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ESCAPE FROM THE CITY? THE ROLE OF RACE, INCOME, AND LOCAL PUBLIC GOODS IN POST-WAR SUBURBANIZATION

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ABSTRACT

The attraction of wealthy suburbs rests, in part, on their political and fiscal autonomy from the low-income electorate and poor tax base in many central cities. I estimate the willingness to pay to live in an affluent suburb by measuring changes in housing prices on opposite sides of city-suburban borders as the income gap between the city and suburb widens (or narrows) over time. I find that a $10,000 increase in town-level median income is associated with a seven percent increase in housing values. The demand for high-income municipalities is driven by school quality and lower property tax rates.

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I. Introduction

Over the past century, American households left central cities *en masse* to settle in the suburbs. The share of metropolitan residents living in the central city fell from 60 percent in 1940 to 32 percent in 2000. At the same time, the income differentiation between cities and suburbs widened dramatically. Whereas, in 1940, the typical suburban resident earned only three percent more than his urban counterpart, the city-suburban income gap increased to 16 percent by the year 2000. The concentration of affluent households in the suburbs creates disparities in the bundle of local public goods and property tax rates between cities and suburbs, providing a further impetus toward suburbanization.[1]

This paper examine the demand for residence in high-income suburbs – above and beyond the demand for affluent neighbors – by comparing the prices of adjacent housing units on either side of city borders.[2] In particular, I estimate panel regressions that examine how the city-suburban housing price gap changes as income disparities between cities and suburbs widen (or narrow) over time. This specification controls for long-standing differences in housing and neighborhood quality across borders that can arise if, for example, municipal zoning ordinances generate discontinuous shifts in housing characteristics at the border or if households with different attributes sort across borders according to their preferences for public goods.

I focus on the years 1960 through 1980, a peak era of suburbanization in the United States. In this period, the marginal homeowner was willing to pay 7.4 percent more for an

[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, 2009) and by rising crime rates and increasing racial diversity in central cities (Cullen and Levitt, 1998; Boustan, 2010).

[2] Other recent work using housing values to estimate household preferences for neighborhood and community attributes include Black (1999); Kane, Staiger and Samms (2003); Barrow and Rouse (2004); Figlio and Lucas (2004); Chay and Greenstone (2005); Reback (2005); Greenstone and Gallagher (2008); Gibbons, Machin and Silva (2009), Machin and Salvanes (2010), and Boustan (Forthcoming). This literature draws on the theoretical contributions of Rosen (1974).

otherwise equivalent housing unit located in a town whose median income was $10,000 higher than that of the neighboring city (in 2000 dollars). I then seek to explain the demand for living in a high-income town using a series of fiscal and expenditure variables. I find that the demand for living in a wealthy town stems from two main factors: lower property tax rates set by jurisdictions with a larger tax base and higher school quality, despite equal expenditures per pupil, in wealthier districts.[3] Taken together, these two factors can explain half of the estimated willingness to pay to live in an affluent town.

The identifying assumption in the panel analysis is that, whatever the initial gap in housing or neighborhood quality across jurisdiction borders, the direction and pace of change over time in these attributes is common to both sides of the border. Although one can never definitively rule out differential trends in unobserved quality, I present three pieces of evidence that mitigate against this possibility. First, there are no differential trends in observable housing quality measures, such as unit size, over time. Secondly, the effect of town-level median income on housing prices is equally strong in a series of subsamples which are less likely to have experienced differential changes in neighborhood composition or local land use policy. Thirdly, housing prices do not respond to town-level median income in a parallel sample of southern cities that shared a school district 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 III describes the unique data set of Census blocks along municipal borders. In Section IV, I present the relationship between jurisdiction-level income and housing prices and

[3] Because direct measures of school quality, such as test scores, do not exist during this period, I proxy for school quality with the share of residents holding a college degree.

test the maintained assumption that housing quality changes at the same rate across borders. Section V explores the local governmental channels that give rise to the willingness to pay for wealthy co-residents. Section VI concludes.

II. Using Housing Prices to Elicit the Demand for Wealthy Co-Residents

A. An Econometric Framework

The goal of this paper is to estimate the marginal homeowner's willingness to pay to live in an affluent town, controlling for housing quality and neighborhood composition. This section describes cross-section and panel estimation strategies that can be used to elicit this parameter. Potential biases in the cross-section motivate the panel analysis.

To begin, consider pooling data from the 1960 to 1980 cross-sections and estimating:

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

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 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.

Equation 1 contains a separate indicator variable for each border area b in Census year t (d_{bt}). This vector captures unobserved neighborhood characteristics that are shared by houses on

either side of a border at a point in time – for example, the presence of a nearby park, bus line, or commercial strip – and for common aspects of the housing stock, such as the age and architectural style of the units. The effect of town-level income is identified by comparing housing prices in the two jurisdictions that constitute a border area. A positive β implies that houses located in wealthier towns command systematically higher prices than their cross-border neighbors.

In the cross-section, β will be biased upward if high-income towns impose zoning regulations that improve the quality of the housing stock or if better quality neighbors sort across the border into the wealthy town. After all, the cross-section captures long-standing differences between cities and suburbs; by 1970, many of the borders in the sample had been in place for over 100 years. However, both land use policies and residential sorting patterns evolve slowly over time. Therefore, it is less plausible that fluctuations in housing prices are driven by changes in zoning rules or in the characteristics of local neighbors.

Equation 2 exploits the panel nature of the dataset to estimate the relationship between decadal changes in housing prices and in town-level median income:

$$\ln(\text{PRICE}_{ijbt}) = \beta\, \text{INCOME}_{jt} + \Phi' \text{block}_{it} + \Psi' \text{d}_{bt} + \Omega' \text{d}_{bj} + \varepsilon_{ijbt} \qquad (2)$$

In addition to the variables in equation 1, this specification includes a distinct fixed effect for each *side* of a border area, expressed as an interaction between border area *b* and jurisdiction *j* (d_{bj}). This vector absorbs any fixed difference in housing or neighborhood quality across borders – for example, due to long-standing differences in school quality or local zoning ordinances between the two jurisdictions. β is now identified from differential *changes* in housing prices across the border over time.

The generalizability of the willingness to pay figures estimated at municipal borders depends on whether residents of border areas reflect the preferences of other city and suburban residents. Suburban households living near the border chose to be closer to the city center than other suburban residents, suggesting that they place a lower value on being physically separated from the low-income city population. However, it is not clear how attitudes toward immediate neighbors are correlated with preferences for local public goods. If suburbanites on the border also have weaker preferences for the suburban bundle of public goods, the coefficients may underestimate the true willingness to pay for living in an affluent suburb.

B. Predictions from Jurisdiction Choice Models

Various classes of jurisdiction choice models predict that housing prices will rise with the income level of a town's residents, thereby generating a gap in housing prices at the border of rich and poor towns. One set of models begins with the observation that the rich are more willing than the poor to trade off a dollar of private consumption for a dollar of public expenditure (see, for example, Tiebout, 1956; Ellickson, 1971; Westhoff, 1977; Epple and Romer, 1991; Fernandez and Rogerson, 1996). These models generate equilibria in which individuals self-select into towns populated by others of the same income level.[4] Epple and Sieg (1999) incorporate housing markets into a framework in which multiple communities fund locally-provided public goods through property taxation.[5] They prove that, in this context, housing

[4] Epple and Platt (1998) consider a model in which individuals differ along two dimensions: income and preferences for public goods. In this case, sorting need not happen only along income lines but, instead, a poor household with strong preferences for public goods may select to live in a "rich" community.

