the effects of foreclosures on nearby home prices into a component that is due to additional available housing supply and a component that is due to dis-amenity stemming from deferred maintenance or vacancy. I find measurable effects on home prices within 250 feet of a foreclosure auction that occurred within the past year. In census tracts with low vacancy rates, the supply effect is roughly -1.3% per foreclosure and the dis-amenity effect is roughly -1% per foreclosure. In census tracts with high vacancy rates, the supply effect falls to about zero, while the dis-amenity effect remains near -1% per foreclosure. Finally, I consider optimal liquidation strategies for lenders with foreclosed properties within 250 feet of one another, and under what conditions Pareto-improving policies could exist.

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1 Introduction

As housing prices have fallen and foreclosure rates have risen over the past few years, lenders have been put in the position of having to liquidate ever larger inventories of foreclosed homes. Recently, a number of articles in the popular press have cited a "shadow inventory" of homes, part of which is made up of homes that have been repossessed by lenders but have not been listed for sale. In a July 7, 2009 segment on National Public Radio, Yuki Noguchi reports,

> "I do know that banks are holding onto inventory, and what they're doing is they're metering them out at an appropriate level to what the market will bear," says Pat Lashinsky, chief executive of online brokerage site ZipRealty.[1]

Such a strategy raises a number of questions. What factors determine the optimal rate that an individual lender should release inventory into the market? If each lender pursues its own optimal strategy, will the outcome be socially efficient, or could everyone be made better off through government intervention?

The answers to these questions hinge upon the mechanisms through which foreclosures decrease nearby property values and the relative size of these effects. There are two primary mechanisms which are theoretically plausible ways by which a foreclosure may lower the value of other properties nearby. The first mechanism is by way of increasing the supply of homes on the market.[2] The second mechanism operates through the dis-amenity imposed on nearby properties if a foreclosed property is not properly maintained or if it falls victim to crime or vandalism, possibly while vacant. This paper attempts to measure the effect of foreclosure on nearby property values and to decompose this effect into portions attibutable to the aforementioned supply and dis-amenity mechanisms.

I pursue an empirical strategy under which identification of seperate supply and dis-amenity effects relies upon segmentation of the single-family and multi-family housing markets. Specifically, I assume that foreclosure of a nearby single-family home effects the property values of single-family homes through both the supply and dis-amenity mechanisms, whereas foreclosure of a nearby non-owner occupied multi-family building effects the property values of single-family homes only through the dis-amenity mechanism. Under this

[1] The full segment can be found at `http://www.npr.org/templates/story/story.php?storyId=106113137`.
[2] Wheaton [1990] shows that prices fall as vacancies rise in a housing market search and matching model.

assumption, identification of seperate supply and dis-amenity effects hinges upon identification of the effect of single-family home foreclosures and non-owner occupied multi-family building foreclosures.

I estimate the effects of single-family home and non-owner occupied multi-family foreclosures on the universe of single-family home sales in Chicago between 1998 and 2008. Using a hedonic framework, I estimate the effect of single-family and multi-family foreclosure sales that occured during the prior year and within 500 feet on the log price of single-family homes. In addition to the universe of other residential foreclosures, I control for a large number of property characteristics that could affect home prices. I also include census tract effects to control for persistant differences in prices across the city. Finally, I control for trends in housing prices over the sample period using either year effects to control for city-wide price trends or community area-year effects to control for neighborhood-level price trends. A central concern of all studies that examine the effect of foreclosures on property values is that they may be affected by reverse causlity. The issue is that falling property values may provide an impetus for home-owners to default on their mortgages, thus foreclosures could be concentrated precisely in the places prices are lowest, yet the low prices would not have been caused by the foreclosures. If prices fall at different rates in different neighborhoods, then the inclusion of community area - year effects may be neccessary to avoid bias due to reverse causality.

I find that each scheduled single-family home foreclosure auction within a 250 foot radius and in the past year is associated with a reduction in the price of a single-family home that ranges from about 0.9% in high vacancy census tracts to about 2.2% in low vacancy census tracts.[3] In contrast, multi-family forcelosure auctions in the past year within a 250 foot radius are associated with about a 1% (per unit of foreclosed building) reduction in the price of a single-family home irrespective of the census tract vacancy rate. I interpret these findings as evidence that the supply effect ranges from about -1.3% in low vacancy census tracts to

[3]This finding is in line with the findings of several other recent studies. Immergluck and Smith [2006] find about a 1% reduction in the price of single-family homes in Chicago in 1999 for each foreclosure within one eighth of a mile. Schuetz et al. [2008] find a smaller effect, about -0.2%, in New York City between 2000 and 2005 in a 250 foot radius. It is not surpirising that I find a larger effect for two reasons. The first reason is that the New York City housing market was booming from during their sample, whereas my sample includes the subsequent bust as well. The second reason is that they study the effect of foreclosure filings whereas I focus on foreclosures that have proceeded to the point where an auction has been scheduled. As opposed to the hedonic framework used by the two aforementioned studies, Harding et al. [2009] use a repeat sales framework and find effects of a similar magnitude in several MSAs. Using data from Massachusetts, Campbell et al. [2009] also find a spillover effect of about -1% per foreclosure within about 250 feet. Lin et al. [2007] find much larger effects using data from 2003 and 2006 from Chicago, but their results may be biased by not having a complete listing of all foreclosures.

