Journal of Real Estate Finance and Economics, 8: 225–234 (1994)

The Adverse Impacts of Local Historic Designation: The Case of Small Apartment Buildings in Philadelphia

PAUL K. ASABERE
School of Business and Management, Temple University, Philadelphia, PA 19122

FORREST E. HUFFMAN
School of Business and Management, Temple University, Philadelphia, PA 19122

SEYED MEHDIAN
The Ohio State University, Newark, OH 43055

Abstract

This paper examines the sales effects of local historic preservation. Using the hedonic framework our study shows that small historic apartment buildings experienced a 24% reduction in price compared to nonlocally certified properties. Our variable for federal historic districts, however, produced statistically insignificant results. The results suggest that historic control (as practiced in Philadelphia) is confiscatory. The study illustrates an outcome of public regulation that impinges on private property rights.

Key Words: adverse impacts, local designation, historic preservation, public choice

1. Introduction

Debate on the economic impact of local historic preservation regulations has escalated since the Pennsylvania Supreme Court stymied the City of Philadelphia Historical Commission's efforts to impose preservation on an unwilling owner.[1] This controversy creates a timely opportunity for an empirical investigation of the impacts of local historic designation on property values.

Unfortunately, the impact of local regulations has proven difficult to isolate since many properties that are locally certified are also federally certified. The necessity of separating local effects from federal impacts is of a major concern since the effect of local certification can differ considerably from the impacts expected from designation at the federal level. All of the prior studies on historic designation suffer from their inability to separate local effects from federal designation effects. Benson and Klein (1988), for example, examine the impact of "districting" in Cleveland, but no attempt is made to isolate local regulation from federal designation impacts. Schaeffer and Ahern (1988) similarly examine federal districts in Chicago but fail to control for any locally derived impacts. Lockard and Hines (1983), Asabere, et al. (1989), and Ford (1989) also fail to separate the two methods of certification. It is thus nearly impossible to draw valid conclusions of the economic effects of local historic preservation based on these studies. Obviously, there is the need to perform empirical studies of the impacts of historic preservation which separate the consequences of local designation from those derived from federal certification.

This paper reports empirical evidence showing that local historic designation in Philadelphia decreased the value of the 1–4 unit apartment buildings studied. To provide a proper background for our empirical framework, Section 2 presents a discussion of the differences between federal certification and local historic designation techniques in Philadelphia.

2. Historic Preservation Techniques

Since 1978, the federal government has utilized historic rehabilitation investment tax credits (ITC) to spur the preservation of historic property. The 15-year history of the preservation tax incentives program is one of gradual increasing use in the late 1970s, succeeded by a tremendous growth after the passage of the Economic Recovery Act of 1981, followed by a rapid decline in use after enactment of the Tax Reform Act of 1986 (National Park Service, 1991).[2] Thus there is some evidence that larger tax incentives encourage historic rehabiliation.[3] However, placement on the National Register of Historic Places (federal certification) creates tax incentives only for individuals seeking ITC (or other tax benefits) through the qualified rehabilitation (or other preservation) programs.[4]

Local techniques, on the other hand, may be restrictive (the regulatory approach) or stimulative (the incentive approach). The regulatory approach uses ordinances to establish procedures for the designation of individual historic properties. It also grants the authority to review all permit applications for the construction, repair, alteration, or demolition of individually designated properties or properties located within designated districts. The restrictive nature of local ordinances varies across cities. New Orleans and Charleston, for example, are extremely restrictive with specific design guidelines that control details such as color of paint, cornice design, and so forth. (See Philadelphia City Planning Commission, 1986.)

From the perspective of the development community, incentives are more desirable than regulation because they reward historic preservation by making it more economically attractive than demolition or nonhistoric alteration. Incentive programs can be built into zoning codes through provisions for lot mergers, transfer development rights, or zoning bonuses,[5] or tied to historic preservation through inducements such as grants, low interest rate loans, and property tax abatements.[6] The impact of historic preservation on property values would likely vary depending on the nature of the local ordinance.