[5] Calabrese, Epple, Romer and Sieg (2006) extend this model to consider the role of peer effects. In their framework, the quality of local public good are produced by some combination of local expenditures and higher peer quality. In this case, higher quality peers allow richer towns to achieve a given quality of public goods with a lower tax rate. I find evidence consistent with this model in Table 5, which shows that rich towns have lower property tax rates than poor towns and yet have equal per-pupil educational expenditures and higher school quality.

prices will be higher in rich areas and will serve as an effective means of stratification because the poor will not want to settle in rich towns at the equilibrium price.[6]

An alternative class of jurisdiction choice models focus on the property tax system (Buchanan and Goetz, 1972; Hamilton, 1976). Rich towns have a larger tax base and so are able to afford an equivalent bundle of public goods at a lower tax rate. These models give rise to a "poor chasing the rich" equilibrium in which agents of all income levels prefer living in a town with wealthier co-residents.[7] The fiscal subsidy offered in rich towns will be capitalized into housing prices, again generating a price gap at town borders.

III. Collecting Housing Prices Along Jurisdictional Borders

My empirical strategy combines block-level data on housing values from the US Census of Housing with municipality-level information on socio-economic status and local public goods from the Censuses of Population and Governments. Detailed data on local government expenditures and property tax rates are only available for jurisdictions with 10,000 residents or more. For the subset of towns of this size, I use tract- and block-level Census maps to identify city-suburban borders along which block-level data is reported on both sides. I exclude borders that are entirely obstructed by features like a railroad track, a body of water or a large tract of industrial land.[8]

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[6] Epple and Sieg (1999) assume that the housing supply is less-than-perfectly elastic. Without this assumption, the housing supply in rich towns would simply expand until housing prices equal construction costs. During this period, suburban housing supply was expanding but new construction occurred in outlying areas. Given commuting costs, outlying houses are imperfect substitutes for housing on the border. Essentially, we should think of the supply of houses at city-suburban borders as fixed during this period.

[7] Henderson (1985), Wheaton (1993) and others point out that zoning regulations can prevent the poor from successfully chasing the rich.

[8] The fitness of each border is determined by examining Census block maps. In particular, I subdivide border areas into series of tract pairs consisting of one tract on either side of the border. A border is only *excluded* if all tract pairs along the border is obstructed in some way. I recorded the reason for each pair exclusion in a border selection

Ruling out obstructed borders improves the plausibility of the identifying assumption. However, it also raises the question of endogenous border formation. Municipalities can erect bulwarks against unwanted populations by zoning for industrial use along their borders or constructing large roadways with limited ability for pedestrian crossing. Cicero, IL is (in)famous for its ethnic and racial exclusivity (Keating, 1988). It may be no coincidence, then, that the Chicago/Cicero border is obstructed by industrial land. As a result, border selection will favor jurisdictions that are the *least* hostile to the city population, thus working against finding a housing price effect at the border.

I identify 56 borders in 16 metropolitan areas with block-level data in 1960, at which point the Census Bureau only assigned blocks to central cities and a few large suburban areas.[9] In 1970 and 1980, I expand the sample to 102 borders in 31 metropolitan areas.[10] Table 1 lists the metropolitan areas that contribute borders to the sample. The balanced panel (column 1) over-represents large, fragmented cities with populous suburbs. Los Angeles-Orange County and New York City-Northern New Jersey account for nearly 50 percent of the sample. The expanded sample incorporates more geographic diversity, adding smaller college towns like Madison, WI and growing western cities like Las Vegas, NV (column 2). The total number of sample borders from each metropolitan area are listed in column 3, while column 4 lists the number of borders in each area that was excluded due to the presence of an obstruction.

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dataset that is available upon request. Reasons for pair exclusions include features like cemeteries, golf courses, ponds, park land and highways.

[9] To increase the 1960 sample, I include 15 borders that divide two suburbs (e.g., Cambridge-Somerville, MA).

[10] The number of borders in the sample is small relative to the total number of divisions in urban areas. I identified 925 jurisdiction borders in the 16 metropolitan areas that contribute to the panel sample, over 700 of which divided two suburbs. Of the 168 city-suburban borders in these metropolitan areas, 107 included a suburb with 10,000 or more residents and 78 were clear of any obvious obstruction. These 78 borders are included in the sample (56 in the panel sample and 22 from the expanded sample). The average central city in these metropolitan areas bordered on 10.5 suburbs.

I exclude southern borders from the main analysis for two reasons. First, nearly half of the southern poor were African-American, a group that lacked a secure right to vote until at least 1965. Therefore, the median income of a town's residents is not a good measure of the median income of the local electorate in the South. Secondly, many southern school districts cover an entire county, including both the central city and its suburban neighbors. As a result, we would not expect to find a relationship between town-level income and housing prices at southern borders through the channel of local tax rates or local public goods. However, if the housing price effect instead reflect confounding factors, like variation in land use policy across town boundaries, we may find similar (spurious) effects in the South. I conduct this placebo exercise using a parallel sample of 49 southern borders in Table 5.

For each sample border, I collect block-level data on the first six blocks away from the border in each direction. Because Census blocks are not digitally mapped for this period, I code the distance of each block from the border by hand. Block data must also be entered by hand for 1960 but are available electronically in 1970 and 1980.[11] The available block-level variables include mean housing values for owner-occupied units, mean rents for rental units, and a small number of housing quality measures.[12] Due to confidentiality concerns, housing prices or rents are only published for blocks containing five or more owner-occupied or rental units. I create a measure of the average "user cost" of housing that can be calculated for all blocks in the sample. The user cost is a weighted average of the annual rent paid by renters and the annual borrowing cost paid by homeowners (borrowing cost = home value x interest rate).[13] Available housing

[11] Many Ohio counties are unaccountably missing from the 1970 electronic block data. I limit coverage of Ohio to borders in the panel sample or borders for which electronic data is available in 1970 and 1980.

[12] The housing values in the Census are based on owner self-reports, which were validated in Kain and Quigley (1972). An important benefit of the Census, compared to transaction data, is that it covers the full housing stock, rather than selected units that have been put up for sale.

[13] I use an interest rate of 8 percent for this calculation, which was the average contract mortgage interest rate over the 1960-80 period. Historical mortgage rates are available at http://mortgage-x.com/trends.htm.

quality controls include the number of units on the block, the average number of rooms by tenure status, the share of units that are in single family structures and the share of residents on the block who are black.[14]

Blocks are matched to the socio-economic characteristics of the jurisdiction in which they are located, including the median income and poverty rate of town residents. I also compile data on property tax rates and municipal expenditures by category. The effective property tax rate is defined as a unit's property tax bill as a share of its market value (rather than as a share of its assessed value). Systematic data on effective property tax rates, drawn from a special survey of recent home sales conducted by the Census of Governments, were only collected in 1970. Because test score data is unavailable during this period, I proxy for school quality with the share of residents holding a college degree. More detail about the sources for the local policy measures is provided in Appendix Table 1.

Appendix Tables 2 and 3 present means and standard deviations of the jurisdiction-level and block-level variables, respectively. In 1970, median family income in sample jurisdictions is $50,000 and the average difference in median family income across a sample border is $10,000 (in 2000 dollars). There is substantial variation in local policy across borders. Crossing the typical border into the central city results in a 0.7 percentage point increase in property tax rates (measured as a share of the unit's market value) and a $500 increase in local government expenditures per capita for non-educational purposes.

Housing units in the border sample have attributes typically associated with the suburban housing stock. In 1970, 76 percent of the units on the average block were detached, single family dwellings. The typical housing unit had 5.7 rooms. Seven percent of residents on the average

[14] The Census of Housing does publish a few other housing attributes at the tract level (for example, the age of the unit and the number of bedrooms and bathrooms). These characteristics are not reported in the block data.

block were black. However, this value is a weighted average of 25 borders with a high black population share (29.5 percent) and 77 borders with a low black population share (0.4 percent). I demonstrate below that the main results are not being driven by the 25 racially diverse borders.

IV. Willingness to Pay for High-income Municipalities

A. Graphical Evidence of Housing Price and Quality Gaps Across Borders and Over Time

I begin my analysis of the willingness to pay for town-level income with graphical evidence documenting discontinuous shifts in both the level and the rate of appreciation in housing prices across municipal borders. In the cross-section, I classify each jurisdiction pair into a richer and poorer town. In the panel, I instead classify jurisdictions into those with faster and slower income growth over the decade. Figures 1 and 2 present housing prices for the first six block tiers away from the border in either direction.[15] I designate blocks on the richer (faster growth) side of the border with positive numbers, while blocks on the poorer (slower growth) side are represented with negative numbers.

