Journal of Urban Economics 76 (2013) 71–82

Contents lists available at SciVerse ScienceDirect

Journal of Urban Economics

www.elsevier.com/locate/jue

Local public goods and the demand for high-income municipalities

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ARTICLE INFO

Article history:
Received 4 February 2012
Available online 28 February 2013

JEL classification:
H41
H73
R21

Keywords:
Suburbanization
Housing prices
Willingness to pay
Local public goods

ABSTRACT

Affluent towns often deliver high-quality public services to their residents. I estimate the willingness to pay to live in a high-income suburb, above and beyond the demand of wealthy neighbors, by measuring changes in housing prices across city–suburban borders as the income disparity between the two municipalities changes over time. I find that a $10,000 increase in town-level median income is associated with a seven percent increase in housing values at the border. The estimated demand for high-income municipalities is primarily driven by school quality and lower property tax rates.

1. Introduction

Residential segregation by income has increased in the United States over the past few decades. Much of this income segregation takes place between jurisdictions, especially between central cities and suburbs (Fischer et al., 2004). For example, in 1940, the typical suburban resident earned only three percent more than his urban counterpart. By 2000, the income gap between residents of cities and suburbs increased to 16%. The concentration of affluent households in high-income towns generates disparities in the quality of local public goods, including public safety and elementary and secondary schooling, between jurisdictions.

This income differentiation between central cities and suburbs coincided with a growing demand for suburban residence. From 1940 to 2000, the share of metropolitan population living in the suburbs increased from 40% to 68%. One attraction of living in a high-income town is the presence of affluent neighbors (Ioannides and Zabel, 2003; Bayer et al., 2007). Another benefit of such towns may be the quality of public goods offered to their residents. Towns with wealthy residents often enjoy a large property tax base from which to raise revenue and a local electorate with preferences for high-quality public services.[1]

This paper examines the demand for residence in a high-income suburb – above and beyond the demand for affluent neighbors – by comparing the prices of adjacent housing units on either side of city–suburban borders. Because high-income towns also tend to have other attractive qualities, such as newer housing units and more open space, I narrow the comparison to neighboring Census blocks. Furthermore, I estimate panel regressions that demonstrate how the suburban housing price premium at the border responds to *changes* in the characteristics of city and suburban residents. Adding this panel dimension allows me to control for remaining (fixed) differences in the quality of housing or neighborhoods on the suburban side of the border, for example due to municipal zoning ordinances or to the sorting of households according to their preferences for public goods.

It is important to emphasize that this research design uses housing prices at municipal borders to assess willingness to pay for average characteristics of residents *throughout the jurisdiction*. For example, between 1970 and 1980, the median income for residents of the town of Evanston, IL increased by $2000, while the median income for residents of neighboring Chicago decreased by $3000 (in 2000 dollars). This $5000 difference in jurisdiction-level median income is associated with a widening of the housing price gap at the Chicago–Evanston border by 3 percentage points. Over this period, there was no differential change in observable characteristics of the housing units or of the residents across this political boundary.

The empirical analysis focuses on the years 1960 through 1980, a peak era of suburbanization in the United States. I find that, in this period, the marginal homeowner was willing to pay 7.4% more

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[1] Suburbanization was also driven by the falling time cost of commuting associated with the diffusion of the automobile and large state and federal road building programs (LeRoy and Sonstelie, 1983; Baum-Snow, 2007; Kopecky and Suen, 2010) and by rising crime rates and increasing racial diversity in central cities (Cullen and Levitt, 1999; Boustan, 2010).

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http://dx.doi.org/10.1016/j.jue.2013.02.003

for an otherwise equivalent housing unit located in a town whose median income was $10,000 higher than that of the neighboring city, even after controlling for housing and neighborhood quality. Using a series of fiscal and expenditure variables, I then demonstrate that the demand for living in a wealthy town stems primarily from lower property tax rates set by jurisdictions with a larger tax base and higher school quality in wealthier districts (despite equal expenditures per pupil).[2] Taken together, these two factors can explain half of the estimated willingness to pay to live in an affluent town.

A novel feature of this research design is to combine cross-border variation in housing prices with changes in jurisdiction attributes over time.[3] The identifying assumption in the panel is that the direction and pace of change in housing and neighborhood quality over time is common to both sides of the border. I present three pieces of evidence consistent with this assumption. First, I find no differential trend in observable housing quality measures, such as unit size, over time. Second, the effects of jurisdiction characteristics on housing prices are equally strong in a series of subsamples which are less likely to have experienced differential changes in neighborhood composition or local land use policy. Third, housing prices do not respond to town-level median income in a placebo sample of southern cities for which jurisdiction borders are less tied to local public goods. Many of these southern cities belonged to consolidated school districts shared with their neighboring suburbs and offered limited voting rights to poor residents during this period.

