

# **An Economic View of Some Causes of Urban Spatial Segregation and its Costs and Benefits\***

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## **Introduction**

Spatial segregation by income, class, race, and ethnicity exists in urban areas throughout the United States and world. Such segregation occurs across local governments in a metropolitan area, and across neighborhoods in a city within a metropolitan area. As discussed throughout this volume, spatial segregation is a public policy concern because of the severe limitations it places on quality of life and upward mobility for those who would benefit from a more non-segregated distribution of people in urban areas.<sup>1</sup> Jargowsky (2002) describes how a neighborhood's class composition influences individual outcomes, independent of one's class status, through a number of mechanisms. These include an emulation of the negative behavior of neighbors, a lack of role models, and an absence of neighborhood institutions that buffer against deprivation.

Much of the worldwide policy efforts to induce greater income, class, racial, and ethnic diversity in cities and urban neighborhoods focus on the removal of institutional factors in the forms of laws and practices that further segregation. Such things as exclusionary zoning, redlining by lenders and insurers, racial steering by real estate brokers, and discrimination by property owners are rightfully pointed to as some of very important causes of urban spatial segregation.

The goal of this chapter is to show that even with the total elimination of all bigoted views of race/ethnicity and the institutional practices that further them, market-based factors would still drive some forms of spatial segregation in a metropolitan area. Thus, if greater spatial integration is the desired goal, urban planners and other policymakers need to understand the "natural" economic forces that work against it. The policy mechanisms to counteract these economic

forces are different from just the elimination of bigoted views and/or institutional practices that facilitate urban spatial segregation.

In reading this essay realize that it is not intended to be a multi-disciplinary examination of the causes of urban spatial segregation, instead it concentrates on an economic approach. Besides neoclassical microeconomics, there are many other rich and relevant ways of explaining the persistence of spatial segregation in metropolitan areas. Most of these non-economic explanations are covered elsewhere in this volume. But if the economic approach described here is ignored, a key causal reason for urban spatial segregation has been overlooked.

This chapter is divided into five sections. Section 2 is a review of the economic forces that promote spatial segregation in a metropolitan area. This review begins with the seminal work of Tiebout (1956) and continues with a relevant theoretical extension by Vandell (1995). Section 3 is a review of empirical evaluations of the causal relationship between variation in population characteristics in a metropolitan area and the number of communities in it. Section 4 offers a description of the cost and benefits that arise from the creation of spatially segregated local governments and neighborhoods in an urban area. Section 5 finishes the chapter with policy suggestions that could mitigate the costs of spatial segregation caused by economic factors.

## **Economic Causes of Urban Spatial Segregation**

### Voting With One's Feet

In his 1956 paper, Tiebout set out to describe a theoretical construct in which a public good (or service) could be efficiently provided by local governments in a metropolitan area through a decentralized pricing system. Public goods are characterized by the attribute that once they are produced for an area, it is extremely difficult to exclude residents living in the area from

consuming them. Before Tiebout, most public economists believed that this “non-excludability” prohibited the efficient provision of a public good through decentralized pricing.

Using a system of decentralized pricing to provide a public good, consumers would be required to reveal their true preference for different amounts of the public good in the form of their own personal demand curve. In other words, tell a government producer the maximum prices they would be willing to pay for all possible quantities of the public good. Understanding the non-excludable nature of public goods, economists believe that the natural response of consumers would be to reveal a lower preference (demand) for the good than truly desired in an attempt to “free ride” off the larger amount desired, and paid for, by others. Of course, everyone faces this same incentive to free ride and the aggregate result under this form of decentralized pricing would likely be an under provision of the public good.

As a solution to this problem, Tiebout envisioned an urban area with many local governments with each providing a different level of the local public good and charging a tax price (in his model a per-person tax) for a consumer to live in the community equivalent to the average cost to provide the good to them. Tiebout asserted that this simple mechanism could effectively eliminate the free-rider problem by forcing consumers to reveal their true preference for a local public good by “voting with one’s feet.” If a person truly desires the level of the public good provided in a community, and is willing to pay the appropriate tax price to cover its production cost, then the only way to consume the good is by residing in the community providing it. The choice of alternative communities, or the competition it generates among local governments, also keeps local providers of public goods from charging more than their average cost to add another resident. As Tiebout (1956, 422) describes: “Spatial mobility provides the local public goods counterpart to the private market’s shopping trip.”

At the extreme in Tiebout's envisioned urban area, a separate local government would be required for each level of local public good provision desired by citizens in the area. In reality, the high average cost of providing a certain level of a public good if only a few consumers demand it forces a less than perfect sorting of like-minded individuals into separate communities. Still, Tiebout's thinking points to a clustering effect in which people of very similar demands for the local public good naturally choose to live in the same community. Since individual demand for a local public good (such as K-12 public education) is often related to both the household's ability to pay (income) and the household's "taste" or desire for the good, which is often tied to social class, Tiebout's mechanism results in urban spatial segregation by income and class when local public goods are provided in a decentralized manner.<sup>2</sup> Since income and class are correlated with race and ethnicity (i.e. in the United States high-income people are less likely to be racial or ethnic minorities), voting with one's feet can also result in spatial segregation by race and ethnicity.<sup>3</sup>

If local public goods and services are provided by independent local governments in a metropolitan area, as they are in the United States and in other countries throughout the world, the mechanism described by Tiebout produces urban spatial segregation by income, class, and even race/ethnicity. The important point is that this spatial segregation is independent of the racial and ethnic segregation that arises through the bigoted desires of some not to live near people of a certain race or ethnicity. The purpose here is not to downplay the importance of bigoted views and the discriminatory institutions that have arisen to support them, but to describe a separate economic mechanism that results in segregated communities in a metropolitan area.

