

**Establishing the Micro Foundations of a Macro-Level Theory:  
Information, Movers, and the Tiebout Market Model**

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## **Abstract**

### **Establishing the Micro Foundations of a Macro-Level Theory: Information, Movers, and the Tiebout Market Model**

The Tiebout model is one of our most important theories of local government. It is also one of the most controversial. Current debate over the Tiebout model revolves around the apparent disparity between results of macro- and micro-level empirical studies. While macro-level evidence shows greater efficiency in the supply of public goods in polycentric municipalities compared to consolidated ones, evidence of widespread citizen/consumer ignorance has been used to argue that individual actions cannot plausibly lead to competition (and hence efficiency gains) among local governments. We argue that previous empirical work has ignored a fundamental point about how markets work: competitive markets are driven by only a subset of consumers. These informed marginal consumers shop around between alternate suppliers and produce pressure for competitive outcomes from which all consumers benefit.

In our research, we differentiate between average and marginal consumer/citizens and update the Tiebout model by incorporating the costs of information gathering, the costs of mobility, and the strategic interests of municipal governments. Using data from a survey of over 500 households, we present evidence on how a class of informed citizen/consumers may satisfy the most important assumptions of the Tiebout market model.

**Establishing the Micro Foundations of a Macro-Level Theory:  
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The Tiebout model is one of our most important theories of local government. Tiebout (1956) argued that by shopping around across communities, mobile citizen/consumers increase the efficiency and the responsiveness of local governments (also see Ostrom et al. 1961). In this market-like approach to local public goods, citizens choose to locate in a community whose taxes and services most closely match their own individual tastes and "mobility provides the local public goods counterpart to the private market's shopping trip" (Tiebout 1956: 422). Although there are many differences between a pure market for private goods and a local market for public goods that limit the effects of competition, a substantial body of research based on the Tiebout model has shown that allocative efficiency is increased through the spatial sorting process and that local governments in polycentric regions deliver services more efficiently than do monocentric local governments (Parks and Ostrom 1981; Sjoquist 1982; DiLorenzo 1983; Schneider 1986, 1989).

While these aggregate level findings are compelling, scholars have attacked the Tiebout model from a variety of perspectives. Oakerson and Parks (1988), for example, question the exclusive reliance on mobility underlying the Tiebout model. They argue that political activity, or "voice," is at least as important as mobility (exit) in determining local government service/tax decisions. Others argue that the role of local governments in the Tiebout model is too passive. In the Tiebout model, government policies are "more or less set," but governments actually engage in strategic behavior in determining their services and taxes. Peterson (1981), Schneider (1989), and Stein (1990) among others, introduce a more active government dimension to the Tiebout model.<sup>2</sup>

While these debates continue, it is Tiebout's notion that citizen/consumers "vote with their feet," the central theoretical construct in the model, that has recently attracted the most attention. Critics have raised questions about several aspects of this individual-level aspect of the model. First, the Tiebout model assumes that citizens are perfectly mobile-that they can easily exit a community that does not satisfy their preferences and that they can enter a new community that offers a service/tax package they prefer. Rather than the frictionless plane of the Tiebout model, as Orbell and Uno (1972) argued long ago, numerous real world constraints on the mobility of individuals limit exit. But it is what Lowery and Lyons (1989) call the "information assumption" of the model that has attracted the most recent attention (also see Sharp 1984; Lyons and Lowery 1989; Lowery, Lyons and DeHoog 1990). Lowery and Lyons argue that the Tiebout exit/entry process requires high levels of information on the part of individual citizen/consumers-that for the Tiebout model to work

citizen/consumers must have accurate knowledge of the alternative local public service/tax packages being offered elsewhere in their region.

Using a carefully matched sample of residents in a polycentric and a monocentric metropolitan region, Lowery and Lyons investigate several of the individual-level information assumptions they believe underlie the Tiebout model. Specifically, they question whether individuals are aware of alternative service/tax packages in other local governments; whether they are motivated to exit a jurisdiction if its service/tax package does not align with their preferences; and whether they make their relocation decisions based on the alternative service/tax packages offered by municipalities.

Lowery and Lyons find little empirical evidence that any of these assumptions hold.<sup>3</sup> They conclude (1989: 94-5) that the organization of local government and the range of services offered in a metropolitan region "just do not seem to influence attitudes and behaviors in the gross manner suggested by the Tiebout model...[and] many of the aggregate-level findings on service delivery may have to be rethought."

#### The Macro-Micro Disparity

Lowery and Lyons pose a fundamental theoretical question: Is it possible to reconcile macro-level evidence that illustrates the effects of Tiebout-mechanisms on local government efficiency with evidence that at the micro-level key assumptions are violated? Although macro-micro level disparities are not uncommon in social science, this matter is probably most familiar to those who have followed recent debates in macroeconomics between Keynesians and the micro-level advocates of rational expectations models. On one hand, we could argue that as long as macro-level models predict well, then nothing is to be gained by comparing their underlying assumptions to micro-level evidence. This position is illustrated in the famous "as if" dictum credited to Milton Friedman (1953). On the other hand, others argue that since science is conducted with accurate explanation, the "as if dictum is simply not acceptable.

Blinder (1989: 123-124) in reviewing the conflict in economics notes that: "neither side is hostile either to first principles or to factual accuracy. We all agree that the ideal macro theory would be built up logically from first principles and would explain the data well. But we also agree that such a theory is a long way off..." Blinder goes on to note that good science need not always be built on solid micro foundations. Thermodynamics, chemistry, and medicine have all accomplished much as sciences without strong micro-level theory. On the strength of this conclusion, Blinder argues that empirical regularities formulated and tested directly at only the macro-level clearly have a place in science.

Despite Blinder's argument, social scientists interested in the underlying social and political processes that give rise to observed data will no doubt feel frustrated with theory that cannot reconcile macro- and micro-level evidence. In this research, we try to place the aggregate-level data that supports the Tiebout model on a micro-level foundation that is built on a better understanding of markets and the role of consumers than evident in most political science. We believe that the current debate over the micro-level assumptions of the Tiebout model is built on a faulty understanding of how markets work. In particular, research on the "information assumption" has not focused on how markets are driven by a subset of actors and by the information search processes in which they engage.

