EFFECT OF KASUWAN LAUSHI SUPER MARKET ON SURROUNDING RESIDENTIAL ACCOMMODATIONS IN BAUCHI METROPOLIS, NIGERIA

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Abstract. The purpose of the paper is to examine the influence of another locational factor, a neighbourhood shopping mall, on residential property values in the surrounding area of Kasuwan Laushi. Hedonic regression model has been developed to explain the variations in property values before and after the announcement of the proposed shopping center. Six functional forms (linear, semilog, exponential, log linear, inverse and inverse-inverse) of the model were considered. The best model was selected using functional form analysis. It has been discovered that the announcement of the proposed shopping center had both negative and positive effects on the value of residential properties. At distances closer than 1,500 feet, diseconomies appear to dominate. Beyond 1,500 feet, economies appear to dominate. The neighborhood shopping center, the subject of this study, is typical of the many small neighborhood shopping centers throughout the country. In order to make meaningful and adequate coverage, the study is limited to Kasuwan Laushi Shopping center. It will also be limited to the impact of the Shopping Center on surrounding residential properties in the study area. The potential respondents will be the sample size drawn from the population of the study. The implications of the model were explored. The impact of this center is not only a matter of concern to the owners of residential properties, but also to the real estate community, financial institutions, and local public officials as well. The neighbourhood shopping mall is becoming increasingly attractive and is positively and negatively affecting the value of the surrounding residential properties. This paper represents the first work that analyse the impact of a shopping mall on the surrounding residential properties in the study area and in the country as well. The trade-off between values proximate to the shopping center and properties served by the center, but removed from its negative effects, would seem to suggest there may be an optimal spatial frequency of these small shopping centers There is a need on the par oft government to ensure that shopping malls are not negatively affecting the value of the surrounding residential properties

Keywords: Bauchi, Kasuwan Laushi, Nigeria, Residential Accommodation, Super Market

1. Introduction

In the last three decades, a great deal of research has been conducted on residential property values. Apart from the physical characteristics of property and the financial conditions of the sale, location factors have been found to be among the primary determinants of property values. These locational determinants include proximity to high ways, mass transit, parks, nuclear power plants and utility lines. This study examines the influence of another locational factor, a neighbourhood shopping malls, on property values in the surrounding area. Neighbourhood shopping malls are becoming increasingly popular throughout the world. The impact of these centers is not only a matter of concern to the owners of residential properties, but also to the real estate community, financial institutions, and local public officials.

The emergence of the centers suggests developers find them to be profitable. While the centers do offer many conveniences, the neighbourhood residents generally have been opposed to such commercial activities,

fearing a loss in their property's value resulting from the disamenities of noise, traffic and crime. The growing popularity of the centers seems to be at odds with the traditional posture of neighbourhood residents. One of the many possible explanations is that increases in the cost of transportation and the value of leisure time may have muted the opposition from local residents. The establishment of these centers, however, does not result only from the market forces of supply and demand. The land use in urban areas is governed by zoning ordinances, and approval from the zoning boards is a necessary prerequisite for the construction and operation of shopping centers in residential neighbourhoods. Although the widespread growth of these centers would tend to suggest a more favourable disposition on the part of zoning authorities, zoning regulations historically have been aimed at preserving and promoting more homogenous land uses in order to stabilised the market values of properties. These regulations restrict commercial and industrial land uses within residential neighbourhoods on the ground that the disamenities generated by commerce and industry supposedly decrease the value of residential properties.

It has been discovered that the announcement of the proposed shopping center had both negative and positive effects on the value of residential properties. At distances closer than 1,500 feet, diseconomies appear to dominate. Beyond 1,500 feet, economies appear to dominate. The trade-off between values proximate to the shopping center and properties served by the center, but removed from its negative effects, would seem to suggest there may be an optimal spatial frequency of these small shopping centers. The effects of proximity to a specific land use may vary across locations. Proximity to worshipping place, schools or shopping centers may have different effects in different parts of a metropolitan area or even in different parts of a large municipality. Generally. The studies which have found no externalities have either used aggregate data (e.g. census tract averages) and missed the proximity effects, or used microdata (i.e. individual property data but extended the study across large regions thereby encountering the nonstationarity of the relationships across space.

