The Tradeoff between Selling Single-Family Houses as Vacant or Lived-In: Evidence from the Bloomington-Normal Housing Market

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Abstract

A widely held view in the residential brokerage industry is that vacant homes have longer marketing times and sell at a price discount compared to non-vacant single-family homes. The purpose of the current study is to explore whether this widely held view is true for the Bloomington-Normal, Illinois, market area. The study uses data from the local multiple listing service, and the analysis employs a hedonic regression model. Findings from the study show that vacant homes have longer marketing times than non-vacant homes, but occupancy status has no significant effects on home sale prices, which is a departure from the generally held view that vacant homes sell at a discount.

Introduction

Selling a house can be a stressful exercise because of the various issues and decisions that surround it. Sellers try to minimize the sale time and maximize the net gain from the sale of a house. Sellers consider whether to use a broker or real estate agent; previous studies have shown that listing a property through a broker or real estate agent could expose the property to a large pool of buyers. However, there have been limited studies on the most effective and efficient approach to selling a house.

The purpose of the case study presented in this article is to explore whether vacant houses have fewer days on the market or sell at a higher price compared to non-vacant houses. The study is guided by the market theory that suggests sellers desire to sell at the highest price and in the shortest time possible, while buyers are guided by the desire to choose, from the available homes in the market, a property that maximizes the utility derived from housing.[1] Based on this theory, and assuming all else are equal, the objectives of the study are to find (1) whether selling a house as vacant (at the time of sale) reduces the number of days the property is on the market, and (2) whether vacant homes sell at a premium or discount compared to non-vacant houses. In other words, do vacant houses have fewer days on the market and sell at a higher sale price compared to non-vacant comparable houses?

The study hypothesis is that vacant houses do not have fewer days on the market and do not sell at a higher price compared to non-vacant houses. A hedonic regression model is used for the analysis. The study used the median days on the market to explore whether vacant houses sell faster than non-vacant houses, while median sale price was used to explore whether vacant homes sell at a

1. John R. Knight, "Listing Price, Time on Market, and Ultimate Selling Price: Causes and Effects of Listing Price Changes," *Real Estate Economics* 30, no. 2 (Summer 2002): 213–237.

premium compared to non-vacant houses. The study used 2016 home sales data extracted from the Bloomington-Normal (Illinois) Association of Realtors (BNAR) multiple listing service (MLS). Bloomington-Normal is a twin city area in central Illinois, about 130 miles south of Chicago, with a population of approximately 170,000. Major employers include State Farm Insurance, Country Financial, and Illinois State University.

Literature Review

One theory in the real estate literature is that vacant houses do not show as well as occupied houses. According to Peng and Cowart,[2] vacant homes experience longer marketing periods because they generally do not have a warm emotional appeal to buyers compared to non-vacant homes; they also note that the absence of furniture makes homes look smaller rather than bigger. To address this type of concern, it is not uncommon for real estate brokers or agents to stage vacant homes in order to create emotional appeal to prospective buyers.

Other factors may affect a home's marketing period. One school of thought is that seller motivation determines how long a property stays on the market.[3] The research shows that sellers who at the time of listing had a planned move date are inclined to sell more quickly than those that have no time constraints. In general, the shorter the planned time to move, the shorter the duration of the marketing time. Another factor that impacts marketing time is overpricing.[4] Findings by Knight suggested that overpricing is costly to the seller both in time and money. Although properties with high initial pricing stay longer on the market, the literature suggests that it is the seller motivation that ultimately determines the listing price and how long a property stays on the market.[5]

Analytic Approaches

Most existing studies have used a hedonic model to predict property sale prices using the factors of seller motivation and time on the market. According to Taylor, a hedonic model is an indirect valuation method where the value that consumers place on certain characteristics is inferred from observable market transactions rather than direct observation.[6] Cannaday and Kang note that "the word hedonic has to do with pleasure; i.e., a hedonic price is related to the pleasure derived from the various attributes of a given commodity."[7] Hedonic analysis is a statistical model that describes the relationship that exists between a property's characteristics and its sale price. The existing studies, however, have noted the likely difficulties with using statistical models for real estate analysis because the models are prone to problems related to multicollinearity and stability of the regression parameters.[8] Find-