about zero in high vacancy census tracts, whereas the dis-amenity effect is consistently about -1%.[4] The supply effect result is consistent with the theoretical prediction from the search and matching model of housing presented in Wheaton [1990] in that marginal increases in the vacancy rate have diminishing effects on prices as the vacancy rate rises. Somewhat interestingly, I also find that in low vacancy census tracts the marginal supply effect of an additional foreclosure is increasing in the number of foreclosures, while the marginal dis-amenity effect of an additional foreclosure is close to constant in the in the number of foreclosures.

Using the estimates of the supply and dis-amenity effects reported above, I consider optimal liquidation strategies for lenders with two or more foreclosed properties within 250 feet of each other. I consider cases in which policy has the potential for Pareto-improvement. Since, I am focussing on the effect of foreclosures on home prices, I assume that, absent any foreclosures, homes simply sell at a constant intrinsic value. Under this assumption, it will always be optimal for lenders to sell all homes that are in high vacancy rate census tracts in the first period, since the supply effect is zero in high-vacancy rate census tracts. However, in low vacancy rate census tracts there may be cases in which it is optimal to not to sell all the foreclosed homes in the first period. I consider the case of a monopolist lender with many foreclosed properties in a 250 foot radius circle. I find that it is optimal for a lender with 10 foreclosed properties in such an area to hold at least one property until the second period as long as the interest rate plus the depreciation rate (the cost-of-carry) is less than about 15%.

2 Data

I use data from several sources. Residential property sales data come from the Cook County Recorder of Deeds and the Chicago Tribune. Foreclosure data for Cook County are from a private data provision company named Record Information Services. Property characteristic data and homeowner tax exemption claim data come from the Cook County Tax Assessor's Office.

Property identification numbers allow the foreclosure and sales data to be linked to the

[4]Using data from Columbus, OH in 2006, Mikelbank [2008] finds an effect of about -2.4% for each foreclosure within 250 feet and an effect of about -4.0% for each vacant and abandoned building within 250 feet. While both of these effects are larger than the effects that I measure, it may be due to the fact he does not control for differences in price between different areas of the city, except through the use of several neighborhood characteristic variables.

property characteristic and tax exemption data. After geocoding the addresses, I calculate the distance between every sale and every foreclosure. Since I am interested in the effect of foreclosures on nearby properties but not on the foreclosed properties themselves, I drop any sale that is that is for the same property identification number and occurs less than two years before or after a forelcosure.

The foreclosure data contain entries for two types of events. These events are the initial filing of the foreclosure and the auction date of the foreclosure if an auction is ever scheduled. I include both types of events in my sample. In the end, the sample that I use for estimation includes roughly all residential property transactions in the City of Chicago from 1999 through 2008 and counts of the number of initial foreclosure filings and foreclosure auctions within the past year and within 250 feet or 500 feet for each of the following categories: Single-family home foreclosure, renter-occupied multi-family building foreclosure, owner-occupied multi-family building foreclosure, and condominium foreclosure.

3 Empirical Methodology

My goals are to estimate the effect of residential foreclosures on the price of nearby property and to separate this estimate into a component due to excess supply induced by forclosures and a component due to the dis-amenity of nearby foreclosures stemming from deffered care and maintenance or vacancy. Basically, my strategy is to seperately estimate the effect of a single-family-home foreclosure on nearby single-family-home property values and the effect of a multi-family apartment building foreclosure on nearby single-family-home property values. Then, with a few assumptions outlined below, I interpret the effect of a single-family-home forclosure as representing the combined effect of putting an additional single-family-home on the market and the dis-amenity effect of deferred maintenance or vacancy on the nearby properties. In comparison, I interpret the effect of a multi-family apartment buliding foreclosure on nearby single-family-home property values as being due only to the dis-amenity effect of deferred maintenance or vacancy on the nearby properties.