Figure 1a demonstrates that housing prices on the first block tier of the high-income jurisdiction (block 1) are five percent higher and statistically different from their cross-border neighbor (block -1). In contrast, housing prices on the first block tiers on either side of the border are statistically indistinguishable from adjacent blocks within the same jurisdiction (blocks 1 vs. 2 or blocks -1 vs. -2). Figure 2a presents comparable evidence for the panel specification. There is a clear discontinuity in housing price appreciation at the border, with prices increasing by an

[15] In particular, I graph coefficients from versions of equations 1 and 2 that replace town-level median income with dummy variables for block tiers coded by jurisdiction type (e.g., rich/poor) and distance from the municipal border.

additional four percent of housing value between blocks 1 and -1 over the decade. Housing price appreciation is otherwise identical on adjacent blocks within the same jurisdiction.[16]

Figures 1b and 2b assess the plausibility of the identifying assumption by examining shifts in unit size across municipal borders or changes in unit size across borders over time. In the cross-section, housing units are somewhat larger on the first block of a wealthy jurisdiction (block 1), with 0.1 additional rooms per unit compared to their cross-border neighbor (block -1). However, in the panel, there is no clear pattern of changes in unit size when crossing the border between jurisdictions with faster or slower income growth. As a result, my preferred results make use of the panel of border areas.

B. Formal Tests for Differences in Housing Characteristics Across Borders and Over Time

This section conducts formal tests of the identifying assumptions that the housing units on either side of city-suburban borders are of equal quality (in the cross-section) or experience the same magnitude of change over time (in the panel). In particular, I estimate versions of equations 1 and 2 in which the set of housing and neighborhood quality characteristics serve as dependent variables. In each case, I begin with the full sample, which contains blocks up to six tiers from the municipal border (roughly equivalent to a Census tract), and then restrict the sample to blocks that are adjacent to the city-suburban border.

The first two columns of Table 2 present coefficients from the cross-section. Census tracts located on the wealthier side of jurisdiction borders have more single family units, a larger number of rooms per unit and fewer black residents. When narrowing the comparison to the

[16] For the cross-section, the p-values for the hypothesis that the first block tiers on either side of the border are equal is 0.00. In contrast, the p-values when comparing the first to the second block tier inside each jurisdiction (or the second to the third block tier) range from 0.35 to 0.85. For the panel, the p-value for the cross-border hypothesis is 0.08 and the range for the tests within each jurisdiction is 0.42 to 0.82.

block level, most of these differences are cut in half and are no longer statistically significant. It is particularly relevant that there are no cross-border differences in the share of single-family units or in the density of development (housing units per block), two characteristics that are often the target of zoning laws. However, as is clear in Figure 1b, wealthy municipality have larger housing units even on the first block adjacent to the border. A $10,000 increase in town-level median income (20 percent) is associated with 0.15 additional rooms per unit.

The third and fourth column of Table 2 contain equivalent coefficients for the panel specification. Two patterns are worth noting. First, none of the differences in the (change in) housing quality between jurisdictions with different rates of income growth are large or statistically significant. Second, the point estimate on unit size, the one measure of concern in the cross-section, falls to zero in the tract comparison and is cut in half at the block level. One remaining concern may be that jurisdictions with larger increases in median income experience less black in-migration over a decade. However, this pattern is driven entirely by a small subset of borders going through a racial transition. If I restrict the sample to the 77 borders with low initial black population shares, the relationship between town-level income and the probability of having a black neighbor disappears. I demonstrate below that the housing price results are equally strong in this subsample (Section IV.D).

C. Housing Price Gaps Across Jurisdiction Borders and Over Time

I turn in this section to the core relationship between town-level income and local housing prices. I start in Figure 3 with a graphical exercise relating changes in the suburban housing price premium to changes in the suburban-city income gap over the 1970s. The structure of Figure 3 is equivalent to the panel regression. In particular, the X-axis indicates a change in

the log income gap between a suburb and the neighboring city. Positive values indicate that suburban and city income diverged over the 1970s, while negative values indicate convergence. The Y-axis depicts changes in the suburban housing premium at each border.

Figure 3a reveals a positive relationship between town-level median income and housing prices at the municipal border. A greater divergence of suburban income from the neighboring city is associated with a larger increase in the suburban housing premium. The slope of 0.55 implies that a $10,000 (or 20 percent) increase in median income, the typical cross-border income gap, is associated with an 11 percent increase in housing prices. This pattern is not driven by any outliers. For comparison, Figure 3b examines the relationship between town-level median income and a measure of housing quality (the number of rooms in the average housing unit). The slope of this relationship is nearly flat. A 20 percent increase in median income is associated with the presence of 0.09 of an additional room. The exclusion of one outlier (Allentown-Easton, PA) cuts this relationship in half.

Table 3 contains estimates of the relationship between housing prices and aspects of a town's income distribution (median income and poverty rates). I begin with a discussion of the cross-sectional results contained in columns 1-3. In the full block sample, the coefficient implies that a $10,000 (or 20 percent) increase in median income is associated with an 8.5 percent increase in housing prices (= $0.43 \cdot 0.2$). When restricting the sample to blocks adjacent to the border, the implied effect falls to a 7.0 percent increase in housing prices. Adding the available housing and neighborhood quality controls further reduces the implied effect of a $10,000

increase in median income to 4.0 percent.[17] The large change in the point estimate with the addition of housing quality controls in the cross-section further motivates the panel analysis.

Columns 4-6 report the panel results. If the cross-section merely reflected unobserved differences in housing quality, we would expect to find smaller panel coefficients. In contrast, each panel regression produces somewhat larger estimates than its cross-sectional counterpart. In the block-level comparison, I find that a $10,000 increase in median income leads to a 9.6 percent increase in housing prices. Adding block-level controls reduces the implied effect to 7.4 percent. Note that adding block-level controls only reduces the coefficient of interest by 20 percent in the panel regressions (compared to over 40 percent in the cross-section) and that the coefficients with and without block-level controls lie within each other's 95 percent confidence interval.

Panel B considers the willingness to pay to avoid living in a town with a high poverty rate.[18] Focusing on the most conservative estimates (those conducted at the block-level with controls for housing quality), I find a coefficient of -0.7 in both the cross-section and panel specifications. The coefficient implies that a five percentage point increase in town-level poverty, roughly equivalent to the gap at the typical border, would lead to a 3.5 percent decline in housing prices. In comparison to the median income results, there is no evidence that homeowners are particularly seeking to avoid residents at the bottom end of the income distribution.

[17] The three percentage point decline in the coefficient on median income can be explained by the difference in the number of rooms across borders and the value of an additional room (0.03 = 0.2 log point increase in housing value per room · 0.15 difference in number of rooms for a 20 percent increase in median income).

[18] The concept of an absolute "poverty line," which takes into account family size and the ages of family members, was developed in the 1960s. Thus, the poverty rate regressions include only 1970 and 1980.

D. Robustness to Alternative Specifications

Table 4 considers a series of alternative specifications for the panel estimation. The first row reproduces the baseline specification, which weights each observation by the number of owner-occupied housing units on the block. This weighting scheme addresses the fact that the average housing price is calculated more accurately on blocks with a larger number of housing units but it also puts more weight on areas with higher density. The results are not qualitatively changed in rows 2 and 3, which instead weights each block or each border equally. Results are again unchanged in row 4, which limits the sample to the 56 borders in the balanced panel.

Row 5 re-estimates equation 2 without the 23 California borders. California conducted a major school finance equalization in the 1970s, which may have reduced the willingness of its residents to pay to live in a high-income town or school district. Indeed, I find a somewhat larger value placed on town-level median income outside of California. In a similar fashion, Row 6 drops the 53 borders for which at least one jurisdiction experienced court-ordered school desegregation over the period.[19] The estimated response to town-level median income is unchanged, suggesting that income is not simply proxying for the desire to avoid integrated schools.