We identify the micro-level processes citizen/consumers use to gather information and the responses of municipalities to consumers in the local market for public goods. We argue that unless these factors are properly understood, research linking the role of citizen/consumers to the macro-level Tiebout market will continue to be misspecified.

***The Role of consumers.*** There is a critical difference between the role of the average consumer (whose level of information may be low) and the informed (or "marginal") consumer. The failure to understand the importance of marginal consumers and the costs that different classes of citizen/consumers face has fundamentally flawed research into the information individuals need to drive a Tiebout-like market. Much of the recent research on movers and the Tiebout model is overly focused on the threat of exit.<sup>4</sup> We believe that it is the ***entry*** decisions of movers, not their exit decisions, that are more theoretically attuned to Tiebout's description of mobile citizen/consumers. Most residential moves are motivated by factors that have nothing to do with public services; rather, they are motivated by changes in employment, or changes in life circumstances. But once forced to shop around for a new house, a new community, and an attendant new local government, the ***marginal*** costs of gathering information about local public services are low. Thus, actual movers, as they choose among their entry options, may be as close to Tiebout's "frictionless mover" as we will find in the real world. But no search process can reveal all aspects of the package of taxes and services municipalities offer in the local market for public goods. In turn, we discuss the "search" and "experience" aspects of local public goods, and these characteristics affect the micro- and macro-level outcomes in the local market.

***Pressure Toward Competitive Equilibria.*** Our empirical focus is at the individual micro-level, establishing the comparative levels of knowledge recent movers and more established residents actually have about local government service/tax packages. But our theoretical focus is on the link

between these results and other market processes. We seek to identify why municipalities respond to consumer search and how the behavior of citizen/consumers can produce macro-level forces that push the local market for public goods toward competitive outcomes.

We discuss these issues in detail below, concentrating on the difference between marginal and average consumers. We then develop the outlines of a more rigorous theoretical approach to the study of the individual-level assumptions underlying the Tiebout model of the local market for public goods and discuss how the particular nature of this market affects competitive outcomes. In the development of our argument, we update the Tiebout model to respond to many of the criticisms that have subsequently been leveled at it, incorporating the costs of information gathering, the costs of mobility, and the strategic interests of municipal governments. With this theoretical structure in place, we use data from a survey of over 500 recent movers and established residents in Suffolk County, New York, to present evidence on how a class of informed citizen/consumers may satisfy some of the individual-level assumptions that *actually* underlie the role of citizen/consumers in the local market for public goods.

### **The Role of the Marginal Consumer**

By analyzing the responses of a sample of *all* individuals in two metropolitan areas, Lowery and Lyons have de facto based their criticism of the Tiebout model on the behavior of the "average consumer." Since the average citizen does not know much about local services and taxes, Lowery and Lyons conclude that the Tiebout model of the local market for public goods cannot **be** operative. But the focus on the average consumer as the driving force in markets is misplaced: Economists recognize that both theory and empirical research should focus on the marginal consumer.

Rhoads (1985: 144) argues that in many markets the marginal consumers are the most careful and well-informed shoppers, whose actions generate: "competitive pressures that help keep prices reasonable for less-informed, non-searching consumers as well" (also see Thorelli and Engledow (1980) on "information seekers" and Feick and Price (1987) on "market mavens"). This set of informed consumers acting in their own self-interest help create an efficient market. Schwartz and Wilde (1979: 638) specify the argument further. For them, "the presence of at least some consumer search in a market creates the possibility of a 'pecuniary externality': persons who search sometimes protect nonsearchers from overreaching firms." More to the point, they argue that *"the conventional analysis asks the wrong question.* Rather than asking whether an idealized individual is sufficiently informed to maximize his own utility, the appropriate normative inquiry is whether competition among firms for *particular groups of searchers* is, in any given market, sufficient to generate optimal

prices and terms for *all consumers*" [1979: 638. Emphasis added). In applying this argument to the Tiebout market, replace the term "firms" with "municipalities".<sup>5</sup>

To illustrate this point in the context of a private good, consider the decision to buy a car. Most cars last several years. For much of the time between car purchases, a consumer need not know anything about the costs or benefits of different models of new cars - the consumer is not looking to buy a car and there would be no benefit in expending resources to gather information. However, when consumers enter the car market, they engage in extensive search about the cost and quality of various car models. A survey of *all* consumers would show that despite the millions of dollars spent by car companies advertising their products, the *average* consumer has little accurate information about different car models. Yet, the car market is highly competitive, because it is driven by the marginal consumer, the relatively small proportion of the population that is "in the market" at any given time and for whom the benefits of search outweigh the costs of gathering information.

This argument can be made graphically. Figure 1 shows a typical supply and demand curve. We assume that price discrimination is not feasible in the depicted market, as is usually the case by law for the service/tax packages cities offer to their residents. The market clearing tax price for the package of public goods is \$.05 per \$1000 of home value and 100 units will be purchased. But the average consumer in this market is actually willing to pay a tax rate of \$.075 for the public goods.<sup>6</sup> In contrast, the marginal consumer will not purchase the good at this tax price (perhaps because this consumer is better informed about the real worth of public goods). In a fully competitive market, the marginal consumer will drive the tax price down to \$.05 per unit, which is what *every* consumer, including the average consumer, will pay. We recognize that the local market for public goods is not fully competitive, so that there is variation in the tax prices local governments charge and the services they provide. But in either the public or the private market, the pressure toward more competitive pricing is driven by the same mechanism: By having more accurate information about prices, the marginal consumer drives the market towards a competitive level.