In reality, Tiebout's original model is very simplistic in its assumptions. Tiebout only considers one type of public good, provided at different levels of quantity and quality by different local governments in a metropolitan area and paid for with a direct fee. Consumers are

knowledgeable about local levels of provision and prices and are able to move their residence to a community that best satisfies their preference for a local public good. In addition, Tiebout assumes no spillovers of local public good provision across community boundaries. Spillovers refer to the benefits (costs) of a local government's provision of a good or service being enjoyed (suffered) by surrounding communities without them paying for this benefit (being compensated for the cost). Even given this simplicity, Tiebout's archetype has become the basis for economic deliberation over how household sort themselves into communities in a metropolitan area.<sup>4</sup>

In the more than 40 years since its publication, economists have tried to fill in the real world pieces left out of Tiebout's original eight-and-half page article. These include a consideration of the fact that local governments provide more than one public good, how local public goods are paid for, how the necessary supply of communities in a metropolitan area arises, and how business location and consumer's choice of housing/neighborhood factor in.<sup>5</sup>

Since the degree of urban spatial segregation is further affected by the metropolitan consumer's choice of house type and type of neighborhood that the house is in, a brief review of economic thinking on these issues are covered next. After that, the following section of the chapter continues with a review of some empirical evidence that links greater population heterogeneity in a U.S. metropolitan area to a greater number of local government jurisdictions in the area. The tie between these two variables is necessary if Tiebout's idea of matching public good provision to the preferences of individuals is correct.

### Choice of House and Neighborhood

When deciding upon a community of residence in an urban area, people pay close attention to differences in local public good provision in prospective communities and differences

in the local tax prices they need to pay to consume it. Every residential real estate agent is inevitably asked about the quality of local public schools and the quantity of local public taxes that comes with a home. As originally discussed by Tiebout, this typically causes a sorting of individuals by income and class across communities in a metropolitan area. But when choosing where to live in an urban area, people are also concerned about the type of housing and the attributes of the neighborhood that comes with a local public goods/tax package. As discussed by Vandell (1995), these concerns usually work to further the degree of spatial segregation observed across an urban area.

Vandell defines a “heterogeneous neighborhood” as a contiguous region of an urban area in which all residents and housing units vary greatly in one or more dimensions. He defines these dimensions using four general categories: (1) housing and lot characteristics, (2) neighborhood amenities, (3) accessibility characteristics, and (4) resident attributes. Under resident attributes he includes variables like race, income, wealth, education, family composition, occupation, etc. By modeling metropolitan housing demand and supply, Vandell shows that market forces are likely to generate neighborhoods distinguished by limited variety in the attributes of residents living in them.

In Vandell’s model, utility (happiness) maximizing households in a metropolitan area demand housing of all types. Housing of all types is supplied in the same metropolitan area by profit maximizing builders.<sup>6</sup> When exhibiting their demand for a certain type of housing, a consumer takes into account their preferences and ability to pay for a home (income level); and the structural, site, and neighborhood characteristics (including race and ethnicity of residents), and accessibility of a particular house at a particular location. When exhibiting their supply of a certain type of housing, a builder considers the profit to be gained from the sale of a particular

type of housing unit and the cost to produce it at a given site. Suppliers of a type of housing face can face different costs depending on their market niche and the attributes of the site the house is located on.

Local public good provision, naturally occurring amenities, and access vary by space in a metropolitan area. If preferences for one or more of these attributes differ by a resident's characteristic, then residents with a given characteristic (i.e. race, ethnicity, income, wealth, education, family composition, occupation, etc.) are likely to outbid others for a neighborhood that possesses the desired attribute(s). Even if preferences for one or more of these characteristics are constant across all homebuyers, households with higher incomes are able to pay more for housing sites with the desired characteristic. The result is a clustering of high-income households closer to spatially based amenities.

Vandell concludes that the forces of supply and demand in a metropolitan area's housing market work to create spatially distinct concentrations of like income residents and housing units in urban neighborhoods. If racial and ethnic minorities possess lower household incomes, as has been shown earlier to be the case in the United States, the observed result can be greater spatial segregation by race/ethnicity.

In addition, the racial mix of a neighborhood is an attribute that in of itself is valued by most in their decision on where to live in a metropolitan area. As discussed in Kain (1985) and Clark (1991), evidence from the United States indicates that African Americans are more likely to desire residence in a racially integrated neighborhood (defined as 50 percent African American), while whites on average find it desirable to have a much higher proportion (80 percent) of their own race in their neighborhood. In the United States, on average an African American household with the same level of income as a white household would be willing to pay more for a home in an

integrated neighborhood and therefore be more likely to live in one. These preferences, which can differ by race/ethnicity, help to reduce the long-term stability of an integrated neighborhood or city.

One-way to alter the just described economic processes that work against integrated neighborhoods would be appropriately used subsidies. For example, a high-income household that desires a greater amount of a local amenity than available in a neighborhood that contains a majority of lower-income residents may be willing to accept the lower amount of the amenity if the subsidized price of housing is low enough to compensate. Alternatively, high-income people could be attracted to a majority low-income community through a metropolitan wide or state provided subsidy of a locally provided good or service that is particularly desired by high-income residents. Subsidy schemes such as this are discussed later in the chapter.<sup>7</sup> The next section includes a summary of empirical evidence in support of relationships expected to hold if Tiebout's model of metropolitan residential location choice, and the subsequent segregation it generates, applies to the real world.