The City of Philadelphia uses a relatively strong form of the regulatory approach matched with very limited incentives. Indeed, as noted earlier, the Pennsylvania Supreme Court has ruled the Philadelphia ordinance a "taking" and in violation of the State's Constitution. The current Philadelphia program gives the city control over demolition, alteration, construction, and maintenance of city certified structures. Historic rehabilitation improvements may qualify under the property tax abatement program discussed earlier. However, the city has no specific incentives for the maintenance or rehabilitation of city certified property (see City of Philadelphia Code, Section 14-2007). The current ordinance is a 1985 update of a much weaker ordinance passed in 1955. As of today, over 15,000 individual buildings, sites, and various properties are subject to city historic control.

The principal objective of this study is to examine the impacts of Philadelphia's local historic designation on small (1–4 units) apartment building values. The data allow us to

examine the impacts of local certification while controlling for the partial effects of federal historic zones using a relatively homogeneous sample. Our hypothesis is that local designation as practiced in Philadelphia will adversely affect the value of investment properties. The balance of the paper is organized in the following manner: After presenting the empirical framework and the hypotheses, we proceed to a discussion of the data examined, report some empirical results, and close by summarizing and drawing some implications.

3. The Empirical Framework

Federal designation can impact on property values positively or negatively. On the positive side, the impacts can be derived from two potential sources: externality effects from historic zoning, and parcel-specific effects for rental properties (due to the tax benefits) accruing from qualified rehabilitation expenses (ITC). On the negative side, federal designation imposes constraints on property rights. For example, to qualify for the ITC, most of the external walls (75%) of a certified historic structure must be retained during rehabilitation. Thus, the net effects due to federal designation could either be positive, negative, or neutral depending on the tension between positive externalities, ITC effects, and binding constraints on property rights (Asabere and Huffman, 1991).

Local designation also can affect property values positively or negatively. On the positive side, some local preservation ordinances offer liberal incentives in the form of property tax abatements, tax assessment freezes, and so forth. On the negative side, some local regulations increase the capital cost in the structure and therefore reduce the return on equity. Consider two identical apartment buildings. One is severely encumbered by regulations; the other is not. In the eyes of the casual tenant, the two apartments may appear the same but the regulated structure is more expensive to operate due to the extra reguirements on maintenance and improvements. The cash flows for the regulated property thus would be lowered and this will adversely affect the value of the encumbered structure. Another reason why real estate is purchased, apart from the cash flow from current use, may be its development potential. The impact of the local ordinances on development potential would depend upon the nature of the ordinance. Restrictive ordinances decrease development potential. The costs associated with regulations may or may not be offset by gains from incentives given to historic property owners. The net effect will likely be negative in cities with more restrictive ordinances and positive in areas with fewer restrictions or substantial incentives.

We examine the potential impacts of historic designation on investment property values with a fairly standard hedonic pricing model:

$$\begin{aligned} LogDSP = {} & \alpha_o - \alpha_1 LOCAL + \alpha_2 FEDL \\ & + \alpha_3 LOC + \alpha_4 COND + \alpha_5 LogLASS \\ & + \alpha_6 FLOOR + \alpha_7 LogAREA + \alpha_8 POST84 \\ & + \sum_{j=9}^{n} \alpha_j X_{ji} + \epsilon_j \end{aligned} \tag{1}$$

Where:

LogDSP = deflated sales price of the ith property, log form.

LOCAL = (1, 0) dummy variable for property currently designated as locally certified historic properties. These designations are parcel specific.

FEDL = (1, 0) dummy variable for federally certified historic districts. These are zone designations as opposed to parcel-specific designations.

LOC = control variables for various aspects of location including: distance in blocks from City Hall (LogCBD); distance in blocks from the Delaware (LogDRVR) and the Schuylkill (LogSRVR) rivers; distance in blocks from the four original town squares, namely: Logan Square (LogLGNSQ), Rittenhouse Square (LogRTNSQ), Franklin Square (LogFRKSQ) and Washington Square (LogWSHSQ); and three dummy variables for specific sectors of the study area, namely: Center City West (CCWEST), Center City East (CCEAST) and Center City Central (CCENT).