Several assumptions are necessary in order to interpret my results in this manner. The first assumption is that multi-family apartment building foreclosures do not add to the supply of single-family homes for sale. This assumption requires that potential buyers of single-family homes do not regard multi-family apartment buildings as substitutes and that

sellers cannot quickly convert multi-family apartment buildings to condominiums and sell the units individually. Anecdotal evidence from real estate brokers that I spoke with suggests that these assumptions hold in practice.[5] While it is difficult to directly measure the degree to which potential buyers view multi-family apartment buildings as a potential substitute for a single-family home, it is possible to assess the frequency with which multi-family apartment building foreclosures result in a renter-occupied building becoming owner-occupied. Data from the Cook County Tax Assessor on claims of the owner-occupied tax exemption for the years 2004 - 2007 reveal that only about 3.3% of multi-family buildings that experienced a foreclosure in either year did not file an owner-occupied exemption in the first year but did file an owner-occupied exemption in the second year. This suggests that entirely renter-occupied multi-family apartment buildings do not frequenly become owner-occupied following a foreclosure. While I do not have direct evidence regarding the degree to which potential home-buyers regard currently owner-occupied multi-family apartment buildings as substitutes for single-family homes, it is clear that renter-occupied multi-family buildings in forclosure are not commonly used as a substitute for a buyer in the market for a single single-family home. Otherwise, the new owner-occupier would claim the tax exemption, and the transition rate of renter-occupied to owner-occupied foreclosed multi-family apartment buildings would be higher than 3.3%.

The second assumption is that both single-family home foreclosures and multi-family apartment building forclosures create dis-amenities for neighboring single-family homes because of deferred maintenance or vacancy. While it is difficult to obtain historical vacancy status data for particular properties, the United States Postal Service has aggregated a number of measures of stocks and flows of vacancy by census tract at a quarterly frequency.[6] Table 1 presents estimates of the association between the number of different types of residential foreclosures and the number of residential addresses that have become vacant in the past three months. These estimates come from a regression of the number of newly vacant addresses in a census tract-quarter on the number of condominium foreclosures, single-family forcloures, and multi-family foreclosures in the same census tract-quarter. Quarter effects are included to account for time trends in the number of new vacancies and community

[5] Chris Young, Sales Associate, Coldwell Bank, Cambridge, MA says, "Rarely have crossover b/w owner-occupied MF and SF/Condo. During property searches, the parameters are separated Condo/SF/MF. Sometimes I get a buyer who's looking SF & Condo, but for the most part they stick with one type. Once they have one type in their head, they stay locked in."

[6] The data are available through the HUDuser website.

area effects are included to account for differences in the number of new vacancies accross neighborhoods. The data are for all census tracts in the City of Chicago and cover the four quarters in 2008. The foreclosure data are counts of the number of units of each type of residential housing that are scheduled to be sold at a foreclosure auction in a particular census tract-quarter.

The estimate presented in the first row indicates that each additional condominium unit scheduled for foreclosure auction is associated with 1.76 newly vacant units. The fact that this estimate is larger than one implies that the estimate is picking up more than just the vacancies due to condominium forclosures, otherwise the estimate could not exceed one. The estimator uses differences in foreclsoures between census tracts within a particular community area to explain differences in the number of newly vacant addresses between these census tracts. While the estimate for the effect of condominium foreclosures on the number of newly vacant addresses implies that there are omitted factors that influence the number of new vacancies and are correlated with the number of condominium foreclosures, it is still important to note that at the census tract level of detail there is a positive correlation between foreclosure auctions and the number of newly vacant addresses. Furthermore, the coefficients on the number of single-family units being auctioned due to foreclosure and the number of multi-family non-owner occupied units being foreclosed due to auction are 0.93 and 0.77, respectively and are not statistically different from each other. This implies that single-family home foreclosures and multi-family apartment building forclosures are associated with a similar number of newly vacant addresses on a per unit basis.

Need to address why multi-family rental building foreclosures would result in vacancies here. 1. Informational problem at auction. Vacancy is verifiable, while lease contracts are harder to verify. 2. Tenants may move out if building is not maintained properly during foreclosure period.

The final assumption is that the dis-amenity created by deferred maintenance or vacancy stemming from a multi-family building foreclosure is comparable to the dis-amenity created by deferred maintenance or vacancy stemming from a single-family foreclsoure or that these two effects can be compared after controlling for the number of units in the multi-family apartment building. An implication of this assumption is that in areas where one would expect the effect of an additional unit for sale to be negligible, such as areas which already

have a high vacancy rate, the magnitude of the effect of a single-family home forclosure should be similar to the per unit magnitude of multi-family apartment building forclosure since both are only capturing the dis-amenity stemming from deferred maintenance and vacancy.

Conditional on the assumptions outlined above, my analysis relies upon obtaining credible estimates of the effect of single-family home foreclosures and multi-family apartment building foreclosures on nearby property values. To achieve this I analyze the prices of a almost all single-family home sales in Chicago between 1999 and 2008. I compute the number of single-family, condominium, owner-occupied multi-family, and non-owner occupied multi-family homes in distance based rings surrounding each transaction. I control for all available structural characterisistics of the properties. I include census tract effects to control for persistant differences in prices across space. Furthermore, I include either year effects or year-by-community area effects to control for either time trends in housing prices at the city-level or community area-level, respectively.