Rows 7 and 8 consider the rents and the user cost of housing as alternative measures of the willingness to pay for town-level income. Rental prices are not as responsive to town-level median income – compare the implied 6.2 percent increase in rents to the 9.6 percent increase in housing values for a $10,000 increase in median income. The weaker response may be due to the

[19] I collect data on the presence of desegregation court-orders by school district from the *State of Public School Integration* website (Logan, 2004). The site contains the full text of judicial decisions and enumerates each action that a district was required to take to counteract desegregation. I classify any school district that was required by the court to engage in at least one remedial step to address school segregation between 1960 and 1980 as a "desegregated" district and drop any border for which at least one jurisdiction falls into this category. Boustan (2010) explores the effect of school desegregation on housing prices during this period in more detail.

composition of the rental market; renters tend to be younger, less well-off, and less likely to have children. In addition, unlike rents, housing prices might also incorporate expectations of future income divergence between a city and its suburbs. The presence of rent control in some urban areas may also limit the ability of the rental market to adjust through prices. Due to the Census Bureau's data restrictions, only a subset of sample blocks have available data on average rental rates or housing values. Row 8 incorporates a measure of the user cost of housing, which allows the inclusion of all housing units along the border in all years. The implied effect of town-level median income on user costs is larger than on either housing values or rents alone.[20]

The coefficient in Row 9 is from a regression that, in addition to median income, includes two town-level characteristics on the right-hand side: black population share and the share of the population over 65 years of age. Others have found that racially fragmented cities and cities with a larger elderly population spend a smaller share of their budget on public goods (Alesina, Baqir and Easterly, 1999; Cutler, Elmendorf and Zeckhauser, 1993). However, adding these town-level correlates has no effect on the relationship between median income and housing prices.

E. Using Subsamples to Consider Alternative Hypotheses

Thus far, I have documented that the demand for suburban residence increases as the income gap between a city and suburb widens over time. Due to the panel nature of the estimation, this relationship cannot be driven by *long-standing* differences in the housing stock or neighborhood composition of adjacent areas. However, it could reflect *changes* in local land use policy or neighborhood composition over the decade. Although this possibility can never be definitively ruled out, Table 5 documents that the estimated effect of town-level median income

[20] Note that the coefficient on user costs is not itself a weighted average of the housing price and rental estimates because many blocks have both owner-occupied and rental housing.

on housing prices is just as strong in a series of subsamples in which such changes in zoning policy or neighborhood composition are less likely.

Race is the one measure of neighborhood composition available at the block level. For a subset of 25 racially diverse borders, an increase in town-level median income is indeed associated with a relative decline in the probability of having a black neighbor over time. However, there is no such relationship between changes in town-level income and local racial composition for the remaining 77 borders. If the estimated effect of town-level median income on housing prices simply reflected a willingness to pay to avoid black neighbors, we would expect the relationship to be muted in this racially homogenous subsample. In contrast, the effect of median income on housing prices is, if anything, a bit larger for this group (row 2).[21]

Although zoning regulations cannot be directly observed in the data, differences in local policy should be reflected in characteristics of the housing stock. In particular, towns with more stringent land use rules should have fewer multi-family units and higher housing prices than their cross-border neighbors. I use these two measures to classify border areas into those more and less likely to have been subject to different land use regimes. If the estimated effect of town-level income on housing prices is driven by differences in land use, we would expect to find weaker results on borders that start out with small initial differences in housing prices or in the share of single-family units. Rows 3 and 4 show that this is not the case. The estimated coefficients in these subsamples (0.45-0.46) are nearly identical to the full sample (0.43).

A parallel sample of southern border areas also cast doubt on the possibility that the estimates can be explained by differences in local land use policy. Southern municipalities had control over their own land use. If the relationship between changes in town-level median

[21] In order to include the full sample, I classify initial conditions in 1970 and estimate a panel regression with data from 1970 and 1980.

income and housing prices were due to changes in local zoning policy, we would expect to find effects of a similar magnitude in the South. However, if the housing price estimate instead driven by local public goods, the effect should be attenuated in the South because southern cities often shared a school district with their neighboring suburbs and limited the voting rights of poor (black) residents during this period. Row 5 reports the estimated effect of changes in town-level median income on changes in housing prices for 49 borders in 10 southern states. In contrast to the main sample, changes in town-level median income are not associated with housing price appreciation in the South. Taken together, these patterns suggest that the main estimates are not being driven by confounding differences in zoning regulations or household sorting across borders.

V. The Role of Public Goods in the Demand for High-Income Municipalities

Unlike the desire to live in a wealthy neighborhood, which can be driven by local social interactions, the desire to live in a wealthy town relies on civic interactions mediated either by the electoral process, the fiscal system or the public schools. This section considers a series of local policies that may account for the estimated demand for wealthy co-residents.

I begin in Table 6 by assessing whether rich and poor towns offer different bundles of tax rates and local public goods. In particular, following the structure of equation 1, I regress a series of local policy variables on town-level median income and a vector of border area dummy variables in 1970. I focus on this cross-section because 1970 is the only year in which data on effective property tax rates were collected. I find that high-income towns differ from their poorer neighbors in three ways: first, they set lower property tax rates. An additional $10,000 of town-level median income is associated with a 0.52 percentage point reduction in the effective

property tax rate. Secondly, wealthy municipalities spend less than poor cities on non-educational functions, particularly on public safety, perhaps because they face fewer social problems. Finally, a larger share of residents in high-income towns hold a college degree, a potential proxy for higher peer quality in local public schools. However, wealthy towns do not allocate more funds to educational expenditures per pupil overall; nor do they spend more on fire protection, parks, road maintenance or sanitation services by town income (not shown).[22]

Table 7 then considers whether differences in local policy can account for the estimated willingness to pay to live in a high-income town. The first panel of Table 7 begins by exploring the relationship between housing values and each local policy variable in turn. Home values fall by 6.5 percent for every point increase in the property tax rate. By this measure, a homeowner would break even after eight years by purchasing a more expensive home in a jurisdiction with a lower tax rate. A higher college share in the town is associated with higher home values at the border, lending credence to the notion that the college share of the population is a proxy for higher quality in public schools. Perhaps surprisingly, home values decline with total municipal expenditures or additional spending on public safety. These estimates may reflect the fact that these expenditures are disproportionately directed toward needy neighborhoods, rather than toward border areas; residents at the border prefer not to pay to police someone else's neighborhoods.

The second panel of Table 7 adds each of these local policies to the regression of home values on median income. Policies that explain a portion of the willingness to pay for wealthy co-residents should reduce the coefficient on median income. For comparison, the first column

[22] It is important to note that higher expenditures may not translate into a higher quality or quantity of public services. First, the majority of expenditures cover the wages and salaries of municipal workers, an increase in which may not translate into a higher quality of service provision. Second, municipal services are not equally provided to every neighborhood but may be directed at either low- or high-income areas.

re-estimates equation 1 for the 61 borders with available data on all local policy measures in 1970. The resulting coefficient (0.260) implies that $10,000 increase in median income raises housing values by 5.2 percent in this subsample. Including the property tax rate as an additional regressor reduces the coefficient of interest to 0.18. The coefficient also falls when the town's share of college graduates is added. When both the property tax rate and college share are included, the coefficient on median income falls to 0.13 and is no longer statistically significant. I conclude that higher school quality and lower property tax rates can account for 20 percent and 30 percent of the estimated demand for living in a wealthy town, respectively. Neither the level of total non-educational spending nor spending earmarked for public safety help to explain the demand for high-income towns. I conclude that the desire to live in a wealthy town stems from two main (measurable) factors: lower property tax rates set by jurisdictions with a higher tax base, and higher school quality in wealthier districts, as proxied by a higher college share, despite equal expenditures per pupil.

VI. Conclusion

This paper estimates the demand for living in a high-income town by examining changes in the premium for suburban housing as the city-suburban income gap widens (or narrows) over time. I focus on the willingness to pay for the civic features of wealthy towns, above and beyond the value of rich neighbors, by comparing changes over time in the price of neighboring housing units on opposite sides of city-suburban borders. Local public goods and tax rates change sharply at these borders, while the pace of change in housing and neighborhood quality evolve more continuously over space.

