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Property Taxation, Capitalization, and the Economic Implications of Raising Property Taxes

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Abstract This study applies a hedonic pricing model to provide further empirical evidence whether, in the spirit of Tiebout (Journal of Political Economy 64(1):416–424, 1956), Oates (Journal of Political Economy 77(6):957–971, 1969), and Tullock (Journal of Political Economy 79(5):913–918, 1971), property taxes in particular have been capitalized into housing prices in the city of Savannah, Georgia housing market. There were sufficient data in this context to study a total of 2,888 single-family houses for the six-year period 2000–2005; 591 of these houses were located in the Savannah Historic Landmark District. Estimating the model in semi-log form reveals (after allowing for a variety of factors, including 12 spatial variables, four of which are *de facto* Tiebout type variables) that the natural log of the real sales price of a single-family house in the city of Savannah environment was in fact negatively affected by the city and county property tax level. This study is prompted by the fact that city and county governments are facing serious financial challenges and are searching for viable revenue sources. Increasing property taxes is one of the potential revenue sources being considered by elected officials. In providing current evidence on the effects of property tax in particular and on the Tiebout hypothesis in general, we seek to alert city and state governments of the potential consequences and perils of property tax hikes.

Keywords Housing prices · Property tax capitalization · Public goods capitalization

JEL R14 · R13 · R11

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Introduction

Since the meltdown of U.S. mortgage and credit markets, city, county, and state governments have been searching with an increasing sense of urgency for either new sources of revenue or means by which to expand existing sources of revenue. In the cases of city and county governments, property tax increases are a particularly tempting vehicle with which to attempt to elevate revenues since, at least in the short run, they have a captive audience (resident homeowners). The present study seeks to provide current evidence as to whether or not such increased property taxes would adversely affect housing prices. If such tax increases are in fact destined to be capitalized into housing prices, homeowners will be adversely impacted by a decline in their property values and hence a decline in their wealth. In turn, to the extent that higher property taxes reduce wealth, consumption spending can be expected to decline, bringing with it further upward pressure on unemployment rates and potential other distortions in resource allocation as well (Cebula and Alexander 2006). To help ensure more dependable results, Tiebout (1956) factors aside from just the property tax are also integrated into the analysis.

Hedonic pricing models have been used in a number of studies to assess the impacts of historic district designation and other factors on property values (Coffin 1989; Ford 1989; Asabere and Huffman 1994; Asabere et al. 1994; Clark and Herrin 1997; Coulson and Leichenko 2001; Leichenko et al. 2001; Coulson and Lahr 2005; Sirmans et al. 2005). This study seeks to extend the literature by applying the hedonic pricing model to the prices of single-family homes in the metropolitan area of Savannah, Georgia, with emphasis on the question of whether property taxes (and a variety of Tiebout (1956) type variables) are capitalized into housing prices. In addition to focusing upon the issue of whether property taxes (*PROPTX*) are capitalized into housing prices in the city of Savannah, this study considers four Tiebout (1956) type variables. These include: close proximity to public primary, middle, and secondary schools (SCHOOL); relatively close proximity to the city's two public universities; and relatively close proximity to the city's primary hospitals, which are in fact funded to some significant degree by state and local public revenues.

This study also accounts for a number of other factors influencing the housing market. For example, it integrates a dummy/binary variable (*HISTDES*) to reflect whether a home sale involved a building officially designated as a national historic landmark. It also distinguishes between home sales within the Savannah Historic Landmark District on the one hand and other home sales in the city of Savannah on the other hand in order to capture any premium that may be applied to sales of the former variety. As in a number of other related studies, spatial control variables are included in the model; in the present specification, nine such variables are included.

In the next section of this study, the Tiebout (1956)/Tiebout (1956)-Tullock (1971) hypothesis is briefly reviewed and then interpreted to include four specific Tiebout (1956)-type variables. Subsequently, the hedonic pricing model is provided, along with a description of the data. Following conventional practice in the literature, the model is estimated in semi-log form. The results are provided and analyzed in the subsequent section of the study. The conclusion provides a summary of the results.

