ABSTRACT

THE ECONOMICS OF SOCIAL CLASS AND METROPOLITAN LOCAL GOVERNMENT

By

Ann Roell Markusen

Theoretical work in local public finance has often focused on the desirability of a multiplicity of independent local governments in a metropolitan area because competition among them for residents may lead toward efficient allocation of resources in the local public sector. The argument rests on a particular interpretation of the residential location incentives of households and the public sector production incentives of local government. This thesis attempts to illuminate the weakness of the above analysis and to construct a superior theory of household and local government behavior and performance.

Using utility analysis to examine the household's incentives for choosing among city and suburbs, the model specified two distinct sources of attraction. One is the particular public-private output mix that is available to the household given its income. The other is a certain level of redistribution, not only of one's own and one's neighbors' income, but also of cost characteristics underlying local public service supply functions. The local public sector links every household with the income and cost characteristics of

other residents, and insulates it from those of non-residents. Thus individualized utility-maximization breaks down, since the income and cost characteristics of the entire community enter as arguments in its demand function.

The distributional impact of the local public sector on a particular household can be viewed as a constrained change in income, or, alternatively, as a change in relative prices of private vs. publicly-produced output facing the household. The presence of this impact precludes the conclusion that residential location reflects a revealed preference for a particular package of local public services. The choice of community may be a response to a more favorable distributional position and may even be made at the cost of violating a preference maximizing position at the given income level.

Attempting to aggregate individual responses to local public sector location incentives, the model indicates that any differences in income or cost characteristics among citizens with similar preferences will cause disagreement among them over the appropriate tax and service levels. Such disagreements will ordinarily be solved by the protagonists migrating to other communities populated by more like-endowed neighbors. The result of this pattern is the creation of stratified and internally homogeneous communities. Perfect stratification will occur if all consumers have similar preferences (or, in the case where they might differ, such differences are overridden by distributional considerations) and if the local public sector is

the only factor in locational choice.

Local governments in this model are not simply producers of local public services, but are economic agents whose interests are identical to those of their constituents. To the extent that suburban populations are homogeneous, the local government will act as if it is maximizing the representative utility function. In addition to determining tax and expenditure levels in the short run, in the long run the government can influence the income and cost characteristics of its residents and the incidence of both taxes and benefits. This process is termed market construction, and suggests that the output level and concommitant tax price in the local public sector is largely a result of the manipulation of demand and supply conditions within the community. This behavior of local governments furthers the tendency toward stratification and homogeneity within suburbs. The dynamics of the model suggest that the trends toward fragmentation and outward sprawl in metropolitan areas will not abate in the future, that stratification will become more pronounced and the dreams of metropolitan-wide government never realized.

Given the difficulties of specifying an acceptable quantitative measure of local public output and the problems besetting the estimation of demand and supply functions, the empirical tests of the theory are indirect. The first set employs data for 47 municipal governments in the Detroit SMSA to test for correlation between high income and low public service cost characteristics and for homogeneity within suburban communities. Both the correlation and equality

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of variance analysis employed support the hypothesis of stratification and homogeneity. A second hypothesis concerning resistance to annexation and consolidation is supported by historical evidence tracing the development of fragmented metropolitan government and the legal tradition protecting it. A final hypothesis predicting continued fragmentation and stratification is supported by trend analysis for both the United States as a whole and the Detroit area.

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FOR

MARINUM MARKUSEN

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THE WOMEN'S MOVEMENT,

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CHAPTER I

INTRODUCTION AND OVERVIEW

This thesis attempts to construct a new theory of local public

finance. Surprisingly little has been written on economic behavior

and performance of people and governments in the local public sector.

What has been written is concerned chiefly with efficient resource

allocation in the public sector. This thesis explores the rather

neglected area of income, cost and wealth distribution.

Chapter II reviews the literature that is related to the four

theory chapters following. The most important work, in terms of its

acknowledged professional stature, is Tiebout's hypothesis[1] that the

existence of a multiplicity of local units of government in a metro-

politan area facilitates efficient resource allocation in the local

public sector because it allows public service customers to express

their preferences by voting with their feet. Other economists have

speculated on the effects of community migration, externalities and

political power on resource allocation in the public sector. The em-

pirical work that has been done bears little resemblance to hypothesis

testing and casts little light on theoretical postulates such as

Tiebout's.

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[1]Charles M. Tiebout, "A Pure Theory of Local Expenditures,"
Journal of Political Economy, LXIV (October, 1956), pp. 416-424.

In Chapter III, a theory is developed to explain the incentives which motivate an individual household to locate in a particular suburb or city within a metropolitan area. Using a utility-maximization model with an income constraint, we can specify two distinct incentives. One is allocative; the consumer-voter wants a public service package that has an appropriate mix given his or her preferences. The other is distributive; the public sector by its very nature has a distributional impact, a result of both the way that it distributes services it produces and the way that it levies for those services. The local public sector links every citizen with the income and cost characteristics of other residents, so that the individualized utility-maximization model breaks down. The household is no longer choosing among a set of alternatives given its income; now the income and cost characteristics of the entire community enter as arguments in its demand function.

Not only do these two incentives co-exist, but it is quite likely that they are both effective in every location decision. It is therefore impossible to accept Tiebout's suggestion that residential choice reflects a revealed preference for a certain package of local public services, since a move may be more a response to a preferred distributional position and may even be made at the cost of violating a preference-maximizing position.

Attempting to aggregate individual responses to public sector incentives, we find that any differences in income or cost character-istics among citizens with similar preferences will cause disagreement

among them over the appropriate tax and service levels. Such disagree-
ments will ordinarily be solved by the protagonists migrating to other
communities with more like-endowed neighbors. The result of this pat-
tern is the creation of stratified and internally homogeneous communi-
ties. Perfect stratification will occur if all consumers have similar
preferences (or, in the case where they might differ, such differences
are overridden by distributional considerations) and if the local
public sector is the only factor in locational choice.

Chapter IV develops two hypothetical examples of community choice
and public sector incentives. The graphs accompanying the chapter
illustrate that the impact of the public sector on individual options
is to offer a set of positions which are actually constrained income
options; for every tax rate a citizen chooses, a different quantity
of total resources of the community will be devoted towards satis-
fying its needs. A poor family in a community with a public sector
which redistributes from rich to poor will enjoy the output of more
resources the larger the public sector becomes. This is an increase
in income in kind. The graphs also indicate that the same phenomenon
can be viewed as a change in relative prices; the distributive nature
of the local public sector effectively changes the relative price
that households pay for public vs. private services. In a community
which redistributes from rich to poor, wealthier families face a
higher relative price for public services, while their poorer neigh-
bors face a lower relative price.

Chapter V develops the market construction theory. It suggests

that local governments are probably very representative of their
constituents, and that we can view them, therefore, as responding to
the same incentives that motivate their residents. Local government
is more than simply a producer of services for an anonymous market.
It has an interest in protecting the preferred position of its
customers; it is a utility-maximizer rather than a profit-maximizer.
Since the distributive nature of the local public sector is of great
interest to the residents, the local government is concerned not only
with an appropriate service mix, but also with the distributive
arrangements which affect each resident's well-being. The local
government has an unambiguous incentive to manipulate cost and demand
characteristics of the local public service market to achieve the
lowest cost, highest quality output possible. The local government
can use exclusionary tools to influence the complexion of the popula-
tion residing within its boundaries, it can construct tax and
distribution rules for its output in a way that will discourage
undesirables from moving in, and it can protect its insular position
by joining forces with other local interests to bar metropolitaniza-
tion attempts. This behavior of local governments will foster the
tendency toward stratification and homogeneity within suburbs.

Chapter VI speculates on the future of metropolitan areas given
the public sector incentives and behavior outlined previously. It
suggests that the trend toward fragmented local government and
stratification will not abate in the future. The distributional
stakes in an insulated local public sector markets are so great that

it is likely that suburbanites will forego public sector efficiencies that could be gained by metropolitanizing services rather than surrender their independent markets.

Chapter VII attempts to test some of these hypotheses. It looks in detail at the Detroit metropolitan area, tests for stratification and homogeneity, and concludes that there is ample evidence of large disparities among suburbs and of the tendency toward homogeneity. It investigates the history of annexation and consolidation in the United States and concludes that neither appears to be a promising tool for reshaping the American metropolis, except perhaps in the South and Southwest. It looks at the trends since World War II both nation-wide and around Detroit and concludes that there is evidence that fragmentation and stratification will continue to be a problem of major metropolitan areas.

CHAPTER II

REVIEW OF THE LITERATURE

A. Traditional Views in Public Finance

Public finance theorists have traditionally stated that there is no simple and uniquely optimal solution to the problem of resource allocation in the public sector. No automatic, market-type mechanism exists to register consumer preferences and translate them into publicly-produced output. An analogy with the private market mechanism cannot be made, for the necessary conditions do not exist in the public sector. First, the public sector produces some goods that are characterized by complex externality problems, such that the consumer is encouraged not to express her true preferences, but hopes that the good will be provided by another group or subset of citizens, with the benefits accruing to her free of charge. Second, even in cases where externalities do not exist, the voting mechanism is a poor substitute for dollar power in the market place. Finally, even if voters did correctly register their preferences at all times at the polls just as if they were buying local services on the private market, government is still a monopoly and cannot be expected to perform in the same efficient way that a firm under competitive pressure does. Hence, "no decentralized pricing system can serve to determine optimally these levels of collective consumption."[1]

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[1]Paul Samuelson, "The Pure Theory of Public Expenditures," *Review of Economics and Statistics*, XXXVI (November, 1954), pp. 387-389.

In lieu of an impersonal market mechanism, then, public output is generally thought to be determined through a social decision-making process. One view of this process is that government allocates resources by providing the level of output preferred by the median voter, presumably minimizing the costs of this output. The government's role in this process is either organistic or individualistic; either the government is portrayed as the Social Person itself, acting to maximize a community welfare function, or it operates as a well-oiled, personless machine which registers individual preferences, produces the output and charges each recipient on a median benefit basis.[2]

A more sophisticated analysis of this decision-making process has appeared in the work of Downs, Buchanan and Tullock, discussed in section D below. They examine the process of aggregating individual preferences through the political mechanism and its implication for allocation in the public sector. An alternative view of this process is the Leninist thesis that government acts on behalf of the small group constituting the owning class and caters only to the well-being of this group. This approach is also discussed below.

Despite the general acknowledgement of the inadequacy of neo-classical theory for dealing with the public sector, such a theory still has its advocates. Richard Musgrave derives the Paretian conditions for optimal resource allocation in the public sector when the

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[2]James Buchanan, "The Pure Theory of Government Finance: A Suggested Approach," _Journal_ _of_ _Political_ _Economy_, LVII (December, 1949), pp. 496-505.

optimal distribution of income has been predetermined.[3] He tries to avoid the conclusions of Samuelson by imposing a Wicksellian separation between the distributive and allocative functions of the public sector. (In the Samuelson work quoted above, distribution is determined simultaneously with resource allocation.) Criticism of his derived Paretian conditions include Gordon Sparks' observations that changes in relative prices within the market-clearing process will hurt someone, if preferences differ, and that the Pareto criterion, with its multiplicity of optimal positions, does not allow the determination of a uniquely optimal allocation without specification of the social welfare function.[4]

B. The Tiebout Hypothesis

In an article published in 1956, Charles Tiebout challenges the prevailing pessimism for market solutions with respect to the local public sector.[5] He claims that competition among fragmented local governments in a metropolitan area allows consumers to reveal their preferences by "voting with their feet," and forces governments to cater to these preferences.

Tiebout begins his analysis by stating,

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[3]Richard Musgrave, The Theory of Public Finance (New York: McGraw-Hill, 1956), pp. 80-86.

[4]Gordon Sparks, "Professor Musgrave's Theory of Public Expenditures," Canadian Journal of Economic and Political Science, XXX (November, 1964), pp. 591-594.

[5]Charles M. Tiebout, "A Pure Theory of Local Expenditures," Journal of Political Economy, LXIV (October, 1956), pp. 416-424.

> In terms of a satisfactory theory of public finance,
> it would be desirable (1) to force the voter to re-
> veal his preferences; (2) to be able to satisfy them
> in the same sense that a private goods market does;
> and (3) to tax him accordingly. The question arises
> whether there is any set of social institutions by
> which this goal can be approximated.[6]

He proceeds to construct a model of local government which he sees as

satisfying these requirements.

The Tiebout model assumes that public service consumers choose

their maximizing tax-service package by moving to the most attractive

community:

> The consumer-voter may be viewed as picking that
> community which best satisfies his preference
> pattern for public goods ... At the local level
> various governments have their revenue and expendi-
> ture patterns more or less set. Given these revenue
> and expenditure patterns, the consumer moves to that
> community whose local government best satisfies his
> set of preferences. The greater the number of
> communities and the greater the variance among them,
> the closer the consumer will come to fully realizing
> his preference position.[7]

Tiebout further assumes that public service producers try to

optimize community size. For each pattern of public services, there

is an optimum size determined by the number of residents for whom

this particular service package can be produced at the lowest average

cost. Communities falling short of their optimal size will try to

attract residents, while communities who have reached optimal size

will discourage additional residents.

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[6]Ibid., pp. 417-418.

[7]Ibid., p. 418.

Thus migration by central city residents to suburbia is seen as a reaction to over-optimal size (and thus resource misallocation) in the city, while the use of zoning laws, implicit agreements among realtors and the like are viewed merely as devices for keeping an optimally-sized population stable.[8] These behavioral assumptions for public service consumers and producers, along with the typical assumptions of the market model such as perfect mobility, perfect knowledge, and the existence of many competing communities, form the basis of the Tiebout model. In addition, Tiebout assumes that employment opportunities do not limit the residential location decision within a metropolitan area, and that external economies are non-existent. From these postulates, Tiebout concludes that residential mobility results in an equilibrium pattern where each locality has a revenue and expenditure pattern that reflects the desires of its residents.

Tiebout then proceeds to deduce the implications of this model for resource allocation in the local public sector. He visualizes the local government as taking the aggregated demand of its citizens to the market place and bidding for resources.

> In the limit, as shown in a less realistic model
> to be developed later, this total demand will
> approximate the demand that represents the true
> preferences of the consumer-voters--that is, the
> demand they would reveal, if they were forced,
> somehow, to state their true preferences. In
> this model there is no attempt on the part of local
> governments to "adapt to" the preferences of
> consumer-voters. Instead, those local governments

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[8]Ibid., p. 420.

that attract the optimum number of residents may
be viewed as being "adopted by the economic system.[9]

Tiebout goes on to develop an even stricter model which demonstrates

this theoretical optimal allocation.

Tiebout deals briefly with his unrealistic assumptions. Partic-

ularly with respect to the existence of external economies and dis-

economies, he admits that metropolitan-wide government is the logical

response. However, he notes that "in real life the diseconomies are

minimized insofar as communities reflecting the same socio-economic

preferences are contiguous."[10]

With regard to the perfect mobility and perfect knowledge

assumptions, Tiebout offers the empirical evidence that studies of

residential location decisions reveal substantial citizen awareness

of differing revenue and expenditure patterns. In addition, he

interprets the resistance to metropolitanization proposals as the

fears of local citizens that their own distinctive tax-service

packages will be lost in the amalgamated metropolitan government.

Out of his analysis, Tiebout draws some policy recommendations

for the future of urban areas. He opposes metropolitanizing services,

except in the case where everyone is made better off or at least no

one worse off, that is, when "more of any service is forthcoming at

the same total cost and without reduction of any other service."

Since it is unlikely that this will be true, then there are no

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[9]Ibid., p. 420.

[10]Ibid., p. 423.

acceptable arguments for metropolitanization "on purely economic grounds."[11] He espouses policies which will increase residential mobility and enhance the knowledge of the consumer-voter, since these will allow the system of local governments to more closely approximate the market-type solution he sees as optimal.

Tiebout sums up his analysis by claiming that he has demonstrated the conceptual solution to the problem of optimal allocation of resources in the public sector:

> If the consumer-voters are fully mobile, the appropriate local governments, whose revenue-expenditure patterns are set, are adopted by the consumer-voters. While the solution may not be perfect because of institutional rigidities, this does not invalidate its importance. The solution, like a general equilibrium solution for a private spatial economy, is the best that can be obtained given preferences and resource endowments.[12]

While he admits that his model falls short of the perfection of the theoretical private competitive model, he notes that:

> Those who compare the reality described by the model with the reality of the competitive model—given the degree of monopoly, friction and so forth—may find that local government represents a sector where the allocation of public goods (and reflection of the preferences of the population) need not take a back seat to the private sector.[13]

Tiebout has had few critics. On the contrary, his hypothesis has been welcomed by a profession stymied by the massive problems of economic analysis of the public sector. He had salvaged at least

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[11] Ibid., p. 423.

[12] Ibid., p. 424.

[13] Ibid., p. 425.

a part of the public arena for theoretical inclusion in the realm of automatic, market solutions to the problem of output determination and efficient resource allocation. His article often graces the head of every reading list on state and local public finance, and has become known as the monopolistic competition model of local government. In general, economists have been willing to concur with him that a multiplicity of local governments is an improvement over a single, metropolitan-wide government in the same way that monopolistic competition is an improvement over monopoly in the private sector.[14]

The major weakness in this model lies in its behavioral propositions. To reiterate, Tiebout envisions the consumer-voter as choosing a community's tax-expenditure package because it best fits her own preference pattern. In general, when we speak of consumer maximization in economics, we refer to her behavior given her income and wealth status. Tiebout carries this maximization principle over into the public sector without considering that choice of community might also involve income-enhancement through the public sector mechanism. In addition, the local government, in the Tiebout model, acts as an average-cost minimizer. This behavior supposedly compels it toward the "optimal size" community, an analogy to the firm reaching the minimum point on its average cost curve by building the

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[14]See, for instance, James Buchanan and Gordon Tullock, The Calculus of Consent (Ann Arbor: University of Michigan Press, 1962), p. 114; John Due, Government Finance: Economics of the Public Sector, 4th ed. (Homewood, Illinois: Irwin, 1968), p. 316; or Werner Hirsch, Urban Economic Analysis (New York: McGraw-Hill, 1973), p. 131.

optimal size plant. Here, too, Tiebout ignores the possibility that

a local government might be playing a redistributive role with re-

spect to both income and costs.