#### The Search for Information

The low level of information held by the "average consumer" is the strongest criticism leveled against the Tiebout model. How, critics ask, can a Tiebout market work when the vast majority of citizens do not possess information about the services and taxes that local governments offer? As with other kinds of political activity, many citizens may be "rationally ignorant" (Downs 1957). But given the role of marginal consumers, we do not need to demonstrate that large numbers of people

have high levels of information, we need only identify specific classes of individuals who know more about services and taxes.

*Movers as Marginal Consumers.* One class of individuals who may help drive the Tiebout market are actual movers. Most citizens do not exit their community because of dissatisfaction with the quality of the local service/tax package. Rather, moves are overwhelmingly driven by employment considerations or changes in family status—in short, the decision to move is largely exogenous to the local market for public goods (Long 1974; Fields 1979; but see Blank 1985; Gramlich and Laren 1984; and Peterson and Rom 1989 on the impact of welfare payments on the mobility choices of low-income families). However, once an individual, driven by personal or employment reasons, is facing the high transaction costs of moving the incremental costs of gathering information on local services and taxes are low.

How likely is it that movers will engage in search for public service/tax packages that they prefer? Consumers utilize cost-benefit calculations in their search processes (e.g., Lanzetta and Kanareff 1962; Stigler 1961) and as the value of a good increases so does the number of individuals who engage in comparative shopping (Bucklin 1966; Udell 1966; Bucklin 1969; Newman and Staelin 1972; Punj and Staelin 1983; Beatty and Smith 1987). Houses are the most expensive purchases most individuals ever make, and they have correspondingly strong incentives to gather information.

The marginal cost of gathering information is reduced by the role of intermediaries who provide information to consumers at a low cost (Rhoads 1985; Friedman 1962). For example, the costs movers face for gathering information about alternative communities may be reduced by real estate agents, who provide information about schools, local services, and taxes in addition to information about specific houses. Citizens also utilize information gathered by others. According to Kozol (1991: 120) the New York State publication *Statistical Profiles of Public School Districts* became "a small best-seller."

Moreover, at time of major real estate transactions, movers are also most sensitive to the future capitalization of housing value and will resist purchasing housing in a community that does not offer a competitive stream of capitalization because of poor services and high taxes. Thus, entry decisions are more likely to be driven by local services and taxes, and, in turn, it is at the point of *entry* not of *exit* that the Tiebout mechanisms are most likely to come into play.

*Search and Experience.* But even if movers have incentives to search, they face limits in their ability to gather accurate information. Economists distinguish between search goods, the quality of which can largely be determined prior to purchase, and experience goods, which must be consumed in order to



learn their quality (Nelson 1970; Weimer and Vining 1992). Markets for experience goods can be inefficient, as consumers either cannot verify product quality at the time of purchase or they must expend relatively large resources (compared to the price of the good) to do so.

Wilde (1981: 1123) shows that even relatively simple private goods possess some "search characteristics" and some "experience characteristics". For the complicated package of local public goods that Tiebout's shoppers purchase along with their residential location, we expect to find some characteristics best ascertained through search and others that require experience. For example, the local tax rate, the student/faculty ratio in local schools, and the number of parks in a community may be easily assessed at low search costs. Far greater search costs are required to determine the stability of the local budget and the likelihood of future tax increases, the ability of local schools to place students in quality colleges, and the safety of the parks at night. These aspects of local public goods may be best learned through experience. Given relatively lower search costs for movers, **we** expect movers to gather much of their information about public services and taxes through search. Given the role of experience in assessing elements of the local service/tax package, we expect that established residents will increase their accurate knowledge of local public goods over time.

While we believe these are the most important dimensions of search and experience to properly specify the Tiebout market, in Appendix 1 we provide a fuller summary of relevant arguments from economic and business studies of information and search in markets for private goods.

### **The Effects of Search on Competitive Outcomes**

Consumers face different configurations of producers in private markets and in the local market for public goods. These configurations affect the incentives individuals have to engage in search and the effects search will have on the competitiveness and responsiveness of producers.

In a market characterized **by** a single provider, consumers have no incentives to **engage** in search because there are no choices among goods. And the provider has little or no incentive to **be** efficient or responsive in its behavior. As is well-known, the outcome is a monopoly price higher than the competitive equilibrium. Consider next a market that is characterized **by** multiple producers but one in which consumers are all ignorant of the quality of goods or the prices that alternate producers charge: that is, consumers are engaging in either no search or low quality search. As in the monopoly market, producers have few incentives to charge anything less than the monopoly price: **the** presence of multiple producers *alone* does not produce efficiency gains over the monopoly market. **However**, more efficient outcomes begin to emerge as soon as some consumers engage in search and **gather**

information about the quality and prices of goods provided by alternate producers. Wilde and Schwartz (1979: 551) note: "the likelihood of competitive equilibria obtaining varies directly with the number of consumers who visit more than one firm [local governments] and with the number of firms such 'comparison shoppers' visit." And even a little comparative information can go a long way. As Bucklin (1969: 416) notes: "The value to the buyer of even a little information is striking."

#### The Incentives of Municipal Governments in the Local Market for Public Goods

To earn profits, business firms respond to informed consumers of private goods. We argue that there is similar pressure for local governments to respond to informed consumers of local public goods. But there are distinctive characteristics of the local market for public goods that affect how these market mechanisms come into play. While models of markets for private goods alert us to important underlying mechanisms of competition and efficiency, they must be modified in order to help us understand processes in the provision of public goods, especially local public goods.

Tiebout's original formulation relegated municipal governments to a secondary role, portraying them as inactive agents. This simplifying assumption may have resulted because of Tiebout's concern for a "pure" theory of competition in metropolitan regions. In the case of pure competition for private goods, the strategies and actions of suppliers are irrelevant to understanding market outcomes. By analogy, in a purely competitive public market, the actions of government need not be modeled. But for many reasons, especially since the local market for public goods is not purely competitive, municipal governments are not passive actors in the local market for public goods. From the perspective of local public finance, not all citizen/consumers are equally valuable to communities and municipalities have incentives to fashion service/tax packages to appeal to certain individuals, and not others. In fact, the "average consumer" may be of no particular interest to competitive cities. Rather, current community residents have incentives to use the tools of their local government to maximize the level of local wealth in their community. Present members of a community are interested in making their community more attractive to an individual with above-average wealth. Given a fixed tax rate and legal constraints on limiting access to local public services, individuals buying above-average cost housing in a community pay what Buchanan has called a "net fiscal dividend" to present residents (Buchanan 1981). According to Peterson (1981) and Schneider (1989) one of the most effective ways in which to attract such residents is by offering an efficient mix of services and taxes for those services important to above-average income individuals.

