Senior Project

Land Bank Impacts in Mahoning County

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I. Abstract

Housing abandonment and vacancies in neighborhoods has been an ongoing problem for many years now. These issues can cause many economic and social problems within these cities. This study takes a look into land bank organizations that some cities are using to help improve on these issues. These organizations assist in taking these abandoned establishments and renovating or demolishing them. Previous studies have examined the relationship between land banks and housing values using the hedonic pricing method and spatial analysis. These studies examined different housing characteristics and their distance from vacant properties and land banks to determine their impact on nearby housing prices. In this paper, I attempt to do a similar analysis for Mahoning County, Ohio. My OLS model will include the count of vacant properties within a one mile radius, the count of land banks within a one mile radius, the distance from a sale to the nearest land bank, and other characteristics of that house such as year built, base area, bedrooms, bathrooms, number of acres and school district to examine the effects on housing values.

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II. Introduction

Since the decline of the steel industry in the 1970s and even more so after the great recession, Mahoning County, Ohio has been in a constant battle with housing abandonment and vacant lots. What once were thousands of family owned mill homes, restaurants, and shops are

now abandoned and the hub for plenty of criminal activity and economic distress. These properties have taken great control over these cities and are causing not only an eye sore but are also a potential turnoff for homeowners and those who are looking to purchase property in the surrounding area. This causes a large economic downfall in the already suffering Mahoning Valley. These sites also tend to be the center of drug trafficking and fire hazards and other existing crime and danger. (Alexander, 2005). The hub of Mahoning County, Youngstown, was once named the murder capital of the United States and continues to live on the top dangerous cities list for the United States. These types of disamenities almost always have a negative impact on nearby housing prices. In neighborhoods that are looking to rebuild and liven, this is a large setback.

To fix this problem, some cities in the US have developed land banks. Land banks are non-profit organizations that are "created to efficiently acquire, hold, manage, and develop tax-foreclosed property" (Alexander, 2005). The main goal of these land banks is to demolish or renovate these vacant and foreclosed properties to eliminate them as a disamenity to the surrounding community. Land banks adopt many different types of properties including not only homes and buildings but also vacant lots as well. Typically, land bank properties are acquired mostly in low income and economically suffering neighborhoods. Because of this, most of this study will focus on the Youngstown area specifically in Mahoning County.

Economists have often studied the impact of these land banks by using hedonic pricing methods to look at the effect of these land bank properties on nearby housing prices and whether or not properties that are in a land bank lessen the negative impact they had previously held. Many of the previously studied variables have been the distance these properties are from houses on the real estate market, how long they have been vacant or abandoned, and the characteristics

of the homes being sold such as bedrooms, bathrooms, and whether or not the house has a garage, etc. These studies have often had similar results claiming that the abandoned and vacant lots have a negative impact on housing prices, but that land bank properties have been lessening this impact. The overall purpose of this study is to look at the effect vacant lots and abandoned properties that have been acquired by land banks on nearby housing prices versus those that are not acquired by a land bank in Youngstown, Ohio.

III. Survey of the Literature

Many economic studies have done research on the effect of vacant lots and abandoned properties on home values, but each study has been slightly different than the previous. One of the best starting points to analyze whether or not the idea that these properties have a negative effect, was done by economists in Flint, Michigan. This was the first empirical evaluation of land bank properties. They found that residential properties acquired by land banks had a greater negative effect on surrounding property values than vacant lots that were adopted by land banks. With this information, they concluded that when land banks demolish their residential properties, they increase surrounding housing values (Griswold and Norris, 2007). It is important to take away from this study that, it does make a difference in the type of abandoned property is surrounding a specific sale. This finding is closely related to a limitation in this study.