The only other Tiebout work related to this theory appeared in

1961.[15] While the main concern of the latter is to develop a theory

of fiscal federalism, the earlier conclusions of Tiebout are reiter-

ated. The model constructed here assumes that all incomes are equal

and that taxation proceeds purely on a benefit basis, the purpose

being to demonstrate criteria by which society can arrange the struc-

ture of government to achieve optimal resource allocation in the

public sector.

However, Tiebout considers briefly the effect of dropping his

equal incomes assumption. He recognizes that tax colonies may appear

and that wealthier families may get better services in the local

public sector as well as the private:

> As a result of unequal incomes, the resulting
> pattern of public goods will be less optimal, in
> a sense, than in the case where incomes are equal.
> However, two modifications appear which somewhat
> offset any distortions introduced by unequal
> incomes.[16]

There is no attempt by Tiebout to define the meaning of "less

optimal, in a sense." The two "modifications" turn out to be demand-

ing public service changes as a condition for entering a community,

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[15]Charles Tiebout, "An Economic Theory of Fiscal Decentraliza-
tion," in Public Finances: Needs, Sources and Utilization, ed. by
National Bureau of Economic Research (Princeton: Princeton University
Press, 1961), pp. 79-96.

[16]Ibid., p. 93.

and changing the pattern of public services after you enter the community. These hardly seem like legitimate modifiers even on the grounds of Tiebout's own theory. Nevertheless, despite the ultimate conclusion, once again, that multiple local government and mobility improve the changes of attaining optimal resource allocation, we must here credit Tiebout with an awareness, if muddled, of the distribution problem that is lacking in his earlier work.

In an article unrelated to the above theory, Tiebout has considered public sector distributional motives for community choice.[17] He and David Houston attempt to set up a set of voting rules which will allow a local community to improve income distribution within their community beyond the level established by policy at higher governmental levels. This set of rules amounts to disenfranchising the potential beneficiaries of further redistribution, so that they cannot impose a burden on the "haves." Tiebout and Houston state,

> One might suggest that, to the extent that these
> rules have not been operative, "tax colonies" have
> appeared. Within the metropolitan region there is
> some freedom of choice for community of residence
> ... Any community which redistributes income "too
> far" may lose its higher-income residents. Higher-
> income people may regroup into a suburban tax
> community.[18]

Unfortunately, Tiebout speculates on this possibility without making any effort to relate it to his previous work on allocative incentives

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[17]Charles Tiebout and David Houston, "Metropolitan Finance Reconsidered: Budget Functions and Multi-level Governments," _Review of Economics and Statistics_, XLIV (November, 1962), pp. 412-417.

[18]_Ibid._, p. 417.

for migration. The student of Tiebout is left to ponder without guidance the relative significance of two distinctly different public sector location stimulants.

One exception to the general acceptance of the Tiebout hypothesis is Harvey Brazer's article, "Some Fiscal Implications of Metropolitanism."[19] Having summarized Tiebout's hypothesis, Brazer states:

> And as an exercise in abstraction, it may be a solution, as useful, perhaps, as many of the economist's abstractions. Unfortunately, however, Tiebout's model cannot be said to be even a rough first approximation of the real world. The most pressing fiscal problems of metropolitanism arise precisely because of the very factors he denies in his assumptions.[20]

He then proceeds to enumerate the ways in which real world circumstances conflict with Tiebout's assumptions. He also notes the increasing differentiation of suburb and city along income and racial lines, creating unequal fiscal endowment. However, he does not suggest the reasons for this increasing differentiation, nor does he construct an alternative model to Tiebout's.

The only explicit test of the Tiebout hypothesis to date has been undertaken by Wallace Oates.[21] He postulates that we ought to

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[19]Harvey Brazer, "Some Fiscal Implications of Metropolitanism," in City and Suburb: The Economics of Metropolitan Growth, ed. by Benjamin Chinitz (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964), pp. 127-150.

[20]Ibid., pp. 132-133.

[21]Wallace Oates, "The Effects of Property Taxes and Local Public Spending on Property Values: An Empirical Study of Tax Capitalization and the Tiebout Hypothesis," Journal of Political Economy, LXXVII (November, 1969), pp. 957-971.

observe the capitalization of public service benefits in property

values:

> If this is true (the Tiebout hypothesis), the
> outputs of public services (as well as taxes)
> should influence the attraction of a community
> to potential residents and should thereby affect
> local property values.[22]

He proceeds to run a regression relating property values for different

communities with their effective tax rate, an index of public sector

output, accessibility to the central city, and housing quality, and

finds that high tax rates do depress property values, but that if

higher taxes go for increased public sector output, this offsets the

impact on property values.

The only comment we will register here is that this observation

of capitalized value can be applied to alternative theories, such as

the one to be developed in this thesis.

C. Migration and Efficiency in the Public Sector

The major debate that parallels and succeeds the Tiebout work

focuses on the contention that free migration of individuals will

achieve the optimal allocation of resources in the public sector.

This debate originated within a general discussion of the justification

for fiscal transfers among units of government, mainly states.

James Buchanan argued as early as 1950[23] that redistribution

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[22]Ibid., p. 958.

[23]James M. Buchanan, "Federalism and Fiscal Equity," American
Economic Review, XL (September, 1950), pp. 583-599.

of fiscal resources among units in a particular tier of government (e.g., states) was necessary to achieve a Pareto-optimal use of those resources. About the same time, A. D. Scott concluded the opposite,[24] that fiscal transfers would hinder the achievement of a Pareto-optimal resource allocation. An exchange followed, until it became clear that both arguments were valid within the conceptual framework chosen.[25]

After Samuelson's redefinition of efficiency in the public sector,[26] Richard Musgrave suggested that as long as governments produced efficiently, and employed benefit taxation, there would be no efficiency basis for intergovernmental transfers.[27] Buchanan responded[28] that he might have overestimated the importance of efficiency considerations in calling for redistribution, but that it still appeared to him that people would migrate in response to fiscal differentials (benefits compared to taxes) even when all states

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[24]Anthony D. Scott, "A Note on Grants in Federal Countries," Economica, XVIII (November, 1950), pp. 416-422.

[25]See James Buchanan and Richard E. Wagner, "An Efficiency Basis for Federal Fiscal Equalization," in The Analysis of Public Output, ed. by Julius Margolis (New York: National Bureau of Economic Research, 1970), pp. 140-141, for a discussion of this debate.

[26]Samuelson, "A Pure Theory."

[27]Richard Musgrave, "Approaches to a Fiscal Theory of Political Federalism," in Public Finances, ed. by National Bureau of Economic Research, pp. 97-122.

[28]James M. Buchanan, "Comment," Ibid., pp. 122-129.

produced efficiently. Musgrave agreed, but said that he did not feel that just because income differentials exist, they should be considered distorting influences. They should be viewed simply as locational factors, site features of

> ... the economic map which determines resources allocation. Efficiency is not served by erasing this feature of the map. Indeed, a central policy aimed at nullifying resulting differentials (such as remain with universal benefit taxation) in state finance will interfere with efficiency in the regional structure of public finances.[29]

This problem continued to concern Buchanan, who recently published two papers dealing with it. The first appeared in 1970, written jointly with Richard Wagner.[30] While conceding the point which Musgrave had made about the unimportance of transfers on efficiency grounds when states produce in a cost-efficient manner and employ benefit taxation, Buchanan and Wagner pointed out that states use traditional tax methods, not benefit taxation, and therefore do not conform to this theoretical ideal. They proceed to construct several simple models in which they demonstrate the migrational impact on efficient resource allocation given different assumptions. In an economy with one pure public good and perfectly mobile productive resources, the efficient position is for every person to migrate to the wealthiest state. In an economy in which resources are not perfectly mobile (e.g., land and space cannot be taken with you), there

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[29]Musgrave, "Reply," Ibid., pp. 132-133.

[30]Buchanan and Wagner, "Efficiency Basis," pp. 139-158.

will be a tendency for less than optimal migration from the poorer area to the rich, in which case we might prescribe a transfer from the poor to the richer area. In the most realistic of these simple models, however, the government produces a less-than-pure public good, so that the benefits to any resident decline (after a point) with immigration of others. This negative benefits effect will likely offset the positive tax effect, and the wealthier area will tend to be over-crowded. Each immigrant will consider only the tax price to himself and the average benefit he will receive, not the diminution of the benefits to others which he imposes with his presence. Thus immigration will proceed past the optimal point, because the migrant weighs average benefits to himself rather than the marginal benefit impact on the entire population.

Buchanan and Wagner point out that

> the excessive migration generated by private choice
> can be mitigated by the granting of property rights
> to residents of subordinate units of government;
> practially this would amount to allowing such polit-
> ical communities the right of excluding immigrants.
> Individuals then wishing to migrate would be forced
> to purchase these rights.[31]

However, they feel that such an arrangement would violate the spirit of freedom of movement implicit in Western Civilization. In its stead, they suggest the use of a system of fiscal transfers to promote efficient resource allocation by preventing too much migration from poor areas to richer ones.

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[31]Ibid., p. 153.

We pause here to note that in reality, an immigration policy and tool kit does exist for the local government. Although the policy is not formulated in terms of property rights, it is implicit in the formal and informal rules governing entry into the community. As such, it is a sort of black market in property rights; those who can afford it may move into a community which provides bountiful public services at a relatively low price. In other words, fiscal privileges go to the highest bidder.

Another weakness in this approach is its concern with the efficiency implication of migration to the exclusion of the distributional ones. Given some initial social welfare function, the analysis works out the implications for efficiency within a process that redistributes income. However, it is probable that the social welfare function itself may be changed by the process, obscuring the results. In addition, it seems that the analysis misses its opportunity to examine the distributional effects of migration in themselves.

D. Economic Theories of Politics

Several ambitious attempts have been made to integrate government behavior into economic theory. Among these is Anthony Down's book, An Economic Theory of Democracy.[32] Rejecting traditional approaches to government's role as an economic agent, which either

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[32]Anthony Downs, An Economic Theory of Democracy (New York: Harper & Brothers, 1957).

consider policy-makers as altruistically pursuing the common good or government as a machine which automatically works to maximize a social welfare function, Downs hypothesizes that politicians maximize votes, just as consumers maximize utility and firms maximize profits.

Since votes are distributed on an egalitarian basis, government policies (which are designed to win a majority of votes) will favor low and middle income groups (assuming larger numbers in these groups) and involve some redistribution from rich to poor.[33] The lower income bias and redistribution will be tempered to the extent that cost of information and uncertainty hamper the voting mechanism. However, in general a "better" allocation of resources could be achieved if high income groups, under certain rules, could buy off votes of lower income groups, a trade which both parties would be willing to engage in. Since democratic constitutions forbid vote selling, a Pareto optimum, in the traditional welfare sense, cannot be achieved in a democratic society.[34]

Since we can expect that uncertainty and information cost will be minimal at the local level, the Downs theory suggests that local government policies would tend to be redistributive and favorable to the lower end of the income distribution. However, this conclusion

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[33]This argument ignores the plausible points made by contemporary radical thought that wealth controls the media which molds the preferences of the masses. It also ignores milder criticisms such as in Due, Public Finance, pp. 25-26, that information is more accessible to higher income groups and thus these groups will have a disproportionate influence on public policy.

[34]Ibid., pp. 202-203.

is invalid in a context where both citizens and local governments have alternative means for achieving their goals, namely, migration and the opportunity to design their own communities. The existence of multiple local governments in a metropolitan area thus changes the possibilities for achieving efficient consumption (defined as the fulfillment of consumer's maximization goals given income constraints), implies different conclusions about the redistributive effect of public policy and widens the scope of activity for local public policy-makers. These issues are fundamental to this thesis.

As other work of importance on this topic is the Buchanan and Tullock book, The Calculus of Consent.[35] They design a theory of individual maximization as it affects political decision-making, dealing mainly with constitutional issues. Their stringent assumptions suggest that according to the self-interest postulate, no redistribution would take place in the public sphere. However, they point out that citizens may opt for redistributive rules in government as insurance for a future time in which they might potentially be recipients.[36]

Since government policy clearly is redistributive, Buchanan and Tullock continue, each issue therefore has two sets of costs and

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[35] James M. Buchanan and Gordon Tullock, The Calculus of Consent (Ann Arbor: University of Michigan Press, 1962).

[36] Actually the converse of this may be the better description of reality. Milton Taylor suggests that households may oppose redistribution because they believe that they may be richer in the future and thus lose out.

benefits for the citizens—one set redistributive and the other allo-
cative. One interesting conclusion is drawn from this:

> The impact of these expected redistributional ex-
> ternalities on the individual calculus could
> scarcely be overemphasized, for it seems to be
> this expectation which causes the individual to
> refrain from assigning to the collective sector
> many activities which he would tend to collec-
> tivize if such externalities were absent ... If
> such projects are to be financed, or if the indi-
> vidual expects them to be financed out of general
> tax revenues, the redistributional externalities
> expected may well be sufficiently large to offset
> the allocational externalities that may be
> continued by failure to undertake coordinated
> development.

Unfortunately, with this brief nod to the entanglement of these

two issues, the subject of distribution is dropped. Elsewhere

Buchanan and Tullock acclaim the virtues of government decentraliza-

tion and locational choice, echoing Tiebout's analogy between com-

peting political units and competitive market forces.[38]

An attempt to test the basic theses of Downs, Tullock, and

Buchanan was made by James Barr and Otto Davis.[39] However, in the

process of distilling the theory to get testable propositions, they

lose most of its essence. In their haste to find a manageable

utility function for individual voter-consumers to maximize, they

assume that each maximizes over private market goods and local public

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[37] Ibid., p. 198.

[38] Ibid., p. 114.

[39] James L. Barr and Otto A. Davis, "An Elementary Political and
Economic Theory of the Expenditures of Local Governments," Southern
Economic Journal, XXXIII (October, 1966), pp. 149-165.

expenditure:

> The imperfect procedure adopted here simply is to
> presume that any utility function has as its argu-
> ments private goods and the (by assumption only one)
> expenditure of the local government. While it may
> be true that voters are concerned only with that
> portion of governmental expenditures which provide
> those goods and services which they consider them-
> selves to be consuming, it appears appropriate to
> abstract from problems related to the manner in
> which governmental goods and services are distributed
> (and also produced).[40]

This "abstraction," combined with a very simplistic assumption

about the renter awareness of property tax burden, results in optimiz-

ing solutions for individual such that "if the ith voter-consumer

is not a property owner, then he will view the municipal expenditure

as a 'free good' and will desire that value of x to be selected which

equates his marginal utility of the expenditure to zero."[41] Con-

versely, the voter-consumer who is a property owner will select a

level of public expenditure which equates the ratio of her marginal

utility for public expenditure to her property taxes with the ratio

of her maginal utility for private goods to their prices.

The authors hypothesize that the successful politican must

approximate the ddsires of owners of median property values in a

community (all residents have identical utility functions), and that

an inverse relationship should be expected between the expenditure

per capita of a community and its corresponding median property

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[40]Ibid., p. 151.

[41]Ibid., p. 152.

ratios,[42] a high proportion of home ownership having a depressing influence on expenditure. The hypotheses are further emasculated by substitution of surrogates for the proposed variables, resulting in vague testable hypotheses which could represent any of a number of theories.

Attention is paid to this piece of work here simply because it is the only known attempt to test the political theories of the Downs-Buchanan type. Its flaws are obvious.

A discussion of economic theories of politics would not be complete without a reference to Lenin's work, State and Revolution.[43] Lenin's theory, drawing strongly on Marx and Engels, is that government is not a contract of reconciliation between individuals with different interests, but the manifestation of irreconcilable class conflicts, where the state develops as the tool of the oppressing class. Even in democratic countries, power inevitably is wielded by those who have wealth, since wealth has the means of permeating the government machinery and using it for its own ends. As Marx said, universal suffrage simply means the opportunity for the oppressed classes to go to the polls once every few years and vote for a member of the ruling class to represent and repress them in the

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[42]A community's median property ratio is simply the ratio of median property value of homeowners to total property value in the community.

[43]Vladimir I. Lenin, State and Revolution, in The Essential Works of Marxism, ed. by Arthur Mendel (New York: Bantam, 1961), pp. 103-198. Originally published in 1917.

legislative body.

In Lenin's eloquent words,

> Democracy for the rich—that is the democracy of
> capitalist society. If we look more closely into
> the machinery of capitalist democracy, we shall
> see everywhere,... restriction after restriction
> upon democracy. These restrictions, exceptions,
> exclusions, obstacles for the poor, seem slight
> especially in the eyes of one who has never known
> want himself and has never been in close contact
> with the oppressed classes in their mass life ...
> But in their sum total these restrictions exclude
> and squeeze out the poor from politics, from active
> participation in democracy.[44]

If Lenin were here today, touring the new suburban phenomenon,

which did not exist in his day, he would continue his condemnation

along these lines. Lenin would see suburbia as the consolidation of

bourgeois power in the public and social sectors. By isolating them-

selves from the larger and more representative urban society, the

wealthier groups escape the possible consequences of a coalition of

an angry urban working class, Blacks, the unemployed and the elderly

poor who might vote for large public benefit programs at their ex-

pense and make inroads on the class structure. Such an escape is

easiest at the local level, but also more critical, because democracy

works best here; at higher levels, while such coalitions are pos-

sible, political distance and aggregation blunt their attack.

Suburban enclaves also prevent participation by lower income

groups and classes (e.g., Blacks) in quality public service programs

like education. By insulating their tax funds within suburban borders,

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[44]Ibid., p. 170.

wealthier groups can insure that their children will receive the superior educations and thus preserve the class structure. Furthermore, the social fabric of the suburbs, with its emphasis on conspicuous consumption, accumulation of durable goods, respect for private property, business clubs, college educations, and good jobs, provides a perfect acculturating atmosphere for children.