### **Heterogeneity in Population Characteristics and the Number of Local Governments**

The story that emerges from Tiebout's model is that people in an urban area sort themselves into different communities based in part upon similar desires for the levels of local public goods provided in these different communities. If the appropriate number of communities in a metropolitan area is too small to meet the varied desires of residents in the area, Tiebout argues that more are eventually created through the incorporation of new local governments. If the number of local governments in a metropolitan area is greater than appropriate, they are eventually reduced through annexation and consolidation.

Tiebout's method of sorting helps to solve the problem of how to efficiently provide local public goods in a decentralized fashion. Regrettably it can also generate spatial segregation by income, class, and even race and ethnicity. An indirect test of whether this is actually happening is to assess whether the degree of variation in the socioeconomic characteristics of residents living in a metropolitan area exerts a positive influence, holding other causal factors constant, on the number of local governments in the area. After all, the most basic prediction derived from Tiebout's model is that greater variation in household demand for a locally provided public good is satisfied through the creation of more local governments. Economic researchers have previously conducted empirical studies to see if this relationship holds and a review of what they found follows.

Nelson (1990) was one of the first to empirically test the relationship between diversity of preferences for local public goods and the number of local governments in an urban area. Using 1982 data from 296 Standard Metropolitan Statistical Areas in the United States he looked at three different measures of local government activity in these areas. Controlling for contracting possibilities, constitutional factors (including tax and debt limits), and environmental factors, Nelson found that the number of jurisdictions in a metropolitan area is in part positively related to greater variation in variables that likely measure greater variation in individual preferences for locally provided public goods. In his study, the standard deviation of household income exerted a statistically significant and positive influence on the number of local governments with taxing power, the number of general-purpose governments, and the number of special districts. A Herfindahl index of age variation exerted a similar influence on the number of local governments with taxing power and special districts.<sup>8</sup>

Nelson explicitly chose to exclude a measure of metropolitan-wide racial variation in his analysis. Martinez-Vazquez, Rider, and Walker (1997) considered this an oversight, because “tastes for association” can play a role in the number of local governments formed in a metropolitan area. They argue that if certain groups desire non-association with certain racial/ethnic groups, then a more racially heterogeneous population in a metropolitan area should result in a greater number of jurisdictions to satisfy tastes for segregation. To test this hypothesis, they gathered data on the number of school districts in all U.S. metropolitan areas for 1972, 1982, and 1992. Controlling for differences in production technology, institutional factors, and tastes for local public school spending, Martinez-Vazquez et al. found that racial heterogeneity (measured through a Leik (1966) index) exerts a statistically significant and positive influence on the number of school districts in an urban area.<sup>9</sup> Regarding their two other measures of metropolitan wide diversity, age heterogeneity (measured with a Leik index) exerted a significant positive influence on school district number, while the coefficient of variation in household income did not.

Drawing upon elements of both the Nelson and the Martinez-Vasquez et al. studies, Fisher and Wassmer (1998) offered a similar regression based explanation of the number of two types of local governments in the United State’s largest 167 metropolitan areas in 1982. Holding other causal factors constant (including a wide variety of political, institutional, economic, and regional characteristics), they found that the coefficients of income and age variation in a metropolitan area exert positive influences on both the number of general-purpose governments and number of school districts. They found that racial variation in a metropolitan area exerts no statistically significant influence on number of school districts and a significant negative influence on number of municipalities and townships. Interestingly, Fisher and Wassmer discovered that most of the variation in local government counts across metropolitan areas can be simulated by multiplying

the average values of all explanatory variables; except the income, age, and race variation measures, by the regression coefficients and multiplying the variation measures by values plus or minus two standard deviations from their means.

In a very thorough study, Alesina, Baqir, and Hoxby (2000) examined variation in the numbers of school districts, municipalities, and special districts in U.S. counties in 1990, and changes in these numbers between 1960 and 1990. Controlling for other relevant causal factors, the influence of countywide variation in income, race, ethnicity, and religion was measured. They found that greater racial diversity in a U.S. county is at least as important as a driver of the number of local governments in a county as greater income diversity. A unique focus of their research is the use of regression analysis to determine, on average, peoples' willingness to tradeoff the benefit of economies of scale – from moving to a smaller scale local government – for the benefit a smaller scale of local government brings in the form of a more homogenous population. Alesina et al. find that in counties throughout the United States, people have demonstrated a large willingness to trade the benefits gained from larger scale local governments in exchange for less racial and ethnic variation in the community they live in.

In another recent study, Brasington (2000) looked at the degree of school district fragmentation in urban areas by examining the number of general-purpose local governments per school district in the 126 districts in the state of Ohio's six largest metropolitan areas in 1985. He argues that the smaller the number of local governments contained within a school district, the more fragmented the school district. Controlling for a school district's private school attendance, population density, new residents, and percentage revenue from local sources, and using a spatial regression technique, Brasington finds that greater diversity in race and income in a school district's boundaries leads to greater school district fragmentation. Age diversity within a school

district's boundaries leads to greater school district consolidation. The race and income findings support Tiebout's notion that greater diversity promotes greater sorting of types of people into a greater number of local governments. Brasington's finding on wider age dispersion resulting in more consolidated school districts is perhaps a result of a compromise on full sorting due to the need to gain economies of scale in an urban area with a smaller number of school age kids.

Finally, in a time series variation on their earlier work, Wassmer and Fisher (2000) analyzed the determinants of change in local government structure over time. They explore determinants of changes in various measures of local government structure within the largest U.S. metropolitan areas over the decade 1982 to 1992 and focus on two basic issues. First, how substantial were changes in the number and size of metropolitan-area local governments in this decade? Second, are changes in local government structure explained in part by changes in the social and economic characteristics of metropolitan-wide population? Wassmer and Fisher test whether residents in metropolitan areas whose population became less alike created more and smaller local governments to provide local public services.