2. Effect of Zoning and Externalities

The effects of zoning and externalities on land prices have been examined empirically in a number of important studies. Most of these studies do not provide support for zoning regulations. Henry (2008). findings reinforce Crecine, Davis and Jackson's (2008) earlier results for Pittsburgh that there are no systematic adverse effects on the value of single family homes in the neighborhood of nonresidential land uses. Maser, Riker and Rosett (2008) using a rather large sample of Monroe County, also conclude that zoning does not produce systematic effects on property values. Winger's (2007) study which considers physical aspects of zoning in New Haven, again finds nonresidential land use per se has no systematic effect on housing values. The absence of measurable externalities may be explained by clientele effects that those who care least about the externality will live closest. Alternatively, the design of the studies which finds no externality effects may be faulty.

There is some support in the literature for the notion that proximity matters. Colwell and Munneke (2006) have found an effect for proximity to electric transmission lines. Kain and Quigley (2008) have shown that proximity effects can have a negative impact on apartment rents and on the value of single-family homes. Tideman's (2007) analysis of zoning hearings in Chicago offers indirect support to the proposition that the effects of externalities are localized. He shows that indifference on the part of properly owners to zoning hearings increases as proximity decreases to the property. This suggests that property owners beyond some critical distance do not regard the presence of disamenity as having any negative effect on the value of their property. To measure the amenity or disamenity effects of zoning, therefore, it would be necessary that the localized effect be bounded by some critical distance so as not to be swamped by other major determinants of residential property values.

3. Importance of Shopping Centers/Malls

Bauchi had undergone a rapid urbanisation which reached almost 70% (Eugene, 2007). This condition has transformed the early shop houses to big departmental stores and finally to large malls (Steven ,William and Richard 2007), which has led to these giant business premise to become increasingly popular among Nigerians. Malls are the symbol of successful cities and they contribute to the economic growth of a country.

Even though they are apparently viewed as enclosed buildings which consist of many smaller shops, this kind of environment plays an essential role to people. These malls also serve to accommodate for various functions for the people with special needs and preferences. Thomas, Roger and Peter (2008) in their research conducted in Guilford, United Kingdom, states that "Shopping malls should not be regarded simply as a particular kind of architectural retail outlet, but as places providing a complex array of commercial, community and leisure facilities and satisfying many psychological need and preferences." They found that users perceived shopping malls as places where they could accomplish their social, psychological, and spatial needs rather than the mall's reputation as merely as a retail setting.

In addition to this, the mall area that plays a vital role in affecting people's judgement of the quality of the mall is a central area, which Eugene, calls as 'social area'. Throughout the world, malls are not just places for activities related to selling and buying, but they are also for a wide range of activities from passive movement such as sitting and relaxing (Martin , Muth and Nourse, 2007). to active movement such as 'mall walking' (Winger, 2007; Peter and Kenneth, 2007). A study conducted in Nigeria by Allen (2006).revealed that the major activities by the public during their trips to malls were such as buying daily their necessities, followed by outing with friends and family, window-shopping and recreation. The finding by Allen (2006).also showed that Nigerians were also involved in a wide range of activities at shopping malls.

Based on the discussion above, shopping environment must also serve as a multifunctional building. Most importantly, malls should cater for shopping, leisure, relaxation, meeting friends and various activities just like the outdoor environment. In addition, malls are designed to resemble the characteristics of a city, which is complete with circulation areas including walkways, atriums and corridors. According to Karl and Peter (2009)., these kinds of areas can be classified as public spaces which allow for passages, social interaction and relaxation. Moreover, any atrium in shopping malls should actually be designed the main purpose, i.e. for it to function as central public spaces, with business outlets set around it (David and Peter, 2009).

Unfortunately, very little research has been carried out on the impact of shopping centers on surrounding residential properties. The few researches that had been conducted have many shortcomings which this research will attempt to address. This phenomenon is more rampant in the areas where public gather at a large, such as the main atrium floor spaces, corridors and walkways. Besides that, the transformation of public spaces into business areas and the extension of business activities in these areas at the malls in Bauchi cause other interior landscape elements (such as seating places, plants, water features, public clocks and sculptures), which should be in the public spaces, to always be neglected and forgotten. Atrium refers to a large high open space in the malls or other buildings (Longman Dictionary of contemporary English, 2001) and can be visible from other levels. Public spaces in this study refer to the areas in the malls such as the walkways, corridors and atrium.