The Framework of the Analysis

This section of the study provides the framework within which the hedonic pricing model is applied to housing sales in the city of Savannah. Tiebout (1956, p. 418) hypothesized that "…the consumer-voter may be viewed as picking that community which best satisfies his set of preferences for public goods…the consumer-voter moves to that community whose local government best satisfies his set of preferences…" As Tullock (1971, p. 917) observes, this hypothesis can be extended such that it more clearly stresses that, *ceteris paribus*, the "…individual deciding where to live will take into account the private effects upon himself of the bundle of government services and taxes…" Thus, Tullock (1971), more explicitly than Tiebout (1956), emphasizes that the consumer-voter evaluates the tax burden at potential locations of choice. Following Oates (1969), a number of studies have investigated whether property taxes are capitalized into housing prices.

Furthermore, four additional variables are considered under the rubric of the Tiebout (1956) hypothesis. These include: close proximity (within one-half mile) to public primary, middle and secondary schools (SCHOOL); close proximity (within two miles) to the city's partially publicly funded major hospitals (HOSP); and relatively close proximity (within two miles) to the city's two public/state universities, Armstrong Atlantic State University and Savannah State University. Thus, this study also considers whether these additional local public services are also capitalized into Savannah's housing prices.

The basic premise of the hedonic pricing model is that a house constitutes a bundle of both desirable and undesirable attributes to utility-maximizing consumers, all of which contribute to the market value of the house as revealed through a market transaction, i.e., a home sale. The hedonic pricing model decomposes the transaction price into various components such as interior and exterior features, or other traits of the house (including location, i.e., spatial considerations) that affect the final sale price. The estimated parameters of the model provide information about the relative contribution of any given house feature.

In this study, the hedonic pricing model takes the following general form:

$$lnRSALESPRj = f(Ij, Ej, SCj, Oj) \tag{1}$$

where:

lnRSALESPj	the natural log of the real price of house j, where the price of the jth house is expressed in 2005 dollars
Ij	a vector of interior physical characteristics for house j
Ej	a vector of external physical characteristics for house j
SCj	a vector of spatial or spatial control variables for house j; and
Oj	a vector of other factors associated with house j, including property taxes and Tiebout variables.

The present study applies the hedonic pricing model to home sales in the Savannah metropolitan area over the six-year period from 2000 to 2005. Data for 2,888 home sales for which there was sufficient information for analysis during this time frame in the city of Savannah (591 of which were in the Savannah Historic Landmark District) were obtained from the Savannah Board of Realtors' Multiple Listing Service (following

Dubin 1998). Property tax data for all of the single-family houses in the study were obtained through the Chatham County Property Tax Assessors Office and the City of Savannah Property Tax Assessment Office. Interestingly, unlike the city of Savannah outside the Historic Landmark District, where 839 homes sales, i.e., 29.1%, involved new homes, the vast majority of the observations for the Savannah Historic Landmark District represent re-sales of existing homes: only 40 Historic District sales (6.7%) were newly built structures. In order to permit comparison of sales prices across the study period, all housing prices and property taxes were converted to and expressed in 2005 dollars using the price index for single-family homes from the U.S. Census Bureau (2007, Table 710).

There were a variety of interior and exterior physical characteristics available for each house sold as well as other factors associated that were available and expressly included in the analysis. Basic descriptive statistics for each of the variables considered in the analysis are provided in Table 1. Naturally, for each of the impacts of the

Table 1 Descriptive statistics

Variable	Mean	Standard deviation
lnRSALESPR	11.81	0.891
BATHS	2.253	1.812
FIREPLACES	1.09	1.30
BEDROOMS	2.6	1.626
SQFT	1,789	1,280
BRICK	0.191	0.469
DECK	0.059	0.25
CRTYD	0.064	0.152
SPRINKLER	0.0183	0.2294
STORIES	1.811	0.982
STUCCO	0.181	0.288
GARAGESP	0.196	0.333
POOLTUB	0.015	0.161
NEW	0.2862	0.299
PARK/SQ	0.0591	0.209
CORNER	0.0521	0.356
CUL	0.012	0.031
LAKERIV	0.009	0.011
APCOMP	0.099	0.065
BUSYST	0.013	0.019
PROPCRIME	1.16	2.02
HISTDES	0.0122	0.0224
DISTRICT	0.2049	0.296
SCHOOL	0.141	0.132
PROPTX	2,746	1,972
AASU	0.13	0.12
SSU	0.11	0.10
HOSP	0.14	0.11

explanatory variables on housing price in the model, the expected sign is proffered in the discussion provided below under the assumption of *ceteris paribus*.

The interior physical characteristics of house j include the following: *BATHS*, the total listed number of baths (full plus half baths); *FIREPLACES*, the total number of listed fireplaces; *BEDROOMS*, the total number of listed bedrooms; and *SQFT*, the total listed number of square feet of finished interior living space.