COND = (1, 0) dummy variable for exterior condition of the building at time of sale in the mind of the Realtor; where 1 denotes good exterior condition and 0 else.[7]

LogLASS = assessed value for the land, in logs. It is our belief that the value of the land will serve as a proxy for neighborhood quality and other aspects of the lot not reflected by lot size.

LogAREA = lot size (or area) in square feet, log from.

POST84 = (1, 0) dummy variable for sales occurring post-1984, following the update and strenghening of the local ordinance. This variable is also expected to control for the partial effects of TRA'86.

x_{jis} = conventional control variables for neighborhoods (median rent of the neighborhood and median vacancy rate); type of zoning (residential vs. commercial); macro-economic conditions; time of sale; and a dummy variable for individual buyer type versus corporate or partnership.

ϵ_j = an error term.

Our coefficients of interest are α_1 and α_2. The coefficients α_1 on LOCAL is expected to be significantly negative for our study area. As discussed above, the sign of α_2 on FEDL can be positive, negative, or neutral depending on the tension between or among the positive externality effects, ITC effects and the binding constraints on property rights. It is expected that the coefficient α_8 on POST84 would be significantly negative due to the more restrictive local ordinance passed in December 1984 as well as the subsequent Tax Reform Act of January 1986 that reduced tax advantages for preservation.

Using the Philadelphia data described in Section 4, several functional forms were tested using the Box and Cox (1964), and the Box and Tidwell (1962) transformation techniques. The functional form represented by equation 1 proved to be the most effective way to specify the models. Section 4, below describes the data and the empirical results.

4. The Data and the Empirical Results

The study area is the central business district (known as Center City) of the City of Philadelphia. The city is the center of an eight county metropolitan area with a total population of over five million. Center City (the site of William Penn's landing) is a three-square mile area composed of the commercial core of the city co-existing with a variety of neighborhoods. A primary destination point for nearly 500,000 residents and visitors, Center City has 34% (285,000) of the city's employment and about 53,000 residents.

The database consists of a set of all sales of 1–4 unit apartment buildings from 1980 to 1991 within the four zip codes covering Center City. After deleting those sales with incomplete data and those beyond the four zip codes covering Center City, 118 sales remained. Data collected from city records include sales price, lot size, number of stories (level), time of sale, property address, land assessment, zoning, and buyer-type.

The city has numerous historic areas and sites. There are ten federally certified historic districts in the Center City area and over 15,000 locally certified parcels. Data on all certified historic parcels came from the Philadelphia Historical Commission and maps of federal districts. Overall, 27% of the 118 sales are of locally certified properties, while 59% of the 118 sales are in federal districts. Dummy variables are used to denote federal historic districts and local designations.

Additional control variables include two neighborhood variables: the percentage of houses vacant in the census tract and median rental levels as obtained from 1990 census reports. Based on a plot map, seven continuous variables for location were generated and included as control variables: Distance to City Hall (or city center), the boundary rivers on the east (Delaware River) and west (Schuylkill River), and the original four town squares; Logan (at northwest), Rittenhouse (at southwest), Franklin (at northeast), and Washington (at southeast). Also, three dummy variables were designed based on zip code coverage to represent specific locations of the study area (Center City) namely: center city east, center city west, and central center city. Differences in development potential were proxied by dummy variables for buildings in residential and commercial zones. A dummy variable was also included for the potential differences in local certification following the passage of the more restrictive ordinance on December 31, 1984. It is expected that this dummy variable would also control for any partial effects due to the Tax Reform Act of 1986. Finally, the rate on 30-year conventional mortgages was included as a proxy for macro-economic conditions. See Table 1 for summary statistics on variables used.

Given the fact that we utilize a combination of cross-sectional and time series data, an assumption can be made that the error terms are correlated over time and across observations. This means that one should consider the possibility of time-series autocorrelation and heteroscedasticity. The "time-series autocorrelation model" is a natural solution to this problem. This is an alternative specification to the "error-components model." As discussed in Pindyck and Rubinfeld (1981), the error-components specification is not the only error specification possible. It has the property that the correlation of disturbances over time is independent of the time gap between the disturbance terms. The time-series autocorrelation specification would predict a decline in the error term over time (see Pindyck and Rubinfeld, 1981, pp. 258–259, for a complete discussion of the time-series autocorrelation

Table I. Summary statistics on 1-4 unit apartment data.