The information in Table 1, taken from Wassmer and Fisher's research, indicates that the number (and thus average size) of localities changed in many large metropolitan areas during the 1980s. Holding the counties contained in the 1982 Standard Metropolitan Statistical Area definition of an urban area constant, the number of municipalities and townships between 1982 and 1992 differed in about 40 percent of the urban areas. Similarly, 36 percent of these metropolitan areas experienced a change in the number of school districts, 79 percent experienced a change in the number of special districts with property taxing power, while 94 percent exhibited a change in the number of special districts.<sup>10</sup>

*insert Table 1 about here*

Although many of these changes are small in magnitude, involving adding or subtracting only one or two jurisdictions in a decade, the pattern of changes is diverse; both increases and decreases occurred. Among those metropolitan areas with changes in the numbers of governments, increases were most common for municipalities and townships (46 out of 58 metropolitan areas), special districts (104 out of 139), and special districts with property taxing power (93 out of 117). Decreases were more common for school districts (39 out of 54). As a result, between 1982 and 1992, about one-third of the large metropolitan areas in the Wassmer and Fisher sample experienced an increase in their number of general-purpose local governments, while more than 70 percent of the metropolitan areas exhibited an increase in the number of special districts.

As detailed in Table 2, also borrowed from Wassmer and Fisher's research, during the 1980s there were substantial changes in the degree of variation in household income among the largest metropolitan areas. In the 95 major metropolitan areas where the counties in the area's definition remained the same, the median change in the coefficient of variation for income was near negative 7 percentage points.<sup>11</sup> The coefficient of variation for household income declined in 73 (or 77 percent) of these areas. The decline in the coefficient of variation was more than 10 percentage points in 37 of the 95 metropolitan areas. This suggests a substantial narrowing of income differences in the majority of urban areas.<sup>12</sup> Though not recorded in Table 2, during the 1980s there also was an increase in racial variation in 92 of the 95 metropolitan areas.

*insert Table 2 about here*

The decreased variation in income that was common in the largest metropolitan areas is consistent in the world envisioned by Tiebout (holding all else constant) with a decreasing number of local governments. Alternatively, the increased variation in the racial composition of the

population in large U.S. metropolitan areas may be consistent with an increasing number of local governments. In light of these occurrences, the relatively small increases in the number of local governments in the United States over this decade are not surprising. In fact, without population growth and increasing racial variation, there might have been substantially more annexations and consolidations leading to fewer local governments in U.S. metropolitan areas in 1992 than 1982.

To test whether the argument that local government structure in a metropolitan area is in part determined by the diversity of citizen characteristics in the metropolitan area, Wassmer and Fisher (2000) look for relationships between changes in aggregate measures of types of local government and changes in the variation of relevant socioeconomic characteristics over the relatively short period of ten years. Using regression analysis, they find strong evidence that increasing income variation within large metropolitan areas contributes to an increased number of school districts, special districts, and special districts with property taxing power. A one-percent increase in the change in the coefficient of income variation respectively leads to a 0.75, 0.91, and 1.48 percent increases in the number of school districts, special districts with taxing power, and special districts.

In one form or another, each of the six different empirical studies described above offer support for the hypothesis that increasing variation within a metropolitan area of the socioeconomic characteristics thought to influence the demand for local government services leads to an increase in the number of local jurisdictions in that area. These results are consistent with the operation of a Tiebout-type process in which individuals seek local governments that provide a set of local services most closely aligned with their demand. If the desired local government structure does not exist, there is some evidence that the process of creating it begins in as short a period as a decade. Based upon these findings, we cannot dismiss Tiebout's concept

that individuals seek similar individuals to reside with and if possible, create a local government structure that allows it. The strongest sorting factor to come out of these studies is income. In only the Martinez et al. study was income heterogeneity not found to exert a significant influence on the number of local governments in a metropolitan area. Greater variation in race and age exerted significant positive influences on the number of local governments in U.S. metropolitan areas in about half of the studies examined.

Rusk (1995), in his widely cited book *Cities Without Suburbs*, makes the claim that “fragmented local government fosters segregation, unified local government promotes integration” (Lesson 18, 33). The only evidence that Rusk offers in support of this statement is a comparison of seven paired metropolitan areas in which both areas are similar in population size, but one area in the pair has a smaller percentage of the total metropolitan population governed by a central city and a larger number of suburban governments. In his sample of seven pairs, the more “fragmented” metropolitan area exhibits a higher degree of African American and Hispanic segregation.

In making his paired comparisons, Rusk only roughly controls for population size and does nothing to control for possible income variation and other causes of local government fragmentation in a metropolitan area. Without these controls, it is impossible to know whether the greater local government fragmentation in one metropolitan area is due to greater income variation in the metropolitan area. As already discussed, greater income variation in a United States metropolitan area likely leads to more local governments in the area. This in turn can lead to greater racial and ethnic segregation because lower-income households in the United States are more likely to be minorities. In support of the casual uncertainty behind Rusk’s statement on government fragmentation as an independent cause of urban spatial segregation, he admits: “Does

greater socioeconomic integration automatically flow from greater governmental unity? Probably not.” (Rusk, 1995, 34)

The empirical studies of economists offer evidence that residential sorting driven by economic considerations motivates some forms of spatial segregation by income, class, and race/ethnicity in U.S. metropolitan areas. Though it is important to note that economists have also discovered that purely economic processes do not fully explain the degree of race/ethnic sorting actually observed in the United States. For instance, Gabriel and Rosenthal (1989) have found that an African American in the United States, with many of the same attributes, including household income, as a white, is more likely to live in a central city. Furthermore, Kain’s (1985) analysis showed that if intrametropolitan location decisions were only based on household attributes like income, family size, age of head, etc., and not race, about twice as many African Americans would have resided in U.S. suburbs than actually did at the time of his study.