I find that the marginal homeowner is willing to pay seven percent more for an otherwise equal housing unit located in a town whose median income was $10,000 above the neighboring city. Half of this premium can be explained by the fact that jurisdictions with a higher tax base set lower property tax rates and offer higher school quality. The total demand for living in a high-income suburb is driven both by local political economy and neighborhood quality. Bayer, Ferreira and McMillan (2007) document that housing values increase by six percent for a $10,000 increase in the income of immediate neighbors. Overall, it appears that the marginal homebuyer is willing to pay up to 13 percent more for an equivalent house located in a high-income town surrounded by high-income neighbors.

The demand for wealthy co-residents can, in theory, act as a "suburban multiplier," augmenting the response to other urban shocks. For example, the construction of the interstate highway system was a major cause of suburbanization during this period (Baum-Snow, 2007). If the presence of a new highway encouraged households in the top half of the income distribution to leave the city, the resulting change in average household income would further reduce demand for city residence. A feedback effect of this nature may help explain the rapid decline of American central cities in the 1960s and 1970s (Baumol, 1967). More speculatively, this type of multiplier may be at work in the opposite direction today as some cities undergo a process of gentrification. In this case, rising incomes spurred by the return to the city of educated young workers and wealthy empty-nesters could form the basis of an urban revival.

Bibliography

Alesina, Alberto, Reza Baqir, and William Easterly. "Public Goods and Ethnic Divisions." *Quarterly Journal of Economics*, 114(4), 1999, p. 1243-1284.

Barrow, Lisa and Cecilia Elena Rouse. "Using Market Valuation to Assess Public School Spending." *Journal of Public Economics*, 88, 2004, p. 1747-1769.

Baum-Snow, Nathaniel. "Did Highways Cause Suburbanization?" *Quarterly Journal of Economics*, 2007, p. 775-805.

Baumol, William. "The Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis." *American Economic Review*, 57(3), June 1967, p. 415-426.

Bayer, Patrick, Fernando Ferreira, and Robert McMillan. "A Unified Framework for Measuring Preferences for Schools and Neighborhoods." *Journal of Political Economy*, 2007, p. 588-638.

Black, Sandra. "Do Better Schools Matter? Parental Valuation of Elementary Education." *Quarterly Journal of Economics*. 114(2), 1999, p. 577-599.

Boustan, Leah Platt. "Was Postwar Suburbanization 'White Flight'? Evidence from the Black Migration." *Quarterly Journal of Economics*. 2010, p. 417-443.

Boustan, Leah Platt. "School Desegregation and Urban Change: Evidence from City Boundaries." *American Economic Journal: Applied Economics*, Forthcoming.

Buchanan, James and Charles Goetz. "Efficiency Limits of Fiscal Mobility: An Assessment of the Tiebout Model." *Journal of Public Economics*, 1972, p. 25-44.

Calabrese, Stephen, Dennis Epple, Thomas Romer and Holger Sieg. "Local Public Good Provision: Voting, Peer Effects, and Mobility." *Journal of Public Economics*, 2006, p. 959-81.

Chay, Kenneth and Michael Greenstone. "Does Air Quality Matter? Evidence from the Housing Market." *Journal of Political Economy*. 113(2), 2005, p.

Cullen, Julie Berry and Steven D. Levitt. "Crime, Urban Flight, and the Consequences for Cities." *Review of Economics and Statistics*, 81(2), 1999, pp. 159-169.

Cutler, David M., Douglas W. Elmendorf, and Richard Zeckhauser. "Demographic Characteristics and the Public Bundle." *Public Finance*, 48, 1993, p. 178-198.

Ellickson, Bryan. "Jurisdictional Fragmentation and Residential Choice." *American Economic Review, Papers and Proceedings,* 61, 1971, p. 334-339.

Epple, Dennis and Glenn Platt. "Equilibrium and Local Redistribution in an Urban Economy When Households Differ in Both Preferences and Incomes." *Journal of Urban Economics*, 1998.

Epple, Dennis and Thomas Romer. "Mobility and Redistribution." *Journal of Political Economy*, 99(4), 1991, p. 828-858.

Epple, Dennis and Holger Sieg. "Estimating Equilibrium Models of Local Jurisdictions." *Journal of Political Economy*, 107(4), 1999, p. 645-681.

Fernandez, Raquel and Richard Rogerson. "Income Distribution, Communities, and the Quality of Public Education." *Quarterly Journal of Economics*, 111(1), 1996, 135-64.

Figlio, David and Maurice Lucas. "What's in a Grade? School Report Cards and the Housing Market." *American Economic Review*, 94(3), 2004, p. 591-604.

Gibbons, Stephen, Stephen Machin and Olmo Silva. "Valuing School Quality Using Boundary Discontinuities." SERC Discussion Paper 0018, 2009.

Glaeser, Edward L. and Joseph Gyourko. "Urban Decline and Durable Housing" *Journal of Political Economy*, 113(2), 2005, p. 345-375.

Glaeser, Edward L. Matthew E. Kahn, and Jordan Rappaport. "Why Do the Poor Live in Cities?" *Journal of Urban Economics*, 63, 2008, p. 1-24.

Greenstone, Michael and Justin Gallagher. "Does Hazardous Waste Matter? Evidence from the Housing Market and the Superfund Program." *Quarterly Journal of Economics*. 2008, p. 951-1003.

Hamilton, Bruce W. "Capitalization of Intrajurisdictional Differences in Local Tax Prices." *American Economic Review*, 66(5), 1976, p. 743-753.

Henderson, J. Vernon. "The Impact of Zoning Policies Which Regulate Housing Quality." *Journal of Urban Economics*, 1985, p. 302-312.

Jackson, Kenneth T. *Crabgrass Frontier: The Suburbanization of the United States*. New York: Oxford University Press, 1985.

Kain, John F. and John M. Quigley. "Housing Market Discrimination, Home Ownership, and Savings Behavior." *American Economic Review*, 62, 1972, p. 263-277.

Kane, Thomas J., Douglas O. Staiger and Gavin Samms. "School Accountability Ratings and Housing Values." In William Gale and Janet Rothenberg Pack (eds.) *Brookings-Wharton Papers on Urban Affairs*, 2003 pp. 83-138.

Keating, Ann Durkin. *Building Chicago: Suburban Developers and the Creation of a Divided Metropolis.* Columbus: Ohio State University Press, 1988.

Kopecky, Karen and Ming Hong Suen. "A Quantitative Analysis of Suburbanization and the Diffusion of the Automobile." *International Economic Review*, Forthcoming.

Logan, John. 2004. "Desegregation Court Cases." The State of Public School Integration. Brown University. <http://www.s4.brown.edu/schoolsegregation/desegregationdata.htm.>

Lee, David S. and Thomas Lemieux. "Regression Discontinuity Designs in Economics." *Journal of Economic Literature*, 48(2), 2010, p. 281-355.

LeRoy, Stephen and John Sonstelie. "Paradise Lost and Regained: Transportation Innovation, Income and Residential Location." *Journal of Urban Economics*, 13, 1983, p. 67-89.

Machin, Stephen and Kjell G. Salvanes. "Valuing School Quality via a School Choice Reform." IZA Discussion Paper No. 4719. January 2010.

Metzler, Jeffrey. "Inequitable Equilibrium: Education Finance in the United States." *Indiana Law Review*. 36, 2003.

Reback, Randall. "House Prices and the Provision of Local Public Services: Capitalization Under School Choice Programs." *Journal of Urban Economics*, 57(2), 2005, p. 275-301.

Rosen, Sherwin. "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition." *Journal of Political Economy*, 82, 1974, p. 34-55.

Tiebout, Charles M. "A Pure Theory of Local Expenditures." *Journal of Political Economy*. 64(5), 1956, p. 416-424.