Variable	Acronym	Mean	S. Dev.
Sales Price	SP	221,183	158,964
Deflated Sales Price	DSP	220,083	132,914
Lot Size	AREA	1,743	1,131
Levels (or Floors)	FLOOR	3.38	0.48
Building Condition	COND	0.36	0.48
Land Assessment (000's)	LASS	15.53	12.93
Median Rent per unit at Neighborhood (1990)	RENT	510	105.82
Vacancy Rate (1990)	VAC	0.10	0.04
Center City East	CCEAST	0.18	0.39
Center City West	CCWEST	0.51	0.50
Center City Central	CCCENT	0.30	0.46
Washington Square	WSHSQ	42.91	24.96
Franklin Square	FRNKSQ	53.36	22.43
Rittenhouse Square	RTNSQ	31.07	21.22
Logan Square	LGNSQ	44.62	15.81
Delaware River	DRVR	68.64	33.46
Schuylkill River	SRVR	45.19	31.82
Mortgage Rate	RATE	0.11	0.02
Continuous Month of Sale	CMNTH	62.01	35.91
Individual Seller	INDV	0.88	0.33
Post84 Sale	POST84	0.51	0.50
Distance from CBD	CBD	0.85	2.56
RES Zoning	RES	0.85	0.36
Local Designation	LOCAL	0.27	0.46
Federal District	FEDL	0.59	0.31

model). Efficient parameter estimates can be obtained by using a variant of generalized least squares. The generalized least square estimates are presented in Table 2.

The use of several variables in a single regression equation as represented by equation 1 also introduces multicollinearity. As shown in Table 2 tolerance tests[8] (see Berk, 1977) are used to detect the presence of multicollinearity. Further examination of our data revealed that deleting two variables (CCWEST and LogFRKSQ) with tolerance values of close to .01 improved the efficiency of our model without introducing a specification error.[9] Thus our model in Table 2 excludes the two variables (CCWEST and LogFRKSQ). The adjusted R^2 of the model is 75%, which is quite good compared with much of hedonic literature.

Based on our model in Table 2, the control variables: LogAREA, LogLASS,[10] COND, and CCEAST are significantly different from zero at the 95% level of confidence. The remaining control variables are insignificant at the 95% level. Our variables, FEDL, for federal designation, and POST84, are also not significantly different from zero at the 95% level of confidence.

The local historic designation variable (LOCAL) produced significant results. Based on our model in Table 2, LOCAL is significantly negative as hypothesized at the 95% level of confidence. The magnitude of LOCAL is −0.27. It must be noted the LOCAL is a dummy variable in a semi-logarithmic specification and thus requires careful interpretation (as suggested by an anonymous reviewer). The expected loss for local designation can be derived as follows:

$$\ln(y) = X\beta + e$$

$$y = \exp(X\beta)\exp(e)$$

$$E(y) = \exp(X\beta)E(\exp(e))$$

Now X, by virtue of being a dummy variable, is either 0 to 1. To see the change in E(y) given the discrete change in X,

$$\Delta E(y) = (\exp(1\beta) - \exp(0\beta))E(\exp(e)) = (\exp(\beta) - 1)E(\exp(e)).$$

Thus the estimated coefficient of −0.27 implies that apartment values are about 24% [that is (exp(−.27) − 1)E(exp(e))] lower for locally designated historic structures.

Table 2. GLS regression.

Estimates of the Autoregressive Parameters			
Lag	Coefficient	Std. Error	t Ratio
1	0.013	0.102	0.131

Yule-Walker Estimates			
SSE	17.565	DFE	96
MSE	0.183	Root MSE	0.428
SBC	215.059	AIC	154.104
Reg Rsq	0.758	Total Rsq	0.754
Durbin-Watson	1.990		