In turn, even if only these above-average income individuals make their entry decisions based on service/tax packages, the Tiebout model could still operate as predicted. That is, given the

structure of the local market for public goods, if only relatively wealthy individuals shop around, their actions may be sufficient to drive the services and tax decisions of local government and the process illustrated in Figure 1 can be extended to the local market for public goods.

Obviously, we cannot gather all the information to fully analyze equilibria in different metropolitan market settings. However, we take an important first step by focusing on the search processes of the citizen/consumer in the local market for public goods. Specifically, we use empirical survey data to understand how movers and non-movers gather comparative information about local government services in a polycentric market setting.

### **Analysis and Results**

To address some of the issues raised by our theoretical perspective, we conducted two telephone surveys of households in Suffolk County, New York. This county, with a population of approximately 1.3 million, has a polycentric structure of government, consisting of 10 towns, 24 incorporated villages, 71 school districts, and innumerable special districts.

The first survey was designed to test the knowledge established (non-moving) householders had of local government services. The second survey tested the knowledge of householders who had recently brought houses in Suffolk County. Appendix 2 describes in detail the methods used and the demographic profile of these surveys.

In this paper, we focus on school district expenditures and taxes.<sup>7</sup> We consider respondents to be "informed" if they accurately ranked their own district on both expenditures and tax rates relative to other school districts in Suffolk County.<sup>8</sup> We first compare the accuracy of the information held by movers categorized by their level of wealth and interest in local schools. We then present a multivariate probit analysis of the influence of these characteristics of movers on their accuracy. In a second probit analysis, we pool recent movers and established residents to examine the search and experience aspects of accurate information about local services. Then, we present data on the quality and sources of information search used by movers. Finally, we relate accurate knowledge to the use of political voice within a community.

Not surprisingly, our data show that the level of accurate information held by all citizens is low. Overall, 21 percent of our respondents accurately evaluated the ranking of their schools. This is about 50 percent higher than what would be expected by chance. Movers taken as a whole actually had less accurate information about their schools than did nonmovers: 19 percent of movers accurately judged the expenditures and taxes of their school district, compared to 24 percent of established residents. But the accuracy of information increased with theoretically important

characteristics of movers.

Local governments have strategic interests in attending to the interests of high wealth individuals. Thus if these individuals seek out and hold more accurate information about services and taxes then pressure for efficiency may result, regardless of the "average" level of information held by all citizen/consumers. To examine differences in information, we divided our sample of movers and nonmovers into two categories: those with household incomes above the average for the sample (\$50,000) and those with incomes below the average.<sup>9</sup> Compared to low wealth respondents, high income respondents were significantly more likely to have accurate information about their school districts: While low income movers proved accurate only 12 percent of the time, high income movers were accurate 28 percent of the time.<sup>10</sup>

Marketing studies shows that certain consumers are more "involved" with some purchases and that it is these individuals who make markets (see Appendix 1). We assess the relative importance of local government services to the location decisions of movers using two questions. We asked movers to name the factors that were important to them in choosing the community in which they chose to buy their house. Forty percent of movers volunteered that the quality of schools, parks, and other local services affected their choice of community. We then asked movers directly whether or not the quality of local schools was important to their choice of community. The percentage of respondents who said yes is high: 68 percent of movers said that schools were very important. Movers do attend to information about local services, especially schools, when making their entry decisions.

In Table 1, we present a probit analysis, testing the influence of attentiveness to schools, the presence of school age children, and income level on the accuracy of information held by movers. The results confirm that even with other factors included, higher income movers are much more likely to hold accurate information about their local school district. Movers also are more accurate when they report caring about local schools (at  $p < .08$ ) and when they have children in the schools (at  $p < .07$ ).

Probit allows for a sensitivity analysis to determine how changing the values of independent variables affects the probability that an individual held accurate information. For all movers in Table 1, the probability of having accurate information among all movers is 19 percent. But if all movers had high income, the accuracy would increase to 26 percent. If all movers cared very much about local schools, accuracy would increase to 22 percent, and if all movers had school age children, accuracy would increase to 27 percent. But if all movers had high income, cared about schools, *and* had school children, the accuracy rate would jump to 41 percent - triple the chance accuracy rate.

We take this as evidence of a class of mobile and valuable residents who know about the relative performance of their schools.

We present a second probit analysis in Table 2 to compare the effects of income and school age children on accuracy for the whole sample of Long Island residents, including non-movers. Because local public goods may have a significant experience dimension, we test the effects of length of residence in a community on the probability a respondent has accurate information. As Table 2 reports, accuracy does increase with time in a community, reflecting an experience good aspects of local public goods (Bledsoe and Stoker 1992 find a similar result for other kinds of information about local politics). For the entire sample, replicating the results for movers alone, respondents are also more accurate when they have children in school and when they have higher incomes.

Repeating the sensitivity analysis, across the entire sample, the probability of having accurate information is 24 percent. But if all respondents had no experience living in the community, accuracy would fall to 19 percent. Similarly, if all respondents had children in schools, accuracy would increase to 30 percent. And if all respondents had high income, accuracy would increase to 29 percent. Combining these two conditions for all respondents increases the accuracy rate to 37 percent-165 percent higher than chance.

To illustrate the search and experience dimensions of local public goods in visual form for both recent movers and established residents, Figure 2 compares the increasing effect of length of residence on the accuracy of information (the experience dimension) with the accuracy of recent movers divided into those with low income and high incomes. The graph illustrates that high income movers treat local public goods as a search good by gathering accurate comparative information while they are considering a housing purchase. For non-movers there is a clear linear trend relating time in a community to accuracy about schools."