A number of studies have documented that people have special needs and preferences towards shopping environment (e.g. Wolf, 2004; Lekagul, 2002; Uzzell, 1995). Most importantly, in the case of shopping malls, the principle used in designing a mall enables designers to come up with varieties of space for people who emphasize on place for relaxation (Carpenter, Walker and Lanphhear, 1975). This is particularly because some people may want to take a short break while shopping, change location from one part to another, rest and think before buying extra things (ibid). In addition, Casazza and Spink (1985) suggested that the major areas of a mall are designed to give impression on its public space and its anchor shops which are linked by plenty of retail stores, with common areas and a chain of public spaces (a.c.f. Lekagul, 2002).

In the context of malls in Bauchi, most of their interior public spaces have been changed into business areas and this leads to the change in the role of these public spaces, which have caused them to lose their viability and not becoming public spaces anymore. As a result, public spaces in malls turn to assimilate other shops where people can only browse and buy merchandises. If malls, as public places, do not provide amenities, which can be used by people to fulfill their physical and physiological needs and preferences, this means that they are merely the place for people to spend their money, while other purposes are ignored. A key consideration, however, must be whether existing out of centre retail development has had a negative or positive impact on town centres. Although developers are typically required to prepare studies to predict the

likely impact of out of centre retail proposals on town centres in support of planning applications, there is much less evidence available on the actual impact of schemes once they are built and trading. In this article we attempt to partially fill this void by turning the clock back and examining whether the very biggest of the out of centre retail schemes – the regional shopping malls – have undermined the performance of nearby town centres.

4. The Kasuwan Laushi Shopping Center

The neighborhood shopping center, the subject of this study, is typical of the many small neighborhood shopping centers throughout the country. This newly constructed center, opened for businss in 1979, is called Kasuwan Laushi. It is located at 2110 Wunti Road, Bauchi metropolis. The center has a lot area of 282,000 square feet and consists of ten small retail stores and one independent grocery store. On its west, Kasuwan Laushi borders a fully developed section of Wunti market the third biggest market in Bauchi. The center was initially proposed to the Bauchi State Development Board on 7th june, 1977. The local newspaper carried a story the next day on the proposed shopping center's construction. Although the commission approved the center a short time later, Construction did not begin until 1978 and the premises were not cleared for occupancy until the beginning of September, 1982. The date, June 7, 1979, when the project was publicly announced, is of special significance for the empirical analysis presented in this study.

5. Methodology

This paper analyse the impact of a small neighbourhood shopping center in Kasuwan Laushi, Bauchi on the value of surrounding residential properties. Hedonic regression model has been developed to explain the variations in property values before and after the announcement of the proposed shopping center. Six functional forms (linear, semilog, exponential, log linear, inverse and inverse-inverse) of the model were considered. The best model was selected using functional form analysis. Finally the implications of the model were explored. The question is whether neighbourhood shopping centers increase, decrease or both increase and decrease the value of proximate residential property.

6. Research Data

The data on the selling prices and characteristics of 43 single-family homes and condominiums sold from 2003 to 2009 in the study area, were gathered from the Champaign County Multiple Listing Service. Although the public records on measurements of lot area or living space might be preferred over data supplied by multiple listing services, the marginal differences are not likely to have any discernible impact on this study's findings. All of the 43 properties lie within three-quarters of a mile from the Kasuwan Laushi shopping center. Distances from the center of Kasuwam Laushi to each property sold were recorded with the aid of plat maps. Summary statistics are in Table 1

Table 1: Summary Statistics for Data

Variable	Mean	Standard Deviation
X_1=Bathroom	2.0814	0.51636
X_2=Living Area	1884.5	510.91
X_3=Fireplace	0.69767	0.63006
X_4=Lot Area	9027.7	3950.9
X_5=Month of sale	51.396	22.297
X_6= (1- AADUM) (DIST)	7.8895	14.118
X_7= (AADUM) (DIST)	16.942	11.617
X_8= (AADUM)	0.74419	0.43632