As observed in Sirmans et al. (2005) and Boyle and Kiel (2001), and based on a variety of other studies, including Ford (1989), Clark and Herrin (1997), Coulson and Leichenko (2001), Leichenko et al. (2001), Laurice and Bhattacharya (2005), Decker et al. (2005), and Coulson and Lahr (2005), the real sales price (*RSALESPR*) of house j is expected to be an increasing function of the number of desirable internal and external physical housing characteristics. For example, *RSALESPR* is expected to be an increasing function of the number of bathrooms and fireplaces. It also is expected to be an increasing function the number of bedrooms and the square footage of finished living space.

The exterior physical characteristics of house j include the following: *BRICK* (=1 or 0), whether the exterior is made principally of brick; *DECK* (=1 or 0), whether the house has a deck; *CRTYD* (=1 or 0), whether the house has a private courtyard; *SPRINKLER* (=1 or 0), whether the house has an underground sprinkler system; *STORIES*, the number of stories in the house structure; *STUCCO* (=1 or 0), whether the house exterior is principally of stucco construction; *GARAGESP*, the number of garage car spaces (not carports) that are included as part of the house; and *POOLTUB* (=1 or 0), whether the house has a hot-tub and/or a swimming pool.

The *RSALESPR* of house j is expected to be an increasing function of whether the house exterior is brick and the number of stories of the structure. In addition, *RSALESPR* is expected to be an increasing function of the presence of a deck, the presence of a pool or hot-tub, and the number of garage spaces. It also is hypothesized here that a stucco exterior (rather than one of wood or vinyl) may enhance *RSALESPR*. Finally, the presence of a private courtyard is expected to enhance the *RSALESPR* for house j, as would the presence of an underground sprinkler system.

Another factor associated with house j is *NEW* (=1 or 0), i.e., whether the house was new at the time of sale. Arguably, a new house is often considered highly desirable because in part it is in need of little or no repair and is generally cleaner and brighter and equipped with new and modern appliances; hence, a new house *per se* is expected to command a higher sales price. Insofar as location in the Savannah Historic Landmark District is concerned, this argument is consistent in principle with the finding in Coulson and Lahr (2005, p. 506) that "…new properties benefit…from being within a historic district."

There are 12 spatial control variables are included in the model. Four of these fall under the rubric of Tiebout (1956) variables whereas counterparts to several of the others are found in one or another of the studies included in the related literature. To begin, it is hypothesized that houses that are located across from or adjacent to a park or square, *PARKSQ* (= 1 or 0), or houses that are located on a corner, *CORNER* (=1 or 0), may be more appealing and hence command a higher price. Similarly, houses located on a cul-de-sac, *CUL* (=1 or 0), or directly on a lake or river, *LAKERIV* (=1 or 0), should also command a higher price. On the other hand, houses located within two blocks of an apartment complex, *APCOMP* (=1 or 0), defined as a rental-only

complex consisting of more than four rental units, or on one of Savannah's busy streets, *BUSYST* (=1 or 0), Abercorn Street, De Renne Avenue, Montgomery Cross, Habersham, Victory Drive, White Bluff/Coffee Bluff, or Oglethorpe, will command a lower price because of the increased vehicular congestion and accompanying noise and air pollution associated therewith. From a different perspective, prospective homeowners presumably are interested in the possible exposure to property crime associated with house j. Accordingly, a spatial measure of property crime is considered in this study: (*PROPCRIME*), which indicates the number of burglaries within a one-half mile radius of house j that were reported to the Savannah Chatham Metropolitan Police Department during the full calendar year preceding the sale of house j. Naturally, risk-avoidance behavior would imply that the real sales price of house j would be negatively affected by *PROPCRIME*.

In the spirit of the Tiebout hypothesis, there is the property tax variable, and there are four variables of a Tiebout (1956) variety. To begin, then, there is the most obvious central issue to the present study of residential property taxes. This study hypothesizes, in the spirit of the Tiebout (1956) hypothesis, that residential property taxes are capitalized into housing prices such that housing prices are expected to be a decreasing function of property taxes, *ceteris paribus*.