U.S. Bureau of Census. *18th and 19th Census of Housing: 1960, 1970.* Various cities by census tracts and blocks, Washington: Government Printing Office.

U.S. Bureau of Census. *Census of Governments, 1967, 1972.* Washington: Government Printing Office.

U.S. Bureau of the Census. *County and City Data Book, Consolidated File: City/County Data, 1947-1977* [computer file], ICPSR Study 7735-7736. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2000.

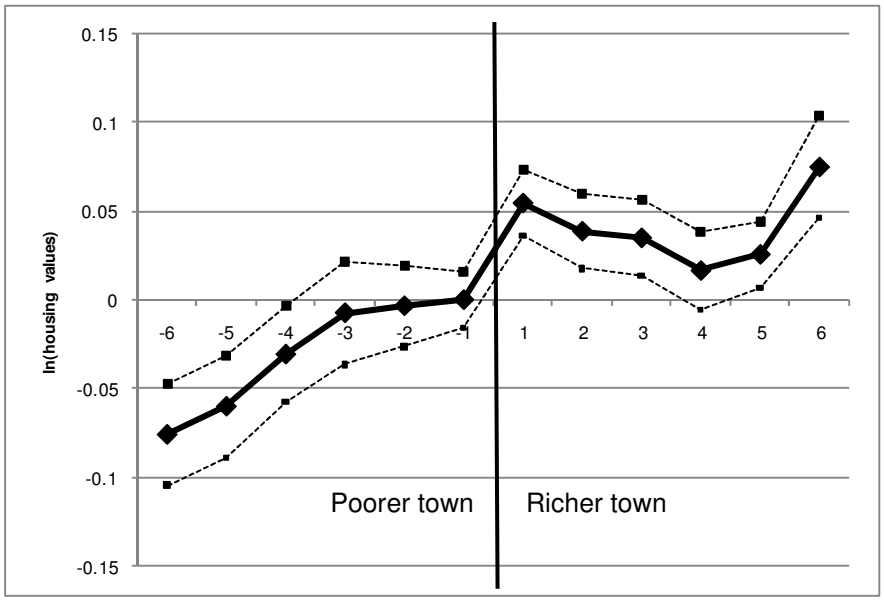
U.S. Department of Education. *Elementary and Secondary General Information System (ELSEGIS): Public Elementary-Secondary School Systems—Finances, various years* [computer file]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2003.

Westhoff, Frank. "Existence of Equilibria in Economies with a Local Public Good." *Journal of Economic Theory*, 14, 1977, p. 84-112.

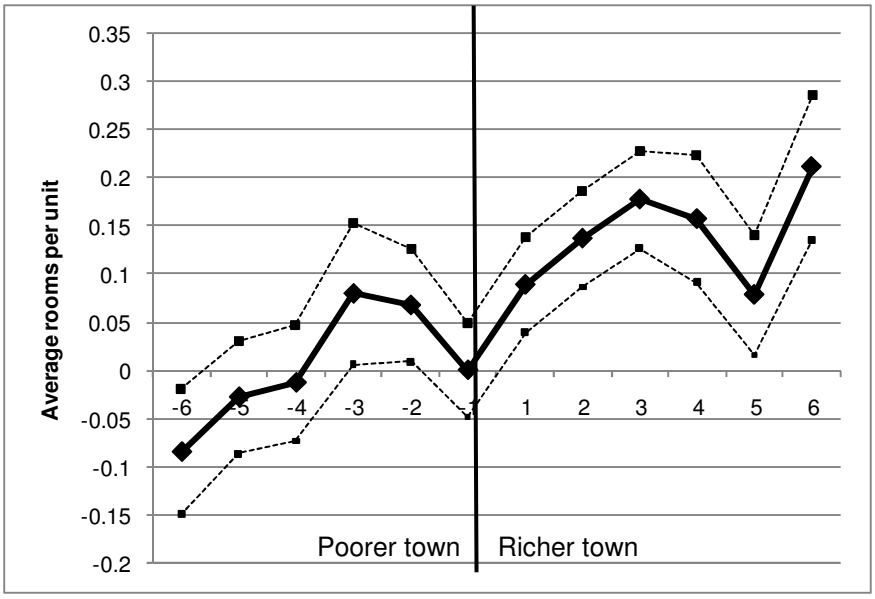
Wheaton, William C. "Land Capitalization, Tiebout Mobility and the Role of Zoning Regulations." *Journal of Urban Economics*, 34(2), 1993, p. 102-117.

Figure 1: Housing values and unit size by distance to the jurisdiction border, Poorer vs. richer towns. Pooled cross-section, 1960-80

a. Housing values



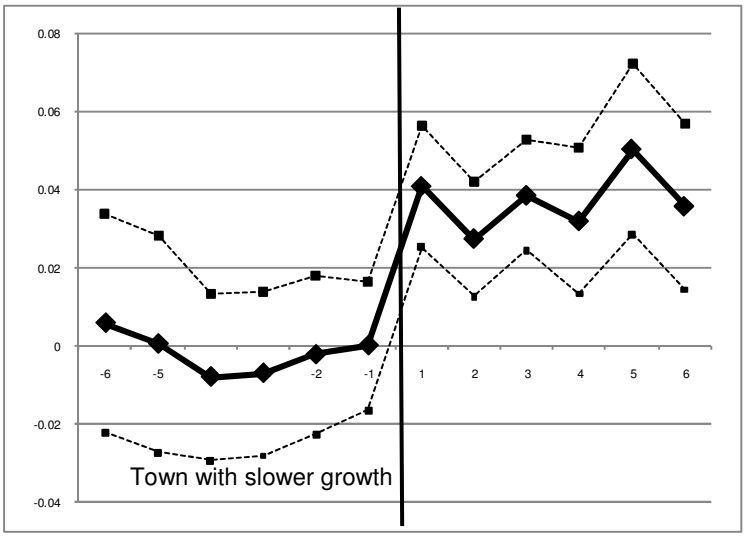
b. Average number of rooms per owner-occupied housing unit



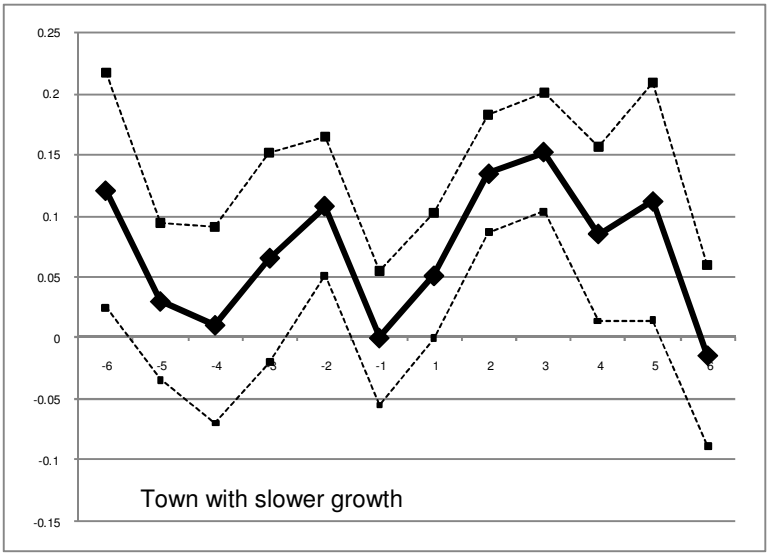
Notes: Each dot is a coefficients from a version of equation 1 that replaces the town-level median income with a vector of dummy variables for block tiers, coded by distance from the municipal border. I classify the jurisdictions in each border area as either "rich" or "poor." Tier numbers range between 6 and -6 with positive numbers falling on the rich side of the border and higher numbers (in absolute value) indicating distances further from the border. Estimates are relative to the first block tier on the poor side. Dotted lines indicate 95 percent confidence intervals.