2. Chien-Chih Peng and Larry B. Cowart, "Do Vacant Houses Sell for Less? Evidence from the Lexington Housing Market," *The Appraisal Journa*l (Summer 2004): 234–241.
3. Justin D. Benefield and William G. Hardin III, "Does Time-on-Market Measurement Matter?" *Real Estate Finance and Economics* 50, no. 1 (January 2015): 52–73; Ken Johnson, Justin Benefield, and Jonathan Wiley, "The Probability of Sale for Residential Real Estate," *Housing Research* 16, no. 2 (2007): 131–142; and Michel Glower, Donald R. Haurin, and Patric H. Hendershott, "Selling Time and Selling Price: The Influence of Seller Motivation," *Real Estate Economics* 26, no. 4 (Winter 1998): 719–740.
4. Paul Anglin, Ronald Rutherford, and Thomas M. Springer, "The Trade-Off between the Selling Price of Residential Properties and Time-on-the-Market: The Impact of Price Setting," *Real Estate Finance and Economics* 26, no. 1 (2003): 95–111; and Knight, "Listing Price, Time on Market, and Ultimate Selling Price."
5. Benefield and Hardin, "Does Time-on-Market Measurement Matter?"; Johnson, Benefield, and Wiley, "The Probability of Sale for Residential Real Estate"; and Glower, Haurin, and Hendershott, "Selling Time and Selling Price." Benefield and Hardin observe that although "time-on-market" is a frequently analyzed outcome in residential literature, there is no consensus agreement on its definition and how it is calculated.
6. Laura O. Taylor, "The Hedonic Method," in *A Primer on Nonmarket Valuation*, ed. Patricia A. Champ, Kevin J. Boyle, and Thomas C. Brown (Dordrecht: Springer, 2003), 331–393.
7. Roger E. Cannaday and Han Bin Kang, "Estimation of Market Rent for Office Space," *Real Estate Appraiser and Analyst* 50, no. 2 (1984): 67–72.
8. Cannaday and Kang, "Estimation of Market Rent for Office Space"; Han-Bin Kang and Alan K. Reichert, "Statistical Models for Appraising Income Properties: The Case of Apartment Buildings," *Real Estate Appraiser and Analyst* 54, no. 2 (Summer 1988): 29–35; and Han Bin Kang and Alan K. Reichert, "An Evaluation of Alternative Estimation Techniques and Functional Forms in Developing Statistical Appraisal Models," *Real Estate Research* 2, no. 1 (1987): 1–29.

ings from these studies show that nonlinear regression models are superior to linear models. Kang and Reichert suggest the use of ridge regression methods to reduce adverse effects of multicollinearity that are common in linear models. They note that the regression parameters must be stable in order to use the same adjustment factor over time, because the stability of the regression coefficient as well as prediction accuracy is sensitive to the form of functional form and estimation techniques. Their analysis found that in most cases, nonlinear models are more effective than linear models and that ridge regression techniques were superior to ordinary least square (OLS), but there was no functional technique or functional form that was superior in all aspects.[9] Therefore, the analyst would have to choose between minimizing the average prediction error and maximizing prediction stability.

In their 2004 *Appraisal Journal* article, Peng and Cowart used a hedonic model to examine if vacant houses in Lexington, Kentucky, sell for less and/or remain on the market longer than occupied homes. Their hypothesis was that vacant houses would have a higher rate of time dependence than occupied houses. The study used the 1999 MLS data from Lexington, Kentucky. Peng and Cowart observed that there is little guidance within economic theory on choosing variables for inclusion in the hedonic equation, and that while it may be ideal to include all housing-related characteristics that may affect value in the analysis, "some attributes cannot be easily defined or measured."[10]

The Peng and Cowart study included attributes for "occupancy status, the number of days on the market, whether the house has sold, the asking and selling prices, and housing attributes" (p. 235). Findings in that study indicated that vacant houses in the Lexington market generally sold for less and stayed on the market longer than non-vacant houses.

Ottensmann, Payton, and Man employed a hedonic model in a study of the housing price impact of location relative to employment in Marion County (Indianapolis), Indiana. That study used data on house prices and housing characteristics derived from the Metropolitan Indianapolis Board of Realtors (MIBOR) multiple listing service (MLS).[11] This data was supplemented with information on neighborhood characteristics using the mean average SAT score for the school district in which the property is located, as well as tax rates, to explore urban location and housing prices using a hedonic model. Housing characteristics used in the study include number of bedrooms, square footage (i.e., above-grade gross living area), age, lot size, and presence of various amenities. The data used in the study was derived from the 1999 home sales recorded in the MIBOR's MLS, which captured 80% of all sales in the market area. Findings from the study showed that the measures of location were statistically significant predictors of sale prices in the same manner as housing characteristics are predictors of sale prices, but the effects of neighborhood characteristics are smaller. The study revealed that as distance and commute time increase from the commercial centers, there was a decrease in home price; in other words, there was an inverse relationship between distance or travel time and house price, which creates a tradeoff between price and commute time.