In the next section, the benefits and costs that flow from the Tieboutian process of sorting people by income and other characteristics into cities and neighborhoods in an urban area are described. This is offered as background to the policy suggestions made in the last section.

### **Benefits and Costs of Spatial Segregation**

The previously described studies have all demonstrated, in one form or another, that the number of local governments in an urban area is in part related to the heterogeneity of the population living there. In addition, a study by Eberts and Gronberg (1981) has shown that school districts in an urban area are less alike in terms of household income as the number of school districts in the area increases. A study by Gramlich and Rubinfeld (1982), based upon survey evidence, has also found that urban residents living in the same community exhibit very similar

demands for local public goods – much more similar than residents in a rural area do.

Furthermore, Hoyt and Rosenthal (1997) have found street level evidence that within urban neighborhoods, households exhibit very similar demands for local public goods. All of this empirical evidence supports at least a partial working of the Tiebout mechanism in urban areas and the subsequent sorting of people into communities and neighborhoods by attributes that in part determine their demand for the goods and services provided by these jurisdictions. The benefits and costs, both private and social, of this outcome are discussed next.

### Benefits Of Tiebout Sorting

Because people of comparable desires for local government services are more likely to be located in the same community within a metropolitan area, Tiebout's sorting mechanism reduces, but is unlikely to eliminate, variation in citizen's desire for the quality and quantity of local government services within a jurisdiction in a metropolitan area. Variation is not eliminated because a local government cannot be created for each type of household demand for local public goods. This reduction in variation within a jurisdiction in citizen demand reduces the inherent dissatisfaction produced through a voting process to determine the levels of local public goods provided in a community. In addition, the usual reliance on local property taxes to pay for local public goods produced in a competitive structure by many local governments in a metropolitan area can often yield close to a benefit structure of finance for them. The benefit structure arises because the consumption of a high (low) level or quality of a local public good is paid by local residents in the form of higher (lower) prices for homes or higher taxes in the local jurisdiction producing it.<sup>13</sup>

Economists also point to the competitive efficiencies generated through a system of choice and mobility as a valuable benefit generated through a large number of local jurisdictions in a metropolitan area in which each are nearly homogenous in terms of income and social class. Just as it is good to have a large number of dealers to choose from when you wish to purchase an automobile, selling a large number of different types of automobiles, so is it good to have a large number of local governments when you wish to choose a residence from which to purchase locally produced public goods.

From a purely parochial perspective, people who have high levels of demand for a local public good benefit from joining with others with similarly high levels. If financed by a local property tax, the local price paid to provide this high level of public good is distributed equitably among high demanding residents. A lower-level demander of the public good is prevented from free riding off the demands and payments of the high level demanders in the community because the only way they can get the high level of service is to pay the appropriate higher taxes and/or higher local home prices for them. Moreover, in an urban area with many local governments, government providers of high-level local public goods are less likely to charge more than what is reasonable for a high level of provision because if they do, high-level demanders will migrate to a jurisdiction in the metropolitan area providing the next most suitable level of provision.

### Costs of Tiebout Sorting

The just described efficiency benefits of Tiebout sorting must be evaluated in light of the equity concerns generated by the private and social costs that arise from urban spatial segregation that sorting produces. Just as the Tiebout mechanism produces more homogeneously higher income, higher class, and higher public good providing communities; it also generates more homogeneously lower-income, lower class, and lower public good providing communities. The existence and isolation of these two types of communities from each other is the prime source of the costs of Tiebout sorting.

One of the important social costs of concentrating poverty in a few communities in an urban area is the concentrated violence and crime that it can generate in those communities. This not only lowers the quality of life for residents in the communities with the higher rates of violence, but it can also spillover the boundaries of these communities and affect the quality of life in surrounding jurisdictions. Even Tiebout recognized this potential failure of his model and for simplicity sake assumed that these forms of spillovers did not exist. Recognizing that such spillovers do exist in the real world, economists that study local government finance have called for an appropriate level of intergovernmental revenue sharing to support local public good provision (such as police services) when a high degree of benefits derived from it spillover local boundaries. Unfortunately, it is not always easy to gain political support for such socially beneficial revenue sharing schemes.

In addition, the less diversity that exists in a community's household income, the less the opportunities to undertake any form of redistribution within the community between rich and poor. In fact, when many local governments exist in a metropolitan area, a locally based

redistribution scheme in a mixed income community will be self defeating in that it serves to drive the wealthy out of the locality pursuing it and attract the poor to it.

Perhaps the greatest equity concern generated by Tiebout sorting is the limited life opportunities it generates for some individuals. This occurs for at least two reasons.<sup>14</sup> The first is through the intrametropolitan labor market occurrence of “spatial mismatch.” This happens when low-skilled workers are concentrated in one location (usually in the central city or inner-ring suburbs) and many low-skilled job opportunities occur elsewhere.<sup>15</sup> Economists have shown that this results in the spatially concentrated low-skilled workers earning less than they would if residing closer to where the potential low-skilled jobs are.<sup>16</sup>

The second loss in opportunity that can result from urban spatial segregation, and one whose loss is actually protected by most state constitutions in the United States is the receipt of a K-12 public education that is considered equal to what is received elsewhere in the state. For public primary and secondary education, and many other locally produced public goods, the level and quality of service produced depends not only on the amount of dollars spent on it, but also on the environment and characteristics of the local population it is produced for. As documented in many studies like those contained in Burtless’ (1996) edited volume, a student’s achievement not only depends on books, classrooms, and teachers, but also to a great deal on the characteristics of the student’s classmates and their families. If the presence of higher-income and higher-class students at a school site improves the performance of lower-income and lower-class students, then the education provided students on the lower end of the income and class spectrum in a Tiebout sorted school district is necessarily lower than it would be in a more heterogeneous one. Though this line of reasoning applied in the other direction, i.e. the presence of lower-income and lower-class students bringing down the quality of the education experience offered higher-income

and higher-class students, offers yet another reason for parents of higher-income and higher-class students to try and sort themselves into distinct school districts.