Regarding the other pertinent variables, first there is a dummy variable, *SCHOOL* (=1 or 0) indicating whether house *j* is located within one-half mile radius of a public elementary school, public middle school, or public high school. For families whose children attend (or are expected to do so) such public schools, there presumably may be benefits from close proximity to same, including reduced student transportation costs. This would imply that the real sales price of house *j* would be positively impacted by *SCHOOL*. Alternatively stated, close proximity to such schools arguably would be somehow capitalized into the real price of house j. On the other hand, for families whose children do not attend such schools or families that do not have school-age children residing at home, the direct value of *SCHOOL* could be negligible (and potentially even a nuisance), although it still might be carry a positive value to the extend that these would-be homebuyers realize that such considerations as are impounded in *SCHOOL* may have advantages in the future should/when re-sale of house *j* be a consideration.

Additionally, dummy variables reflecting relatively close proximity to each one of the city's two public universities, Armstrong Atlantic State University, *AASU* (= 1 or 0), and Savannah State University, *SSU* (=1 or 0), are considered. In this case, relatively close proximity is defined as location of house j within a two-mile radius of either of these universities. The hypothesis in this case is that such close proximity to either *AASU* or *SSU* affords easier access to the university's educational opportunities and cultural (including sporting) events and hence should lead to value that is capitalized into the price of house j.

In addition, a dummy variable reflecting proximity, i.e., location within a two-mile radius of any one the city's primary hospitals, *HOSP* (=1 or 0),, namely, Memorial Hospital or St. Joseph's/Candler Hospital, which are in fact funded to some significant degree by state and local public revenues, is considered. To the extent that such proximity represents a safety issue and/or a convenience issue in terms of closeness to medical care and/or serious medical care, this closeness should translate into a value that is capitalized into house j's real market price.

In addition, there is the residual category of other factors considered in this study. To begin, it is argued here, given the historical culture of Savannah, that if a single family house has received designation as a national historic landmark (*HISTDES*), it should command a higher market price to reflect an element of prestige. Then there is the separate issue of location in the Savannah Historic Landmark District *per se*. If a house in Savannah is located in this District (*DISTRICT*), it is hypothesized that its market value is greater as a result of the element of prestige associated with this location. Both *HISTDES* and *DISTRICT* are dummy variables.

Empirical Findings

Estimating the hedonic model outlined above, with the White (1980) procedure adopted to correct for heteroskedasticity, semi-log estimation results are

$$\begin{aligned}
&\ln RSALESPRj = 10.23 + 0.101BATHSj + 0.053FIREPLACESj + 0.081BEDROOMSj \\
&\qquad\qquad\qquad\quad (+3.21) \qquad\quad (+3.58) \qquad\quad (+2.72) \\
&+0.00017SQFTj + 0.22BRICKj + 0.089DECKj + 0.104CRTYDj + 0.136SPRINKLERj \\
&(+2.66) \qquad (+3.30) \qquad (+2.78) \qquad (+3.37) \qquad (+2.37) \\
&+0.135STORIESj + 0.26STUCCOj + 0.11GARAGESPj + 0.109POOLTUBj + 0.27NEWj \\
&(+2.76) \qquad (+3.44) \qquad (+3.12) \qquad (+1.67) \qquad (+3.54) \\
&+0.11PARK/SQj + 0.022CORNERj + 0.083CULj + 0.12LAKERIVj - 0.041APCOMPj \\
&(+2.03) \qquad (+0.28) \qquad (+2.38) \qquad (+2.75) \qquad (-2.01) \\
&-0.072BUSYSTj - 0.019PROPCRIMEj + 0.022HISTDESj + 0.14DISTRICTj \\
&(-2.05) \qquad (-2.05) \qquad (+2.03) \qquad (+2.68) \\
&-0.00003PROPTXj + 0.036SCHOOLj + 0.019AASUj + 0.02SSUj + 0.037HOSPj \\
&(-2.66) \qquad (+3.18) \qquad (+1.89) \qquad (+1.81) \qquad (+2.09) \\
&R^2 = 0.88, \text{adj}R^2 = 0.86, F = 47.02
\end{aligned} \tag{2}$$

where terms in parentheses beneath coefficients are signed t-values.

In Eq. (2), 27 estimated coefficients are provided, with 15 being statistically significant with the expected sign at the 1% level, eight being statistically significant with the expected sign at the 5% level or beyond, and two being statistically significant at the 10% level. Only the estimated coefficient for the variable CORNERj fails to be statistically significant at beyond the 10% level. The coefficient of determination (0.88) indicates that the model explains seven-eighths of the variation in the dependent variable (lnRSALESPR). Finally, the F-statistic is significant at far beyond the 1% level, evidence of the overall strength of the model.