Our survey evidence also illuminates the type of search process of movers. Compared to low income movers, movers with higher resources are significantly more likely to use "institutional sources", such as schools and governments to provide them with information. People with lower incomes are more likely (at  $p < .07$ ) to rely more on "personal sources", especially friends and family for information about local services (see Slama and Tashchian 1985: 72 for parallel evidence from private markets). More importantly, movers who report caring more about local government services are more likely to use both kinds of sources to gather information than are other respondents (significant at  $p < .06$ ).

***Incorporating The Role of Voice.*** One criticism of the Tiebout model is its failure to identify the

importance of voice as a driving force in the local market for public goods. We believe that voice reinforces the pivotal role of the high income marginal consumer. Inman (1978) found that a group virtually identical to our informed consumers -- younger, high-income households with children - even though making up a small percentage of the population were likely to have their preferences for school budgets met. They achieved their success through active participation in the local political process—that is, through voice.

The knowledgeable mover will be more readily able to make comparisons between services and taxes in competing jurisdiction and will have solid evidence upon which to base complaints about the services currently provided. Paralleling Inman, we find that better informed movers are also significantly more likely to have engaged in higher levels of political activity.<sup>12</sup> These individuals combine entry and voice to increase their power as consumers over the behavior of municipal agencies.

### **Tiebout Redux**

In the last decade, many scholars have tried to discredit the Tiebout market model by challenging the accuracy of the individual-level assumptions they believe underlie the model. These critics argue that citizens with incomplete information cannot force a local market for public goods to operate competitively, regardless of how many alternative suppliers are available in a metropolitan area. This work ignores recent economic models and marketing studies that analyze competitiveness in markets with incomplete information. In contrast, we believe that it is possible to construct a model of the local market for public goods that begins to resolve the apparent macro-micro disparity.

Our results show that many established residents are ignorant of local services and taxes. For most of these residents, ignorance is "rational" since they are not making any relevant decisions based upon these issues. Taken as a whole, many citizen/consumers do not consider local services and taxes important to them and not surprisingly they do not have accurate information about local school taxes and expenditures that is much more accurate than chance. Does this mean that there are no competitive forces in the local market for public goods and that as Lowery and Lyons argue "the aggregate-level findings on service delivery may have to be rethought"?

We believe that rejecting the Tiebout market on this basis is simply wrong, because even in highly competitive private markets many consumers do not have accurate comparative information about product quality (Lichtenstein and Burton 1989). Economic theory suggests that it is not necessary for all consumers to be informed about choices in order for a market to move towards a competitive equilibrium. If some subset of consumers make accurate comparisons and act on that

knowledge that may be sufficient to make a market behave competitively. And if these consumers are the most desirable segment of the market, the pressure for competition may be even greater.

High-income movers have more accurate information about local schools and those who report they care about local schools are also more accurate about local public services and taxes. These important households gather accurate comparative information and they act upon this information when making their entry choice. But even more important for understanding the local market for public goods, these citizens are the very people that communities have the strongest incentives to attract.

Are there enough of these people to make a market? Or in more general terms: How many consumers must have accurate information for a market, particularly a market for local public goods, to be pushed towards a competitive outcome such as Tiebout described? Wilde and Schwartz (1979: 543) lament the absence of rigorous analytical tools to answer the question. While surprisingly little systematic attention has been devoted to the issue in the economics literature, some observers have offered the view that very few informed consumers can make a market. A consumer advocate, Senator Paul Douglas once argued that a competitive market would exist if "only" 10 percent of the consumers were "cost conscious" (Wilde and Schwartz 1979: 543). Thorelli and Engledow (1980: 14) argue that "information seekers" make up only 10-20 percent of the population. And Inman showed that a highly informed set of voters, making up about 13 percent of the population, was able to make local school budgets respond to their preferences.

The precise percentage of informed consumers needed is likely to vary according to the price of the good, the ability of suppliers to price discriminate among consumers, the number of alternative suppliers in the market, and the strategic actions available to suppliers. But the purchase of a house and the local public goods that are bundled with that house favor the ability of a subset of consumers to drive a competitive market.

Dagger (1981) estimates conservatively that 20 percent of Americans change their local jurisdictions over a 5 year period. Since the upper income half of our mover sample hold much more accurate comparative information, over a five year period, perhaps 10 percent of the population in an average community will have recently entered the community and have high levels of comparative knowledge of local public goods. We believe that this is enough to put pressure on communities to be competitive in their services, especially since these are the residents most strategically important for the continued fiscal viability of communities.

Clearly, while informed entry helps drive a local market for public goods in something

approximating Tiebout's "pure theory", other actions also stimulate competition that forces governments to provide services efficiently. For example, governments try to attract desirable businesses by keeping their taxes low in relation to the services they deliver. Businesses have strong incentives to make well-informed entry choices, reinforcing the concerns of high income movers. Nonmovers can also use local politics to change service delivery patterns, and they are often assisted by "political entrepreneurs" who aggregate their collective "voice" (see Schneider and Teske 1992).

As Thorelli and Engledow (1980) noted for information-seeking consumers in the private market, as Sharp (1984; 1986) argued for local public goods, and as Hirschman (1970) noted most generally, mobility and voice are related. Citizens with the most accurate knowledge of local public goods are also more likely to be politically active. This is clearly true for high income movers. But it is also true for non-movers: based on the comparative knowledge they acquire over time, they use voice to improve the service/tax package in their community.

While entry pressures communities to be competitive, the combination of entry and voice is likely to provide even more effective pressure on local governments, providing the mechanisms that make competitive models of local governments work. But it is only by understanding how these micro-level political behaviors interact with macro-level market mechanisms that we can more accurately specify and examine the macro-level Tiebout market.