### **Public Policies To Reduce Urban Spatial Segregation**

Even if all bigoted views and the laws, regulations, and institutional practices that facilitate them were eliminated, strong economic forces would still exist that must be addressed if the degree of spatial segregation in a metropolitan area is to significantly decrease. Though as described above, these economic forces (e.g., sorting by income and class as described by Tiebout and Vandell) and the consequent urban spatial segregation they generate yield genuine benefits (e.g., less voter dissatisfaction, competitive forces that generate a lower cost production of local public goods, and a reduction in local free riders who do not pay their fair share of the cost of providing a local public good) that are often overlooked by non-economists in public policy discussions.<sup>17</sup>

But as also described above, spatial segregation within an urban area generates significant individual and social costs. If moral imperatives and public opinion in support of them determine that these costs are too large to let stand, the relevant policy question becomes what is the best way to reduce the private and social costs of urban spatial segregation, while still preserving as much as possible the individual and social benefits derived from the mechanism of voting with one's feet.

### **Lack of Local Resources Or Physical Separation?**

To determine the appropriate policy tool to best moderate the costs of urban spatial segregation it first must be determined whether the costs arise primarily from a lack of local

resources in some communities or from the physical separation of different types of people from each other. In other words, does the policy solution entail the redistribution of resources from high-income communities to low-income communities (or neighborhoods)? Or does it require the more drastic step of physically moving types of people between communities in a metropolitan area (or neighborhoods in a city)?

From an economic perspective, the unequal distribution of local monetary resources that naturally results from Tiebout sorting in a metropolitan area is best moderated through a system of progressive income taxation that is applied equally throughout a metropolitan area (or a state). Ideally, the proceeds of the tax are then distributed back to low-income communities within the metropolitan area (or state) in the form of foundation or matching grants. Most states within the United States, and similar forms of government above the local level in other countries, pursue this process to one extent or another. This is justifiable from both the standpoint of equity and economic efficiency. Equity is invoked if society has deemed that all are entitled to a minimum level of provision of local public good and this level is not being provided in poor communities because of the limited resources available to them. As well, such intrametropolitan redistribution is economically efficient if it is done as a subsidy to poor communities for locally provided public goods that exhibit large positive externalities in consumption (i.e. the benefits of someone consuming a local public good extend beyond the person themselves and benefit society as a whole). Local public goods that are likely to exhibit large externalities and hence qualify for intrametropolitan redistribution schemes include public safety, sanitation, and K-12 public education.

Open to debate is the degree that this form of redistribution should be pursued in a given urban situation. Of course, the greater the spatial segregation by income in the urban area, the

greater the economic justification for such redistribution schemes. Additionally, this form of redistribution is commendable because it does nothing to change the motivation for efficient Tiebout sorting within an urban area because high-income people face the same taxes anywhere they choose to reside within the region (or state). Though if one state pursues such forms of progressive taxation and redistribution greater than others it encourages its wealthy citizens to go elsewhere. This is especially the case when a metropolitan area straddles two states and one state exercises a higher degree of income redistribution than the other. Wealthy people can still work at the same job but reside in the state pursuing the less aggressive policy of income redistribution.

Regrettably, the simple redistribution of resources from spatially segregated high-income communities to low-income communities is unlikely to fully alleviate all of the costs of spatial segregation in a metropolitan area. Even if redistribution generates equal monetary resources for all communities, spatial segregation will still yield unequal levels and quality of local public good provision across communities. The reason is that the levels of most local public goods are significantly affected by characteristics of the environment and the people they are produced for. This is particularly true for the two local public goods, public safety and public K-12 education, that generate the greatest costs and benefits to other than those who consume them, and generate the greatest agreement that there is a minimum level of acceptable provision for all.

For this reason, and for the economic costs arising from spatial mismatch, and the social and private costs that accrue in a democratic society when one income, class, racial, or ethnic group is isolated from another; it is often appropriate to encourage the physical movement of groups between previously homogenous communities. Understanding the economic concepts offered above, the important policy concern is how best to accomplish this.

Consider a community in an urban area that decides to provide a high level of local public K-12 education by collecting a high per-student level of local property taxes from households in the community. This can be accomplished in what an economist would consider an efficient manner by, scenario one, local zoning that allows only a certain minimum size and quality home that sells for a high price and an appropriate rate of local property taxation is levied against this value. As an example, consider a community with only homes valued at \$500,000 each. Assume that one child resides in each home. Each year the school district taxes each home at two percent of the property's market value and raise \$10,000 a year to fund each child's K-12 public education. Alternatively, in a second scenario, the same community permits mixed size and quality homes in their jurisdiction and allows the natural forces of the metropolitan wide housing market to raise the value of a small and/or low quality home and lower the value of a large or high quality home (as compared to if the respective home existed in a community of identical homes).