Figure 2: Changes in housing values and unit size by distance to the jurisdiction border, Towns with faster vs. slower income growth. Panel, 1960-80

a. Changes in housing values



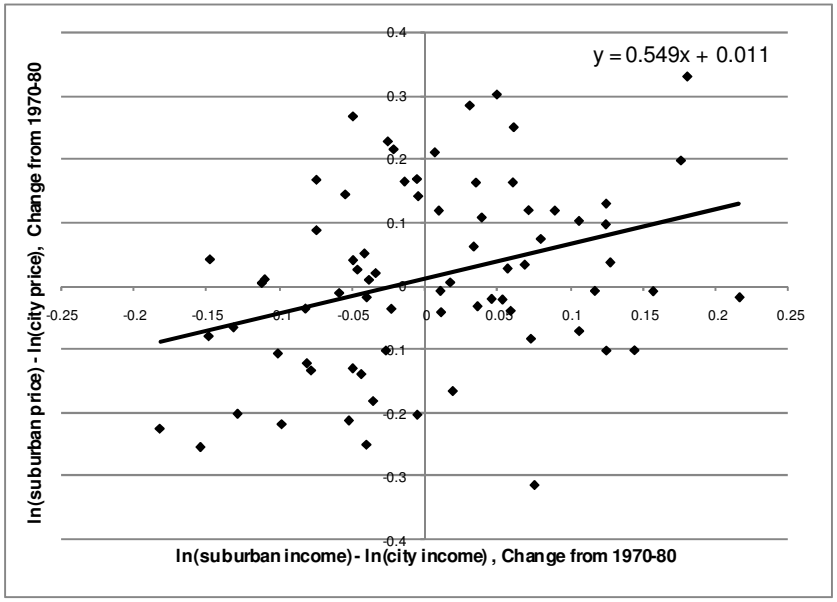
b. Changes in average number of rooms per owner-occupied housing unit



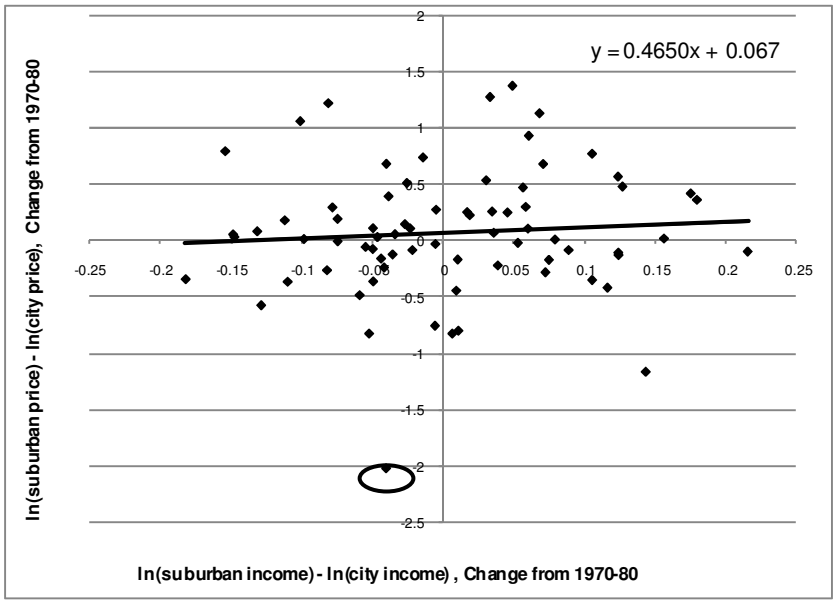
Notes: Each dot is a coefficient on interactions from a version of equation 2 that replaces the town-level median income with dummy variables for block tiers and interactions between block tiers and Census year. I classify the jurisdictions in each border area as either experiencing higher or lower income growth in relative terms over a decade. Tier numbers range between 6 and -6 with positive numbers falling on side of the border with higher income growth and higher numbers (in absolute value) indicating distances further from the border. Estimates are relative to the first block tier on the poor side. Dotted lines indicate 95 percent confidence intervals.

Figure 3: Relationship between changes in the city-suburban income gap and changes in housing unit size at city-suburban borders, 1970-80

a. Housing values



b. Average number of rooms per owner-occupied housing unit



Notes: Each dot represents a border area. The X-axis indicates a change in the log income gap between a suburb and its city from 1970 to 1980. The Y-axis depicts changes in the suburban housing premium (panel A) or the suburban unit size premium (panel B) over the decade.

Table 1: Jurisdiction borders with available block-level data by metropolitan area, 1960-80

		Number of borders			
Region	Metropolitan area	Sample, 1960-80	Added to sample, 1970-80	Sample, total	Excluded
North	Allentown-Bethlehem, PA		2	2	
	Boston, MA	2	1	3	4
	Hartford, CT		3	3	2
	New York, NY-NJ†	10		10	3
	Pittsburgh, PA	3		3	
	Providence, RI	3	1	4	
	Scranton, PA		1	1	
	Springfield, MA		1	1	1
Midwest	Akron, OH		2	2	2
	Canton, OH		1	1	
	Chicago, IL†	5	2	7	6
	Cleveland, OH	2		2	
	Dayton, OH	1		1	
	Des Moines, IA		2	2	
	Detroit, MI	1	6	7	
	Grand Rapids, MI		4	4	
	Indianapolis, IN		1	1	3
	Kansas City, KS-MO	2	2	4	3
	Madison, WI		1	1	
	Minneapolis/St. Paul, MN	1	1	2	3
	Moline-Davenport, IL-IA	1	1	2	
	South Bend, IN		1	1	
	St. Louis, MO	1		**1**	4
West	Denver, CO	1	2	3	
	Las Vegas, NV		1	1	
	Los Angeles, CA†	17	5	22	7
	Phoenix, AZ		1	1	1
	Portland, OR		2	2	1
	San Bernard.-Riverside, CA		1	1	3
	San Francisco, CA†	2	1	3	
	San Jose, CA	4		4	
	TOTAL:	**56**	**46**	**102**	**44**

Notes: Metropolitan areas marked with † contained secondary central cities in 1960 that are now considered by the Census Bureau to anchor their own, independent metropolitan areas. These are: Newark, NJ; Jersey City, NJ; and Clifton, NJ (New York); Gary, IN (Chicago); Anaheim, CA (Los Angeles); and Oakland, CA (San Francisco).

Table 2: Effect of jurisdiction-level median income on housing quality and neighborhood demographics

	Cross-section		Panel	
Dependent variable	Tract	Block	Tract	Block
Share single family	0.070	0.034	-0.135	-0.183
	(0.035)	(0.050)	(0.079)	(0.141)
Number units	-13.073	-14.227	4.971	9.029
	(10.059)	(21.352)	(23.912)	(47.062)
Number rooms	0.765	0.779	0.009	0.344
	(0.160)	(0.199)	(0.307)	(0.439)
Share black	-0.086	-0.036	-0.354	-0.164
	(0.047)	(0.022)	(0.233)	(0.147)
N	20,336	6,358	20,336	6,358

Notes: Columns 1 and 2 (columns 3 and 4) report coefficients and standard errors from separate regressions of equation 1 (equation 2) with each block-level characteristic as the dependent variable. Standard errors are clustered by border area. There are 102 border areas included in the regressions (see Table 1). Observations are weighted by the number of owner-occupied units on the block. Columns marked "tract" contain blocks in the first six tiers on either side of the border, while columns marked "block" contain only blocks adjacent to the border. The sample is restricted to blocks with at least five owner-occupied units without missing information on housing values.

Table 3: Effect of jurisdiction-level income on housing prices

Dependent variable = ln(value of owner-occupied units)

	Cross section			Panel		
	Tract	Block	Block, controls	Tract	Block	Block, controls
Panel A						
ln(median income)	0.425	0.348	0.197	0.552	0.480	0.371
	(0.060)	(0.058)	(0.036)	(0.190)	(0.170)	(0.127)
N	20,348	6,358	6,358	20,348	6,358	6,358
Panel B						
Share poverty	-1.428	-1.045	-0.694	-0.922	-0.948	-0.671
	(0.277)	(0.237)	(0.170)	(0.624)	(0.550)	(0.460)
N	16,144	4,844	4,844	16,144	4,844	4,844

Notes: Cells contain coefficients and standard errors from regressions of housing prices on jurisdiction-level income measures (cross-section = equation 1; panel = equation 2). Standard errors are clustered by border area. The median income regressions contain data from 1960 to 1980, while poverty rates are only available in 1970 and 1980. Block-level control variables include: number of housing units on block; share of units that are single-family structures; average number of rooms; and black population share. See the notes to Table 2 for other details on the samples and specifications.