Suburbia is thus both a community and a local government dedicated to preserving bourgeois class structure. Furthermore, its development, in Leninist terms, was inevitable since the egalitarianism of the public sector threatened to diminish class distinctions and the power of the wealthy.

It is useful to note that the Marxist view disagrees outright with Tiebout and Buchanan's view of the nature of the utility functions. The latter believe that people do have unique and varied preferences, so that even when everyone has the same income, individuals desire different allocations of resources. Their strong endorsement of political democracy and fragmented local government as efficiency generators rests primarily on this assumption. The Marxist analysis, on the other hand, suggests that preferences are not unique, but are conditioned by class, so that members of each productive group can be expected to have similar preference patterns. For instance, as a family moves "up" in capitalist society, it moves to a house and neighborhood that advertizes its economic position, not to one which it innately prefers. Indeed, this behavior is probably essential to maintaining its job and economic position.

Under such circumstances, the division of the population into

separate local governmental units can reflect only the differentials

in income and wealth, and the desire to preserve them.[45]

This thesis will try to reconcile the Marxist view with our

conventional tools for analysis. One of the questions it seeks to

answer is whether or not we can expect that wealth and wealth-

preserving behavior will inevitably undermine the pursuit of egali-

tarian goals in our society.

E. The Exploitation Hypothesis

Work on an explicit hypothesis of suburban exploitation of the

central city has been done by William Neenan.[46] His first formula-

tion of this concept appeared in 1970, in a study in which he attempted

to measure the benefit flows between Detroit and six of its suburbs.[47]

Neenan points out that there has been a surprising reticence

among public finance experts to admit that suburbs exploit the

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[45] Despite the reliance of conventional economics on diversity
for significance, the assumption of identical utility functions is
actually quite common, especially in operationalizing theory.

[46] For references to previous work along these lines see William
Neenan, Political Economy of Urban Areas (Chicago: Markham, 1972),
pp. 57-60; Dick Netzer, "Federal, State and Local Finance in a
Metropolitan Context," in Issues in Urban Economics, ed. by Harvey
Perloff and Lowdon Wingo (Baltimore: Johns Hopkins Press for
Resources for the Future, Inc., 1968), p. 438; or Wilbur Thompson,
A Preface to Urban Economics (Baltimore: Johns Hopkins Press for
Resources for the Future, Inc., 1965), p. 290. While the term
"suburban exploitation thesis" was coined previous to Neenan, he is
the first to elaborate upon it and advance it to the stature of a
theory.

[47] William Neenan, "Suburban Central City Exploitation Thesis:
One City's Tale," National Tax Journal, XXIII (June, 1970), pp. 117-139.

central city. He quotes Margolis:

> The argument that central cities are exploited by
> the noncentral cities is not well established. If
> anything, central cities may be relatively better
> off.[48]

This argument is based on the observation that while a central city's

facilities have a high use rate during the day, supporting suburban

commuters, the intensity of land use in the central city that para-

llels this activity provides an enriched fiscal base in the form of

higher property values.

Neenan sets out to measure what he terms the "citizen's surplus,"

the difference between perceived benefits and perceived tax liability.

He constructs a benefit profile for residents of six Detroit suburbs,

including the "free" services they receive from Detroit (museums,

the zoo, etc.), the avoidance of welfare-related services, and the

uneven benefits impact of indirect public subsidies like tax exemp-

tions. Weighing this against taxes and intrametropolitan transfers,

he finds that a suburban family receives between $7.00 and $50.00 a

year in uncompensated benefits from Detroit. He then suggests

compensation with revenue-sharing and a non-residential income tax.

In 1972, Neenan published his Political Economy of Urban Areas.[49]

[48] Julius Margolis, "Metropolitan Finance Problems: Territories, Functions and Growth," in Public Finances, Needs, Sources and Utilization, ed. by James Buchanan (Princeton: Princeton University Press, 1961), pp. 229-270.

[49] William B. Neenan, Political Economy of Urban Areas (Chicago: Markham, 1972).

The book is an expansion of the exploitation hypothesis, designed to propose concrete corrections in the fiscal structure.

Neenan builds a model of individual consumer maximization in order to develop the concept of fiscal residuum, which is the consumer's perceived benefits over her perceived tax. The model implicitly includes recognition that her tax will depend on costs and the incomes of other consumers of public services, but these determinants are not expressed in a way which permits analysis of each influence independently, nor of the potential conflicts between the two and the resulting behavior of citizens and governments. In addition, Neenan explicitly disregards the influence that socio-economic characteristics of a community may have on the supply functions for basic services.[50]

Neenan develops a measure of benefits, which is essentially a cost-of-service (expenditure) measure modified by a willingness-to-pay multiplier. With this measure, tax data and his estimates of intrametropolitan revenue and benefit flows, he designs a revenue sharing system to compensate for the exploitation. He can be credited with being a pioneer in this effort; very few revenue sharing proposals, including the recent national one, have tried to use real needs and imbalances as the allocative criteria for shared funds.

Of greater interest to this thesis is the chapter in Neenan's

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[50] Ibid., pp. 87-92.

book where he deals with equity and efficiency considerations. In order to term one situation exploitative, he says, we have to have some non-exploitative benchmark. His basic contention is that it is impossible to talk about efficiency in the public sector without first establishing a normative guide.

> ... an explicit equity judgment is required before central city-suburban public sector interactions can be analyzed in terms of efficiency. Although the relation between (1) income distributional patterns and (2) relative price structures and the optimal supply and mix of metropolitan public services are admittedly theoretically pertinent, they will be disregarded in this chapter. However, a judgment will be made regarding the "correct" legal structure.[51]

Neenan's normative benchmark is that the welfare distribution should be the same across the metropolitan area as in the absence of any public service sector, and public services introduced only if a majority of metropolitan residents then vote for the new tax and expenditure program. He demonstrates that if individuals are free to migrate to maximize their own fiscal residuum, there will be a decrease in the total fiscal residuum across the metropolitan area, a situation which represents inefficiency. Thus, even without externalities, the existence of differing fiscal resources can impede the achievement of efficiency over the whole area. Therefore, a transfer should be made from the richer to the poorer jurisdiction to prevent an inefficient solution.[52]

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[51]Ibid., p. 167.

[52]Note the resemblance of this outcome to the Buchanan and Wagner case examined above.

The normative criterion is very important here. Without it, if one takes an already fragmented metropolitan area in which numerous units are providing public services, it is impossible to judge the equity of the situation, for the formation of those units and their impact on distribution has been ignored. One of Neenan's observations justifying his use of the benchmark is:

> It is contended here that the mere fact of residence in a rich community rather than a poor community establishes no property right in the public sector benefits that accrue to high income communities. The fact of such residency constitutes merely a windfall gain judged in reference to an initially "neutral" welfare distribution in a metropolitan area.[53]

This point of view is applauded and espoused by the writer of this thesis.

Neenan realizes that his concept of fiscal residuum is extremely hard to measure.

> The introduction of such real world factors as legal and extra-legal barriers to migration, the immobility of resources, general equilibrium interactions with the private sector and capitalization of fiscal phenomenon make the question of quantifying the fiscal residua for metropolitan areas extremely problematic.[54]

Since his interest is in the quantification, he has had to take some rather crude steps in the analysis to proceed from consumer maximization to his concept of fiscal residuum to its measurement and the derivation of compensation principles. The theoretical

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[53]Ibid., p. 183.

[54]Ibid., p. 183.

model for deriving and comparing fiscal residua requires that income levels are equal, utility functions identical, tax structure the same, distribution and cost functions the same and that no externalities exist. With these assumptions, the fiscal residua can be measured as the difference between the perceived benefits (above) and the per capita tax base, modified by a tax-exporting factor.

> Thus based on both per capita property values and an index of tax-exporting, and overlooking the possibility of differential congestion costs, and supply conditions, it appears that Detroit residents may receive a somewhat smaller fiscal residua than do their equals in other metropolitan areas.[55]

Neenan's work is laudable in precisely this tremendous effort to generate a useful criterion and measure for the exploitation which is obviously going on. This thesis hopes to go beyond Neenan's work by developing a more inclusive theoretical model, by examining in particular the behavior of citizen groups and local government decision-makers, and by concentrating more on an historical framework for analysis.

F. **Demand, Supply and Location Factors in Local Government Output**

Several people have dealt with local economic issues in a way which includes recognition of differential cost factors, supply factors, and demand elements among local governments. These few studies are pioneers in rejecting the theory that local governments simply respond to exogenous cost and income conditions when

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[55]*Ibid.*, p. 189.

determining output levels.

Jerome Rothenberg has approached the problem of local government in the metropolitan area from within the framework of location theory.[56] He has tried to build a model to explain the pattern of residential and commercial location in an urban area which includes the influences of the local government sector. His model examines the location decisions that a household and business will make and the responses to those decisions by city and suburban policy-makers.

This model assumes that all residents of the area have the same preference function, which varies with income. Each family chooses to locate in one of two communities--the city or the suburb. There are five differential costs (or advantages) which distinguish the suburb from the city:

1. Privacy – more space per family, at a higher cost of accessibility.

2. Welfare Redistribution – the evasion of welfare-related services which the family achieves by moving to the suburb.

3. Public Service Consensus – the suburb is _assumed_ to be richer (median income higher) than the city and more homogeneous (less disparity in incomes). Therefore a family with an income higher than the median in the city will gain by moving to the suburb where its demand for public services will be similar to its neighbors and its share of the tax burden will be lighter.

4. Externality Induced Tax Burden – the suburban evasion of taxes for public services which the city supplies but which can be enjoyed by commuting suburbanites.

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[56] Jerome Rothenberg, "Strategic Interaction and Resource Allocation in Metropolitan Intergovernmental Relations," _American Economic Review, Papers and Proceedings_, LIX (May, 1969), pp. 494-503.

5. Minimum Lot Size – a potential disadvantage to moving to the suburbs. However, it is a cost only to those who would have preferred a smaller lot size; for these households it represents a purchase (and maintenance) cost constraint.

Each family weighs these advantages and disadvantages and decides whether it will gain, given its budget, by moving to the suburb.

Rothenberg notes that on balance, these five location factors benefit higher income groups:

> The impact of this is that the suburbs will tend to attract chiefly the highest income classes (having assumed away demographic differences among households). The suburbs will tend to be a high income, highly homogeneous community relative to the city. It is clear that minimum lot zoning is a device that enhances the strength of the other suburban advantages.[57]

Rothenberg also points out that the highest income groups will be the first to migrate to the suburb, since the benefits for them are greatest. The sequential pattern of metropolitan migration will be from the richest on down. The larger the suburb gets, the less the advantage to the next migrant. Each successive entrant decreases the average level of privacy, the strength of the public service consensus, and the degree of insulation from income redistribution; at some point, the minimum lot size constraint will become operative. The utility gain for each successive migrant diminishes. When the advantage to the next migrant equals zero, then the equilibrium size of the suburb is determined.

Having formulated the individual decision-making function,

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[57]Ibid., p. 499

Rothenberg turns to the responses by city and suburban governments.
He assumes that the city has two policy instruments: the ability
to recover externality costs from suburbanites (the form of this
recovery is not specified) and a property tax rate. The suburb has
a property tax rate instrument and zoning powers. Both governments
are assumed to maximize the total value of land within their juris-
dictions. With this model, Rothenberg derives values for the policy
instruments for both city and suburb, the maximum land value for
the area and optimal size for each. Since each set of prescribed
policies depends on the choices of the other government, Rothenberg
points out that the results need reaction function analysis to see
if the behavior of the two converges to some equilibrium point.

The strength of Rothenberg's model lies in its inclusion of the
income and welfare cost redistribution which does occur in the dy-
namics of fragmented local government. The model does not contend
that a more efficient allocation of resources is achieved through
competing local governments, but simply that certain groups derive
"benefits" from its existence. "Benefit" includes redistributive
gains as well as a better family income allocation pattern.

Rothenberg's model would be better if it included an analysis
of the dual role of local government (determining an appropriate
level of public services and capturing distributional gains) and the
possible policy conflicts arising from it. Could the incentive to
use land use policies, zoning and building codes for insulation from
area-wide redistributive forces constrain the ability of the local

public sector to act as a firm marketing a product mix and facilitating consumer choice? In addition, his characterization of local government behavior is weak (maximizing land value). The restriction of the model to only two governments—one central city, one suburban—leads to an equilibrium solution which may not in actuality characterize the competition among numerous suburbs and the central city. Finally, Rothenberg's work lacks historical suggestion as to how the situation arose in the first place. This thesis will examine the possibility that fragmented local governments appeared and have been maintained partly because of the escape from redistribution which they provide for groups of differing income and sociological characteristics.

One of Rothenberg's students, Bryan Ellickson, has worked on the problem of redistributional benefits in location decisions.[58] He notes that most public finance work has resulted in the advocacy of either larger local units of government, or further fragmentation, while in reality we observe rigid and unchanging jurisdictional boundaries. He feels that the lack of realism in such proposals stems from the failure to include motives for residential location in this analysis.

Ellickson includes in his model a conception of the dual role of local government:

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[58]Bryan Ellickson, "Jurisdictional Fragmentation and Residential Choice," American Economic Review, Papers and Proceedings, LXI (May, 1971), pp. 334-339.

> ... we must investigate the impact of local govern-
> mental structure not only on allocative efficiency
> but on the extent of redistribution from rich to
> poor as well.[59]

He views the relationship between government and its citizens as

simultaneous; the nature of government policy both attracts resi-

dents to the community and is affected by their votes once they are

there.

Ellickson then suggests the elements of a general equilibrium

model for a metropolitan area, but stops before formulating the

equations for it, as it is too formidable, and merely _assumes_ that

communities will stratify by wealth. He does make an important

observation, however:

> The stability of perfect stratification hinges
> crucially on the nature of household preferences
> and the method by which local public services are
> financed.[60]

Collusion, through exclusionary zoning, further enhances the strat-

ification tendency.

Ellickson then cites several recent studies as evidence for

stratification and homogeneity. Regretably, he does not attempt to

test for the existence of these phenomena himself. This thesis, in

addition to alluding to similar existing evidence, will try to

employ both statistical and historical evidence in its support.

Of all the diverse sources quoted in this Review, Ellickson

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[59]_Ibid._, p. 334.

[60]_Ibid._, p. 339.

comes closest to posing the problem which this thesis addresses. While the present work approaches the problem in a different manner, it owes a debt to Ellickson for pointing out that distributional motives are indeed operative in community choice and that such motives may lead to stratification and homogeneity. This thesis will examine in greater detail the relationship between allocational and distributional motives for an individual household in choosing a community and will construct a theory of governmental behavior from the implications of the former.

Byron Brown's work on educational finance includes some novel approaches which this thesis will build upon. Brown's objective is to assess the suitability of "achievement level" as a measure of educational output, to survey the variation in school district behavior across the state of Michigan.[61] and to judge the effectiveness of school aid formulas for achieving equality of educational opportunity.[62]

Brown's model assumes that the school district maximizes its social welfare function, choosing between education and private goods. He employs two constraints in the maximization: the traditional budget constraint (school district resources), and the

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[61]Byron Brown, "Achievement, Costs, and the Demand for Public Education," Western Economic Journal, X (June, 1972), pp. 198-219.

[62]Byron Brown, "State Aid and Equality of Opportunity in Education," Review of Social Economy, XXIX (September, 1971), pp. 218-226.

production function for education. In other words, he recognizes that school districts are producers as well as consumers of educational output, and that they make decisions about the _inputs_ into production within their maximizing behavior. Furthermore, the production function he develops includes two sets of inputs: paid-for inputs, such as teachers, class size, etc., and unpaid-for inputs, or the socio-economic characteristics of the students themselves. Students are thus the "raw material" of the educational process, with their class, social and family backgrounds. The output of a year of education will vary greatly between two unequally equipped school districts with the same set of "paid-for" inputs.

Using this model and the reduced forms derived from it, Brown estimates demand and cost functions for education from cross-sectional data for Michigan. He finds that his assumed output measure, cognitive achievement level, does not fare well in the analysis, suggesting that the real output of education may be something entirely different, such as cultural and psychological adjustment and class indoctrination. Furthermore, he finds (as others have previously) that expenditures on the paid-for inputs are not significantly related to the output variables, but instead that the socioeconomic inputs have much greater explanatory power for predicting the behavior of the school district.

The Brown model is a short-run model in the sense that it assumes the socio-economic characteristics, which are integral to his analysis, as exogenous, and surveys the implications of his model

cross-sectionally. This thesis hopes to examine the impact of
Brown's strategic variables on individual behavior in choosing a
community and in "protecting" it through the politics of local
government. Hopefully, some understanding of this will throw light
on a historical pattern which has led to the present disparities
which Brown notes in his work.

G. Empirical Fabrications

With the exception of those few empirical studies mentioned
above in relation to specific theories, most empirical work done on
local government output has been of an ad hoc variety, purporting
to explain the variation in state and local expenditure patterns.
These studies are mentioned here as a contrast to the work reviewed
above, and because they have received such widespread attention in
the literature.

The expenditure differential studies originated with a detail
in a book by Soloman Fabricant published in 1952.[63] Fabricant, as
an exercise in support of a verbal argument about the influences on
the local budget, regressed interstate variation in operating ex-
penditure per capita on three explanatory variables: per capita
income, population density, and percantage of state population in
urban areas. His results were good in the statistical sense; his
variables explained 72 per cent of the variation. Of this exercise,

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[63]Soloman Fabricant, Trend of Governmental Activity in the
United States Since 1900 (New York: National Bureau of Economic
Research, 1952).

Fabricant notes, "The readers will discover that the following analysis is rather more technical (and tentative) than that in preceding chapters. It may be skipped without losing the main thread of the discussion."[64]

Nevertheless, there followed a plethora of studies which tried to improve upon this exercise. Improvements included adding more explanatory variables and changing the functional form. It is the writer's opinion that the popularity of such studies lay not in their usefulness or correspondence to reality, but in their coincidence with an era enamored with the use of statistical technique in economics, and the need to publish something, of whatever quality. A brief description of these studies follows, with concluding remarks on the general weaknesses of this approach.