Based on estimate (2), the real sales price (expressed in natural log form) of single-family houses in the city of Savannah is a positive function of the number of bathrooms, fireplaces, bedrooms, garage spaces, stories in structure, and the number of square feet of finished living space in the house. In addition, the presence of a deck, a private courtyard, or an underground sprinkling system adds to the sales price. An exterior construction of brick or stucco, and new construction also tend to increase the sale price of the house, as does the presence of a pool or hot-tub. Location across from or adjacent to a park or square also appears to enhance sales price, although corner location does not appear to significantly influence housing price. Location on a

cul-de-sac or either on a lake or river also acts to enhance housing price, whereas close proximity to either an apartment complex or a busy street reduces the house price. Location in an area with more burglaries reduces the real price of a house. Designation as a national historic monument apparently is appealing and hence contributes somewhat to a higher sales price. Furthermore, the coefficient on *HISTDIST* implies that location in the Savannah Historic Landmark District *per se* increases a house's sales price.

Finally, and most importantly in terms of the objective of this study are the results for the Tiebout (1956) hypothesis. As shown in Eq. (2), the natural log of the real sales price of house j is found to be (as hypothesized) a decreasing function of the property tax liability associated with the house. The natural log of the real sales price of house j is found to be positively affected by close proximity to a public primary, middle, or secondary school. Close proximity to a major hospital also elevates the real sales price. Lastly, there is evidence that close proximity to either *AASU* or *SSU* also elevates house j's market value, albeit modestly.

As for the specific contributions of the statistically significant variables on *LnRSALESPR*, there are 25 effects that can be summarized. In a semi-log functional form with the dependent variable being expressed in natural log terms, a one unit change in a non-binary independent variable has a percentage effect on the dependent variable that is given by 100% multiplied by the estimated coefficient, *ceteris paribus*. For example, with respect to the interior features of house j, the presence of an additional bathroom causes the real sales price of house j to increase by 10.1%. This factor generates the largest positive sales price response for interior features. By comparison, the presence of an additional bedroom yields a positive housing price response of roughly 8.1%. This is followed by a more modest price increase for an additional fireplace of roughly 5.3%. The effect of the *SQFT* variable on the real sale price of house j is handled somewhat differently because the scale of measurement is per square foot. In particular, the mean square footage is 1,789. A one standard deviation increase in the square footage (1,280) from the mean implies a 21.76% increase in the real sales price of house j. This translates into a situation in which, on the average, the real housing price rises by roughly $28.99 (in 2005 dollars) for each additional square foot of finished living space, which lies roughly in the middle of the range for other recent similar studies (e.g., Coulson and Leichenko 2001; Bin and Polasky 2004).

Regarding the response of the *lnRSALESPR* of house j to exterior features, we focus first on the number of stories present in house j and the number of garage spaces on the premises of house j. Based on the average of the results in Eq. (2), one additional story for house j yields a roughly 13.5% higher sales price, and one additional garage space yields an approximately 11% higher sales price.

In interpreting the coefficients on the dummy (binary) variables, we follow the procedure in Halvorsen and Palmquist (1980). Accordingly, to begin, it is observed that the cladding type of house *j* appears to exercise a large effect. For example, holding other things constant, a house with a brick exterior commands a roughly 24% higher sales price than one without a brick exterior, whereas a house with a stucco exterior commands a roughly 29% higher sales price than one without. Other things held constant, a house with a private courtyard commands an approximately 11% higher sales price than a house without one, whereas a house with an underground

sprinkler system commands a roughly 14% higher price than one without one. Furthermore, other things held constant, a house with a deck commands a roughly 9% higher sales price than one without one. It is worth observing that the results for each the last three variables considered, namely, courtyard, underground sprinkler system, and deck might seem a bit high. This might be attributable to the fact that a variable reflecting lot size (which is unavailable for most of the Historic Landmark District houses and for many of the other houses considered as well) is, of practical necessity, omitted from the analysis. As for the sales-price response of house j to other non-interior and non-exterior features, it appears (other things held the same) that if house j that is of new construction, it sells with a premium of nearly 30% as compared to other existing (not-new) houses.

The results for variables *HISTDES* and *DISTRICT* are next. It appears that a house designated as a national historical landmark secures about a 2.4% premium over a house not so designated. This premium is a separate effect from that of whether house j is located is located in the Savannah Historic Landmark District. Indeed, a house located in the Savannah Historic Landmark District commands a real price premium of about 16% over a house not located in the district.