The reason that a small or low quality home sells for more in community that also contains large or high quality homes is the positive capitalization of the underpayments in local property taxes that a small or low quality home in this situation makes over its lifetime. To understand why this occurs, think about a community that contains all \$500,000 homes and one home that would cost \$100,000 if it were built in a community of all homes just like it. This mixed-house community can tax property at two percent of its value and still raise nearly \$10,000 a year for the public education of each home's child. Every household, except the one living in the \$100,000 home, is paying its fair share of taxes. If the small home sold for \$100,000 in this mixed-house community, it would only pay \$2,000 in property taxes and receive nearly \$10,000 in public school services. This amounts to an \$8,000 a year windfall for this property. People who like to live in small homes and consume large quantities of public schooling will observe this occurrence

and express their desire to live in this home by bidding its price up until the net present value of the yearly \$8,000 windfall is perfectly capitalized into a price higher than the \$100,000 it would sell for in a community of all small homes. Alternatively, for a large or high quality home that exists in a community that also contains small or low quality homes, negative capitalization or a reduction in value occurs because of the overpayments in local property taxes made for the local services received.

In either situation, there would be few to no low-income households in a community that decides to provide a high level of local public K-12 education by collecting a high per-student level of local property taxes from households in the community. Scenario one does not allow homes of a size and quality that the poor can afford and the second scenario demonstrates that the natural operation of housing markets to price low-income households out of even small or inferior quality homes.

From a purely economic perspective, households in this homogenously high-income community or neighborhood are very reluctant to accept housing into their community that a low-income person could afford to live in because such housing would not pay its “fair” share of local property taxes. For example, the necessarily low assessed value of such property taxed at the city’s rate of property taxation would not cover the expected cost of providing city (and public school) services to the residents expected to live in it. In addition, if “peer” effects exist in the provision of local public goods, the presence of lower-income households would diminish the quality of the locally produced and consumed public good. A solution could be a cash payment to the high-income community, paid for by the entire metropolitan area or state, to encourage its acceptance of lower-income households. Alternatively, encouragement could come in the form of a non-cash supplement, again paid for by the entire metropolitan area or state, of a locally

provided good or service that high-income households value. Galster (1990) also examines the possibility of using only affirmative marketing policies to achieve the same results and describes their limited efficacy in the Cleveland metropolitan area during the 1970s. In addition, Fischel (2001, Chapter 11) concludes his recent Tiebout inspired book, *The Homevoter Hypothesis*, with economic-based suggestions on how to preserve the benefits of residential sorting given that it is desirable to mitigate the inequitable social outcomes it generates in a metropolitan area. His suggestions include dollar-based “carrots” to promote appropriate community development and dollar-based “sticks” to curb local misbehavior.

#### Subsidies to High-Income Households

To many, the idea of offering subsidies to already high-income households, if they are willing to tolerate poor people as neighbors, is insupportable. But before such schemes are dismissed outright, consider the policy alternatives that are currently more likely to be pursued. Instead, a high-income community under an “inclusionary zoning” plan is forced to take a certain amount of low-income housing into its boundaries.<sup>18</sup> Or a high-income school district is forced to take a certain number of low-income children into its classrooms. Both of these usually occur by higher government fiat and without compensation for the fiscal and reduced public good production capabilities that mixed-income heterogeneity generates for the previous homogenously high-income community.

Forced spatial integration, in the form of inclusionary zoning requirements or bussing across school district boundaries or between school sites, may result in a more heterogeneous community for a while, but if another high-income community exists where this income segregation has not been forced, high-income people are very likely to vote with their feet and

eventually move there. Even if such a community does not exist, there is a strong incentive for high-income people to try and create one through incorporation. This creation almost always occurs at the urban fringe of a metropolitan area and some have pointed to this occurrence as a clear generator of urban sprawl in the United States (see Jargowsky 2002 and Powell 2002). The only way to eliminate this incentive is if income integration is forced upon all communities in which high-income individuals could possibly choose to live. But such force does not eliminate the ill will and economic cost that is generated by it.

#### Economic Lessons for Crafting Policy to Deal with Urban Spatial Segregation

This chapter sets out to describe the powerful economic forces that public policies designed to break down urban spatial segregation must overcome in order to fully succeed. When crafting policy instruments in such situations, economists agree that it best to not work against the market. Instead, policy makers should recognize that urban communities that are nearly homogenous in income or class structure offer benefits to their residents that would be lost if the community is forced to integrate. At the same time, most recognize that as a whole society benefits from more income and class integrated communities. So to create integrated communities where they do not arise naturally, and to guarantee their long-term stability, “carrots” for the wealthy to accept more poor within their community, or to get the wealthy to move to poorer communities, may need to be given.

Economists generally agree upon this policy course and perhaps many would even go further and suggest that a market method like currently used to reduce air pollution in the United States be considered. Such a method would recognize that high-income communities most unwilling to accept the poor are the ones that have the most to gain from keeping them out and

hence are the ones that should be willing to pay the most for this privilege. The policy prescription that follows begins with inclusionary zoning requirements equally distributed throughout all communities in an urban area. This means that a certain percentage of a community's housing must be affordable to all. This type of requirement is not new in the United States. The proposed twist on this requirement is the allowance that the inclusionary zoning requirement for one high-income community be tradable in a free market between other high-income communities in the metropolitan area. So if residents in one high-income community wish to exclude low-income housing they can purchase the right to do so by paying another high-income community in a metropolitan area to accept greater than its fair share. The socially important result would be the same percentage of low-income people moving into previously exclusive high-income enclaves. The difference is that no high-income enclave could claim that it had no alternative but to allow low-income housing into its boundaries. If the private benefit of preserving exclusive high-income status is so important to some citizens, under this scheme they have the ability to buy this right from another high-income community.

Though no doubt controversial, this last section contains the distinct policy lessons that flow from the economic perspective on the causes, costs, and benefits of urban spatial segregation. The merits and concerns that are present in this way of thinking and the policy lessons derived from it deserve further discussion in the broad context of all the interdisciplinary arguments surrounding urban spatial segregation that are present in this volume.