Glenn Fisher was the first to re-run Fabricant's regression.[65] He used the same model for the analysis of 1957 interstate variation in per capita expenditure with similar results.

Additions to the right-hand side of the equation were made by Seymour Sacks and Robert Harriss in explaining interstate variation for 1960.[66] They added both state and federal aid as independent

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[64]Ibid., p. 112.

[65]Glenn Fisher, "Determinants of State and Local Government Expenditures: A Preliminary Analysis," National Tax Journal, XIV (December, 1961), pp. 340-355.

[66]Seymour Sacks and Robert Harriss, "The Determinants of State and Local Government Expenditures and Intergovernmental Flows of Funds," National Tax Journal, XVII (March, 1964), pp. 75-85.

variables and found that this increased the explanatory power of the regression.

Glenn Fisher again attempted to explain interstate variation in state and local expenditure levels for 1960 data, this time postulating a diverse collection of variables under three main categories: economic, demographic and socio-political. Out of these he hand-picked those which gave him the best results, eliminating the "overlapping" variables in his kitchen sink.[67]

Ernest Kurnow, objecting to the linear form of previous regressions, substituted a joint regression model ($Y = aX_1^{b1} X_2^{b2} X_3^{b3} \ldots$). He claimed to get better results than his predecessors.[68]

In 1967, Ira Sharkansky decided that what was missing in the regression equation was an additional independent variable, last year's expenditure. By including this "independent" variable in the equation, he "explained" over 90 per cent of all variation in expenditure differentials for the present period.[69]

While the above studies all deal with interstate variation in aggregated state and local expenditure, similar studies have been

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[67]Glenn Fisher, "Interstate Variation in State and Local Government Expenditures," National Tax Journal, XVII (March, 1964), pp. 57-74.

[68]Ernest Kurnow, "Determinants of State and Local Expenditure Re-examined," National Tax Journal, XVI (September, 1963), pp. 252-255.

[69]Ira Sharkansky, "Some More Thoughts About the Determinants of Government Expenditures," National Tax Journal, XX (June, 1967), pp. 171-180.

used to explain differences in levels of public expenditures among
cities and local governments. The 1951 pioneer study by Brazer
of expenditure levels across 462 cities is perhaps the most well
known;[70] he found that population density, median family income
and intergovernmental revenue were the variables most closely cor-
related with expenditure levels.

In 1957, the Scott and Feder study of 192 California cities
found that property value per capita, retail sales per capita, pop-
ulation growth and median number of persons per dwelling unit ex-
plained a large part of inter-city variation.[71]

Woo Sik Kee attempted to add certain socio-economic ahracter-
istics to an analysis of differentials in fiscal effort between
local governments and found that, in addition to income per capita
and the level of state grants, the difference was explained by the
ratio of employment to resident population, a commuter proxy.[72]

Recently, a study of local expenditure levels in Ontario by
Ronald Bodkin and David Conklin found that expenditure differen-
tials were explained chiefly by population, per capita property
assessment, population density, and per capita provincial and

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[70]Harvey Brazer, City Expenditure in the United States (New
York: National Bureau of Economic Research, 1959).

[71]Stanley Scott and Edward Feder, Factors Associated with
Variations in Municipal Expenditure Levels (Berkeley: Bureau of
Public Administration, University of California, 1957).

[72]Woo Sik Kee, "City-Suburban Differentials in Local Govern-
ment Fiscal Effort," National Tax Journal, XXI (June, 1968),
pp. 182-189.

dominion aid.[73]

A number of common criticisms can be levied against these studies. Most serious, in the view of this writer, is the failure to construct a meaningful economic theory about the differences between expenditure levels of local units of government. The "results" of the multiple regression analysis are therefore not tests of any hypotheses but merely answers to technical, ad hoc exercises. Werner Hirsch points out that in order to mean something, such studies should hypothesize the relationship between expenditure and the supply and demand for local public services. The two most important "determinants" of local expenditure as found in these studies, local fiscal capacity and federal-state aid, do not fit well into either cost or demand theory.[74]

Secondly, the general methodology of these studies is appalling by the most primitive of econometric standards. Among the more serious errors is the claim that "explanation" is increased by regressing a variable on what is essentially a component of itself.[75] The use of state and federal contributions to local expenditure as an independent variable "explaining" local expenditure levels is of

[73]Ronald Bodkin and David Conklin, "Scale and Other Determinants of Municipal Expenditures in Ontario: A Quantitative Analysis," International Economic Review, XIV (October, 1971), pp. 465-481.

[74]Werner Hirsch, "The Supply of Urban Public Services," in Issues in Urban Economics, ed. by Perloff and Wingo, pp. 477-525.

[75]Elliott Morss, "Some Thoughts on the Determinants of State and Local Expenditures," National Tax Journal, XIX (March, 1966), pp. 95-103.

this genre. Another highly suspect maneuver is the addition of
last year's expenditure as an explanatory variable for this year's
expenditure. There is also criticism of the use of explanatory
variables which are closely related without considering the multi-
collinearity problems associated. Fabricant's original use of popu-
lation density and percent population in urban areas as independent
variables is an example.[76]

Third, most of these studies have been confined by data unavail-
ability to examining the differentials between states or between
larger cities within states, and not urban-suburban differentials.
Therefore, the results may have little importance for highlighting
intra-metropolitan differences.

Fourth, all of the studies use state and/or local expenditure
as a measure of output, despite apologies about its unfitfulness.
This is inadequate and misleading. It results in predictions such as
that made by Jesse Burkhead[77] that since expenditure and tax levels
in the Cleveland metropolitan area are becoming more uniform across
local units, there may be less resistance to metropolitanization
in the future. This will be true only if expenditure levels accur-
ately reflect the real satisfaction that residents gain, and it is

[76]See Harvey Brazer, "State and Local Public Expenditures and
'Needs'," in Financing State and Local Governments, Federal Reserve
Bank of Boston, 1970, for a longer discourse on the econometric
weaknesses of these studies.

[77]Jesse Burkhead, "Uniformity in Governmental Expenditure and
Resources in a Metropolitan Area: Cuyahoga County," National Tax
Journal, XIV (December, 1961), pp. 337-348.

highly unlikely that this will be so.

Unfortunately, these studies, in the absence of any extensive empirical test of Tiebout and alternative theories, have served as an implicit and subtle body of evidence for the Tiebout hypothesis. As Fabricant found, income differentials are the major factor in "explaining" expenditure differentials, and no subsequent study has unearthed a more significant influence. This can be viewed as indirect support for the Tiebout hypothesis; nomopolistic competition provides alternative public service packages that tend to attract and sift out the various income groups in the population. However, the same observation can be used to support a more comprehensive theory such as that suggested by Rothenberg and Ellickson, and that developed in this thesis.

An exception to the lack of theorizing accompanying expenditure studies is work done by James Henderson.[78] Henderson postulates that local decisions about tax and expenditure levels are made by maximizing some perceived community welfare function. The community gains satisfaction from both public and private goods, the latter represented by expenditure level; the utility gained from public expenditure is in turn a function of the level of per capita income, population size and revenue forthcoming from higher levels of government (voila! the familiar variables). Henderson constructs a logex

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[78]James Henderson, "Local Government Expenditures: A Social Welfare Analysis," Review of Economics and Statistics, L (May, 1968). pp. 156-163.

utility function, which is additive between public and private goods, and proceeds to run a two-stage least squares multiple regression on the reduced forms. The results, needless to say, are edifying.

In addition to his omission of any analysis on the construction, politically or economically, of this community welfare function, Henderson does not really do much more than his predecessors who merely ran ad hoc regressions on expenditures. He makes no effort to defend his particular choice of a community utility function, a matter which is of utmost importance, since entirely different results can be obtained with alternative forms. One cannot help but suspect that his "model-construction" is merely a form of empty one-upmanship.

H. A Nod to Political Scientists

Political scientists, too, have had their debates over the suitability of fragmented local government in the metropolitan area. Robert Warren notes:

> Students of government, planners and civic leaders have produced numerous studies, articles and books during the last 40 years which have found that de-centralized systems of government are not respon-sive to, or capable of meeting the needs of, metro-politan populations ... A common point of agreement in the literature has been that the decentralization or Balkanization of governmental decision-making authority within the same population center is the primary cause of the metropolitan problem ... Its performance is characterized by the uneven alloca-tion of fiscal resources, differing levels of service, economically inefficient scales of organ-ization, benefit-cost discrepancies, unresolved regional problems, and the lack of a mechanism to

allow controlled and rational growth and to de-
termine and implement regional policies.[79]

Warren himself suggests the political scientist's counterpart to
Tiebout's argument, that the market mechanism is theoretically a
beautiful device for providing for the efficient allocation of re-
sources and the satisfaction of diverse preferences, and that it can
and is being applied at the local level of government. Decentralized
government is viable, he claims, and contrary to the decades of dire
predictions, has not lead to breakdown and failure in the public
sector. Not only is it viable, but it has been seriously underesti-
mated and actually may be far superior to metropolitan-wide schemes.

The opposite viewpoint is espoused by Robert Wood, one of the
members of the New York Metropolitan Region Study.[80] He claims that
fragmented local government has prevented the achievement of public
service goals both on equity and efficiency grounds. Furthermore,
the corrective he proposes--metropolitan government--he fears is not
achievable in a setting where each political unit operates in its
self-interest and has something to lose. Having made a strong case
for metropolitan-wide government, he reluctantly concludes that the
chances of attaining it (a revolution, in his words) are slim, since
it would require certain groups sacrificing their own self-interest

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[79]Robert Warren, "A Municipal Services Market Model of Metro-
politan Organization," _Journal of the American Institute of Planners_,
XXX (August, 1964), p. 195.

[80]Robert C. Wood, _1400 Governments_ (Cambridge: Harvard Uni-
versity Press, 1961).

for gains to the whole population. "We simply record that we know of no other time when a revolution took place when the existing system was solidly established and its citizens, as they understood the goals of their domestic society, content."[81]

I. A Wrap-up

In closing this chapter, it is helpful to summarize the limitations of what has gone before; this listing will sketch out, like a silhoette, the departure point for this thesis. The problem is the determination of the economic role of a local government in an urban area. It is a firm-like agency which produces public services efficiently under the compulsion of consumer covereignty operating through market choice? Or is its function more complex, even contradictory, to this view?

In general, this review of the literature indicates that in most economic work the analysis has not employed realistic behavioral postulates about individual household behavior in response to public sector location incentives. This has led to incorrect conclusions about the function of fragmented governments. When realistic (meaning inclusive of distributional considerations) behavior has been allowed, it usually has been treated as an unpleasant problem, and in any case has not led to a comprehensive theory of the translation of such behavior and incentives into local government policy.

The economic performance of local government also has not

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[81]Ibid., p. 199.

adequately been described by the existing theories. Its effectiveness on three traditional economic counts—allocative efficiency, distribution and stability—has not been established. In addition, the theories advanced to date have never been adequately tested. The empirical work done on local public sector finance, purporting to explain differences among units, actually casts no light on these theories; they cannot be considered hypothesis testing, but rather resemble ad hoc searches for "explanation."

This thesis attempts to improve on the behavioral postulates and their implications, and to arrive at a better prediction of performance, which it will test, however crudely. With a thanks to the thought-provokers reviewed in this chapter, we will proceed with our model.

CHAPTER III

LOCAL GOVERNMENT OUTPUT AND CITIZEN

LOCATION DECISIONS

In this chapter we shall develop a simple model to use in
examining the individual citizen or family's response to the local
public sector in their choice of, and satisfaction with, a community
in which to reside. The analysis here is conventional. The use of
contemporary consumer theory will enable us to point out the errors
in the conclusion, drawn from the same theory, that a multiplicity
of local governments necessarily facilitates the fulfillment of
individual preferences with respect to a public/private product mix
and thereby works in favor of efficient resource allocation.

A. The Assumptions

The following assumptions are made for any local community of
n decision-making units, or households:

1. Utility Functions

Each household derives utility (pleasure) from the consump-
tion of two goods, one publicly produced within the community
and the other privately produced and purchased on the private
market.

Equation 1. $U_i = u(P_i, G_i)$, for all i

where U_i: utility of household i

P_i: consumption of publicly-produced good,
P, by household i

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Gi: consumption of private good, G,
by household i

<u>a</u>. The function is non-additive with respect to G and P; that is, the satisfaction obtained from the consumption of one good depends on the level of consumption of the other. This is more realistic than assuming additive utility functions. The latter, such as $Ui - Pi + Gi$, argues that you are indifferent between one orange and forty-nine apples, or twenty-five of each. Clearly, most of us prefer the balanced fruit diet to the unbalanced. Thus we represent the function as $Ui = f(Pi,Gi)$, such as $PiGi$, Pi^2Gi^2, etc. Other forms will be considered below.

<u>b</u>. The utility function is identical for all households. This is a strong statement, for obviously the question of preferences is central to this thesis. However, we do not need this assumption to validate the argument, but for ex-positional purposes we will employ it for its simplicity. Later on, we will see what happens if we assume that indi-viduals do indeed have "unique" preference functions. For now, we crudely postulate that each person desires about the same proportion of public and private goods. This limits us only to saying that all poor people have about the same priorities between crime prevention and food, and that all wealthier groups have about the same priorities; how-ever, the poor may have very different priorities than the

rich within the bounds of this assumption.

c. Each household's utility is independent of its neigh-
bor's; that is, Ui ≠ f(Uj). This is merely the formal ex-
pression of the Selfish Man Assumption, devoid of altruism
or "keeping up with the Jones," institutionalized in the
competitive economy. In general, people do not ostensibly
derive satisfaction from the educational gains of others in
the community nor from better protection of other neighbor-
hoods; they are concerned only with their own. Alternative
assumptions will be considered below.

d. Both Gi and Pi are "goods," that is, they are positive
wants. The consumer's pleasure increases with more of
either.

2. Production Function

The production of Gi takes place outside of the community,
since the community is negligibly small with respect to the
market producing the goods it consumes. The production of Pi,
however, takes place within the community. The local government
is the collective decision-making unit, functionally analogous
to the firm. Its approval of a yearly budget constitutes the
determination of the level of public output as its corresponding
tax price. It produces the output, P, for the whole community,
from one purchased input, R, and two "free" inputs, H and T:

Equation 2: $P = f(R,H,T)$

where R: quantity of purchased input

H: community handicap index

T: community rip-off factor

a. R is conveniently visualized as labor, since payroll comprises the bulk of local budgets. Capital outlays and other inputs can be included by simply expanding the expression for multiple inputs. Over the output range considered, we assume that output will increase with additional purchased inputs, $\partial P/\partial R > 0$.

b. The handicap factor is an index of unpurchased inputs into production. The level of public safety, for instance, is influenced not only by the size of the police force and the shine of their badges, but also by the incidence of narcotics in the area, the incidence of broken families, the local unemployment rate, the presence of repeaters, and the shape of the city's physical plant. Some of these inputs can be associated with individuals who reside in the area; some simply abide in the structure and function of the community itself. While they do not appear as paid-for items in the local budget, they are strong molders of output. The handicap factor is simply a sub-grouping of inputs of this type and can be constructed by a realistic multiplicative association of such factors, scaled with 1.0 as the "average" handicap of the array of communities. Since such inputs are negative, we espect that $\partial P/\partial H$ is less than zero.

<u>c</u>. The rip-off factor, T, is a measure of the "free" inputs which a community can enjoy at the expense of another community. This is merely a colorful expression for the polysyllabic externalities so familiar in public finance. However, the use of the term "rip-off" implies that such externalities as are found in urban areas are not simply acts of God that residents are innocently saddled with, but are consciously created and cultivated. The rip-off factor is a function of the ease of access to the public service of another unit and the success in avoiding assessment for its use. Each Detroit suburb, by way of example, enjoys the free input of facilities such as the Detroit Zoo and Belle Isle in the provision of local recreation services for its residents. Ripped-off services enhance public output: dP/dT greater than zero.

<u>d</u>. A discussion of the appropriate form for the production function parallels that for the utility function. We want a multiplicative function, for realism. Any of the conventional forms, of a Cobb-Douglas or CES type, are acceptable for our purposes.

3. Distribution Functions

The community may distribute the publicly-produced output in a number of ways:

Equation 3. $P_i = g(P_i, Y_i, n, h_i)$ for all i

where Y_i: income of household i

n: number of households in the
community

hi: handicap index of individual
households

$\underline{a}$. If P is a true public good, non-exclusive in nature,
then $P_i = P$. This is delightfully simple, but unfortunately,
most local services (with the single forceful exception of
pollution control) are not of this nature.

$\underline{b}$. Most local public services are functions of n, meaning
that the output must increase when population increases to
provide the same quality and quantity of service to each
household. Take parks, for instance; while each family has
access to a community park, the growth of the community will
tend to congest the park. More acreage must be provided to
assure the same enjoyment level for each resident. There-
fore we expect $dP/dn < 0$.

$\underline{c}$. It is possible to distribute services on the basis of
income, wealth, or some income-related characteristic.
Street-cleaning and boulevard upkeep, for instance, benefit
a family according to their frontage. Public golf courses
and municipal snowmobile trails are offered only to those
who make a concommitant private expenditure. (These are
services which we usually advise to be paid on a fee basis
instead of out of general tax revenue; it does not always
happen that way though.) It is also possible to distribute
services inversely with respect to income; public health

facilities such as a general hospital benefit lower income

groups in a community. We do not have conclusive evidence

of the prevailing relationship between income and receipt

of local public services in this partial context.

_d_. Some services are distributed on the basis of the handi-

cap characteristics of individuals or areas in the community.

Remedial reading programs are an example. (As a rule, the

correlation between handicap characteristics and income

will be large and negative.) While generally public services

at the local level are distributed in favor of handicapped

groups, there are cases in which the opposite is true.

Differential treatment of areas within a city with respect

to structural and maintenance services in effect redistri-

butes in favor of those with few handicaps. The prevailing

relationship is here also indeterminante.

4. Budget Constraints

Each household spends its income in the form of local taxes

and on Gi.