Case Study

The objectives of the current study are to explore whether vacant houses have a longer marketing time and sell at a discount compared to non-vacant houses in the Bloomington-Normal (Illinois) housing market. *Vacant homes* as used in this study means non-occupied homes, whether they are staged (furnished) or not staged (unfurnished) for marketing purposes. The local multiple listing service considers vacant homes as unoccupied homes; it does not differentiate whether the homes were furnished or unfurnished. The study is intended to build on the prior studies by Peng and Cowart and by Ottens-

9. Kang and Reichert, "Statistical Models for Appraising Income Properties"; and Kang and Reichert, "Evaluation of Alternative Estimation Techniques."

10. Peng and Cowart, "Do Vacant Houses Sell for Less?" 235.

11. John R. Ottensmann, Seth Payton, and Joyce Man, "Urban Location and Housing Prices within a Hedonic Model," *Regional Analysis and Policy* 38, no. 1 (2008): 19–35.

mann, Payton, and Mann, and to provide the local market participants with information to make rational decisions when selling a house.

Study Methodology

The hedonic model is a well-established and accepted methodology in the real estate literature.[12] The study uses hedonic regression models to explore the research questions: Do vacant houses have fewer days on the market, and do vacant houses sell at a higher or lower price compared to non-vacant houses? The null hypothesis was that vacant houses do not have fewer days on the market and they do not have a higher sale price compared to non-vacant houses.

Data. The study used 2016 data from the Bloomington-Normal multiple listing service (MLS). The search criteria included the following characteristics: Type = House; Status = Closed; Closed Date = 01/01/2016 through 12/31/2016; City = Bloomington and Normal; New Construction = No; Feature = Not REO/foreclosures. The resulting data set included 1,763 listings of existing single-family homes. New construction and REO/foreclosure sales were excluded from the data set because new construction is generally vacant at the time of sale. Transactions involving properties that were bank-owned, short sales, or foreclosures were excluded from the data set because those types of sales involve conditions and motivations that are different from typical market sales. The data was screened for zoning, and one of the sales was removed from the data set because of its C-1 office zoning classification, leaving a total of 1,762 closed sales, which represents 41% of all deeds recorded in the McLean County Recorder's office in 2016. The sale prices in the data set ranged from $9,000 to $999,000, with a median sale price of $163,000. The median days on the market for the houses in the data set was 34 days. The breakdown of the sales by zip code is presented in Table 1. The data set fairly represents every neighborhood and geographic area in the twin cities of Bloomington and Normal. Missing data (e.g., lot size) was researched and manually added using information obtained from the township and county assessors' online database and the county GIS.

Table 1 Homes Sold in Bloomington and Normal in 2016 by Zip Code and Occupancy Status

Zip Code	Vacant	Occupied	Total
61701	208	212	420
61704	213	348	561
61705	61	110	171
61761	246	364	610
Total	**728**	**1,034**	**1,762**

Variables. For operational analysis, the sale price was defined as the dependent variable. The independent variables include occupancy status, days on market, number of stories, age, gross living area, total rooms, number of bedrooms, number of bathrooms, number of half baths, number of garages, and how sold. Descriptions of each of the variables are shown in Table 2. Table 3 summarizes the data for each of the variables for all home sales as well as for only vacant homes and only occupied homes.

Results

The variable *Sale Price* was regressed against the *Vacancy* variable (1 for vacant, 0 occupied) along with the independent variables of physical characteristics, such as *Story*, *Gross Living Area*, *Garage*, *Bathroom*, *Age*, and *Cumulative Days on the Market*. Table 4 reports ordinary least square (OLS) regression results using all samples (1,762 sales) in the data set. Table 5 reports the estimated results using a selected sample of homes with sale prices ranging from $100,000 to $300,000. The sample size in Table 5 was reduced to 1,527 by deleting sale transactions for very small and large homes. The average sale price of the selected sample was about $190,000.

As shown in Table 4, the *Vacancy* variable was not statistically significant, meaning that a home's status as vacant or occupied had little effect on selling price, holding all other independent variables in the model constant. The other independent variables were highly significant at the 95% confidence level. The *Story*

12. Justin Benefield, Mark Pyles, and Anne Gleason, "Sale Price, Marketing Time, and Limited Service Listings: The Influence of Home Value and Market Conditions," *Real Estate Research* 33, no. 4 (Winter 2011): 531–563.