Endnotes:

1. Schneider (1989) explores other problems with applying a model of the private market to the local market for public goods.
2. The Tiebout model and its extensions have also been criticized on equity grounds. Hill (1974) described the polycentric system of metropolitan government as "separate and unequal." In this paper we are concerned only with the efficiency aspect of the model.
3. In addition to our central concern in this paper, the Lowery and Lyons approach can be criticized on several other grounds. For example, Percy and Hawkins (1992) note that counties, not local government, are often perceived as the most important services deliverers in the south, where Lowery and Lyons did their analysis, but not in the rest the nation. Percy and Hawkins (1992) and Sharp (1986) find that citizens in the Milwaukee and Kansas City metropolitan areas, respectively, are affected by service/tax packages and both argue that they find evidence of Tiebout market mechanisms. Furthermore, users of economic models prefer to focus on revealed preferences as demonstrated by actual individual choices, not on survey responses that have no action component. For example, while surveys of New York City residents routinely find that more than half of them say they are planning to move from the city soon, half the population does not leave. Thus, it is actual, not potential movement that seems more relevant, and Lowery and Lyons do not measure actual exit. Finally, schools are the most important and expensive local public good provided in most jurisdictions and Lowery and Lyons' analysis excluded schools because both of their metropolitan areas have consolidated school districts.
4. This may reflect the influence on political science of Hirschman's (1970) seminal work **Exit, Voice and Loyalty**. The course of the debate might have been different, if Hirschman had included "Entry" in his title.
5. In this paper, we use the term "municipalities" broadly. The delivery of local services is accomplished by a variety of government agencies. However, we believe that in the Tiebout model, any agency that delivers services and levels taxes to pay for those services will be subject to Tiebout-like pressure. This includes general purpose municipalities, but it also includes special districts, including the "municipal" agency (school districts) that is in charge of the most costly local service delivered-public education.
6. While economists do not usually try to isolate particular individuals at a precise point on a market demand curve, following Hirschman (1970), we do this to highlight the difference between the average and the marginal consumer. We also recognize that for private goods, market demand is a horizontal summation of individual demands, while for pure public goods it is a vertical summation. This distinction does not affect the overall thrust of our illustration.
7. The general pattern of response we document below for schools is repeated in an analysis of local roads and parks, which we do not report but which is available upon request from the authors.
8. To test the accuracy of information, we asked our respondents a series of questions about the taxes and expenditures of their local school district-the most important and most expensive local service. Respondents were asked the following question: "Compared to all school districts in Suffolk County, would you say that the amount spent on each student in your school district is: above average, below average, or about average." Respondents could also offer "Don't know" as a response. A similar question was asked for taxes. Respondents who said they didn't know their expenditures or taxes were automatically classified as holding wrong information. To be judged as having correct information, a

respondent had to choose the branch that correctly characterized their school district. Thus a respondent who said local school expenditures (taxes) were above (below) average had to live in a school district whose expenditures were actually above (below) average. Those who responded "average" were considered accurate if they were in one of the 50% of districts surrounding the mean. Thus by chance a respondent had a 25 percent chance of taking any of the four paths and a 50 percent chance of being correct, if they gave any response other than "don't know." By chance we therefore expect a respondent to get the expenditure or tax question correct 37.5 percent of the time and to get both right  $.375 * .375 = .14$  by chance.

9. Respondents were read a series of categories of increasing income levels and asked to stop the interviewer when the category was reached that encompassed the respondent's household income. The "average" category for respondents was \$40,000-\$50,000. We therefore define upper income individuals as those respondents with incomes above \$50,000. For movers, we duplicated every analysis presented using house price. Given that local taxes are overwhelmingly based on property values, house values may be a more accurate reflection of the resources municipalities really care about. We report the results for income rather than house price, because accurate house price information was not available for non-movers. Moreover, there is a high correlation between income and house price and the results reported based on house price are virtually identical to the results reported.

10. This difference between income groups is significant at  $p < .0001$ . Furthermore, 28 percent is significantly better than the 14 percent accuracy expected by chance, while 12 percent is not significantly different than chance. For comparative purpose note that among established residents, income has a similar effect increasing the accuracy rate from 22 percent for low income residents to 28 percent for high income residents.

11. The trend line in Figure 2 is the regression line plotting accuracy against the square root of the length of time a respondent has lived in a community. We used the square root because the distribution of the variable is highly skewed, with a handful of respondents having lived in the same community for over 50 years.

12. In a series of questions, respondents were asked if they had ever attended a meeting called to discuss problems in your neighborhood or local community? Joined an organization attempting to solve these problems? Signed a petition regarding any particular local problem? Telephoned or written to an elected official regarding local problems? Joined a group for parents of school students like the PTA [Parent-Teacher Organization]? Voted on a school budget? We summed responses to create a political activity scale running from 0-6. High income mover reported a mean of 1.7 political activities, significantly higher than the 1.2 average for low income movers ( $p = .04$ ). Movers who volunteered that local services were important in their choice of community engaged in an average of 1.8 activities, significantly higher than the 1.28 activities engaged in by movers who did not say that local services affected their choice of community ( $p = .02$ ).

## Appendix 1

As economists have recognized that few markets fulfill assumptions of complete information and perfect competition, they have turned to the study of the role of information in markets. Complete information is too costly to generate in most transactions and no party ever has fully complete information about a product or service. Stigler (1961), Nelson (1970), and Akerlof (1970) have produced the seminal works in the area of information economics. Subsequent to these explorations, economists have done theoretical work on price-quality relationships, on the elements of search and experience that allow consumers to learn about purchases, and on how competitive markets can act in the absence of full information by all consumers. They have studied the effects of search processes and market equilibria and identified two basic types of search: sequential and fixed sample (Cave 1985). While there are important differences in the equilibria expected from either of these broad search processes, under either approach, more extensive search and greater numbers of informed consumers in any market produce stronger pressure toward competitive outcomes.

Bucklin (1969: 416) summarizes the critical processes: "Fundamental to the efficient operation of a competitively organized market economy is the function of consumer search. If buyers fail to seek out alternative prices and qualities and thereby become ill informed, markets become segmented, prices rise, and consumer surpluses are transferred to the entrepreneurial sector."