4 Results

Table 3 presents estimates of the effect of several types of residential housing forclosures that occured over the past year on the price of nearby single-family homes. I limit my sample to single-family homes because detailed data on the structural characteristics of these properties are available from the Cook County Tax Assessor's office. In contrast, the only structural characteristic that is available for condominium units is the age of the building. Furthermore, to ensure that I am comparing homes near foreclosures to comparable homes, I limit my sample to home sales that have at least one foreclosure filing or auction within the past year within 1000 feet. Each specification presented in Table 3 contains controls for a vector of structural characteristics such as the logs of land and building square-footage, a quartic in the age of the structure, and indicator variables for: the number of bathrooms, the type of construction (frame, masonry, or mixed), whether the structure has an attic or basemant (and whether they are full and/or finished), air conditioning, fire place, garage (number of cars and whether it is attached to the home). All specifications also contain census tract effects to control for persistent differences in factors that affect home prices. Examples of such factors include persistant differences in amenity levels across the city, such

as proximity to train stations or to Lake Michigan.

Each specification also includes either year effects or year-community area effects to control for time-trends in home prices. The specifications in columns (1), (3), and (5) include year effects which control for the large increases and subsequent decreases in Chicago home prices during the sample period from 1999 through 2008. With this large set of structure, place, and time-specific controls, my hope is that any omitted variable is not correlated with the number of nearby foreclosures over the past year. This assumption could, potentially, be violated if variation in the number of foreclosures over time is driven by community area-level changes in prices. Such reverse-causality bias could be a problem if a drop in home prices in one community area is particularly large compared to another community area, and this drop leads to more foreclosures in the first community area. If this were the case, then an estimator that does not control for community area-year effects might overstate the effect of forecloures on home prices. The specifications presented in columns (2), (4), and (6) include community area-year effects to control for time-trends in home prices at the community area-level which will help to avoid potential reverse causality bias.

The estimate presented in the first row of column (1) of Table 3 indicates that each additional single-family home foreclosure within 250 feet lowers the selling price of a single-family home by about 2.6%. The estimate in the second row of column (1) indicates that each additional single-family home foreclosure that is between 250 and 500 feet away is associated with about a 0.7% reduction in the sale price of a single-family home. The estimate presented in the third row of column(1) implies that each unit of a non-owner occupied multi-family apartment building foreclosure within 250 feet is associated with about a 1.4% drop in the sale price of a single-family home. The estimate in row four of column (1) reveals that forclosures of non-owner occupied multi-family apartment buildings between 250 feet and 500 feet away are associated with about a 0.8% price reduction. Rows five through eight of column (1) present similar estimates for owner-occupied multi-family apartment building forclosures and for condominium foreclosures. I do not focus these estimates, but have included them in case the reader is interested. All estimates are calculated on a per-unit basis, and can thus be interpretted as the price reduction of a single-family home associated with an additional unit of foreclosure of a particular type of housing in each distance-based band. All specifications include controls for the number of initial foreclosure filings.

Column (2) of Table 3 presents estimates from the specification which includes community area-year effects. The reduction in the magnitude of estimates from column (1) to column (2) indicates is consistent with the story that reverse causality may be biasing estimates that do not control for community area-specicific price trends.

Interpretting the estimate in the first row as the combined supply and dis-amenity effect of foreclosure on nearby single-family home prices and the third row as the dis-amenity effect alone results in a decomposition which attributes a 1.2% decline in price to the supply effect and a 1.4% decline in price to the dis-amenity effect for the estimates in column (1). Similarly the estimates in column (2) attribute a 0.7% drop in single-family home prices to the supply effect and a 1.1% drop in prices to the dis-amenity effect.

4.1 Variation in Effect by Vacancy Rate

Columns (3) through (6) of Table 3 present estimates for the same specifications as those in columns (1) and (2) but for a sub-sample of low vacancy rate census tracts and a sub-sample of high vacancy rate census tracts. Figure 1 shows a map classifying Chicago census tracts by whether their vacancy rate is above or below the median census tract vacancy rate of 5.17%. Census tract vacancy rates are calculated from USPS data from the 2005 - 2008. The estimates from columns (3) and (4) imply a supply effect of -2.1% and -1.3% per unit of forclosure within 250 feet, respectively. The estimates from columns (3) and (4) imply a dis-amenity effect of -1% and -0.9% per unit of forclosure within 250 feet, respectively. Consistent with the theoretical results illustrasted in Wheaton [1990], the supply effect is more pronounced in a tight housing market. Columns (5) and (6) present the similar estimates for the sub-sample of high-vacacncy rate census tracts. The supply effects implied by these estimates are a 1.0% decrease in price and a 0.1% increase in price per unit of foreclosure within 250 feet.

On the whole, the evidence presented in Table 3 shows that both the supply and dis-amenity effect of foreclosures are detectable only for the sale prices of single-family homes within 250 feet of the foreclosure. The dis-amenity effect appears to be present in both high and low vacancy rate areas and is consistently about -1%. The supply effect is only present in low vacancy areas and ranges from -2% to -1.3%.