Table 2 Variable Descriptions

Variable	Description
Dependent variable	
Sale Price	Sale price recorded in MLS
Independent variables	
Occupancy Status (Vacancy)	Binary variable: 1 if house is vacant; 0 otherwise
Days on Market (DOM)	Number of days that a property listing is on the market
Cumulative Days on Market (CDOM)	Number of cumulative days on the market, i.e., the total number of days a listing or multiple listings of the same property are on the market. This accounts for price reduction due to overpricing or relisting of a property either as a result of change in listing broker or property having a new listing number
Story	Binary variable: 1 if two story, 0 otherwise
Age	House age in years
Gross Living Area (GLA)	Above-grade living or finished area in square feet
Finished Area in Basement	Below-grade living or finished area in square feet
Total Room	Total number of rooms above grade
Bedroom (BR)	Number of bedrooms above grade
Bathroom (BA)	Number of bathrooms above grade
Half Bath	Number of half baths above grade
Garage (GR)	Number of garages
Lot Size	Lot size in square feet
How Sold	Binary variable: 1 if purchased with cash or conventional financing; 0 otherwise

variable indicates that two-story homes have less value than other styles. The *Gross Living Area*, *Garage*, and *Bathroom* variables have significantly positive signs as expected. It implies that a larger house with more garages and bathrooms sells at a higher price. The *Cumulative Days on Market* variable (*CDOM*) has a negative sign and is statistically significant, meaning that the longer the property is on the market, the lower the sale price. The *CDOM* result is not surprising as a seller may be more willing to reduce the selling price if a property is not sold within a reasonable period. The *F*-value in each table is very high, implying that the model is significant at the 90% confidence level or higher.

In the study, two regressions also were run with *Cumulative Days on Market* as the dependent variable. This variable was regressed against the same independent variables as in the first regression model and *Lot Size*. Table 6 reports the regression results using samples of all 1,762 homes sold, while Table 7 reports the same results using the selected sample of homes with sale prices ranging from $100,000 to $300,000 (1,527 sales). Note that the *Vacancy* variable is highly significant and carries a positive sign, as shown in Table 6. This implies that vacant homes take longer to sell, holding all other independent variables in the model constant. The *Gross Living Area* variable is positive and highly significant as expected. The estimated results in Table 7 are similar to the Table 6 results. The *F*-value in each table indicates that the model is highly significant, with values at least at a 90% confidence level.

Table 3 Descriptive Analysis—Mean, Median, and Standard Deviation

	All Sales (*N* = 1,762)			Vacant Houses (*N* = 728)			Occupied Houses (*N* = 1,034)		
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**
Dependent variable									
Sale Price ($)	185,617	163,000	93,645	161,47	147,250	84,301	202,615	180,000	96,166
Independent variables									
Occupancy	0.41	0	0.49	1	1	0	0	0	0
DOM	62	34	83	84	58	95.20	46	23	69
CDOM	74	40	97	102	72	108.27	54	25	83
Lot Size	11,229	8,510	14,666	10,349	8,250	12,584	11,848	8,712	15,947
Story	1	1	0.50	0.48	0	0.50	1	1	0.50
Age	38	24	55.50	46	35	79.39	32	22	27.13
GLA	1,762	1,641	673	1,653	1,523	643	1,838	1,753	684
Finished Area in Basement	554	550	500	475	433	487	611	611	502
Total Room	9	8	44.55	8	7	2.05	10	8	58
Bedroom	4	3	0.86	3	3	0.86	3.61	4	0.85
Bathroom	2	2	0.78	2	2	0.76	2	2	0.77
Half Bath	1	1	0.58	1	1	0.58	1	1	0.57
Garage	2	2	0.75	2	0	0.78	2	2	0.71
How Sold	1	1	0.38	1	1	0.38	1	1	0.38

Table 4 Estimated Results of OLS Regression: All Sample Sales (Dependent Variable: *Sale Price*)

Variable	Expected Sign	Coefficient	*T*-Value	Significance
Intercept		–7,858	–1.13	0.26
Vacancy	–	–607.0	–0.23	0.82
Story	–	–43,744	–14.11	0.00**
GLA	+	88.7	28.82	0.00**
Garage	+	18,451	8.09	0.00**
Bathroom	+	20,083	8.13	0.00**
Age	–	–692.1	–12.52	0.00**
CDOM	–	–24.45	–1.98	0.05**
F-Value	705.2			0.00**
R^2	0.74			
N	1,762			

** Statistically significant at the 95% level

Table 5 Estimated Results of OLS Regression: Selected Sample Sales (Dependent Variable: *Sale Price*)