Unfortunately, economists have done little empirical work on these questions. However, their more applied colleagues in business, marketing, and consumer research have provided some evidence in real markets, which we summarize here.

In the American economy, where many markets are competitive, much of the research into private goods markets shows that many or most consumers do not comparison shop very much. For example, Claxton et al. (1974) found only 5 percent of furniture buyers and 8 percent of appliance buyers to be store-intensive, thorough shoppers, with an average of 20 store visits for furniture shoppers, compared to 8 or less for other shoppers. They found that these informed subsets of shoppers utilized more sources of information and had higher incomes. For the other buyers, Claxton et al. (1974: 35) conclude: "A basic conclusion from available studies is that pre-purchase search is a relatively limited activity, even in the case of major durables." Earlier, Katona and Mueller (1955) found that 47 percent of those purchasing durables bought at the only store they visited, a percentage that jumps to 70 percent for non-durables. Thus, most consumers do not do a lot of comparative shopping for these products that are sold in what we would consider to be competitive markets.

Other studies also find a group of consumers that search more than others. These consumers

are more interested in and "involved with" the product and also usually have higher incomes (Katona and Mueller 1955; Newman and Staelin 1972; Claxton et al. 1974). For example the National Commission on Consumer Finance reported that "the number of people unaware of the Annual Percentage Rate paid on credit for recent purchases ranged from almost 90 percent in poverty areas to 52 percent in market populated by relatively affluent buyers" (Wilde and Schwartz 1979: 543).

Two sets of studies in particular have focused on the critical importance of consumers who search more (and presumably are therefore better informed about comparative price and quality information). Feick and Price (1987) labelled the upper third of information seekers "market mavens," who are likely to be opinion leaders and to share comparative information with other, less informed consumers. Slama and Williams (1990) generalize Feick and Price's findings to more markets and confirm that market mavens provide comparative product information to others for many products and services, including real estate.

In a second line of research, based on a major cross-national study over many years and focusing on users of consumer information (such as Consumer Reports subscribers in the U.S.), Thorelli and Engledow (1980) believe that a category of "Information Seekers" (IS) are significantly more interested and more knowledgeable than the average consumer (AC in their parlance). They argue explicitly that these IS, who make up 10-20 percent of the population and are higher income than AC, help to police the market by comparative shopping and by complaining more (e.g., voice in our parlance) if products and services are not adequate. In their own words, Thorelli and Engledow (1980: 12-14): "the test report magazine subscribers represent a fairly homogeneous and cosmopolitan group of information-sensitive consumers, which may be found in all industrially advanced countries, and which is significantly different from the average consumer group. We . . . estimate that from 10 percent to 20 percent of the consumers in a high consumption economy may be [Information Seekers]. . . They are both affluent and consumption-oriented, so that they account for a large number of total purchases and a large dollar volume. . . in their role of opinion-leaders and vigilantes of the marketplace, the IS constitute a public good."

Thus, economic and consumer evidence supports the notion of a cadre of high income consumers helping to make markets more efficient, even in the face of large numbers of non-searching consumers.

## Appendix 2

For the survey of non-moving householders, we generated a telephone number sampling pool using listed telephone numbers and the "add-a-digit" approach (Lavrakas 1987: 39-41). This survey was conducted in October and November of 1991 and the interviewers were undergraduate students participating for class credit. The overall response rate was 49 percent. To obtain this response rate, up to a total of nine call-backs were made to every selected telephone number. All selected individuals who refused on the first call were recontacted by an experienced interviewer, and households with listed telephone numbers received an advanced letter informing them of their selection in the study. The response rate was calculated as the ratio of completions to the sum of completions, refusals, and numbers at which there was no answer. Of the 310 completed interviews, only the 239 cases in which the residents owned and had been living in the present residence for at least a year were included in the subsequent analysis.

For Suffolk residents who had recently brought houses, a more complicated procedure was used to generate the telephone number sampling pool. Lists containing all the names and addresses of recent purchasers (plus the price of the house) as recorded at the Suffolk County Clerk's Office during October 1991 were obtained. Telephone numbers were then matched with the listed names and addresses. The questionnaire contained items with wording identical to that used in the survey of established residents. These questions were augmented with others having to do with matters such as reasons for moving and the nature of the search undertaken. This survey was conducted in January 1992 using the best interviewers from the previous survey. The overall response rate was 54 percent; resulting in 259 completed interviews.

Both samples achieved a fairly even mix of the sexes (the sample of established residents had 44 percent male and 56 percent female respondents, while the sample of recent movers had 53 percent male and 47 percent female). Our sample of established residents had lived in their current homes for an average of eighteen years. Aside from this difference in length of residency, the demographics of the established residents and recent movers were quite similar. The majority of respondents were white (93 percent) and well educated (37 percent had completed some college and 39 percent had completed a college degree). The average household income of established residence was between \$35,000 and \$40,000; slightly lower than the average for recent movers of between \$40,000 and \$50,000.

The average age of the established residents was 46 years; the average for recent movers was 35 years. Reflecting this difference, established residents were more likely to have children, and 33

percent of them had children in school, compared with 24 percent for recent movers. However, recent movers were more likely to expect children in future (88 percent compared with 62 percent).

Going by national figures, the respondents in both samples were better educated and had slightly higher income than the general population. According to the 1991 Statistical Abstract of the United States, in 1989, 17 percent of the population had some college and 21 percent had completed a college degree. In the same year, the median household income was \$34,000. At \$157,000, the average price of the houses purchased by the recent movers was also somewhat higher than the comparable national figure. According to the Family Economics Review Vol. 4, No. 1 (March 1991), the median sale price in 1989 of a single-family home in the United States was \$120,000. Average school expenditure per student in Suffolk County were \$9,664 in 1990 (the most recently available figures at the time of the survey). This figure is high even for the Northeastern states, and is almost twice the average school expenditure per student for the nation as a whole. The 1992 Almanac of the 50 States (Ed. E.R. Hornor) puts the average per pupil expenditure in the United States in 1990 at \$4,890.