Secondary to Griswold and Norris and perhaps the most versatile and valuable study of land banks was done by Whitaker and Fitzpatrick (2014) on land bank properties in Cuyahoga County, Ohio. Their study evaluated the effectiveness of a recently established land bank in Cuyahoga County. They look at this through a hedonic pricing method and observe the sales prices of these land bank homes. Like other studies, Whitaker and Fitzpatrick believe that these

land bank homes have a lesser negative impact on sales prices of houses than vacant/abandoned lots not acquired by a land bank. They were motivated by the fact that some studies found the land banks effective and others found them ineffective or negative. They wanted to examine the land bank properties themselves. The variables they used were pre-land bank properties and acquired land bank properties. What they found suggested that for each pre-land bank property within 500 feet of a sale, the sale price dropped by 3.4 percent, while an additional land bank owned house reduces nearby sale prices by only 2.4 percent. These results show that although both pre-land bank and land bank properties have a negative effect on nearby housing prices, land bank acquired properties have less of a negative impact than properties that have not be acquired by a land bank.

A more basic approach to the idea that distressed properties have a negative effect on nearby properties is done in a study by Harding, Rosenblatt, and Yao (2009). They focused specifically on foreclosures. They found evidence that the distressed properties do, in fact, have a negative impact on the sales prices for nearby non-distressed properties. The impact was approximately one percent per nearby foreclosed property. With this study they accounted for distance as well. They discovered that the discount diminishes the further away the distressed property is from the home being sold. Very similar to this study is one done by Hartley (2014) on foreclosures in Chicago. Hartley also examined the effect of foreclosures on nearby properties. Believing that foreclosures decrease the value of surrounding homes, he looked at two factors in his study. The first was the increase in the supply of homes on the market and the second examined the state of the foreclosed properties such as vacancy, up keeping, crime, and vandalism of the property, counting them as a disamenity. What he found was that each extra unit of supply decreased housing prices by about 1.2 percent and that the disamenity factor of the

foreclosed homes has close to no effect on nearby housing values. The disamenity factor not having an effect on home values is different than almost every other study.

It is also important to look at these housing impacts and examine each aspect. In a study by Mickelbank (2008), it is explained that vacancy/abandonment and foreclosure of houses are often grouped together, but they are not entirely related. Vacancy and abandonment of houses is not always the result of a foreclosure and foreclosures do not always become unkempt and abandoned. Mickelbank states that the estimates of the impacts of these variables are often thrown off when one of the variables is left out, either vacancy/abandonment or foreclosure. Because of this belief, he studies them individually. When he studies foreclosure on its own, he finds that previous studies, where the two are grouped together, overstate its effect on nearby housing prices. He reaches a similar conclusion with estimating vacant/abandoned homes in isolation except that in this case he found that when grouped together with foreclosures, the impact of vacant/abandoned homes on surrounding properties is overstated by more than double. This is an interesting study because it exposes the idea of a major inaccuracy of other evaluations.

IV. Theoretical Model

This study applies economic theory based on the hedonic pricing model which estimates an individual's willingness to pay, or sales price, for housing properties based on different variables. Highlighted in this case, distance from land bank properties, will be a main focus. This

model is commonly used among economists and is used in almost every previous study

regarding land banks. A basic hedonic model is shown below:

$$P_i = \beta_0 + \beta_1 X_{1i} + \cdots + \beta_k X_{ki} + \varepsilon_i$$

In this equation, Pi is typically the sale price of the home and β is the marginal value that each

independent variable adds to the sale price.

In this study, an OLS regression based on the hedonic pricing model will be used. The

model will associate the sales price, or consumer's willingness to pay based on the count of

vacant land and land bank properties within a one mile radius, the distance between a sale and

the closest land bank, which school district they are located, and characteristics of the houses that

were sold such as number of acres, bedrooms, bathrooms, and the year a home was built. The

specific OLS model used in this study is shown below:

$lnP_i = \beta_0 + \beta_1\ CountVacantLand + \beta_2\ CountLandBanks + \beta_3\ LBDistMiles + \beta_4\ School + \beta_5\ FullBath$

$Count + \beta_6\ HalfBathCount + \beta_7\ BedroomCountt + \beta_8\ Acres + \beta_9\ YearBuilt + \beta_{10}\ BaseArea + \varepsilon_1$

Where lnP_i is the log of the sale price of the home i, and each explanatory variable is shown

below:

Table 1: Explanatory Variables

Variable	Description	Expected Sign
COUNTVACANTLAND	Identifies the number of vacant land properties within a one-mile radius of a home	Will be able to look at differences in impact between the houses which are part of a land bank and those which are not (negative)