Source: Field Survey (2009)

Correlation Coefficients

	X_1	X_2	X_3	X_4	X_5	X_6	X_7
X_2	0.6738						
X_3	0.5045	0.5380					
X_4	0.0562	0.0742	0.2443				
X_5	-0.1084	-0.1041	-02567	-0.8145			
X_6	0.3132	0.2047	0.2645	0.6816	-0.8150		
X_7	0.0024	0.1035	0.2262	0.8191	-0.9532	0.8550	
X_8	0.6252	0.7651	0.5069	-0.0432	-0.0016	0.1119	0.0287

Figure 1: Correlation Coefficient
Source: Field Survey (2009)

7. The Model Specifications

To analyze the impact of a shopping center on neighborhood property values, one might compare property values in two homogeneous neighborhoods, one with a neighborhood shopping center and the other

without. But ideal situations are hard to find and the two neighborhoods are bound to be dissimilar with respect to physical characteristics or socio-economic conditions. This study uses only the affected neighborhood, but controls for proximity and for before and after effects as well as conventional hedonic variables. If the effect of proximity is different before and after the announcement then we may conclude that property owners are justified in opposing shopping centers because of the associated disamenaties.

In this respect, external costs capitalised into value decreases for the most proximate properties, may outweigh the benefits offered by the neighborhood shopping centers. The model for determining the relationship between property value and the specific characteristics of the location utilises the following function:

$SP_i = f(X_{1i}, X_{2i}, ..., X_{8i})$

Where SP_i is the selling price of the ith property and the X_is are defined as follows:

X_{1i} = the number of bathrooms in the ith property
 X_{2i} = the living area (sq. ft.) of the ith property
X_{3i} = the number of fireplaces in the ith property
X_{4i} = the lot area (sq. ft.) of the ith property
X_{5i} = the sale month of the ith property from 0 to 46
X_{6i} = distance of the ith property to Kasuwan Laushi times $(1 —X_8)$
X_{7i} = distance to Kasuwan Laushi times X_8
X_{8i} = after announcement dummy: O= before and 1 = after

The first four variables relate to the characteristics of the sampled properties and the fifth variable provides a record of the sale month in order to capture overall trends in the selling prices. The last three variables are included in the model to capture the effects on the property values in the neighborhood following the announcement of the shopping center. The first of these variables, X_{6i}, can be viewed as a control in the sense that its coefficient will measure the effect of proximity prior to the announcement data. Before running the regressions, hypotheses were developed with regard to the signs of the explanatory variables. The coefficients of variables X_{1i} to X_{4i} were hypothesised to be positive meaning that an increase in any one of these variables would tend to increase the selling price of the ith property, other things being equal. The coefficient of variable X_{5i}, the month of sale of the ith property, was also hypothesised to be positive. The before announcement distance variable X_{6i}, on the other hand, was hypothesised to be zero on the assumption that distance from Kasuwan Laushi before the announcement would not be expected to affect the property values. The variable X_{7i}, distance to Kasuwan Laushi if the sale was after the announcement, was assumed to have a positive coefficient since property values might be expected to increase as distance from Kasuwan Laushi increased. That is, the shopping center was expected to depress values of the nearest properties relative to those at some distance. Finally, the coefficient of X_{8i}, was hypothesised to be negative on the assumption that diseconomies associated with the presence of a shopping center would cause an absolute decline in the values of the nearest properties.

8. Functional Form Analysis

Six functional forms were tested. The results are summarised in Table 2. The magnitude of the maximum log likelihood is determined to be -428.61. This magnitude is not significantly less at 95 percent level of confidence from that of the inverse-inverse function, the function with the highest log likelihood (-429.213). Neither is the log likelihood of the log linear function significantly different from the maximum log likelihood at the 95 percent level of confidence. From these two functional forms, we selected the log linear model (Model 4) because of the ease for interpreting the regression coefficients. The log likelihoods of all other well-known functional forms are significantly less than the maximum. A similar application of the test for choosing the model that best fits the data is explained more fully in Brennan, Cannaday and Colwell.