The remainder of the paper is organized as follows. The next section introduces the estimation methods used to relate housing prices to a jurisdiction's median income or poverty rate. Section 3 describes the unique data set of Census blocks along municipal borders. In Section 4, I present the relationship between jurisdiction-level income and housing prices and test the maintained assumption that housing quality changes at the same rate across borders. Section 5 explores the local governmental channels that give rise to the willingness to pay for wealthy co-residents. Section 6 concludes.

2. Using housing prices to elicit the demand for wealthy co-residents

2.1. An econometric framework

The goal of this paper is to estimate the marginal homeowner's willingness to pay to live in a town with affluent residents, for example because such towns enjoy a larger property tax base and offer a bundle of higher-quality public goods. If the marginal homebuyer prefers to live in a high-income suburb, we would expect housing prices in such towns to be higher than those in neighboring, low-income cities. However, housing units in wealthy suburbs also differ from those in cities in a number of ways, including age of the unit, lot size, and so on. Therefore, my preferred specification limits attention to Census blocks on either side of the city–suburban border, where housing units are most likely to be comparable.

A cross-border comparison minimizes disparities in housing quality between housing units located in different jurisdictions. The identifying assumption behind this approach is that neighborhood and housing quality varies continuously across municipal borders, while local policy and tax rates, which are a function of the characteristics of the local electorate, shift discontinuously at the boundaries. However, the neighborhoods alongside borders that have been in place for many years may endogenously diverge as the housing stock deteriorates or as different types of households move in. I address this concern by following border areas over time, assessing whether changes in the characteristics of jurisdiction residents are associated with changes in the housing price gap at municipal borders.[4]

This section describes cross-section and panel estimation strategies used to elicit this willingness to pay parameter. I begin by pooling data from the 1960 to 1980 cross-sections and estimating:

$$\ln(\text{PRICE}_{ijbt}) = \beta \text{INCOME}_{jt} + \Phi'(\text{block})_{it} + \Psi' d_{bt} + \varepsilon_{ijbt} \quad (1)$$

where i indexes Census blocks, j jurisdictions, b border areas, and t Census years. A border area consists of a pair of jurisdictions, one of which is a city and the other a suburb. PRICE represents one of three block-level dependent variables: the mean value of owner-occupied units, the mean rent for rental units, and combined measure of the user cost of housing. The key explanatory variable, INCOME, is measured at the jurisdiction level as either the median income or the poverty rate of a jurisdiction's residents. Some specifications also add available block-level housing and neighborhood quality controls (block_{it}). Regressions are weighted by the number of relevant housing units on the block and standard errors are clustered by border area.

Central to identification in the cross-section is the vector of indicator variables (d_{bt}), one for each border area b in Census year t. This vector captures unobserved neighborhood characteristics that are accessible to residents on either side of a border at a point in time – for example, the presence of a nearby park, bus line, or commercial strip. These fixed effects also control for common aspects of the housing stock, such as the age and architectural style of the units. The effect of town-level income is thus identified by comparing the prices of neighboring housing units located in either the poorer or the richer municipality within a border area. A positive β implies that houses located in a wealthier town command systematically higher prices than their cross-border neighbors.

Eq. (1) is estimated using two samples of Census blocks. The first sample contains blocks that are themselves adjacent to the border on either side ("block sample"). The second sample includes blocks up to six blocks away from the border on either side ("tract sample"). This larger sample is intended to reflect the size of a Census tract, a geographic unit often used interchangeably with the idea of a "neighborhood."

In the cross-section, β will be biased upward if high-income towns offer superior housing or neighborhood quality that is apparent even for blocks adjacent to the border. It is possible that housing or neighborhood quality jumps discontinuously at a municipal border due to local zoning regulations (e.g., lot size restrictions) or to household sorting in response to long-standing differences in access to public goods.[5] One solution to these concerns is to examine changes in the housing price gap at municipal borders as the characteristics of the jurisdictions' residents evolve over time. Although zoning laws can themselves change over time, housing units built before the new regulation are almost always

[2] Lacking direct measures of school quality, such as test scores, during this period, I proxy for school quality with the share of residents holding a college degree.

[3] Other recent work using housing values to estimate household preferences for neighborhood and community attributes include Black (1999), Kane et al. (2003), Barrow and Rouse (2004), Figlio and Lucas (2004), Chay and Greenstone (2005), Reback (2005), Greenstone and Gallagher (2008), Gibbons et al. (2009) and Machin and Salvanes (2010). This literature draws on the theoretical contributions of Rosen (1974). These studies either leverage cross-border variation (e.g., Black, 1999) or exogenous changes over time in, say, school policy (e.g., Reback, 2005) but, to date, have not combined the two. Boustan (2012) is one exception.

[4] For a thorough discussion of a related econometric framework, see Turner et al. (2011). This paper moves beyond their outlined framework by adding a panel dimension.

[5] In a cross-border comparison, the importance of housing sorting depends on the radius of interaction. If households put much more weight on their next-door neighbors than on neighbors living one block away, household sorting can be a confounding factor in this cross-border design.