Consider now the results for the eight non-Tiebout (1956) spatial control variables, seven of which are expressed as dummy variables and one of which is not. A house located across from or adjacent to a park or square commands an approximately 12% higher price than a house that is not so situated, whereas location on a corner has no significant housing price impact. On the other hand, location on a cul-de-sac results in a housing price premium of 9%, while location on a lake or river yields a price premium of roughly 13–14%. Next, location within two blocks of an apartment complex reduces the price of a house by roughly 4.5%, whereas location on a busy street reduces the price of a house by nearly 8%. As for property crime, which is not expressed in binary (dummy) variable form, one additional burglary within a half-mile proximity lowers the real sales price of a house by nearly 2%.

Next we consider the Tiebout (1956) spatial variables. Location within one-half mile of a public school (primary, middle, or secondary) elevates the real sales price of house j by nearly 4%. Location of house j in close proximity of one of Savannah's major hospitals elevate the price of house j by approximately 4% as well. There is also modestly compelling evidence that location of house j within close proximity to one of the two public universities universities, whether *AASU* or *SSU*, elevates its real housing price by about 2.3%.

Finally, the estimated coefficient on the property tax variable is negative, as expected, and statistically significant at the 1% level. This finding provides strong empirical support for the Tiebout (1956) hypothesis that higher property taxation reduces the price of housing, *ceteris paribus*, presumably because the property tax liability is capitalized into the housing price (Oates 1969). The mean property tax level for a single-family home in the Savannah housing market is $2,746, while the standard deviation is $1,972. Raising the property tax by one standard deviation ($1,972) would reduce the real price of the average house by 5.916%, i.e., by $14,097.

This finding that raising property taxes would reduce housing prices is important for at least three reasons. First, this policy would reduce the net wealth of homeowners. Second, this reduced net wealth induces a reduction in consumer spending, which

exerts upward pressure on the unemployment rate. Third, to the extent that property tax increases are implemented, the affected areas will experience a reduced population growth from migration; indeed, net out-migration could occur (Cebula and Alexander 2006), which would create a new round of revenue problems for city and county governments.

Conclusion

The purpose of this study was to investigate, using the metropolitan Savannah, Georgia housing market as an example, the Tiebout (1956) hypothesis that property taxes are capitalized into real housing prices. To enhance the dependability of the study, other Tiebout (1956) factors are integrated into the study. The study is prompted by the goal of alerting city and county government to the perils of property tax increases.

The principal findings of this study, given its objective, include the result that the natural log of the real sales price of a single family house in Savannah over the 2000–2005 period was negatively impacted by higher property taxes, implying that (as hypothesized) property taxes are capitalized into real housing prices.[1] In addition, there is strong empirical evidence that such Tiebout (1956) factors as close proximity to public schools (primary, middle, and secondary), major hospitals, and both of the public universities found in Savannah all were positively capitalized into the real housing prices of single-family homes in Savannah. This study of the Savannah housing market provides strong empirical support for the Tiebout (1956) hypothesis, a finding that affirms the free market system's efficiency in assessing the impacts governmental actions and policies. These findings are consistent with the classic related earlier study by Oates (1969).

In closing, we reiterate that the finding that a policy by city and county governments of raising property taxes would reduce housing prices is important for at least three reasons. First, this particular policy reduces the net wealth of homeowners. Second, the reduced net wealth induces a reduction in consumer spending, which would exert upward pressure on the unemployment rate. Third, to the extent that property tax increases are implemented, the affected areas will experience a reduced population growth from migration. Indeed, net out-migration could occur (Cebula and Alexander 2006), which would create a new round of revenue problems if not crises for city and county governments.

[1] In all, there are 11 differences between the present model and the specification in Cebula (2010). Aside from the introduction/addition of the critical variables expressly reflecting the Tiebout (1956)/Tiebout (1956)-Tullock (1971) hypothesis, namely, *PROPTAX, SCHOOL, AASU, SSU*, and *HOSP* (four of which are also spatial control variables), and the more inclusive definition of the variable *BUSYST*, there is the additional spatial variable *PROPCRIME*. Also, the present study omits the natural log of square feet of finished living space (l*nSQFT*), and dummy variables reflecting house closings during the months of May, June, and July. Introduction of the latter three seasonal variables in the present specification leads to multicollinearity problems in the present model. On the other hand, use of *lnSQFT* in place of *SQFT* neither adds to nor detracts from the findings in the present study.

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