Table 4: Effect of jurisdiction-level median income on housing prices, Alternative specifications

Dependent variable = ln(value of owner occupied units)

	1960-80
1. Baseline *N* = 6,358	0.480 (0.170)
2. Unweighted	0.491 (0.171)
3. Weight borders equally	0.516 (0.162)
4. Balanced panel *N* = 4,417	0.518 (0.219)
5. Drop California *N* = 3,850	0.697 (0.182)
6. Drop if desegregate *N* = 2,911	0.509 (0.210)
7. Dependent variable = ln(rent) *N* = 4,487	0.308 (0.192)
8. Dependent variable = ln(user cost) *N* = 7,804	0.831 (0.264)
9. Add jurisdiction controls	0.545 (0.142)

Notes: Cells contain coefficients and standard errors from panel regressions of housing prices on jurisdiction-level median income (equation 2). See the notes to Tables 2 and 3 for details on the sample and specification. The regressions underlying rows 4-6 contain 56, 79 and 49 border areas respectively. Row 7 (row 8) includes all blocks with at least five rental (occupied) units and is weighted by the number of rental (occupied) units. Row 9 includes as regressors the black population share and share of the population over 65 years old at the town-level.

Table 5: Effect of jurisdiction-level median income on housing prices in various subsamples

Dependent variable = ln(value of owner-occupied units)

	1970-80
1. Baseline	0.431
N = 4,854	(0.189)
Sub-samples	
2. < 75th percentile, % black	0.521
N = 3,593	(0.255)
3. < median, initial price gap	0.464
N = 2,455	(0.176)
4. < median, initial single family gap	0.452
N = 2,537	(0.287)
Southern sample (Borders = 49)	
5. Southern	0.019
N = 2,329	(0.062)

Notes: Cells contain coefficients and standard errors from panel regressions of housing prices on jurisdiction-level median income (equation 2). See the notes to Tables 2 and 3 for details on the sample and specification. In order to calculate initial characteristics for each border area, analysis is restricted to 1970 and 1980. In 1970, the 75th percentile of initial black population share is 3.6 percent; the median initial housing price gap is 12.5 percent and the initial gap in single family share is 9.5 percentage points.

Table 6: Association between jurisdiction-level median income and local policy, 1970

	Dependent variables					
	Property	Share	Spending ($1000 per cap.)		Spending ($1000 per pupil)	
RHS variable	tax rate	college	Total	Police	Instruct	Admin.
ln(med income)	-2.681	0.276	-1.374	-0.214	-0.169	-0.047
	(0.325)	(0.032)	(0.235)	(0.025)	(0.385)	(0.045)
Borders	62	102	96	96	102	102
Observations	124	204	192	192	204	204

Notes: Cells contain coefficients and standard errors from regressions of local policy measures on jurisdiction-level median income. The unit of observation is a jurisdiction. Following the format of equation 1, the regressions also contain a vector of border area dummy variables. Sources for the local policy measures are reported in Appendix Table 1.

Table 7: Explaining the willingness to pay for jurisdiction-level income with variation in local policy, 1970

Dependent variable = ln(value of owner-occupied units)

	Alone	Property tax rate	Share college	Spending $1,000 per cap. Total	Spending $1,000 per cap. Police	Tax + sh. college
Panel A						
Policy variable	---	-0.065	0.428	-0.037	-0.621	---
		(0.015)	(0.202)	(0.025)	(0.196)	
Panel B						
ln(med income)	0.260	0.181	0.232	0.292	0.221	0.127
	(0.061)	(0.094)	(0.057)	(0.062)	(0.072)	(0.107)
Policy variable	---	-0.028	0.113	0.024	-0.167	---
		(0.022)	(0.161)	(0.017)	(0.239)	

Notes: Cells contain coefficients and standard errors from cross-sectional regressions of housing prices on jurisdiction-level income measures (equation 1). Standard errors are clustered by border area. The sample includes the 61 borders with information on all local policy variables in 1970 (N = 1,631). In the first column, median income is the only jurisdiction-level regressor. The remaining columns adds local policy variables. Sources for the local policy measures are reported in Appendix Table 1. See the notes to Tables 2 and 3 for more details on the sample and the specification.

Appendix Table 1: Sources for jurisdiction-level public goods data

Variable	Source
Current (non-educational) expenditure[1] • Categories: Fire, parks, police, roads, sanitation, sewers, other	*Census of Governments, 1972*
Educational expenditure, per pupil[2] • Categories: Instructional, administrative	*Elementary and Secondary General Information System (ELSEGIS), 1968-69*
Effective property tax rates[3]	*Census of Governments, 1972*
Share residents with college degree	*Census of Population, 1970*

1: Non-educational expenditures are measured at the municipal level. In some states, counties are responsible for providing public services. Most jurisdiction pairs in the sample belong to the same county.

2: Educational spending per pupil is collected both from independent school districts and municipal school systems.

3: The *Census of Government* estimates effective property rates at the town level from samples of recent home sales. The effective property tax rate of a housing unit is the ratio of the property tax bill to the transaction price. These rates are reported for the 25^{th}, 50^{th} and 75^{th} percentile of the market value distribution. I assign units on the poor (wealthy) side of borders the effective rate for homes at the 75^{th} (25^{th}) percentile of the value distribution in their jurisdiction. That is, I assume that the houses on the border are larger than the typical city unit and smaller than the typical suburban unit. Exact data on property tax rates are available for 38 city-suburban borders. For 27 additional borders, I assign the suburb the property tax rate reported for the "balance of the metropolitan area" (that is, for all home sales in the suburban ring). In the remaining 37 cases, there is no information on property tax rates for any towns on the suburban side of the border.

Appendix Table 2: Summary statistics, Jurisdiction variables

	1970		1970-80
Mean (S.D.)	All jurisdictions	Difference across borders	Change in cross-border difference over time
Median family income *($ 2000)*	$49,980 ($10,227)	$9,926 ($8,918)	$2,880 ($2,181)
Poverty rate	0.067 (0.036)	0.046 (0.031)	0.026 (0.025)
Share black	0.086 (0.142)	0.151 (0.145)	0.055 (0.068)
Share college graduate	0.123 (0.081)	0.068 (0.071)	0.027 (0.030)
Property tax rate, % of sale price	2.535 (1.115)	0.723 (0.482)	
In $1,000 ($2000): Instruction $ per pupil	3.001 (0.652)	0.512 (0.473)	
Non-education $ per capita	0.736 (0.424)	0.493 (0.431)	
Police $ per capita	0.114 (0.053)	0.066 (0.045)	

Notes: Demographic and socio-economic variables are available for 102 city-suburban borders. Expenditure variables are available for 97 borders and property tax rates for 65 borders.

Appendix Table 3: Summary statistics, Block-level variables

	1960	1970	1980
Average value, owned	$101,681	$102,651	$157,690
	(53,358)	(41,524)	(91,863)
Number units	42.689	39.347	41.954
	(43.783)	(39.122)	(58.118)
Mean # rooms, owned	5.713	5.736	5.478
	(0.933)	(1.083)	(1.022)
Share single family	0.735	0.796	0.839
	(0.227)	(0.265)	(0.229)
Share black on block	0.027	0.064	0.124
	(0.112)	(0.201)	(0.287)
Average contract rent	$457.90	$519.13	$575.80
	(143.23)	(169.23)	(183.77)

Notes: Cells contain means and standard deviations of block-level variables. Means are reported for the sub-sample of blocks that have at least five owner-occupied units and that are not missing information on housing values. The one exception is average contract rent, which is reported for the sub-sample of blocks with at least five rental units.