Table 1

Factors Influencing the Accuracy of Recent Movers  
Concerning Local School Expenditures and Tax Rates.  
Probit Analysis of 224 Recent Homebuyers

	Coeff.	Std. Error	t	P > t
School important	.426	.244	1.75	.08
Kids in School	.408	.222	1.84	.07
Income	.763	.225	3.40	.00
Constant	-1.818	.270	-6.74	.00

N = 224; chi-square = 20.4,  $p < .001$

NOTES: The dependent variable = 1 when respondents correctly identified both their school tax rate and expenditures as average, above average, or below average, 0 otherwise. The dependent variable = 1 for 42 of the cases. The School important variable = 1 if respondents said that local schools were very important to them. The Kids in school variable = 1 if respondents have children of school age, and 0 otherwise. The Income variable = 1 if the household income exceeds the sample median, and 0 otherwise.

Table 2

Probit analysis of Factors Influencing the Accuracy of All Respondents

	Coeff.	Std. Err.	t	P > t
Time in Community	.078	.031	2.55	.01
Kids in school	.295	.144	2.05	.04
Income	.370	.140	2.64	.01
Constant	-1.162	.135	-8.63	.00

N = 422; chi-square = 16.6, p < .001

NOTES: The dependent variable = 1 when respondents correctly identified both their school tax rate and expenditures as average, above average, or below average, 0 otherwise. The dependent variable = 1 in 89 of the cases. The Time in Community variable is the square root of the number of years of residence in the present community (= 0 for recent movers). The Kids in school variable = 1 if the family has children of school age. The Income variable = 1 if the family income exceeds the sample median, 0 otherwise.



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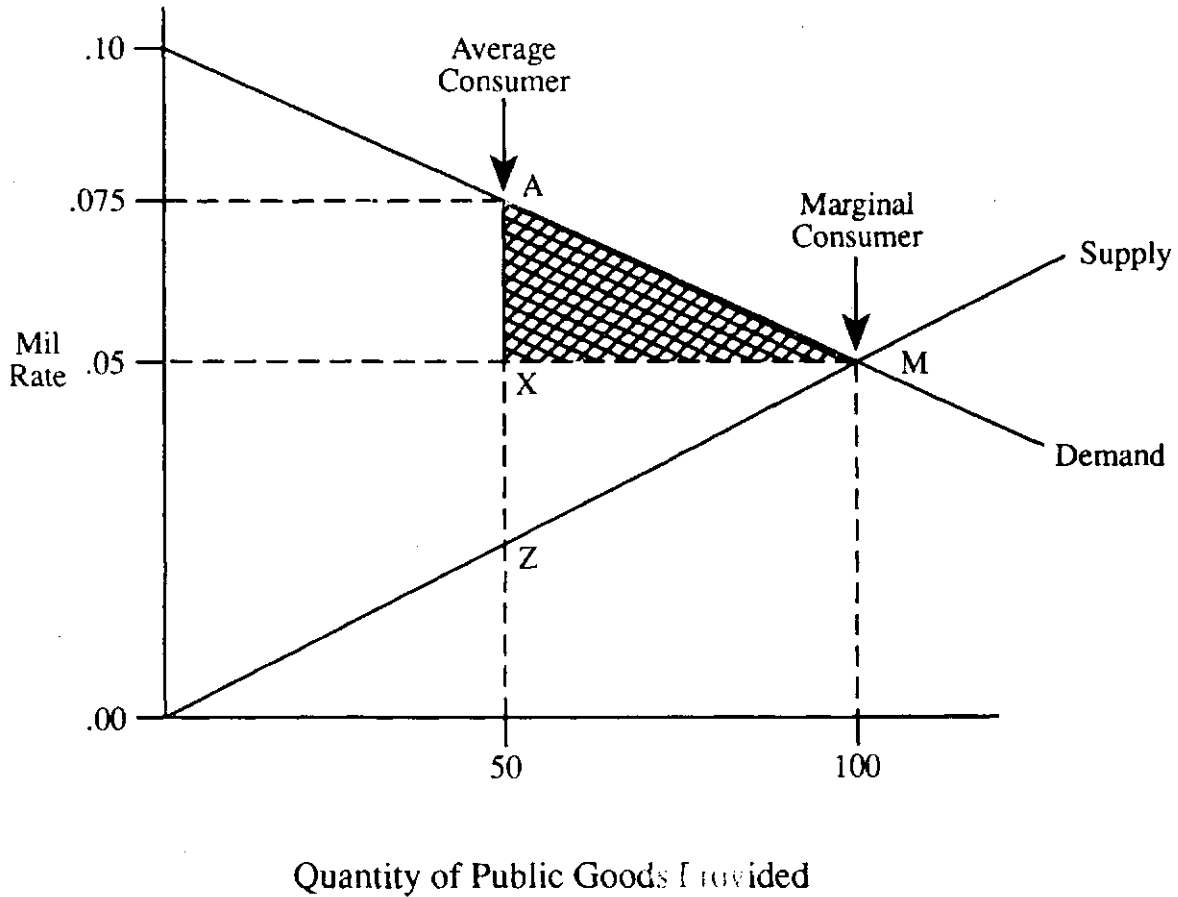
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**Figure 1: The Effects of the Marginal Consumer on Efficiency  
In the Local Market for Public Goods**



Notes: While the "average consumer" would pay a tax rate of \$.075, the well-informed "marginal consumer" drives the market tax price to \$.05. The shaded triangle, MAX, represents the surplus citizen/consumers gain from the pressure toward a competitive equilibrium. The triangle MZX also represents an efficiency gain, but one that accrues more directly to producers. The degree to which this producer surplus is transferred back to citizen/consumers is a function of the exactive capacities of local bureaucrats (see Niskanen 1971; Schneider 1989). Also see note 6.

Figure 2: Search, Experience, and Accuracy