Variable	B Value	t Ratio	Approx. Prob.	Tolerance
Intercept	6.902	1.615	0.110	
LogAREA	0.276	2.297*	0.024	0.512
LogLASS	0.374	3.721*	0.000	0.252
COND	0.228	2.541*	0.013	0.827
INDIV	−0.031	−0.224	0.824	0.758
LogCMNTH	0.104	1.138	0.258	0.344
FLOOR	0.076	0.710	0.479	0.535
LogCBD	−0.498	−1.349	0.181	0.119
CCEAST	0.890	2.507*	0.014	0.086
LogRATE	−0.806	−1.418	0.160	0.168
LogVAC	−0.851	−1.101	0.274	0.018
LogRENT	−0.232	−0.347	0.730	0.051
RES	0.034	0.129	0.898	0.129
LogLGNSQ	−0.001	−0.002	0.999	0.090
LogRTNSQ	0.175	1.291	0.200	0.139
LogWSHSQ	−0.193	−1.029	0.306	0.077
LogDRVR	0.249	0.889	0.376	0.041
LogSRVR	−0.227	−0.967	0.336	0.038
POST84	−0.082	−0.449	0.655	0.188
FEDL	−0.113	−0.271	0.787	0.062
LOCAL	−0.266	−2.083*	0.040	0.479

*Significantly different from zero at the 95 level of confidence.

5. Summary and Policy Implications

This study has supported our view that local historic designation as practiced in Philadelphia—a strong regulatory framework with limited incentives—can produce adverse impacts on investment property values. This study is an example of public regulation that impinges on private property rights and thus reduces property values.

The results of our empirical analysis show that local designation (LOCAL) is associated with a 24% price discount. The results imply that historic designation (as practiced in Philadelphia) is confiscatory and thus, in a way, lend empirical support to the original Pennsylvania Supreme Court decision, which struck down the city's historic ordinances. Even though the decision was later reversed, it is obvious from these results that the only way the city can gain cooperation from property owners is to move away from the regulatory mode and toward the use of incentives.[11] Thus, another implication of this study is that historic designation is a major public choice problem that requires careful examination.

Notes

1. *United Artists Theater Circuit, Inc. v. City of Philadelphia*, July 10, 1991. Under pressure from historic advocates and the city, the court reheard the case in October 1991 and in November 1993, the court reversed its original decision.
2. However, the Tax Reform Act of 1976 first shortened depreciation and amortization schedules to encourage rehabilitation. In 1978, a 10% ITC was allowed for the rehabilitation of commercial and industrial property. The Economic Recovery Act of 1981 provided a 25% ITC for rehabilitation of federally registered property. The Tax Reform Act of 1986 reduced the ITC to 20%, lengthened depreciation schedules, but most importantly, severely curtailed the ability to write off "passive" income losses, including losses from historic rehabilitations.
3. Using the ITC does not preclude using other federal, state, or local funding sources. It has been estimated that nearly 70% of historic rehabilitation projects used one or more forms of additional incentive or publicly-supported financing in FY 1990. While the vast majority of these additional incentives were state or local programs, 12% of the historic rehabilitation projects nationwide also used the federal low-income housing tax credit first enacted by the Tax Reform Act of 1986. Additionally, 18% of the projects used various funding programs of the Department of Housing and Urban Development (National Park Service, 1991).
4. Another federal tax benefit is the tax deduction associated with a facade easement donation. However, the administration of these programs varies greatly from city to city. The Philadelphia Historic Preservation Corporation's facade easement program is one of the most stringent in the country in terms of its restoration requirements and maintenance obligations imposed on the property owners (Philadelphia City Planning Commission, 1986).
5. The lot merger concept permits the joining of adjacent lots under separate ownership into one lot for the purpose of clustering development and potentially preserving a historic resource. There is no formalized lot merger program for historic purposes in Philadelphia.

   A transfer development right (TDR) program permits the sale of a property's unused development potential. TDRs are possible in Philadelphia under a new 1991 zoning code. Although historic property qualifies under the program, to date there have been no TDRs in the city.

   The bonus program is a common and widely used planning technique offered to developers in return for givebacks such as setbacks, public open space, transit connections, etc. Of the 54 zoning classifications in the Philadelphia Zoning Code, seven classifications contain bonus floor area provisions. These provisions make no special mention of certified historic properties (Philadelphia City Planning Commission, 1986).
6. In order to stimulate the preservation and restoration of historic structures many cities and states have instituted tax relief programs by freezing property tax assessments or exempting improvements from tax assessment

(tax abatement). The City of Philadelphia has implemented enabling legislation, which allows a five-year tax abatement on improvements to existing structures. This exemption applies to all rehabilitation or new construction of income-producing properties and is not limited to historic properties (Philadelphia City Planning Commission, 1986).