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**Table 1**

**Distribution of 1982-1992 Changes in the Number of Local Jurisdictions in 149 Major U.S. Metropolitan Areas (Using Constant County 1982 SMSA Definition)**

Number in Each Category Given

Change Of	Municipalities And Townships	School Districts	Change Of	Special Districts	Special Districts (Property Taxing Power)
Less -5	0	3	Less -50	3	0
-5	0	1	-25 to -50	3	1
-4	0	1	-24 to -12	9	0
-3	0	3	-11 to -5	13	8
-2	1	11	-4 to -1	8	15
-1	11	20	0	9	32
0	91	95	1 to 4	40	37
1	19	8	5 to 11	44	35
2	11	3	12 to 24	11	11
3	5	1	25 to 49	4	6
4	3	1	More 50	5	4
5	2	0			
More 5	6	2			
Max Change	12	7	Max Change	646	405
Min Change	-2	-15	Min Change	-99	-50

**Table 2**

**Distribution of 1980-1990 Changes in the Coefficient of Variation for Household Income in 95 Major U.S. Metropolitan Areas (Where County 1982 SMSA Definition Did Not Change for County 1992 MSA/PMSA Definitions)**

*Number in Each Category Given*

<u>Change Of</u>	<u>Coefficient of Household Income Variation</u>
Less/Equal -20	11
Less/Equal -15 to Greater -20	9
Less/Equal -10 to Greater -15	17
Less/Equal -5 to Greater -10	19
Zero to Greater -5	17
Greater Zero to 5	10
Greater 5 to Less 10	9
Greater 10	3

## Endnotes

<sup>1</sup> Also see Powell's (2002) article "Sprawl, Fragmentation, and the Persistence of Racial Inequality: Limiting Civil Rights by Fragmenting Space" for a recent and well done description of the "denial of access to economic, education, and social opportunity structures" that concentrated spatial poverty promotes (p. 86).

<sup>2</sup> Social class is simply defined here in terms of a household's demand for a local public good like K-12 public education. For instance, if two households exhibit the same income, but one is willing to pay a higher price for a given quality level of K-12 education, then they are considered of a higher social class.

<sup>3</sup> According to the U.S. Census, in 2000 the median household income in U.S. metropolitan areas for white non-Hispanics was \$49,984. For whites (who can be Hispanic) it was \$47,353, for Hispanics it was lower at \$34,345, and for African Americans it was the lowest at \$31,807. This information available June 2002 at <http://www.census.gov/hhes/income/income00/inctabl.html>

<sup>4</sup> See O'Sullivan (2002, Chapter 13) for a general description on how economists think about household sorting in a metropolitan area.

<sup>5</sup> See Ross and Yinger (1999) for a recent review of much of these extensions to Tiebout's (1956) original theory.

<sup>6</sup> Vandell's model is easily altered to include renters and landlords, as opposed to just builders and homebuyers. See his article for a description of how this does not change his substantive findings.

<sup>7</sup> Galster (1990) describes another alternative to achieving racially integrated neighborhoods through the use of affirmative marketing and outreach.

<sup>8</sup> The Herfindahl (H) index was originally created to measure industrial market concentration. In Nelson's paper it is appropriately used to measure the concentration of population by age in a metropolitan area within three age groups: less than 18 years old, 18-64 years old, and 65 plus years old. Taking the percentage of a metropolitan area's population in each category, squaring it, and then summing all three of the squared values together yields the H index. A higher value of the H index indicates greater homogeneity of age in an urban area and hence a wider variety of preferences for locally provided government services. See Rhodes (1993) for a further explanation of the H index.

<sup>9</sup> Leick originally derived his index to account for the degree of consensus on a multicategory survey question. His index ranges from 0 to 1, with 1 representing the greatest dispersion. Greater Leick dispersion across racial/ethnic categories indicates less of a concentration of metropolitan residents in a limited number of racial/ethnic categories. If persons in a racial category exhibit a unique demand for local government services, then less of a concentration in a few categories (measured as a higher Leick index) indicates greater variation in the demand for local government-provided services.

<sup>10</sup> These calculations utilize the same SMSA county-based definition of a 1982 metropolitan area. This comparison is possible because the 1982 and 1992 *Census of Governments* records the number of municipalities and townships, school districts, and special districts for all counties in the United States.

<sup>11</sup> The coefficient of variation is equal to the standard deviation of a variable divided by its mean and all multiplied by 100. It is a measure of variation in a variable relative to its mean and therefore can be compared across variables measured in different units.

<sup>12</sup> This may be surprising given the trend in the 1980s of greater service sector employment in the United States. But as Madden (2000, xi) has found: "The growth of low wage jobs in the service sector, even with declines in higher wage jobs in manufacturing, reduces poverty and income inequality if the new service sector jobs go to those

who previously had no jobs.”

<sup>13</sup> See Fisher (1996, Chapter 5) for a simple to understand explanation of how this can come about.

<sup>14</sup> See Jargowsky (2002) and Powell (2002) for some more reasons.

<sup>15</sup> See Sjoquist (1995) for an overview of the economic causes and policy solutions to spatial mismatch in a metropolitan area’s labor market.

<sup>16</sup> See Holzer (1991) for a review of the mixed empirical evidence in support of the spatial mismatch hypothesis.

<sup>17</sup> As an example, there are few if any other essays in this volume that devote much space to the economic “benefits” of urban spatial segregation described here. Though note that authors Boal, Cherry, and Qadeer in this volume describe some non-economic benefits that flow from ethnic enclaves. These can include providing a political base and a sense of comfort for people with different language and customs.

<sup>18</sup> The reason why force is necessary to accomplish this should be better understood after reading the example given previously.