Variable	Expected Sign	Coefficient	*T*-Value	Significance
Intercept		–12,669	–1.59	0.11
Vacancy	–	2,633	0.91	0.36
Story	–	–47,377	–14.31	0.00***
GLA	+	91.18	27.51	0.00***
Garage	+	19,253	7.02	0.00***
Bathroom	+	20,132	7.45	0.00***
Age	–	–692.4	–10.55	0.00***
CDOM	–	–35.1	–2.53	0.01***
F-Value	529.9			0.00***
R^2	0.71			
N	1,527			

*** Statistically significant at the 99% level

Table 6 Estimated Results of OLS Regression: All Sample Sales (Dependent Variable: *Cumulative Days on Market*)

Variable	Expected Sign	Coefficient	*T*-Value	Significance
Intercept		38.20	4.35	0.00***
Vacancy	+	28.65	5.61	0.00***
Story	–	–5.55	–0.92	0.36
GLA	+	0.03	4.64	0.00***
Garage	+	–6.83	–1.64	0.10*
Bathroom	–	–2.25	–0.50	0.62
Lot Size	+	1.16E-5	1.15	0.25
F-Value	705.2			0.00***
R^2	0.74			
N	1,762			

* Statistically significant at the 90% level
*** Statistically significant at the 99% level

Table 7 Estimated Results of OLS Regression: Selected Sample Sales (Dependent Variable: *Cumulative Days on Market*)

Variable	Expected Sign	Coefficient	*T*-Value	Significance
Intercept		16.31	1.65	0.10
Vacancy	+	30.42	5.73	0.00***
Story	–	–7.43	–1.22	0.22
GLA	+	0.03	4.35	0.00***
Garage	+	2.54	0.54	0.59
Bathroom	–	–1.59	–0.34	0.73
Lot Size	+	1.11E-5	1.12	0.26
F-Value	11.49			0.00
R^2	0.04			
N	1,527			

*** Statistically significant at the 99% level

Conclusion

This study is based on the theory that sellers seek to maximize the net gain from selling a house by choosing a listing price that balances the marginal cost of continuing the search with the benefit of shortening the listing period. This suggests that a typical seller would like to sell at the highest price and in the shortest time possible. The purpose of the study is to examine whether vacant houses have fewer days on the market and sell at a higher price compared to non-vacant houses. The null hypothesis was that vacant houses do not have fewer days on the market and they do not have a higher sale price compared to non-vacant houses. The 2016 Bloomington-Normal, Illinois, MLS data was used for the study. The study assumes that the sample houses in the data set are reasonably priced and in move-in condition.

The findings from the study show that vacant homes have a longer marketing time (days on the market) than non-vacant houses. This finding is consistent with findings by Peng and Cowart in their analysis of the Lexington, Kentucky, housing market. However, contrary to the Peng and Cowart findings, which suggest that vacant houses sell for less, the current findings from the Bloomington-Normal housing market did not reveal any statistically significant difference between the sale prices of vacant and non-vacant houses. This study result highlights the principle that real estate markets are local and the impact of characteristics varies by location. In accounting for the differing results in the current study and the Peng and Cowart study, it should be noted that there is a difference in the size of the Lexington, Kentucky, housing market relative to the Bloomington-Normal, Illinois, housing market. In addition, the two studies were undertaken during periods with different residential housing market conditions.

Limitation of the Study

The current study has a number of limitations. It did not factor in the cost of maintaining vacant buildings until they are sold or measure the inconvenience to the property owners during open houses or showings to prospective buyers. The expenses of maintaining vacant buildings and the inconvenience cost to property owners are factors that could come into the decision

of whether to keep a house vacant or not at the time of sale. The study assumed that the sample houses are habitable and do not require major repairs or renovation at the time of listing. The study also did not specifically address the effect of staging and whether that impacts marketing time. These are all possible areas for future research. In addition, the use of a nonlinear regression model is another area for possible future research.

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Additional Resources

Suggested by the Y. T. and Louise Lee Lum Library

Appraisal Institute

- **Education**
  Residential Applications: Using Technology to Measure and Support Assignment Results
- **Lum Library Knowledge Base [Login required]**
  Information Files—Residential properties

CoreLogic HPI—Home price trends
https://www.corelogic.com/products/corelogic-hpi.aspx

HousingEconomics.com—NAHB housing statistics
http://www.nahbclassic.org/showpage_details.aspx?showpageID=311

National Association of Realtors—Research and Statistics
https://www.nar.realtor/research-and-statistics

Redfin—Data Center
https://www.redfin.com/blog/data-center

US Census Bureau Center for Economic Studies—Data and Research
https://www.census.gov/programs-surveys/ces.html

Zillow

- **Average Time to Sell**
  https://www.zillow.com/sellers-guide/average-time-to-sell-a-house/
- **Housing Data**
  https://www.zillow.com/research/data/