Equation 4. $Yi = t(Yi)^{\beta} + Gipg$

where   t: local tax rate, $t \geq 0$

pg: market price of G

β: parameter expressing nature of tax
structure; $0 \leq \beta$

For convenience, we treat saving as if it were a part of

the basket of Gi purchased, in order to focus on the allocation

of income between the local public sector and all other uses.

The tax form here has been generalized to enable us to consider both the tax structure and the tax rate. While the bulk of local taxes are property taxes, we can, by using incidence data, represent the property tax as a form of income tax. The 1958 Michigan Tax Study concluded that persons with incomes under $2000 in Michigan paid an average 5.05% in property taxes, while persons with incomes over $10,000 paid an average 1.01% in property taxes.[1] These figures can be used to express the tax structure and rate in a single expression. Incidence can be expressed in the following way:

$$\frac{Ti}{Yi} = \frac{t(Yi)^{\beta}}{Yi} = t(Yi)^{(\beta-1)}$$

where ti: total local tax paid by household

In order to determine the burden of the tax across income levels, we take the derivative of incidence, Ti/Yi, with respect to income to see if the incidence increases or decreases as income rises. If the former, then the tax structure is progressive, since a higher proportion of income goes to local taxes as income rises. If the latter, it is regressive.

$$\frac{d\,\frac{Ti}{Yi}}{d\,Yi} = \frac{dt(Yi)^{(\beta-1)}}{d\,Yi} = (\beta-1)t(Yi)^{(\beta-2)}$$

Now as long as t > 0, this expression will be positive if $\beta > 1$,

[1]Richard Musgrave and Darwin Darcoff, "Who Pays Michigan Taxes?" Michigan Tax Study, Staff Papers, State of Michigan, House of Representatives. Lansing, Mich.: Michigan State Legislature, 1958, p. 138; figures for residential property tax incidence.

in which case the tax structure is progressive. If $\beta < 1$, the expression is negative, indicating that incidence declines as income rises. If $\beta = 1$, incidence is constant over the entire income range.

Thus, in our formulation, β represents the tax structure; $(Yi)^\beta$ the tax base. If $\beta = 0$, the tax is a flat fee on each household, regardless of income. If $\beta < 1$, the tax structure is regressive. If $\beta = 1$, the tax is flat rate, or proportional. If $\beta > 1$, the tax is progressive. In the incidence study cited above, the tax structure as expressed in terms of β can be inferred to be something like 1/6 or .167. A change in incidence, over time, represents a change in the tax structure; it becomes more or less regressive (or progressive) and can be reflected by a change in β.

t represents the tax rate. Generally, the property tax rate must apply to every plot within a community equally, by law. A millage issue is a choice between 30 mills or 40 mills, with the victorious rate applying across the board. This uniformity provision is almost universal in the U. S., although in a few cases different categories of property receive differential treatment.

Even in cases where different rates are in fact used, i.e., a local income tax, we can convert these differences into changes in base. We do so here, in order to facilitate an examination of long run and short run responses to taxes by individuals.

In the short run we will assume that the tax structure is fixed;
all citizens can vote on a tax increase issue, but the incidence
it will have is predetermined. In the long run, citizens can in-
fluence the structure, and thus the incidence, of taxes.

5. Revenue and Expenditure Function

The community has no source of funds to finance its public
services except local taxation.

$$\text{Equation 5.}\quad t\Sigma(Yi)^{\beta} = R_p r$$

> where pr: market price of "paid-for" public
> input

It is assumed that pr is exogenous. In general this is true,
since wages and salaries are competitive over many industries
and throughout a metropolitan area. However, it is possible
that one might have to pay a policeman more to work in the inner
city than in Pristine Province. Below we shall consider the
effect of other sources of revenue.

B. **Maximization**

The above model enables us to see the interactions between public
sector institutions and decisions, and individual preferences. We
can avoid the problems of aggregating the individual utility functions
into a community utility function. We can merely investigate the con-
ditions under which a household will be satisfied with the public
service package it receives. If it is not, we will be able to use
this model to identify the elements which it will want to change,
whether via the local exercise of political power or by migrating to
another local community.

Each household will attempt to maximize its utility subject to
its budget constraint. The common Lagrangian technique is used here
to examine this process.

The range of possibilities for each household will depend on the
time period we choose to examine. In the short run, we will assume
that each family is stuck in one community, with all its structural
and institutional characteristics given. The exogenous variables in
the short run are thus (Y_i, ΣY_i,* T, H, h_i,* β, n, pg, pr). The en-
dogenous variables are (G_i, P_i, P, R, and t). In other words, the
community is semi-permanently saddled with its income and handicap
levels, its tax structure and its size. Within these limitations,
each family will choose a desirable tax rate and desirable levels of
private and public consumption.

In the long run, we will assume that individuals and therefore
communities can attempt to manipulate many of their structural fea-
tures, in particular: ΣY_i, n, β, H, T, and h_i. The utility of the
members of the community can be increased by carefully molding these
market determinants. Collusive action can affect the magnitudes of
these variables beyond each individual's power over his own income
and preference patterns. This long run behavior will be examined

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*Under the usual community conditions the size of the population
is so large that no one individual's income will have an impact on the
total level of income. If a household's income goes up $1000 it may
have a large impact on its own behavior but it is negligible in a
community of 20,000 with an average income of $10,000, where it repre-
sents .00002 of the total. The same argument holds for treating h_i
independently of H.

in Chapter V.

C. The Short Run: Individual Maximization Within the Given Community

To facilitate the exposition, the model is here restated suc-
cinctly along with the behavioral expectations associated with each
equation:

1. $U_i = u(p_i, G_i)$ for all i; $\dfrac{\partial U_i}{\partial P_i} > 0$, $\dfrac{\partial U_i}{\partial G_i} > 0$.

2. $P = f(R, H, T)$; $\dfrac{\partial P}{\partial R} > 0$, $\dfrac{\partial P}{\partial H} < 0$, $\dfrac{\partial P}{\partial T} > 0$.

3. $P_i = g(P, Y_i, n, h_i)$ for all i; $\dfrac{\partial P_i}{\partial P} > 0$, $\dfrac{\partial P_i}{\partial n} < 0$; $\dfrac{\partial P_i}{Y_i}$, $\dfrac{\partial P_i}{h_i}$

<div align="right">not determined a priori</div>

4. $Y_i = t(Y_i)^\beta + G_i pg$ for all i, $\beta > 0$.

5. $t\Sigma(Y_i)^\beta = R(pr)$

In the short run:

    Exogenous: Y_i, ΣY_i, β, H, h_i, T, n, pr, pg.

    Endogenous: G_i, P_i, P, R, t.

    Given this model, the following objective function can be
formed with the Lagrangian multiplier, λ:

6. $U_i' = u(P_i, G_i) + \lambda\{tY_i + G_i(pg) - Y_i\}$

Substituting for P_i the production and distribution functions, and
for t the community taxation function, this becomes:

7. $Y_i' = u' [g\{f(R, H, T), Y_i, h_i, n\}, G_i] +$

$$\lambda\{R(pr)\frac{Y_i^\beta}{\Sigma Y_i^\beta} + G_i(pg) - Y_i\}$$

This is an acceptable function, for it contains only two endogenous

variables, R and Gi, which are in fact the two "choices" that the household has. R is chosen implicitly with the tax-vote decision of each household, since under the short-run conditions, each tax rate (30 mills, 50 mills, etc.) is associated with a unique R, P, and Pi. Taking the partial derivatives of Ui' with respect to R, Gi and λ:

8. $\dfrac{\partial Ui'}{\partial Gi} = u'_g\{g[f(R,H,T), Yi, hi, n], Gi\} + \lambda(pg)$

9. $\dfrac{\partial Ui'}{\partial R} = u'_r\{g[f(R,H,T), Yi, hi, n], Gi\} + \lambda(pr)\dfrac{(Yi)}{\Sigma(Yi)^\beta}$

10. $\dfrac{\partial Ui'}{\partial \lambda} = \dfrac{R(pr)(Yi)^\beta}{\Sigma(Yi)^\beta} + Gi(pg) = Yi$

By setting each of these equal to zero, and by combining equations 8 and 9, we can eliminate λ and get an expression for R in terms of Gi. Substituting this expression into equation 10, we can get an expression for Gi in terms of the set of exogenous variables. We can proceed to do the same for all the other endogenous variables. These equations must hold in order for a maximum to exist for the household.[2]

11. $Gi = Gi(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

12. $R = R(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

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[2]In addition, the following second-order condition must hold, to ensure that a maximum is attained:

$(u'_{gg})(h'_r)^2 - 2(u'_{rg})(u'_r)(u'_g) + (u'_{rr})(u'_g)^2 < 0$, where $u'_g = \dfrac{\partial Ui'}{\partial Gi}$,

$u'_r = \dfrac{\partial Ui'}{\partial R}$, $u'_{rr} = \dfrac{\partial^2 Ui'}{\partial R^2}$, $u'_{gg} = \dfrac{\partial^2 Ui'}{\partial Gi^2}$, $u'_{rg} = \dfrac{\partial^2 Ui'}{\partial Gi \partial R}$

13. $P = P(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

14. $Pi = Pi(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

15. $t = t(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

The first major observation from this exercise is that each household has a unique tax and public expenditure package that satisfies its maximization conditions. For each household, we have a set of five equations (11-15) for five endogenous variables: Gi, R, P, Pi and t. The system is identified for the individual household; there is one unique solution.

However, equations 12, 13, and 15 determine the values of three variables, R. P, and t, which are system-wide. The value of each must be the same across any community of n units. Aggregating over n households, we find that we add five equations into the system for each household, but gain only two endogenous variables each time: Gi and Pi. The result is an over-identified system in which there will be 5n equations but only $2n + 3$ endogenous variables. For a two-household community, for instance, we have the following set of equations:

11a. $Gi = Gi(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

11b. $Gj = Gj(n,H,T,Yj,\Sigma Yi,hj,pr,pg)$

12a. $R = R(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

12b. $R = R(n,H,T,Yj,\Sigma Yi,hj,pr,pg)$

13a. $P = P(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

13b. $P = P(n,H,T,Yj,\Sigma Yi,hj,pr,pg)$

14a. $Pi = Pi(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$

14b. $Pj = Pj(n,H,T,Yj, Yi,hj,pr,pg)$

15a. $t = t(n,H,T,Yi, Yi,hi,pr,pg)$

15b. $t = t(n,H,T,Yj, Yi,hj,pr,pg)$

For these ten equations, we have only seven endogenous variables:
R,P,t,Gi,Pi,Gj, and Pj.

Another way of approaching this result is to convert R, P, and t above into R^{di}, P^{di}, and t^{di}, denoting the desired magnitudes of each of these variables for household i. This restores the number of endogenous variables to 5n. However, we then have to add a set of equations to the model which will contrain the _actual_ magnitudes of R: P: and t:

16. $R^{di} = R^{dj}$ for all i, j;

17. $P^{di} = P^{dj}$ for all i, j;

18. $t^{di} = t^{dj}$ for all i, j;

Since there can be only one actual R, P and t. In this formulation, our number of equations would again exceed the number of endogenous variables [by $2(n-1)$].

Over-identification simply means that we have too much information for the determination of a unique value for each variable. We could leave out $5n - (2n+3) = (3n-3)$ equations in the first formulation [or $2(n-1)$ in the second] and still be able to find solutions for our unknowns. As the model stands, we have too many potential values of R, P, and t.

In practical terms, this means merely that each household makes a calculation of the desirable level of R, P, and t for itself, but

only one such value can prevail. If, then, the system of equations (i.e., each household's calculations) does indeed produce different values for these variables, a conflict is inevitable. This conflict either manifests itself as an incentive to migrate <u>out</u> of the community or to attempt to win through the internal political process.

The only case in which this system will be identified, i.e., in which a unique solution is obtained for all variables which satisfies everyone, is when $Yi = Yj$ and $hi = hj$.[3] This reduces the number of equations to $2n + 3$, since each household's equations for R, P, and t will be identical. In the above two-household illustration, this special situation reduces 12a and 12b, 13a and 13b, and 15a and 15b to the following:

12c. $R = R(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$ where $Yi = Yj$, $hi = hj$

13c. $P = P(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$ where $Yi = Yj$, $hi = hj$

15c. $t = t(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$ where $Yi = Yj$, $hi = hj$

Now we have seven equations for seven endogenous variables. We would expect that a community of households in which this special case holds would be stable (no one cares to migrate) and peaceful (no controversies would develop in local politics).

The maximization under income constraint which we have built into this model is a condition necessary for the arrival at a Pareto-optimal point for society. Satisfaction of the maximization conditions for all would ensure that the marginal rate of substitution

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[3]The reader should keep in mind that this outcome is dependent on the assumption of identical utility functions.

between public and private consumption for all consumers is equal, the Pareto-optimal condition for the demand side of the market. The failure to satisfy the maximizing conditions is a signal that the Pareto-optimal condition does not hold and that some individuals would be better off with a different public-private mix. Another way to view this lack of optimality is to observe that our efficiency criterion has been violated; a different allocation of society's scarce resources between public and private output would increase someone's well-being (without, presumably, affecting another's adversely) and therefore constitute a more efficient economic mechanism.

Since we can expect that households will register their dissatis faction by migration or political dissent, we can interpret the lack of either as a sign of fulfillment of the demand conditions for a Pareto-optimum. In this particular formulation, we see that all the maximizing conditions are satisfied only in a homogeneous community (Yi = Yj, hi = hj). Therefore to the extent that our assumptions hold, we can conclude that efficiency considerations tend to motivate households to seek homogeneous communities. This is consistent with the Tiebout thesis of efficiency motivation governing location decisions with respect to the public sector.

The second major observation is that each household faces redistributive forces, as well, in choice of community. The reduced forms indicate that even if all units have the same level of income, any one household's utility is also a function of the total income (ΣYi) of the community, the hardship (H) and rip-off (T) factors, so

that it will be tempted to move to a higher income and less handi-
capped community _even_ _if_ its maximization conditions are satisfied
in the present community.

This potential to enhance income and escape costs through com-
munity selection also encourages the creation of homogeneous commun-
ities. Although every household will desire to live in as wealthy
and costless a community as possible, theoretically an equilibrium
will develop in which communities will be stratified along such lines.
The wealthiest groups will tend to congregate together, since each
member will lose less than if it chooses to cohabitate with poorer,
more handicapped groups. The latter will aspire to cohabit a commun-
ity with the "betters" but will settle for their own kind if they
cannot gain entry and for barriers to intrusion by still "lower"
groups. Institutional mechanisms adopted and employed to actualize
these aspirations are the subject of Chapter V.

As soon as we admit that distributional motives exist in the
context of community choice, we lose the option of describing a move
from one community to another as Pareto-optimal. A Pareto-optimal
move is one which makes everyone at least as well off as previously.
If migration in fact makes some (those left behind) worse off, then
we cannot claim that the post-migration situation is preferable to
the previous one. While we can still say that moves are partly
prompted by preference maximization motives, we cannot claim that
efficiency is achieved. The two states, before and after migration,
are Pareto non-comparable; the distribution has been changed.

Tiebout, it may be recalled, used the efficiency stimulus to migration to postulate that fragmented local governments provide a more optimal allocation of resources in the public sector than a single monolithic government. In light of our analysis, we must object that the two states are non-comparable, since income and cost distribution differs between them. Certainly a _change_ from the latter to the former is _not_ preferable.

With these two major observations, we have demonstrated theoretically that both efficiency and redistributive motives arising from the nature of the local public sector are present in migration decisions among city-suburban communities. As we shall see below, relaxation of specific assumptions does not invalidate this result. Since both are present, it is impossible to state unambiguously that either one or the other is primarily responsible for creating and maintaining the fragmented pattern of local governments, and whether either one is controlling today in household location decisions.

A second conclusion that we have suggested is that both these incentives lead toward homogeneous communities.[4] This result is dependent on the assumption of identical utility functions. If we admit different preference functions among households with equal income and handicap characteristics, then the efficiency incentive

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[4]This inference is important because it allows us to construct a testable hypothesis, whereas the previous point, while self-evident, does not.

will not lead unambiguously to homogeneous communities.[5] The income

redistribution effects <u>within</u> a given community will still encourage

the household to search for class and socio-economic equals and

superiors on maximization principles, but the effect of conflicting

preferences may encourage a household to identify potentially with

households of different (income, wealth, age, etc.) endowments than

its own. In Chapter V we develop a behavioral model for local govern-

ment which analyzes the response to potential conflicts between pre-

ference and distributionally-motivated moves.

To further establish the inextricable presence of these two

motivations, suppose that we enquire into the possibility that only

one of them is actually present in household location decisions. What

are the conditions under which either of the two is non-existent? It

is possible to construct alternative restricted forms of the model

which can ascribe migration (and the tendency toward homogeneity) to

only one of these motivations.

1. Efficiency but not Redistribution

<u>a</u>. If the variables, ΣY_i, H, and T are identical for every

existing and potential community, then there would be no

motivation to move for distribution's sake. Obviously, this

is not a believable case, since most communities do differ

greatly in income-per-capita and cost structures. Indeed,

we have proved above that as long as <u>individual</u> incomes

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[5]See Section D-4, p.

vary, there exists a motive for the creation of fragmented

income-cost homogeneous communities. Only under complete

income and cost egalitarianism ($Yi = Yj$, $Hi = hj$) would

this case exist.[6]

b. If distribution of public output is directly proportional

to the payments made to the local government by households

(that is, if $Pi = P\dfrac{(Yi)^\beta}{\Sigma(Yi)^\beta}$), and if H and T are identical

for all communities, then there would be no motivation to

move for distribution's sake. It would not matter which

community an individual lived in since his portion of public

output would not depend on his neighbor's income but only on

his own.[7] His taxes, in this case, are really a sum which

varies directly with how much he gets. This case is not

observed in the present operation of local government;

distribution of public output is not very strongly related

to the contributions made by individual households. And

even if it were theoretically imagined, there is no guaran-

tee that households would not try to change this distribu-

tion rule within their respective communities.

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[6]This is interesting, because it suggests that a truly egali-
tarian society could effectively use local community alternatives to
achieve efficiency (if differences in preferences really do exist)
without having to sorry about distributional implications.