Model Number / Functional Form	1 Linear L=1 R=1	2 Semi-log L=1 R=0	3 Exponential L=0 R=1	4 Log Linear L=0 R=o	5 Inverse L=-1 R=1	6 Inverse-Inverse L=1 R=1
X_1 = Bathroom	11,798 (3.279)	24.357 (2.9972)	0.16978 (4.1913)	0.57364 (4.4)	-0.2776x10-5 (-4.0586)	0.1198 (5.2725)
X_2 = Living Area	5.3181 (1.25)	4,785.1 (0.5458)	0.8347x10-4 (1.7428)	0.12471 (1.3612)	-0.1458x10-8 (-1.8031)	-0.3215x10-2 (1.4743)
X_3 = Fireplace	4,177 (1.666)	2274.2 (2.0453)	0.03789 (1.3427)	0.04697 (1.7435)	-0.2559x10-6 (-0.53697)	-0.4815x10-6 (-1.3650)
X_4 = Lot Area	1.9033 (3.685)	1.7528 (2.9135)	0.3363x10-4 (5.7834)	0.277x10-4 (4.418)	-0.6036x10-4 (-6.1465)	-0.3994x10-9 (-4.3687)
X_5 = Month of Sale	143.47 (1.4444)	6,150.9 (1.5517)	0.00185 (1.6502)	0.07427 (1.7925)	-0.2649x10-7 (-1.4025)	0.6885x10-6 (1.1704)
X_6 = (1-AADUM)(DIST)	-321.63 (-1.0787)	-246.71 (0.7454)	-0.00625 (-1.8617)	-0.005349 (-1.5426)	0.1095x10-6 (1.9275)	0.1302x10-6 (2.9151)
X_7 = (AADUM)(DIST)	489.91 (2.1989)	514.12 (2.2252)	0.00411 (1.6405)	0.00462 (1.91381)	-0.2491x10-7 (0.58797)	-0.4117x10-7 (-1.3141)
X_8 = AADUM	-11,832 (-1.0787)	-11,632 (-1.0489)	-0.1565 (-1.2675)	-0.15478 (-1.3368)	0.21754x10-5 (1.0433)	0.2432x10-5 (1.6085)
Constant	15,194 (1.2978)	-19,579 (-0.3122)	10.336 (78.417)	9.9491 (14.485)	0.2811x10-4 (12.628)	0.8118x10-5 (3.7632)
Adjusted R2	0.8450	0.8299	0.9056	0.91	0.8976	0.9408
Log likelihood	-442.287	-444.28	-432.859	-431.649	-440.936	-429.2123

Table 2: Regression Results

Source: Field Survey (2009)

9. Regression Results

The regression results confirm most of the hypotheses developed above. The hypothesised signs of coefficients for all variables in all models are consistent with the regression results. The results for Model 4 suggest a fairly strong relationship between the dependent and independent variables. The R2 shows that 91 percent of the variation in the dependent variable is explained by the regression. The values of regression coefficients (except on X3, X6, X7, & X8) represent partial elasticities. That is, these coefficients measure a percent change in selling price for one percent change in each of the independent variables when the influence of other variables is held constant. A percentage increase in variable X1 (bathroom), for instance, increases the selling price of the dwelling unit by about four-tenths of one percent when the influence of other independent variables is held constant. The coefficient on the month of sale variable, X5, has a similar interpretation. It indicates property values appreciated at an overall monthly rate of about one-tenth of one percent for every one percent increase in time measured in months from 2004 to 2009. The coefficient on X3, however, has a different interpretation. It indicates that a fireplace adds about 5 percent (exp .04697 = 1.048) to the value of a residential property.

The interpretation of the coefficients on X6, X7 and X8 is of primary interest. The coefficient on X6, the before announcement distance effect, shows a possible small decrease in selling price as distance (in feet) increases away from Kasuwan Laushi (although this effect appears to be quite significant in Model 6). While the variable X6 has a coefficient which is significantly negative at the 90% level of confidence, the coefficient is not significantly different from zero at the 90 percent level of confidence. It may be the Kasuwan Laushi location, or something near it, had some amenity value prior to the announcement. Alternatively, residents could have had different expectations for the development of the Kasuwan Laushi site than those realised. However, it is reasonable to assume there is no significant distance effect prior to the announcement of the forthcoming shopping center as hypothesised.