COUNTLANDBANKS	Identifies the number of land bank properties within a one-mile radius of a home	Will be able to look at differences in impact between the houses which are part of a land bank and those which are not (negative)
LBDISTMILES	Identifies the log distance of the closest land bank to property sold	Will show the impact of the land bank based on distance from property sold (positive)
SCHOOL	Set of dummy variables for school district in which a home resides	Will be able to measure the impact on housing prices based on the school district (significant)
FULLBATHCOUNT	Number of bathrooms in property sold	Will look at the effect of the number of bathrooms has on price of property sold (positive)
HALFBATHCOUNT	Number of half bathrooms in property sold	Will look at the effect of the number of half bathrooms has on price of property sold (positive)
BEDROOMCOUNT	Number of bedrooms in property sold	Will look at the effect of the number of bedrooms has on price of property sold (positive)
ACRES	Identifies the number of acres the property has	Will look at the effect number of acres has on price of property sold (positive)
YEARBUILT	Identifies the year a home was built	Will look at the effect the age of a home has on the price of property sold (positive)
BASEAREA	Identifies the log of base area (square footage) of a home	Will look at the effect the base area of a home has on the price of property sold (positive)

This model will be using spatial analysis from ArcGIS software to determine the *CountVacantLand, CountLandBanks* and *LBDistMiles* variables. This will be able to determine how many vacant properties are within a 1-mile radius of a sale and then look further into whether or not that abandoned property is acquired by a land bank. I will also use spatial analysis to determine the distance between a sale and the closest land bank property.

V. Data

The data for the analysis is available through the Mahoning County Land Bank, which gave me land bank history of Mahoning County and the property information for each of these land banks including their property ID numbers. I paired this information with home sales data from Mahoning County Auditor's Office which provides me with the price of the homes, their characteristics, school district, and property numbers. As said before, this study uses ArcGIS to measure the distances between the land bank and abandoned properties and the homes that were sold for the year 2017 as well as the number of land bank and abandoned properties within one mile of the sale. Aside from this data, a dummy variable for school district area the house was located was also included to examine neighborhood effects on housing prices, for these dummy variables the city of Austintown was left out as the intercept.

VI. Results

The results of this study were a bit contradictory of my predictions. My initial prediction was reflective of the results of the Whitaker and Fitzpatrick study with the idea that vacant land and land banks both provide a negative coefficient, but the land bank coefficient will be less than the vacant land coefficient. With distance between the closest land bank and the sale of a home, I expected the coefficient to be positive in the sense that for every mile a house is further from a home, it will increase the value of that home. For the school district dummy variables, I had expected that most of them would have a significant relationship between location and housing prices whether it be positive or negative. As for housing characteristics, I predicted that they would follow the outcome of a typical hedonic pricing model where the more attractive amenities will increase the value of a home. The results of the study are shown in *Table 2*.

Table 2: Results

Variable	Model 1	Model 2	Model 3
CountVacantLand	0.00059 (0.93)	-0.0113 (-2.30)**	0.00149 (2.25)**
CountLandBanks	-0.00814 (-6.03)**		-0.00778 (-5.78)**
LBDistMiles (Log)		0.10203 (5.07)**	0.09404 (4.70)**
Acres	0.0215 (10.70)**	0.02060 (10.19)**	0.02089 (10.43)**
BaseArea (Log)	0.00528 (7.59)**	0.42168 (6.93)**	0.43083 (7.15)**
YearBuilt	0.00528 (7.80)**	0.00535 (7.86)**	0.00505 (7.48)**
BedroomCount	0.1458 (5.20)**	0.14416 (5.12)**	0.14303 (5.13)**
FullBathCount	0.20046 (6.08)**	0.18685 (5.65)**	0.19500 (5.95)**
HalfBathCount	0.30992 (8.99)**	0.29257 (8.41)**	0.29283 (8.50)**
SchoolDummy	Yes	Yes	Yes
R^2	0.5230		
Number of Observations	1663		

Note: ** and *, respectively, denote statistical significance at the 5% (or better) and 10% levels (T-Stat in parenthesis)