[7]In other words, the public sector acts just as if it were a
private market.

2. Redistribution but not Efficiency

A simple case. By restricting the model to a very simple one, we can show that it is possible for efficiency conditions to be satisfied in a non-homogeneous community, but that re-distributive motives will tend to create homogeneous communities anyway. Let us suppose that the utility function for each individual looks like this:

19. $U_i = P_i G_i$ Each household has a utility function which produces indifference curves in the shape of a rectangular hyperbole.

20. $P = RT/H$ Production function is the input times the handicap and rip-off factors.

21. $P_i = P/n$ Output is distributed on the basis of population.

The reduced forms will then be:

22. $G_i = Y_i/2pg$

23. $R = Y_i^{(1-\beta)} \Sigma (Y_i)^{\beta}/2pr$

24. $P = Y_i^{(1-\beta)} \Sigma (Y_i)^{\beta}(T)/2pr(H)$

25. $P_i = Y_i^{(1-\beta)} \Sigma (Y_i)^{\beta}(T)/2pr(H)n$

26. $t = Y_i^{(1-\beta)}/2$

With one additional restriction, that $\quad = 1$, we obtain the result that all members of the community, regardless of income level, will be satisfied with the same tax rate, since the formulas for P, R and t will be identical for all individuals (all Y_i's drop out):

23a. $R = (Y_i)^{1}/2pr$

24a. $P = (Y_i)^{1}(T)/2pr(H)$

26a.   t = 1/2

However, even though the efficiency conditions are fulfilled for each, households will still gain by moving into a different community where Yi, H or T is more favorable.

It is possible to extend the results in this case to a number of other special (and similar) cases. However, no matter how far it is extended, we cannot escape two serious limitations.

The first is that by limiting the utility function to a certain class of functions, we lose the substitution character- istics for each good, either completely [as above, Gi $\neq$ f(pr)] or partially. This is seriously limiting. While we can make a good case for the importance of the interdependent element in the function (the PiGi or $Pi^{\beta}Gi^{\beta}$, etc.), we have to avoid func- tions such as Ui = Pi + PiGi + Gi or else suffer the ambiguity that we suffer in the general case. Our ignorance of the nature of utility functions becomes a crippling factor in this situa- tion.

Secondly, we frankly do not observe that local taxes are of a flat rate form (proportional: β = 1). When they are not, then individuals do have an efficiency motive for migrating. However, it is also clear that if the individuals in a community can change the tax structure, even if their maximization conditions are satisfied with the present tax rate, they may elect in favor of a regressive tax in order to preserve their redistributive

gains.[8.0] Therefore, the redistributive motive may initiate and re-enforce institutions which may as a side effect give rise to efficiency motives for behavior.

Thus our expedition into the theoretical possibilities for pure attribution of migration to one or the other of these public sector motives is disappointing. The restricted forms which would give such results are too unrealistic. For the moment, then, we must live with them both.

D. Alternative Assumptions

This section considers alternative assumptions that could be used in constructing a model of this type. It attempts to cover all serious challenges to the realism of assumptions employed earlier.

1. The Forms of the Utility Function[8]

In the model constructed in the previous section we chose a non-additive utility function; for the special case under Section C, we used a further restricted form. Here we briefly look at alternative forms and their results.

a. Additive forms. Additive utility functions look like this: $U_i = f(P_i) + f(G_i)$. This means simply that a consumer gets pleasure from these two independently—that his enjoyment of park facilities is totally independent of

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[8.0] See Chapter V, Rule 2.

[8] The debate considered here is analogous to that concerning production function forms and thus will not be repeated for the latter.

whether or not he has a bicycle, baseball bat or thermos

jug. In general, while such forms are the simplest avail-

able, we do not use them because they are unrealistic.

Quite obviously I would rather have one bicycle and one

park nearby, rather than two of one and none of the other.

Three subsets of such functions exist. The first (e.g.,

$Ui = Pi^2 + Gi^2$) includes all such functions that would give

us difference curves concave to the origin on a conven-

tional indifference map. We reject these as "irrational."[9]

The second subset consists of all functions $Ui = (a + bPi +$

$cGi)$, linear functions which give us a linear indifference

curve. This is generally considered unacceptable because

it is the limiting case. Unless the relative price ratio

exactly coincides with the slope of such an indifference

curve, each consumer will choose to consume all of either

one good or the other; if it does coincide, then the solu-

tion is indeterminant. In our model, however, the use of

this type of function would emphasize the results; for even

if the budget line did coincide with the indifference curve,

each household will choose to consume only one type of

output (public or private) if its income differs from its

neighbor's. If its income is less than the average, then it

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[9]See Milton Friedman, Price Theory: A Provision Text, 1st ed.
Rev., Chicago: Aldine Publishing Company, 1967.

will vote for a total tax/public service package with no

private consumption, and vice-versa.

The third set of additive functions contains those

that give us convex-to-the-origin indifference curves:

$$Ui = (a + bPi^{\alpha} + cGi^{\beta}) \text{ where } 0 < \alpha < 1, 0 < \alpha < 1$$

Thus a function like $Ui = Pi^{1/2} + Gi^{1/2}$ will give us a

solution for R and t that looks like the following:[10]

$$R = \Sigma Yi/\{pr[(pr/pg)(Yi/\Sigma Yi)n + 1]\}$$

$$t = 1/[n(pr/pg)(Yi/\Sigma Yi) + 1) + 1]$$

One weakness in this formulation is its implication that R

is an inferior good when the tax structure is proportional.

On principle, it is better to avoid use of additive

functions because they ignore the interdependence between

consumption goods.

b. Non-additive forms.

    i) Conventional forms. Most production functions

    which we use in economics belong to the CES class of

    functions, which demonstrate both homogeneity of

    degree one and constant elasticity of substitution.

    The use of these functions has been popular because

    they are quite manageable; while they may not explain

    the total reality of the relationship between produc-

    tion inputs, they at least serve well as a crude

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[10]Using the simplified equations in Section C-2, setting β,
H, T = 1.

approximation.

The situation with utility functions is analogous, except that we will lose the substitutability in some cases, as noted above. In addition to the CES forms (which include a Cobb-Douglas form), we can add all multiplicative functions of any degree homogeneity, and get satisfactory and manageable results. These are the forms used in the foregoing analysis.

ii) Quadratic forms. We can also inquire into the results of using quadratic forms of the utility functions, which combine the additive and multiplicative characteristics of the functions considered above.[11] A function such as $Ui = Pi + PiGi + Gi$ gives us a desired tax rate of $t = 1/2(1 + pg/Yi - npr/\Sigma Yi)$. More complex quadratic functions yield more complicated reduced forms, e.g., $Ui = PiGi + 1/10(Ri)^2 + 1/10Gi$ gives us $t = \dfrac{1 - prn/\Sigma Yi}{2 - (1/5)n(pr/pg)(Yi/\Sigma Yi)}$. It becomes almost impossible to determine what the impact of a change in Yi, prices, size, etc., will be as the form lengthens. It is essentially only a mathematician's exercise anyway, since this is an empirical question which can be solved only by

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[11]Here, again, we have to avoid many functions, e.g., $Pi^2 + PiGi + Gi^2$, which describe concave preference functions.

revealed preference methods, or more circumspectly, by the estimation of demand functions. For our part we will not do worse than most by restricting ourselves to the simplest of realistic functions and seeing how their implications bear up in the real world.

2. Content of the Utility Function

We could include, in this analysis, variables such as space, commuting cost and time, which do vary with choice of community. However, we are simply attempting here to examine the partial influence of public policy choice on metropolitan location decisions. The complexity of the location problem is so great that no one has yet produced a satisfactory general equilibrium theory of location (not to mention the need for dynamic analysis in this area). Regretting the limitations of partial analysis, we have proceeded nevertheless in hopes of casting some light on the public sector impact on such decisions.

The exclusion of land value determination from the model, on the other hand, is a serious problem. It is quite probable that land values are not independent of public policy decisions and choice, especially the instruments of community design, such as zoning, etc., discussed in Chapter V. However, the latter is more a question of the distribution of benefits, i.e., the transfer of public policy surplus into land rent, rather than a counterbalance to the forces at work in the model.

3. Interdependence of Utility Functions

Interdependencies in household preference functions produce different results in our model. Two prototypes will be considered here briefly.

a. Keeping up with the Jones.' This proposition has strong intuitive appeal, either from the social-climbing vantage point or in its Big Fish in a Little Pond variant. Either form can be expressed in the following way:

$$Ui = u(\frac{PiGi}{PjGj})$$

The public sector response of this position, under the simplest form of the model, depends on the relationship between Pi and Pj. If Pi = P/n, then Pi must equal Pj in actuality, and public sector choice is indeterminate altogether; $\partial Ui/\partial R = 0$. The relationship between Pi and the individual income and hardship position, if such exists, will determine either a positive or negative response to increased public output and taxes.

It is intuitively clear that this preference structure will tend to reinforce the tendency toward homogeneity which we have derived under independent utility assumptions. All so motivated will wish to live in a community populated with people who will reflect well on them, and aggregating over the total potential population, this search will tend to group people into homogeneous strata.

<u>b</u>. The Altruist. Another interesting case is the urban
liberal, whose utility function encompasses his neighbor's
access to and enjoyment of certain publicly produced goods:

$$Ui = u(Pi,Gi,Pj) \qquad \partial Ui/\partial Pj > 0$$

According to our short run model, this sentiment would lead
the liberal to vote for higher taxes, since he will margin-
ally value P, and therefore R, more highly. Using Ui =
(PiGiPj), a simple calculation along the lines of equations
22-26 yields:

23b. $\quad R = (2/3)Yi^{(1-\beta)}\Sigma(Yi)^{\beta}/pr$

instead of the original

23. $\quad R = (1/2)Yi^{(1-\beta)}\Sigma(Yi)^{\beta}/pr$

Thus under any realistic tax system (flat rate or regres-
sive), this behavior actually hurts the very group which
the liberal wishes to aide, since it forces the former to
allocate too much of their own paltry income to the public
sector. (This is assuming, of course, that the lower in-
come groups do not return the liberal's altruism.)

In the long run, households of this persuasion will
find that in order to achieve their goals, they must dis-
mantle the entire set of institutions which has been care-
fully groomed to protect the inequality (see Chapter V).
This is nearly impossible for any one household to achieve.
Most individual responses (e.g., the suburbanite who moves
back into the city) carry heavy penalties. It is more

likely that such households will continue to live in suburbia but assuage guilty consciences by supporting metropolitanization or redistributive revenue-sharing.

4. Variation in Preference Functions Between Households

Finally, in this consideration of alternative assumptions about preference structures, we come to the most interesting and most challenging:

$$U_i = u_i(P_i, G_i)$$

That is, that households have different preference functions among themselves. This is the fundamental assumption on which the Tiebout hypothesis is constructed.

Let's consider a simple example. Suppose that two households have a different valuation of public vs. private consumption:

$$U_i = P_i G_i$$

$$U_j = P_i G_i^2$$

The optimizing combination for each, in our model, yields tax and public output goals:

$$R^{di} = \frac{Y_i^{(1-\beta)} \Sigma Y_i}{2pr} \qquad t^{di} = \frac{Y_i^{(1-\beta)}}{2}$$

$$R^{dj} = \frac{Y_i^{(1-\beta)} \Sigma Y_i}{3pr} \qquad t^{dj} = \frac{Y_i^{(1-\beta)}}{3}$$

Obviously, heterogeneous preference structures lead to disagreement over tax and output levels; this provides us with an allocative motivation for migration independent of differences in

income distribution. If all incomes are equal, then this assumption would lead to the conclusion that households would tend to group together in communities in which they share a public-private output consensus. Tiebout's analysis would be upheld.

If, however, there are variations in incomes across any portion of the potential community (the metropolitan area), then the outcome is less certain. In order to agree on a tax rate, people with higher incomes will have to have lower preferences for public services than their lower income neighbors. In this example, for instance, household i, with its higher preference for public services, would have to find households of j's persuasion whose income are 1 1/2 times as great as i's in order to agree. This case is not inconceivable; an ambitious working class family may wish to forego private consumption in order to secure a good education for its children and could join higher income, less education-conscious families in a Tiebout-type preference-arranged community.

However, this case for preference determination of community location, restricted as it is by the necessity for income to counter-balance differences in preference exactly, is further diminished by the influence of Y_i, H and T on ultimate receipt of P_i, so that despite short-run agreement on t, the long-run interests of households encourage them to seek communities with high levels of Y_i and T and a low level of handicaps, H. Our original inferences about distributional motivation for

migration still stand.

The competing assumption considered here is interesting be-
cause it is the substance of the Tiebout hypothesis. It is also
the only assumption that can lead to a prediction of hetero-
geneous groupings of people within communities, drawn together
by consensus about public-private service mix. We cannot tear
the reality of the assumption (nor that of our alternative as-
sumption incorporated earlier) because revealed preference
methods cannot distinguish between allocative and distributional
motives (see Chapter IV). Nor can we use demand equation esti-
mation or expenditure comparisons because of the inability to
define output properly. The antagonistic predictions of homo-
geneity vs. heterogeneity are the only really testable results
of competing theories of household location response to public
sector incentives.

In testing for homogeneity and stratification, in Chapter
VII, we will be testing the validity of the Tiebout explanation
vs. the one developed in this chapter. A finding of homogeneity
will not necessarily negate this assumption (variation in pre-
ferences) but will indicate that distributional considerations
are strong enough to wipe out locational satisfaction of such
diversity in tastes as may exist.

5. The Form of the Production Function

The production functions employed in this model are the
conventional forms used in most economic analysis. This is not

the place to pursue the debate over the usefulness of such forms

nor their empirical validity; certainly the state of the art in

this area is quite primitive. We use them here because they are

the simplest expression of fundamental relationships which we

suspect exist in production. In doing so we are not doing any

worse than the best production analysis to date.[12]

6. Revenue and Expenditure Functions

In our model, we use a crude formulation of the community

budget which postulates that taxation is the only source of

local revenue. A more realistic approach would include three

basic categories of revenue sources: taxation, transfers from

other governmental levels, and fee payments:

5a. $Rpf = t \ (Yi) + A + F$

where A: Aid to community from state and federal
governments

f: Fees paid for particular local services

The second addition, F, can be excluded from our analysis since

it represents a portion of local output which is produced pub-

licly but paid on a personal benefit basis just as it would in

the private market. We can assume that such services do not

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[12] An exception is William Baumol's paper, "Macro-economics of Unbalanced Growth: The Anatomy of Urban Crisis," American Economic Review, LVII, June, 1967, in which he assumes that sectors such as local public services are characterized by production functions in which output is solely a function of labor, as assumed here, but points out that productivity in such sectors does not increase with increases in output, so that costs generally rise cumulatively and progressively as the whole economy grows.

affect the individual's decision to locate in a particular community.

The aide category, however, is quite important. State revenue sharing has been substantial for many local governments· for years, although it varies tremendously between communities (in 1972, state revenue sharing accounted for 25% of the East Lansing, Michigan, general fund revenue but only 8% of the same revenues for Ann Arbor and Dearborn). Federal revenue contributions have become important in recent years, first in grant form and now in revenue-sharing form.

Shared funds and grants are allocated on the basis of a maze of alternative criteria, but we might propose the following functional relationships as those most frequently employed or observed:

$$5.5 \quad A = f(n,Re,Dr,e,w)$$

where n: population

Re: receipts from local unit on sales, income or other state tax

Gr: grantsmanship

e: effort; an indicator of people's willingness to tax themselves, often simply tax receipts/tax base, i.e., general tax rates

w: wealth, or some related measure of need, conventionally the local tax base

Until very recently, most state aid (apart from educational funds) has been returned on simply a per capita or source-of-receipts basis. Inclusions of such returns would not influence

our model significantly. A few states now redistribute funds with an effort or need modifier on a per capita formulation. The federal government's recent revenue-sharing program relies heavily on effort as an allocator, and replaces many of the older earmarked aid programs like Model Cities. The importance of such aid is indeterminante; if the aid formulations really do redistribute from wealthier to poorer areas, then the impact is to soften the distributional bias in our model. However, if such aid is merely a redistribution of funds between government levels, with little redistribution between income groups (a likely case with an effort based formula), then the aid will not counteract the distributional disparities between local governments and their effect on motivation and location. In addition, if the new federal program for revenue sharing replaces older compensatory programs which were aimed at alleviating some of the handicap factors in inner cities, then on balance it may heighten distributional disparities.

Having defended our assumptions, we will leave the framework of the model intact and proceed, in the next chapter, to develop an example and graphical demonstration of the implications of the model. However, a note of regret is entered over the lack of space and time here to explore the interesting implications raised by some of these alternative formulations.

E. A Class Analysis of Suburban Location

A Marxist analysis of household location decisions arrives at the same conclusions regarding efficiency and the Tiebout hypothesis as the preceeding, more conventional, analysis. However, the Marxist paradigm replaces utility analysis with an investigation of class structure and its impact on community design. Its conclusions are stronger than those we have developed with utility analysis.

Marxist analysis rejects the position of utility theory in neoclassical economics on two grounds. First of all, it rejects the label of "goodness" bestowed on certain outcomes in the neoclassical model for attainment of the best possible positions of individuals with respect to their utility structure, given their incomes. The latter approach disregards social justice as a societal aim, claiming that by simply accepting a given income distribution, its analysis is value-free. The Marxist critique brands this stance apologist and points out its implicit value-laden nature. Secondly, Marxism rejects the concepts of individuality and innate preference as the primary determinants of economic behavior. Class membership, instead, determines the consumption behavior of households.

The Marxist analysis explains suburban development and differentiation within the context of its critique of capitalism as a system of productive, and therefore social, relationships. Capitalism produces two primary social classes: capitalists, who receive income from ownership claims on the means of production, and workers, who receive income from the sale of their labor power to the capitalists.

Upon these fundamental classes is overlaid a superstructure of sub-
classes whose nature is determined by the particular character and
historical circumstances of the society. (Race and income bracket
are two subclass distinguishers.) The map of suburbia is a symmetri-
cal mosaic of these subclasses extending out from the center of the
area.