The variable X7, the distance to Kasuwan Laushi after announcement, however, proved to be a significant determinant of the selling price. As expected, the regression coefficient revealed that after the announcement property values increased as distance from the site of impending construction increased. That is, the coefficient on X7 is significantly positive at the 90 percent level of confidence. The after announcement price effect, variable X8, tends to confirm the general apprehension on the part of residential property owners that the location of commercial activity in the immediate neighborhood tends to adversely affect property values. The regression coefficient, which is significantly negative at the 90 percent level of confidence, indicates properties located adjacent to the center decreased in value after the announcement in 2004. The results from Model 4 are depicted in Figure 2 below:
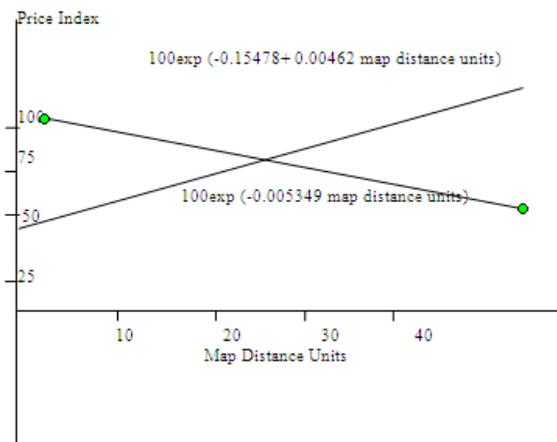
Figure 2: Impact of the Shopping Center on Selling Price before and after the announcement.

Source: Field Survey (2009)

The downward sloping curve in Figure 2 illustrates the impact on selling price before announcement and the upward sloping curve illustrates the impact after the announcement. The intersection of the two curves shows that properties 'located beyond 15.53 map distance units, or approximately 1,500 feet, from the shopping center were valued more after the announcement than before. The results depicted in Figure 1 illustrate the impact of the announcement on the price-distance relationship indicated by Model

10.   Conclusion and Recommendations

The announcement of the proposed shopping center had both negative and positive effects on the value of residential properties. At distances closer than 1,500 feet, diseconomies appear to dominate. Beyond 1,500 feet, economics appear to dominate. The trade-off between values proximate to the shopping center and properties served by the center, but removed from its negative effects, would seem to suggest there may be an optimal spatial frequency of these small shopping centers. There is a need on the part government to ensure that shopping malls are not negatively affecting the value of the surrounding residential properties in the study area. More shopping centers need to be constructed in order to improve the value of many residential areas.

11.   References

[1]   Allen C. G, (2006). Hedonic Prices, Price Indices and Housing Markets1. *Journal of Urban* **Economics** 5: 47 1-484.

[2]   Anderson, W., Thomas, J. (2008) Identifying the Convenience-Orientation Consumer. *Journal of Marketing Research,* 8: 179-183

[3]   Babcock, R. I. (2008). *The Zoning Came: Municipal Practices and Policies,* Univ. of Wisconsin Press, UK

[4]   Box, G. and Cox, D. (2009) An Analysis of Transformations, *Journal of* **the** *Royal Statistical Society.* Series B, 26:, 211-243.

[5]   Fred, P. & Reynolds, R. (2008) Shopping Orientations and Product Usage Usage Rates, *Journal of Marketing Research*. 8: 505-508

[6]   Box, G. and Tidwell P. W. (2008). Transformation of the Independent Variables. *Technometrics:* Vol 5 531-550,

[7]   Brownstone, D. & Kain, J. (2007), *The Moving Behavior of San Francisco Households.* Prentice Hall, New York

[8]   Brownstone D. and Devany A. (2008), Zoning, Returns to Scale, and the Value of Undeveloped Land, *Review of Economics and Statistics* 73(4): 699-704. New York: National Bureau of Economic Research, processed.

[9]   Cervero R.; Duncan M. (2007), Neighbourhood Composition and Residential Land Prices: Does Exclusion Raise or Lower values? *Urban Studies,* 41(2): 299-315.