4.2 Variation in Effect by Number of Nearby Foreclosures

Table 4 presents estimates of specifications which are similar to those presented in Table 3 except that for each distance-based band and each type of a foreclosure a quadratic term is also included. To save space, only the estimates of the coefficients for single-family home and non-owner occupied multi-family apartment building foreclosures are shown. These estimates provide empirical evidence regarding whether the marginal effect of an additional nearby foreclosure increases or decreases as the number of nearby foreclosures increases. The estimates presented in the first two rows of column (1) reveal that the marginal effect of a single-family home foreclosure within 250 feet is increasing in the number of such foreclosures. In comparison, rows five and six of column (1) reveal that the marginal effect of a multi-family building foreclosure descreases as the number of these forclosures increases (on a per unit basis). Column (2) presents the same specification as column (1), but estimated on the low vacancy rate sub-sample.

Figure 2 plots the supply and dis-amenity effects that are implied by the estimates in rows one, two, seven, and eight of column (2) as the number of foreclosures within 250 feet varies between zero and four. Over this range the dis-amenity effect is close to linear, while the supply effect becomes much more pronounced when considering the change between two and four foreclosures than it does when considering the change between zero and two foreclosures.

4.3 Price Elasticity of Demand for Owner-Occupied Housing

The results presented in Table 3 can be used to calculate a localized price elasticity of demand for owner-occupied housing. The estimates in column (4) imply that the supply effect associated with an additional single-family unit on the market due to foreclosure is about -1.3% in low-vacancy rate census tracts. On average there are about 19 owner-occupied housing units within 250 feet of each single-family foreclosure in the sample. This means that an additional unit of available owner-occupied housing represents about a 5.3% increase in supply within the a 250 foot radius of the foreclosure. These numbers imply a price elasticity of demand for housing of about -4. This estimate is much larger in absolute value than those found and reported in Hanushek and Quigley [1980] which fall between zero and negative one. I interpret this difference to be a result of the fact that prior estimates

tend to be measuring demand responses to price shocks in the rental market where frictions might be expected to be small. In contrast, I am measuring the price response due to an extra unit of supply in a search and matching setting where frictions are very important.

5 Welfare Implications

In this section I consider whether there are scenarios under which lenders, acting in their own best interests, impose externalities on other lenders or residents, and under what conditions Pareto-improving public policies exist.

5.1 Optimal Liquidation Strategy of a Monopolist Lender

Consider a monopolist lender with an inventory, S_t, of foreclosed single-family homes all within 250 feet of each other. Suppose that each sale within the same year affects the price of all homes sold that year through the supply effect, and each home kept in inventory until the next year affects price in previous year through the dis-amenity effect. The monopolist seeks to maximize total revenue or,

$$\max_{q_t} \sum_{t=1}^{T} \left(\frac{1}{1+c} \right)^t R_t$$

where,

$$R_t = [p_0(1-s)^{q_t}(1-v)^{S_t - q_t}]q_t$$

subject to the constraints that year t sales, q_t, reduce next year's inventory and that sales are bounded by zero and the current inventory level.

$$S_{t+1} = S_t - q_t$$
$$0 \leq q_t \leq S_t$$

where p_0 is the sale price if no other homes were for sale in year t, s is the supply effect, v is the dis-amenity effect, q_t is the number of homes that the lender chooses to sell in year t, and c represents the "cost of carry" or the cost of holding a property in inventory which will include the interest rate and depreciation or maintenance required to prevent depreciation.

Given the convexity of the problem, at an optimum the lender is indifferent between selling one more home in year t as opposed to year $t+1$. This condition gives rise to the following equation,

$$\begin{aligned} & p_0(1-v)^{S_t}\left(\frac{1-s}{1-v}\right)^{q_t} + q_t p_0(1-v)^{S_t}\left(\frac{1-s}{1-v}\right)^{q_t}\log\left(\frac{1-s}{1-v}\right) \\ = \; & \frac{1}{1+c}\left[p_0(1-v)^{S_t}\left(\frac{1-s}{1-v}\right)^{q_{t+1}} + q_{t+1}p_0(1-v)^{S_t}\left(\frac{1-s}{1-v}\right)^{q_{t+1}}\log\left(\frac{1-s}{1-v}\right)\right] \end{aligned}$$

I solve this model numerically and find that with $s = 0.013$, $v = 0.009$, and starting with an inventory of 10 homes that it will be optimal to postpone the sale of at least one home until the second period as long as $c \leq 0.15$. With $c = 0.05$, the optimal rate of sales is to sell six in the first period, three in the second period, and one in the third period.

5.2 Optimal Liquidation Strategy in Stackelberg Leadership Model

In the case where two lenders have properties that they wish to liquidate that are very close to each other, a Stackelberg leadership model may be appropriate if it is the case that there are small differences in the timing of foreclosures within a single period. Consider the case of two lenders, each with a single property to liquidate. In this case the lender for the property which forecloses first will find it optimal to put the property on the market immediately. The second lender will then be faced with the decision of whether to list their property during the first period or hold off until the second period. The second lender will choose to postpone listing the property until the second period if the revenue that they would receive in the second period, discounted by the cost-of-carry, exceeds the revenue that they would receive in the first period or,

$$\left(\frac{1}{1+c}\right)p_0(1-s) > p_0(1-s)^2 \tag{1}$$

Roughly, this condition will hold if the cost-of-carry is less than the supply effect.