To account for possible multicollinearity, the regression was ran three separate times. The first

was ran excluding the variable that determines the distance to the closest land bank. With this

model, the number of vacant land properties was not in line with my predictions since it increases housing values by 0.059%. Although it is positive, the result is not significant. For the number of land banks within a one mile radius, for each additional land bank, the house value decreases by 0.8%. This falls within my predictions and is also significant. In the second model that was ran, the variable that was omitted was the count of land banks within a one mile radius. After running the second model, the sign of the count of vacant land properties had become negative and significant. The results state that for every additional vacant land property within a mile of a sale, it would decrease the sale by 1.1%. In this model the variable for the distance to the closest land bank is added. The coefficient is positive and significant as I had predicted. In this case, for every percent change in miles the land bank is further from the sale of a house, the house value increases by 0.102 percent. For the third model, all three variables were included, and all yielded significant results. In this model, the count of vacant land properties became positive where for every additional vacant property within a mile of a sale, it will increase the sale price by 0.01%. For the number of land bank properties within one mile of a sale, the coefficient was negative. In this case, for each additional land bank property within a one mile radius of a sale, it will decrease the house value by 0.7%. Last, for the measure in distance to the nearest land bank from a sale, the coefficient was positive. For every percent change in miles the land bank is further from a sale, the value of the sale increases by 0.09%.

Based on the average housing value in Mahoning County of $145,635, the results show that people would be willing to pay $216 dollars to live near a vacant lot, and would prefer the house value to drop by an average of $1,133 based on the number of land banks within a mile of the property.

In all three models that were ran, the continuous variables all yielded positive and significant values proving them to fall into the pattern of a traditional hedonic model where greater amenities yield higher housing prices. Also, in all three models my school dummy variables were all significant. This shows that there is a relevant correlation between the location of a house and the value of that house.

VII. Limitations

There were some limitations in this study that may have skewed the results of the regression. The first limitation is that the vacant land data did not include properties that included a structure such as a building, or a home. This means that the only vacant land that was included in the model was properties such as a field, vacant lot, or an open green space. It can be believed that the coefficient for the count of vacant land properties within a one mile radius resulted in a positive coefficient due to this limitation. Initially, the prediction was that this variable would be negative due to the fact that people tend to not want to live near vacant areas. A reason it could have turned out to have a positive relation was that living next to a vacant open space such as a field or grass area is more attractive to some homeowners. Because this variable did not include structures such as dilapidated buildings or homes, there was not as much of a negative effect.

Another limitation was that ArcGIS showed that most of the vacant land properties were on the outer parts of downtown Youngstown, and the land bank properties were located closer to the city. Typically land banks are adopted in low income areas which are already unattractive due to the quality of living and crime in that area. This typically shows lower housing values without land bank properties. Therefore, this study would be more accurate if conducted in a

smaller setting such as one particular neighborhood. This way, one could observe the data in an area where variables such as crime rates are held constant.

Last, there was a limitation on the fact that it would have been very difficult to determine when a land bank and the sale of a home were existent at the same time. This would cause inaccuracies in the study because it is difficult to determine whether or not the property was in possession of the land bank during the time of the sale.

VIII. Conclusion

Concluding this study, what the results showed were almost perfectly in line with the predictions. Based off of the third model that was run, we can see that vacant land properties such as fields and green spaces increase house value, land bank properties tend to decrease housing value, but as the land banks are further away, the house value begins to increase. The only variable not matching the hypothesis is the vacant land variable. As mentioned previously this is most likely due to the fact that the data did not include properties with structures. As provided in the model, the housing market in Mahoning County shows typical results considering amenities of a home where greater amenities result in a higher house value.

Based on past research, it seems as if the land banks are having a positive impact on their community. With these results, I would recommend that these vacant properties continue to be acquired by land banks to help rejuvenate the surrounding area. Based on this particular study alone, it is shown that the vacant lots are having a positive impact on housing prices. A recommendation that I believe would make a positive impact is that the land bank properties, once acquired, should be renovated into vacant land/lots rather than being restored. Although this

would be a good recommendation based on these results, the results may be inaccurate due to the limitations of this study.

For future studies, I believe it would be beneficial to examine this study in a smaller proximity such as a neighborhood to help make the results more accurate. Also it would be beneficial to have the vacant property data that includes structures.

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