[10] Clois, E. K. and Joan, C.K. (2009) *Residential Housing.* The Goodheart Willcox Company, Inc. South Holland Illinois.

[11] Colwell, P. F. & Munneke, H.J. (2006) Land Price and Land Assembly in the CBD, *Journal of Real Estate Finance and Economics,* 18(2): 163-180.

[12] Crecine, J. P., Davis, O. A. and Jackson, L. E. (2008) Urban Property Markets: Some   Empirical Results and their Implication for Municipal Zoning. *Journal of Law and Econornics* 10: 79-99.

[13] Dewees, D. N. (2008) The Effects of a Subway on Residential Property Values in Toronto, *Journal of Urban Economics 3357-369*

[14] David M. G. and Peter M. (2009). The Effects of Nonresidential Land Uses on the Prices of Adjacent Housing: Some Estimates of Proximity Effects. *Journal of Urban Economics* 8: 1980, 1-15.

[15] Eugene F. B. (2007). The Determinants of Land Value. *Journal of Land Economics.* 56: 325-333.

[16] Frederick H. R. (2008). Externalities in Urban Property Markets: An Empirical Test of the Zoning Ordinance of Pittsburgh. J*ournal* of Law and Economics 16: 313-343.

[17] Griliches, D.M. (2005). On an Index of Quality Change. *Journal of American Statistical Society* 56: 535-543.

[18] Grossbart, T, Stanford, L., Robert A. (2008) Environmental Sensitive and Shopping Behaviour. *Journal of Business Research* . 3: 281-294

[19] Henry O. P. (2008). The Effects of Property Taxes and Local Public Spending on Property Values. *Journal of Political* Economy*. 58: 994-1003.

[20] Kain J. F. and Quigley, J. M. (2008). Measuring the Value of Housing Quality. *Journal of American Statistical Association* 65: 532-548.

[21] Karl L C. and Peter F. C. (2009). Property Values and Accessibility to Primary Schools," *The Real Estate Appraiser and Analyst*, forthcoming.

[22] Norman C. M. (2006). Residential Property Hedonic Pricing Models: A Review, in Sirmans, C. F editor, *Research in Real Estate,* Vol.2, Jai Press, Inc., 1156.

[23] Martin J. B., Muth R. F., and Nourse, H.O. (2007). A Regression Method for Real Estate Price Index Construction, *Journal* of *the American Statistical Association.* Vol. 58: 933-942.

[24] Moschis, C. & George, P. (2008). Shopping Orientations and Consumer Uses of Information. *Journal of Retailing.* 52: 61-70

[25] Peter F. C. and Kenneth W. F. (2007). Electric Transmission Lines and the Selling Price of Residential Property. *The Appraisal Journal.* 37 490-497.

[26] Ralph J. B. (2007). On the Selection of the Best Predictive Model in Multiple Regression Analysis. *The Appraisal journal* 42 (4): 572-576.

[27] Robert H. and Henry O. P. (2007). Choice of Functional Form for Hedonic Price Equations. J*ournal of Urban Economics.* 10: 37-49.

[28] Rosett, S. (2008). Hedonic Prices and Implicit Markets. J*ournal of Political Economy* 82: 34-55.

[29] Smith, B. A. (2009). Measuring the Value of Urban Amenities. J*ournal of Urban Economics.* 37: 370-387.

[30] Steven M. M., William R. R. and Richard N. R. (2007). The Effects of Zoning and Externalities on the Price of Land: An Empirical Analysis of Monroe County, New York, *The Journal of Law and Economics* 20 (1): 111-132.

[31] Thomas P. B., Roger E. C. and Peter F. C. (2008) Office Rent in the Chicago C8D, *Journal of American Real Estate and Urban* Economics Association 12 (3): 243-260.

[32] Thomas B. B. and Peter F. C. (2006) "Housing Prices Indexes," in *Researrh in Real Estate,* Vol. 2, *IN* Press, Greenwich, Conn.

[33] Tideman, N. T. (2007). Land Use Control through Administered Compensation, in Program on *Regional and Urban Economics Discussion* Paper No. 59, Harvard University Press

[34] Winger, A. (2007). How Important is Distance from the Center as a Determinant of Urban Residential Land Values. *Appraisal Journal* 41: 558-565.