7. The database contains no information on age of building—a standard control variable. However, based upon our inspection of city deed transfers, most apartment buildings in our sample are well over 50 years old with many over 100 years old. We therefore employ building condition as a proxy variable for effective age and condition.
8. Tolerance for a variable is defined as $1 - R^2$, where R^2 is obtained from the regression of the variable on all other regressors in the model. It must be noted that variance inflation (or VIF) is the reciprocal of the tolerance.
9. This refers to the specification error due to omitting a relevant explanatory variable in a regression equation. Unlike variables like Lot Size (LogAREA), distance from city center (LogCBD), time of sale (LogCMNTH), and zoning (RES) that must not be omitted due to strong theoretical and empirical foundations, these two variables (CCWEST and LogFRKSQ) were initially included in an exploratory manner only. Notice that Table 2 includes eight other control variables for location).
10. As noted by an anonymous reviewer, it is possible that the land assessment variable (LogLASS) is reflecting the impact of other variables that appear to be not statistically important. In other words, we needed to test for any possible masking effects of the LogLASS variable. Several other regression were run without LogLASS. The results indicated that the land assessment variable (LogLASS) is not masking other variables.
11. One suggested possibility is that a ten-year property tax abatement could be enacted by ordinance of City Council for historic structures while keeping nonhistoric properties at five years. The argument is that historical properties can be considered more fragile and therefore should benefit from an additional abatement [13]. As an aside, a major incentive for keeping New Orleans property in semi-slum conditions is that under a certain level of assessment there is no property tax. Hence there are two classes of property in New Orleans: taxable and nontaxable and a great portion of the historic districts fall within the lower value.

References

Asabere, P.K., G. Hachey, and S. Grubaugh. (1989). "Architecture, Historic Zoning, and the Value of Homes," *Journal of Real Estate Finance and Economics* 2, 181-195.

Asabere, P.K., and F.E. Huffman. (1991). "Historic Districts and Land Values," *The Journal of Real Estate Research* 6:1 (Spring).

Benson, V.O., and R. Klein. (1988). "The Impact of Historic Districting on Property Values," *Appraisal Journal* (April), 223-232.

Berk, K.N. (1977). "Tolerance and Condition in Regression Computations," *Journal of American Statistical Association* 72, 863-866.

Box, G., and D. Cox. (1964). "An Analysis of Transformations," *Journal of the American Statistical Association* Series B, 26, 211-243.

Box, G., and P.W. Tidwell. (1962). "Transformations of the Independent Variables," *Technometrics* 531-550.

Ford, D.A. (1989). "The Effect of Historic District Designation on Single-Family Home Prices," *AREUEA Journal* 17:3 (Fall), 353-362.

Kennedy, P.E. (1984). "Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations," *American Economic Review.*

White, H. (1980). "A Heteroscedasticity-Consistent Covariance Matrix and a Direct Test for Heteroscedasticity," *Econometrica* 48, 817-838.

Lockard, W.E., and S.D. Hines. (1983). "Historic Zoning Considerations in Neighborhood and District Analysis," *Appraisal Journal* (October), 485-497.

National Trust for Historic Preservation. (1983). Information Sheet No. 35. Washington, D.C.: National Trust for Historical Preservation.

National Park Service. (1991). U.S. Department of Interior, Washington, D.C., *Tax Incentives for Rehabilitating Historic Buildings: Fiscal Year 1990 Analysis* February.

Philadelphia City Planning Commission. (1986). *Analysis of Preservation Techniques for Center City Philadelphia* October 30.

Pindyck, R.S., and D.L. Rubinfeld. (1981). *Econometric Models and Economic Forecasts*, McGraw-Hill Book Company, New York.

Schaeffer, P.V., and C.P. Ahern. (1988). "The Impact of Historic District Designation on Property Values: An Empirical Study," Unpublished paper, University of Colorado at Denver, December.