5.3 Policy Implications

In the previous two examples, if the cost of holding a foreclosed property from one period to the next is low enough for the lender, then they may optimally choose to wait to sell a property so as not to flood the market. This action will impose a cost on residents that live near the foreclosed property which is equal to the dis-amenity effect. In cases where

the dollar amount of this dis-amenity effect summed over all residents within 250 feet of the foreclosed property exceeds the gain that the lender realizes by holding off selling the property until the next period, a Pareto-improving policy exists. The policy would be to tax the nearby residents the minimum amount so that the goverment could offer the lender an incentive payment to the lender so that they would be in favor of selling their entire inventory of foreclosed homes in the first period rather than carrying any of them into the second period.

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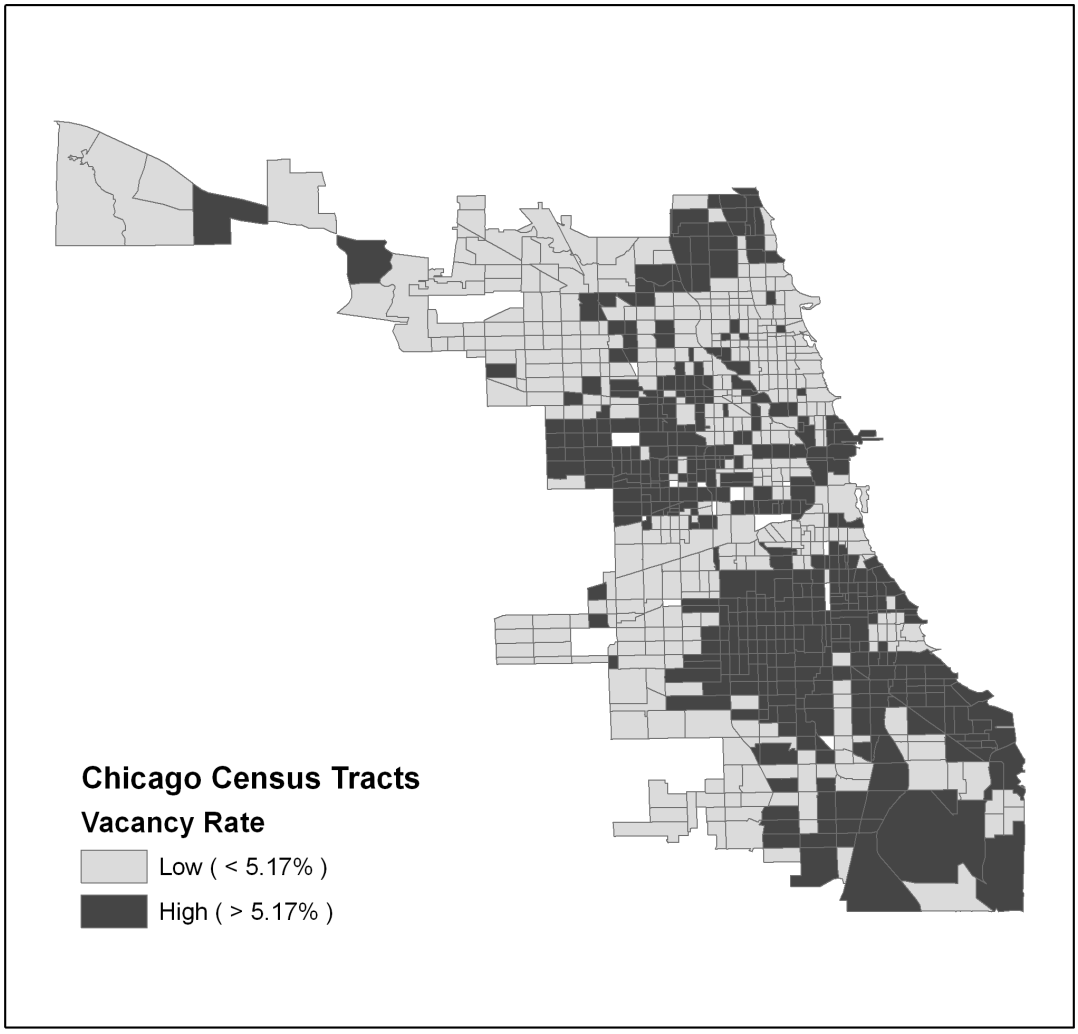