Members of a subclass congregate together for many reasons, all
of which can be considered as attempts to maintain class status,
and in American society, to mime the class status of higher class
groups. Functions of the class-bound suburb include the assimila-
tion of children into the particular class, conspicuous consumption
and accumulation of durable goods appropriate to that class, the
bestowal of status by association, and the maintenance of job status
by auxiliary functions such as entertaining. Not only do these
functions attract subclass members to a particular location, they
are actually necessary preservatives of class status. Failure to
live up to the style of one's subclass removes one from its ranks,
often directly by unemployment.

The public sector plays a very important role in this process.
Clearly, the local government influences the functions ascribed to
suburbia above. It determines the nature and quality of the educa-
tion which children receive. It molds the racial and economic assort-
ment of neighbors with whom both the parents and the children will
associate. It insulates a subclass from having to support services
for other subclasses of the society which may differ in type

or quantity.

The class behavior of Marxist analysis emphasizes the distributional impact of community "choice." The class-found suburb not only supports the productive role of the household's members, it also ensures that political rules and externalities are manipulated in favor of its subclass. Efficiency, in the Marxist model, is a subject to be considered only after social justice is achieved. An objective outsider would, of course, agree that there is some perversity in the efficiency standard used by the neoclassical model; surely where gluttony and starvation exist side-by-side the society cannot be credited with having made an appropriate allocation of resources.

The Marxist reasoning leads to the conclusion that differentiated suburbs have developed from class roots and emphasizes the pre-eminence of distributional or class motivation in residential location. It leads to more powerful conclusions than we were able to reach in the earlier sections of this chapter, where we could conclude only that correct use of utility theory hypothesizes an ambiguous motivation for residential location decisions. By using class analysis, the emphasis on efficiency, which requires the assumption of innate and independent preferences, vanishes from the model and the distributional forces molding residential location are starkly outlined.

F. Conclusion

In this chapter we have constructed a model which examines the impact of the local public sector on the household's locational choice within the metropolitan area. The model demonstrates that households, as consumers of public services, will attempt to maximize their preference functions in choosing a community. However, since the choice of community has a distributional impact on the household as well, we cannot draw the usual conclusion of optimal public sector resource allocation resulting from the competition among local units of governments and consumer choice. Distributional gains and losses involved in community migration impair the analysis of demand conditions leading to Pareto-optimality; since the conventional analysis relies upon each maximizing preferences given income, the introduction of locational variation in the individual's real income via the public sector mechanism negates the Tiebout conclusion.

The following chapter contains a graphical exposition of the model constructed. It demonstrates the distributional impact of the local public sector on consumer optimization both within and among several communities, and the constrained nature of this distributional effect.

CHAPTER IV

SOME ILLUSTRATIVE EXAMPLES OF INDIVIDUAL

CHOICE AND RESPONSE

This chapter is designed to present a few hypothetical situations to illustrate the process outlined in the preceeding chapter. The graphics included here dramatize, with conventional tools, the distorting influence of distributional considerations on the individual's decisions on tax issues and migration. While care has been taken to construct examples as realistic as possible, the magnitudes expressed should be treated skeptically and mainly as indicators of directional change.

A. Basic Model

1. $U_i = P_i G_i^{19}$ Same assumptions hold as on pages ___ of Chapter III; G_i to the 19th power used to provide realistic reflection of actual preference for local public services as opposed to all other consumption.

2. $P_i = P/n$ Distribution is assumed to be based on population size alone. Each consuming unit gets the same absolute amount of output.

3. $P = RT/H$ Simple production function.

4. $Y_i = tY_i^{\beta} + G_i p_g$ Simple budget constraint.

5. $R_{pr} = t\sum_i Y_i^{\beta}$ Simple revenue-cost function.

B. Derivations

6. $t = Yi/Yi^{\beta}20$ — Tax rate desired by each i.

7. $Pi = RT/Hn -$

   $Yi(\underset{i}{\Sigma}Yi^{\beta})T/20prYi^{\beta}Hn$

   Receipt of output which is implied by the tax rate chosen; desired output.

7a. $Pi = Yj(\Sigma Yi^{\beta})T/20prYj^{\beta}Hn$ — If there is a tax conflict, and household i loses to household j, then i will receive an allocation of public output based on j's income and preference structure.

8. $Gi = (19/20pg)Yi$ — Desired consumption of private goods.

8a. $Gi = \dfrac{Yi - tjYi^{\beta}}{pg} =$

   $\dfrac{Yi - (Yj/Yj^{\beta}20)Yi^{\beta}}{PG}$

   If there is a tax conflict and household i loses to household j, then the amount of household i's resources left for expenditure on Gi is circumscribed by j's income and preference structure.

9. $(Yi^{a}) = PiprH/T + Gipg$ — Apparent income, a measure of the resources actually devoted to the consumption of household i.

C. Example 1

Purpose: To demonstrate the impact of tax and community choice on the effective budget constraints of individual units. Simple model with no allocative problems.

Additional modifications, numerical additions:

$\beta = 1$ flat rate (proportional) tax

A: community with 20,000 households with incomes of $5,000

B: community with 20,000 households with incomes of $20,000

pg: $100   complete arbitrary and unimportant; can be visualized as a month's groceries for a family of four, or equivalent.

Pr: $10,000 arbitrary; can be visualized as the salary of one
police officer for one year

X: household with income Y_x of $5,000

Z: household with income Y_z of $20,000

H,T: equal to 1 for both A, B.

This case is constructed like the special case in Chapter III,
in which disparate incomes could agree on a tax rate. The following
table expressed the desired tax rate, the accompanying publicly-
produced output allocated to each unit, the desired amount of private
consumption, and the apparent income level, for each household in
each possible location.

TABLE 1. Taxes, Consumption and Apparent Income: Example 1

Household	X		Z	
Community	A	B	A	B
t	.05	.05	.05	.05
Pi	.25	.1	.025	.1
Gi	47.5	47.5	190	190
Y^a	$5,000.00	$5,750.00	$19,250.00	$20,000.00

It should also be noted that this example is constructed to be
redistributive. Since public output is financed by a proportional
tax, but distributed in lump amounts equally to all units, the pre-
sence of disparate incomes will involve redistribution. Thus low

income person X receives a redistributive benefit from living in a

higher income community, B, while person Z is redistributed away from

if she lives in community A. Of course, when all incomes are the

same, as is the case when X lives in A, or Z lives in B, there is no

redistribution. Apparent income is a measure of this built-in

redistribution.

The following graph displays these positions on a conventional

indifference map. One of the appropriate set of indifference curves

has been added to aid visualization, Uz.

As theorized in Chapter III, this graph demonstrates that even

if everyone agrees on a tax and public output level, each will have

an incentive to move to the wealthier community, from X_A to X_B, from

Z_A to Z_B. Distributional considerations thus have an obvious role in

migration decisions, apart from allocative concerns.

The graph also demonstrates the real nature of the budget con-

straint when the public sector is taken into account. The public

sector, unless distribution parallels assessment exactly, is a re-

distributive agent from some groups to others. However, by redistri-

buting "in kind," the local public sector limits the form in which

any household can participate in this redistribution. For instance,

if X lives in community B, it enjoys the output of resources valued

at \$5,750, although it must consume \$1,000 of it in Pi, which cannot

be varied without affecting the income level itself. This apparent

income, combined with the prevailing price ratio, would yield budget

constraint Y_{XB}^a. This constraint, however, is not operative, since
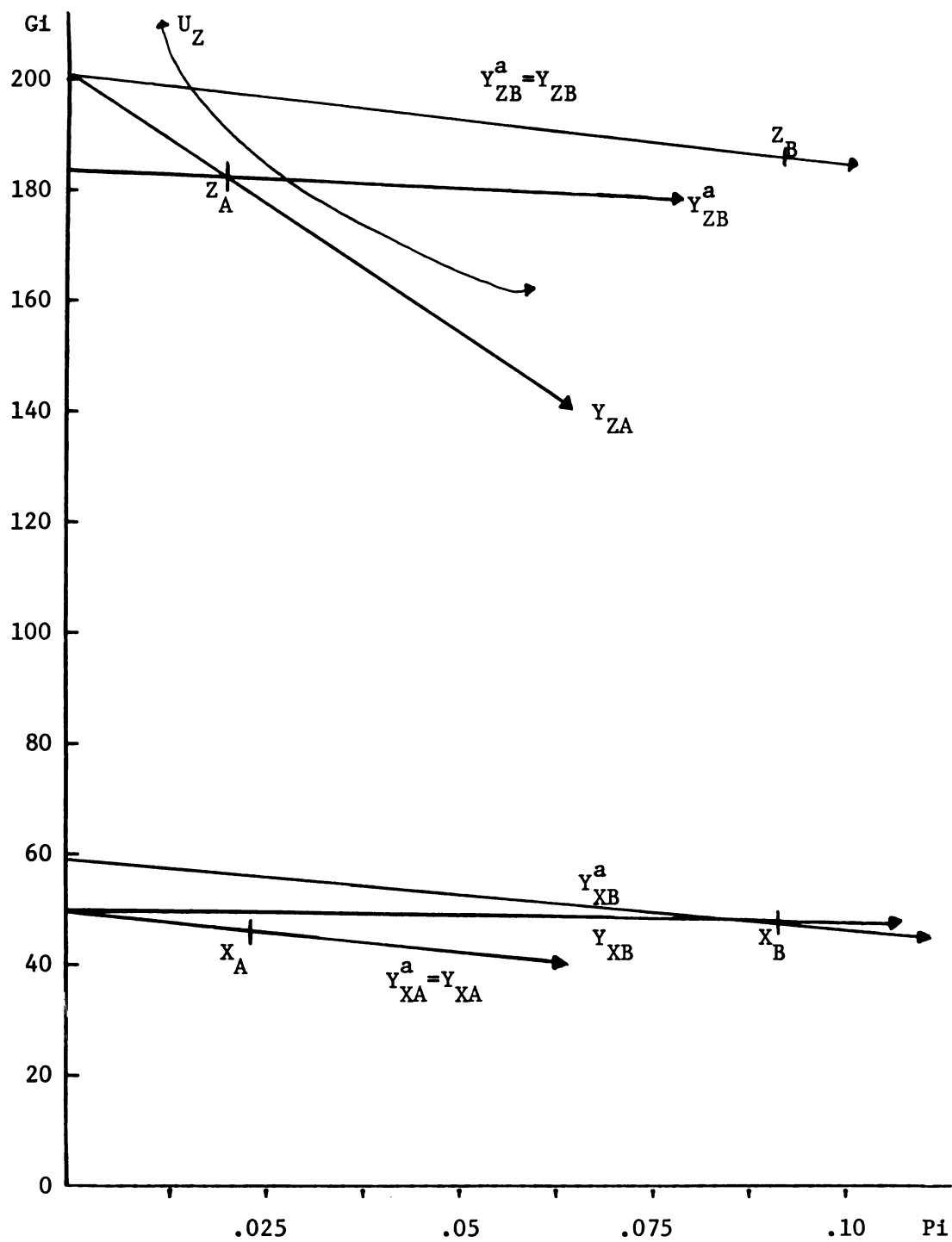
Figure 1.   Consumption and income, Example 1.

it is impossible for X to attain any other point on it.

The _real_ budget constraint that X operates under is given by Y_{XB}, the combination of opportunities that X has in choosing between different tax rates and private consumption. We can express this new constraint in either of two ways. We can present it as a schedule of income changes corresponding to different tax rates at prevailing relative prices. We would then have a set of figures describing our constraint like the following, for Z_A in this example:

TABLE 2. Real and Apparent Income

Tax Rate	Real Income	Apparent Income (Value Consumed)
.00	$20,000	$20,000
.05	20,000	19,250
.10	20,000	18,500

This particular way of stating the constraint has the advantage of demonstrating that Z, even if the public sector redistributes away from him, will often choose a public/private mix which does not maximize his "income." The maximizing position for Z in this case is at a tax rate of .05, where he enjoys the output of resources valued at $19,250. This he prefers to the alternative of no public output but control over all of his real income.

However, another approach toward this budget constraint can be

taken, one that will avoid the confusion raised above when a series

of different "incomes" are related to a single budget constraint.

It can be noted, from the graph, that the real budget constraint, Y_{ZA},

for instance, has a different slope from the apparent income con-

straints Y_{ZA}^a or Y_{ZB}^a. In effect, the opportunity to garner some of

another's income through the public sector by choice of a tax rate

affects the <u>real</u> price ratio that each household faces. For higher

income households, the increase of lower income groups in the commun-

ity raises the relative price of public output, since for each tax

dollar more of its income is redistributed to those groups. This is

illustrated by the budget constraints Y_{ZB} and Y_{ZA}; the latter is much

steeper than the former and represents the redistribution in a commun-

ity of unequal incomes. For X, the lower income household, the

effective price of public output will decrease as X moves into a

higher income community, Y_{XA} to Y_{XB}. This approach allows us to re-

tain the conventional association of a unique income level and rela-

tive price structure as the determinants of the budget constraint;

for Y_{ZA} the relative price would be pg/pr = .0025, for Y_{ZB} it would

be .01. However, we cannot compare X with Z in this approach, for

each now faces a different effective price ratio.

D. <u>Example 2</u>

    Purpose: To show budget constraints and desires and conflicts
             of two units of unequal incomes living in a community
             with a regressive tax.

    Changes from Example 1: $\beta = 1/2$. This gives us a somewhat
    realistic tax structure. Under this structure effective rates

on the $20,000 unit range from .025 to .05; from .05 to .1 on the $5,000 unit.

TABLE 3. Tax, Consumption and Apparent Income: Example 2

Household	X		Z	
Community	A	B	A	B
X wins:				
t	35.4	35.4	35.4	35.4
Pi	.025	.05	.025	.05
Gi	47.5	47.5	195	195
Y^a	$5,000.00	$5,250.00	$19,750.00	$20,000.00
Z wins:				
t	70.7	70.7	70.7	70.0
Pi	.05	.1	.05	.1
Gi	45.0	45.0	190	190
Y^a	$5,000.00	$5,500.00	$19,500.00	$20,000.00

The following graph, similar to the one above, maps out these options and the budget constraints operative in each case.

In addition to those positions listed in the table, a budget constraint for each household is shown as it would occur if taxation were progressive, i.e., if taxes $= tYi^2$. As might be expected, progressive taxation "lowers" the tax price of public output for X, raises it for Z.
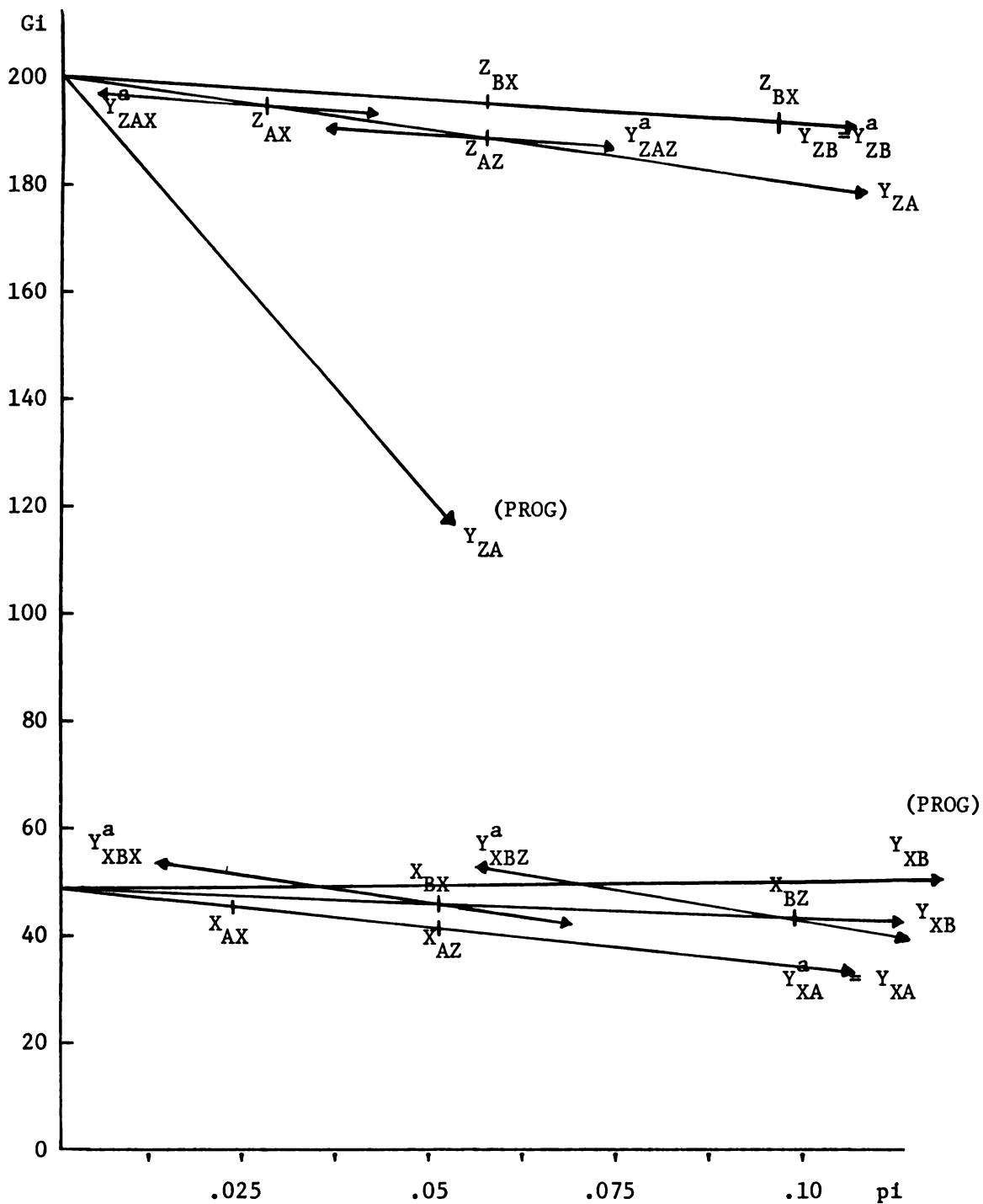
Figure 2. Income and Consumption, Example 2.