Figure 1: High and Low Vacancy Rate Census Tracts

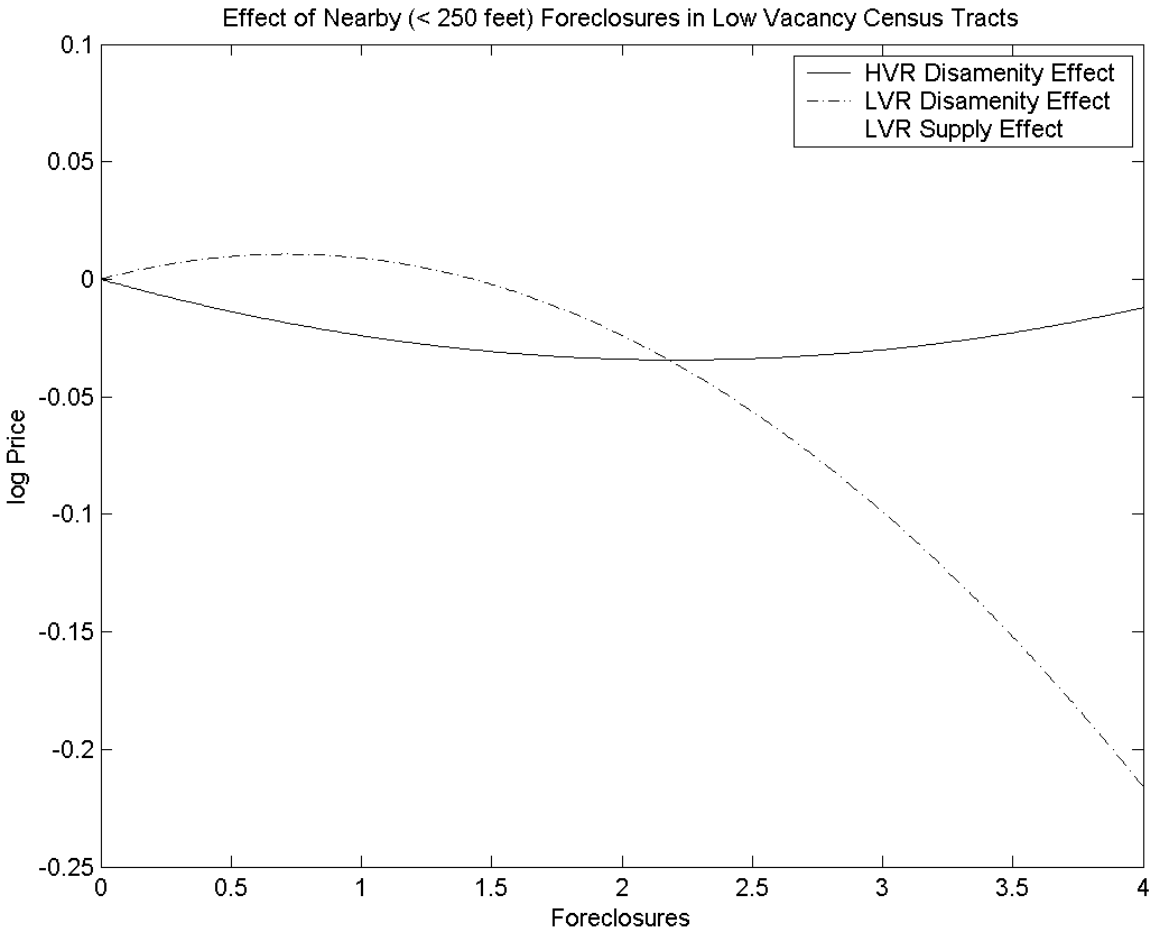

Figure 2: High and Low Vacancy Rate Census Tracts

Table 1: Relationship Between Newly Vacant Addresses and Foreclosure Auctions

	# Newly Vacant Addresses in past 3 Months
Condo Units Scheduled for Auction	1.76**
	(0.77)
Single Family Houses Scheduled for Auction	0.93***
	(0.16)
Multi Family Units (Owner on Premises) Scheduled for Auction	0.49
	(0.39)
Multi Family Units (All Rental) Scheduled for Auction	0.77***
	(0.10)
R^2	0.30
N	2,401

Note: Unit of observation is census tract - quarter. All Chicago census tracts are included. The time period is the 4 quarters of 2008. Eicker-White standard errors are reported in parentheses. Community Area effects and Quarter effects are included.

Table 2: Descriptive Statistics of Nearby Foreclosures for SFR and Condo Transactions

	Mean	S.D.	Min	Max
SFR Forcs $0-250$ ft.	0.17	0.45	0	6
SFR Forcs $250-500$ ft.	0.36	0.72	0	9
SFR Forcs $500-1000$ ft.	1.27	1.93	0	26
Units RO MF Forcs $0-250$ ft.	0.06	0.43	0	10
Units RO MF Forcs $250-500$ ft.	0.17	0.78	0	18
Units RO MF Forcs $500-1000$ ft.	0.67	2.03	0	49
Units OO MF Forcs $0-250$ ft.	0.02	0.23	0	8
Units OO MF Forcs $250-500$ ft.	0.06	0.38	0	8
Units OO MF Forcs $500-1000$ ft.	0.21	0.77	0	11
Condo Forcs $0-250$ ft.	0.00	0.08	0	5
Condo Forcs $250-500$ ft.	0.01	0.15	0	8
Condo Forcs $500-1000$ ft.	0.05	0.34	0	13

Note:

Table 3: Effect of Foreclosures on log Prices

	(1) all SFR	(2) all SFR	(3) Low Vac	(4) Low Vac	(5) High Vac	(6) High Vac
SFR Forcs $0-250$ ft.	-0.026***	-0.018***	-0.031***	-0.022***	-0.020**	-0.009
	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.008)
SFR Forcs $250-500$ ft.	-0.007**	-0.001	-0.012***	-0.006	-0.003	0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)
Units RO MF Forcs <= 250 ft.	-0.014**	-0.011	-0.010	-0.009	-0.010	-0.010
	(0.007)	(0.007)	(0.009)	(0.008)	(0.008)	(0.008)
Units RO MF Forcs $250-500$ ft.	-0.008**	-0.005	-0.003	-0.003	-0.008*	-0.006
	(0.004)	(0.004)	(0.006)	(0.006)	(0.005)	(0.005)
Units OO MF Forcs <= 250 ft.	-0.002	0.005	-0.014	-0.008	0.010	0.017
	(0.009)	(0.009)	(0.011)	(0.011)	(0.014)	(0.014)
Units OO MF Forcs $250-500$ ft.	-0.006	-0.004	0.003	0.003	-0.010	-0.008
	(0.006)	(0.006)	(0.006)	(0.006)	(0.009)	(0.009)
Condo Forcs $0-250$ ft.	0.006	0.002	-0.030	-0.007	0.021	0.004
	(0.033)	(0.029)	(0.037)	(0.037)	(0.043)	(0.038)
Condo Forcs $250-500$ ft.	-0.009	-0.013	0.003	0.005	-0.022	-0.027
	(0.014)	(0.015)	(0.022)	(0.022)	(0.019)	(0.020)
Structure Characteristics	X	X	X	X	X	X
Year Effects	X		X		X	
Year x Community Effects		X		X		X
Census Tract Effects	X	X	X	X	X	X
N	40,829	40,829	25,286	25,286	15,541	15,541
R^2	0.72	0.73	0.75	0.76	0.63	0.65

Note: Eicker-White standard errors are reported in parentheses. Sample limited to transactions within 1000 feet of a foreclosure filing or auction that occurred within the past year. Reported coefficients are for foreclosure auctions. Controls for foreclosure filings are also included. Structure characteristics include the log of land sqare-footage, the log of building square-footage, a quartic in building age, and indicator variables for the following characteristics: 2 bathrooms, 3 or more bathrooms, masonry exterior, frame and masonry exterior, basement, full basement, finished basement, attic, full attic, finished attic, garage, detached garage, 2 car or larger garage, air conditioning, fire place.

Table 4: Effect of Foreclosures on log Prices

	(1) all SFR	(2) Low Vac	(3) High Vac
SFR Forcs $0-250$ ft.	-0.010	-0.001	-0.003
	(0.009)	(0.014)	(0.014)
(SFR Forcs $0-250$ ft.)^2	-0.005	-0.014	-0.003
	(0.005)	(0.010)	(0.006)
SFR Forcs $250-500$ ft.	0.002	0.002	0.006
	(0.006)	(0.006)	(0.010)
(SFR Forcs $250-500$ ft.)^2	-0.001	-0.004	-0.001
	(0.003)	(0.003)	(0.003)
Units RO MF Forcs $<=250$ ft.	-0.025*	-0.031	-0.028*
	(0.014)	(0.022)	(0.016)
(Units RO MF Forcs $<=250$ ft.)^2	0.004	0.007	0.005
	(0.004)	(0.006)	(0.004)
Units RO MF Forcs $250-500$ ft.	0.007	0.009	0.007
	(0.008)	(0.008)	(0.010)
(Units RO MF Forcs $250-500$ ft.)^2	-0.002	-0.003**	-0.002
	(0.002)	(0.001)	(0.002)
Structure Characteristics	X	X	X
Year x Community Effects	X	X	X
Census Tract Effects	X	X	X
N	40,829	25,286	15,541
R^2	0.73	0.76	0.65

Note: Eicker-White standard errors are reported in parentheses. Sample limited to transactions within 1000 feet of a foreclosure filing or auction that occurred within the past year. Reported coefficients are for foreclosure auctions. Controls for foreclosure filings are also included. Structure characteristics include the log of land sqare-footage, the log of building square-footage, a quartic in building age, and indicator variables for the following characteristics: 2 bathrooms, 3 or more bathrooms, masonry exterior, frame and masonry exterior, basement, full basement, finished basement, attic, full attic, finished attic, garage, detached garage, 2 car or larger garage, air conditioning, fire place.