This example shows that two households in this situation with disparate incomes will not agree on a mutually acceptable tax rate. Because of the regressive nature of the tax structure, any given tax rate has a diverse impact on those assessed, even though they may share the same desires for a public-private mix. This phenomenon in our model is characteristic of a whole group of disturbances (disparate preference functions, distribution of product on an income/hardship basis, etc.) which will prevent maximizing households from agreeing on an acceptable tax rate to be applied to everyone.

From a careful look at the table and the diagram, it is evident that there is some trade-off point between an increase in income _in kind_ gained by moving to the richer locality, and the loss of the optimal allocation of income between consumption items. For instance, X obviously prefers X_{BX} to all three other positions, and prefers X_{AZ} least. However, it is not clear whether or not X prefers X_{BX} to X_{AX} or vice versa. We do not know if X will choose to stay in the poorer community where his views on appropriate tax levels are accepted, or to move to the richer community even if his tax goals are unaccepted. We can only answer this question when we know the precise nature of the utility function, the relationship between $Gi_{XAX}{}^{19} Pi_{XAX}$ and $Gi_{XBZ}{}^{19} Pi_{XBZ}$.

The trade-off point can be formulated for our basic model used in this chapter:

$$(Pi_A i)(Gi_A i)^{19} : (Pi_B j)(Gi_B j)^{19}$$

$$\frac{19}{20}^{19} \frac{Yi^{20}}{Yi^{\beta}} \; \sum_i Yi_A^{\beta} : \frac{YjYi^{19}}{Yj^{\beta}} \; \sum_i Yi_B \; \frac{1-Yj^{(1-\beta)}}{20Yi^{(1-\beta)}}^{19}$$

$$\frac{19}{20}^{19} Yi^{(1-\beta)} \; \sum_i Yi_A^{\beta} : Yj^{(1-\beta)} \; \sum_i Yi_B \; 1 - \frac{1}{20}\frac{Yj}{Yi}^{(1-\beta)\,19}$$

If the left hand side of this expression exceeds the right, then allocative considerations overrule redistributive considerations for the household. In our example, a painstaking calculation reveals that this is the case for our friend X; she will prefer to stay in the poorer area where she can obtain a better product mix. The institution of a regressive tax has turned what once was an attractive community into an unattractive one. In her own community, despite a regressive tax, she does not bear an inordinate share of the tax burden because all incomes are equal.

The above formula points out that this decision depends on the tax structure (β), the disparity between incomes of winning and losing tax voters (Yi, Yj) and the disparity between overall levels of income ($\sum_i Yi_A, \sum_i Yi_B$). A change in any one of these factors could change the decision in favor of migration for X. It is clear that there is a range of values for which X would chose to live in B with a misallocated income, rather than in poorer A with a properly allocated income.

We should note that this dilemma is very real for X, the lower income household, while it is almost non-existent for Z. Since X orders her options in the following way (XBX, XBZ or XAX, XAZ) it is likely that she will be stuck choosing between the middle two. It

is unlikely that XBX will occur; that would mean that X's tax pref-
erence would dominate in a community where everyone shares B's in-
come and aims. It is likely that if she lives in B, she will have to
live with position XBZ or else join a community like A of like-minded,
like-endowed incomes. For Z, however, whose ordering goes ZBZ, ZBX,
or ZAZ, ZAX, both middle positions are unlikely while the two un-
equivocal ones are not. Most Z's, as we know, end up in ZBZ
positions.

The dilemma just illustrated points out the major contention of
this thesis, that is, that the choice by a household or individual
to reside in a particular community cannot be taken as his revealed
preference for a certain public/private mix in a simple utility-
maximizing model. He maximizes utility, certainly, but his choice
involves alternative income status's as well as different product
mixes. Our conventional theory claims that we achieve an efficient
allocation of resources when all persons are maximizing their given
incomes by contracting on the free market for goods. But here we
see that some individuals may forego maximization positions in order
to enhance their income position.

Viewed another way, this is equivalent to saying that the
marginal content of the argument has been destroyed. As economists
we are accustomed to the convenient simplicity of viewing market
choice as a means for marginal improvement. Ordinarily, because our
consuming unit corresponds one-to-one with his resources (income),
we can demonstrate unambiguously that on the margin, a particular

consumption mix is more desirable than another solely with reference
to his desires. However, now that the consumer's income position
(or, alternatively, the relative price structure) is not independent
of his choice, we have lost the comparability of various consumption
points for the purpose of determining the more "efficient" mix.

E. Extensions of the Graphical Approach

The graphical analysis employed above can be extended to portray
the impact of any of the variables in our model. We could chart
different utility functions, different production functions for public
output, distribution functions which favored or penalized different
sets of individuals, revenue functions that include compensatory
components from higher levels of government, and so on. However, we
would not gain any conceptual understanding from such exercises, for
the basic dilemma still remains. Even if varying utility functions
prevented agreement on tax levels within a community, we could not
interpret the emigration from that community as a response to purely
"allocative" motivation.

Such graphical extensions would point out, however, that income
is not the only non-allocative factor inducing people to move. It
is rational for a household to choose another community if all that
differs is the cost structure, that is, if all else is equal, T is
higher and/or H lower than for the present location. Differences in
cost structure can be translated into a different relative price
ratio for public/private output, or into a gain in command over

resources (apparent income) as discussed above. Similarly, a dispar-
ity in public output distribution methods or in tax structure can
be viewed as incentives to migrate in the same vein.

F. Conclusion

These examples and the accompanying graphs have been devised to
help in a visualization of the problem considered in this thesis.
They point out that choice of a tax level and community actually en-
tail the calculation of a new set of trade-offs. The urbanite chooses
not merely between combinations of public-private output at her given
income level and a fixed market price level, but between combinations
of output at different (but constrained in kind) income levels, or
looked at the other way, at different relative price ratios. This
real choice can be expressed by the construction of a new budget
constraint which is unique (within any one community) and can be used
analytically in the same way as the conventional budget constraint.
However, the components of that new budget constraint force us to
the conclusion that an individual's maximizing position is dependent
on his neighbor's income, sociological status, the shape of the com-
munity's physical plant, etc., factors which we do not conventionally
insert into the givens of our theory of micro-economic behavior.
Nor can we conclude that a person's migration from one community to
another is simply in response to a more amiable mix between public/
private output.

Having analyzed the demand side of the local public service market, we shall turn (in our next chapter) to the supply side of this market and examine the producer's response to the double-faceted goals of its current and potential residents.

CHAPTER V

LOCAL GOVERNMENT AS A MARKET DESIGNER

We have explored the public sector incentives which attract
metropolitan people to various residential locations. When they
are not moving, however, these same people attempt to achieve their
goals with respect to local services and their tax tag through local
government. In this chapter, we will explore the link between the
individual consumer's motivation and local government decisions.
We will develop a model that postulates metropolitan local govern-
ment behavior and policy.

A. The Assumptions

The following assumptions are made for any municipal government,
other than that of the central city, in a metropolitan area.

1. Representativeness

The municipal government is assumed to be as representa-
tive as a very pure theory of democracy would suggest. That is,
its actions are approved by at least a majority of its constit-
uents at all times. While we generally observe that the egal-
itarian principles of democracy are undermined by the unequal
distribution of wealth and income, and therefore power, on most
levels of government, we can make a good case for a high degree
of democratic responsiveness at the local level in a metro-
politan area.

Several reasons can be cited in support of this assumption. First, the relatively small size of the suburban constituency, averaging less than 50,000,[1] facilities operation along the lines of traditional grassroots democracy. Personal contacts with local officials are common and no political expertise is required to run for office. Secondly, local elections are frequent, and money tends to be a less important factor in victory. Finally, most suburban areas have fairly good local papers which are published weekly and devote a great deal of space to the reportage and discussion of local affairs. Therefore, our assumption seems reasonable in light of these accessibility and information factors.

2. Homogeneity

We make the explicit assumption that suburban municipalities, by virtue of the process described in the preceeding chapters, have highly homogeneous populations. We can further defend this assumption by pointing out that despite the fertile atmosphere for political debate, suburban politics are almost uniformly dull. Political scientists have remarked at length on the political consensus which is characteristic of

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[1] In the sample of 47 Detroit area municipalities used in Chapter VII, comprising 82% of the SMSA population, the median size population is 30,850, although 55% of the population live in Detroit and nine other suburban cities with populations above 70,000. Data from 1970 census.

suburbia.[2]

This assumption does not hold in exceptional communities which are undergoing a transitional stage due to their position in the aging process or which are subject to special location features or pressures (e.g., the University community). But heterogeneity in such communities is treated here as either transitory or of negligible importance in describing the general political functioning of the suburb. In cases where policies implied by the model are the subject of contention among heterogeneous groups within a community, we will note these differences.

The other exception here is the central city itself, which cannot be characterized by homogeneity and political consensus. Bit city politics are a subject for a more sophisticated theory of public expenditures and decision-making. However, since our point is that the metropolitan problem is mainly one of the development and maintenance of surrounding independent municipalities, we are not losing explanatory power by excepting the central city.

3. Minimum Size

We assume that there is a lower limit to the size of a viable independent municipality. The production conditions for

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[2]See, for example, Robert Wood, Suburbia: Its People and Their Politics (Boston: Houghton Mifflin Company, 1958), especially Chapter 5, "The Politics of Suburbia."

local public services are such that they can satisfactorily be met only by a unit larger than this minimum.[3] The minimum, imposed by production requirements, can be expressed as $n > n_o$, or $R > R_o$, or a similar scale-related variable. (R is the single-factor input used in the model; n is population.) This lower limit on the size of a municipal unit contrains the process outlined above from resulting in as many service units as there are people in the metropolitan area. A crude estimate of the minimum feasible size for a modern suburb is between 10,000 and 15,000.

4. Legal Protection

We assume that a legal apparatus exists which facilitates the establishment of independent municipalities on the fringe of metropolitan areas. A permissive framework makes it easy for outlying areas to stave off absorption into larger areas by defensive incorporation.

B. Local Government Maximization in the Metropolitan Area

The local government's role in producing public output is functionally analogous to the firm in the private economy. It must hire the factors necessary for production, determine an output level for a stated price and produce that output. However, in explaining

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[3]See James Buchanan, "An Economic Theory of Clubs," Economica, XXXII, February, 1965, for an exposition of optimal group size given the cost of distribution characteristics of the service which the group provides and its membership consumes.

local government behavior and policy, a complete analogy with the
behavior and performance of firms in a competitive market is
inadequate.

The neoclassical theory of the firm examines its responses to
a given resource allocation via the factor price vector and to a
given state of demand for its output. Under competitive conditions,
the profit drive compels the individual firm to perform efficiently
both in choosing type and level of output and in employing minimum
cost techniques. Aggregating over all firms, the profit drive
ensures the most desirable employment of scarce resources. In this
micro model, we do not expect to observe the firm engaged in any
activity other than vigilant cost minimization and a continual search
for new and cheaper resources and techniques. The firm has no inter-
est in who purchases its product, apart from their ability to say.
Furthermore, there is no limit on the expansion of its output except
prohibitive or rising costs, or insufficient demand; in general
firms are always seeking to expand their markets without screening
their potential customers (and rejecting some) on the basis of how
much money they make, how educated they may be, how white or black
they are. The firm's behavior is divorced from the interests of its
consumers and is indifferent to the impact of its decisions on the
individual well-being of any one or group of them. Recognition is
granted only to the dollar power that the customer can muster in
the marketplace.

The local government, on the other hand, finds its goals

indistinguishable from those for whom it is producing. Thus it combines the roles of producer and consumer. It both embodies the demand for public services and carries out the production of them. In this merging of two roles, usually considered separately in economic theory, the profit-making motivation disappears as the incentive of disinterested management, and the utility-maximizing motivation replaces it as an enforcer of cost-efficient production.[4] But utility-maximization implies a wider range of behavior than what we observe in the prescribed role of the firm.

We have demonstrated above in Chapters III and IV that the public sector well-being of a group of citizens does not merely entail the efficient production of public services for them, given their resources, but includes income enhancement. The local government, then, since it reflects the maximization goals of its constituents, can be expected to behave in a way that will achieve both these ends. Unlike the private firm, indifferent to its customer's income position, the local government can theoretically be expected to pursue policies which will enhance its "customer's" wealth or income. Expansion of its market will not be undertaken unless it enhances the well-being of its present customers. Free from the

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[4]In "Property Rights and Economics Theory," _Journal_ _of_ _Economics_ _Literature_, X, December, 1972, Erik G. Furnbotn and Svetozar Pejovich summarize the salient features of a diverse set of theoretical studies, all of which employ some form of utility maximization as the behavioral postulate in place of the traditional profit maximization (for firms) or social welfare maximization (for the public sector).

need to search for new markets, the local government can turn its

attention to controlling cost and demand factors in its public serv-

ice market. This is the process which we shall term "market construc-

tion."

In contrast, the conventional firm in economic theory enters

"the market," an arena in which supply meets demand, where produced

goods, consisting of assembled resources, are traded for other goods,

or the money surrogate. It may tru, as in the case of oligopoly, to

influence demand (e.g., advertising) or costs (e.g., vertical inte-

gration), but its market is by nature independent of the firm itself.

The economic behavior of the local government is quite differ-

ent. Its output is local public services, like public safety, parks

and recreation, and sanitation. The demand for these services is

expressed by the taxes the resident consumer is willing to pay for

a certain set of them, given quantity and quality. The cost struc-

ture is determined partly by general technological considerations

(the expense of an equipped policy cruiser) and local conditions

(the extent of the drug traffic, poverty, etc.). Since the goal of

the agent (here the local government identifying with its constit-

uents) is to enjoy the best service package at the least possible

price, it is obvious that given a chance to influence the cost or

demand structure in this local public service market, it will do so.

This behavior on part of the producing agent is facilitated

by the fact that the market for the public output of local govern-

ment is spatially circumscribed. The local government cannot

"profit" by selling its output to a higher bidder who lives in another community. It can only "gain" by carefully sifting the components of its own market, to try to achieve the best possible cost and resource position. Therefore it attempts to mold its own demand, and to limit its cost per unit of output: it constructs the market for its product.

Having assumed that local government mirrors the concerns of its residents, and after suggesting the general outlines of the market construction process, we can express short run and long run local government behavior explicitly. The explicit specification of local government policy aims involves merely transferring the concerns of the individual consumer, as determined in Chapter III, to the motivational reservoir for public policy.

1. The Short Run

In the short run, that convenient time period which we use to distinguish between optimizing behavior _given_ supply and demand conditions, and optimizing behavior with respect to structural change, the local government is expected to formulate the annual municipal budget and assign an appropriate tax price. From Equations 12c, 13c and 15c, we have the unique solutions for public service factor input, output and tax "price" in a homogeneous community:

12c. $R = R(n, H, T, Y_i, \Sigma Y_i, h_i, p_r, p_g)$ where $Y_i = Y_j$, $h_i = h_j$

for all i, j

13c. $P = P(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$ where $Yi = Yj$, $hi = hj$

for all i, j

15c. $t = t(n,H,T,Yi,\Sigma Yi,hi,pr,pg)$ where $Yi = Yj$, $hi = hj$

for all i, j

The solution here is straightforward. This optimum tax-service package is settled upon either through local leadership in the budgetary process, or at the polls by a voter-determined tax rate corresponding to a particular service package.

We can infer that the local government, in its combination of consumer and producer roles in this process, stretches each tax dollar as far as possible, so that in a very limited and theoretical sense (to be qualified further) it can be said that the local government is an efficient economic agent in allocating scarce resources from the supply side. However, this admission does not rest, as Tiebout's argument does, on the competition among local governments as the necessary incentive, but on the unity of producer and consumer aims at the local level. In assuming that the government's action allocates the resources available to it as efficiently as possible, we are simply paraphrasing the cornerstone assumption of economics, that man is rational. Furthermore, this efficiency generating behavior is acknowledged only with respect to the individual unit, in isolation from the competitive struggle, as if we were considering it with blinders on. When we take those blinders off, as we will see below, the behavior and performance of local government

differs dramatically from the simple Tiebout model of congenial competition imposing allocative efficiency.

2. The Long Run

In Chapter III we demonstrated how the individual unit would desire certain structural changes in the public sector which would enhance her public service position and her general well-being. These structural changes will be carried out by the local government, buttressed by citizen and local business support. All of them are aimed at changing the demand and supply conditions that the local government, and therefore its taxpayers, faces.

What kind of rules, structural parameters and institutions will a local community adopt in order to foster and protect distribution from public sector erosion? We have already seen that the tax rate a person pays and the public services she receives in return are influenced by the following relationships.

$$P_i = P_i(n, H, T, Y_i, \Sigma Y_i, h_i, p_r, p_g; \text{ tax structure, distribution structure})$$

$$t = t(n, H, T, Y_i, \Sigma Y_i, h_i, p_r, p_g; \text{ tax structure, distribution structure})$$

Each household will lobby in its community for the aggrandizement of its own portion of P_i via these variables. The household becomes part of a group which is literally constructing its own market for local public services. In all but a very few instances, the prescribed action for the policymakers is

unambiguous; every resident will generally want the same rules
enacted, regardless of their other differences. We will note
the exceptional cases.

C. <u>Local</u> <u>Government</u> <u>Policy</u>: <u>Elements</u> <u>of</u> <u>Market</u> <u>Construction</u>

Market construction, a long run phenomena, consists of a set of
general principles which circumscribe the growth of the community,
mold its membership and promote its public sector philosophy (to
redistribute or not to redistribute). The following policy rules for
local government can be deduced from the individual maximization
schemes.

Rule 1. Develop as high an average income level as possible.
We have noted above that unless public output is an inferior good
(which we have rejected in general), an increase in per capita income
in the community will increase the amount of public output that each
resident gets. Even if public output is considered inferior by the
very wealthy (a hypothesis which probably holds for individual out-
put categories but not the aggregate of local services), an increase
in per capita income will still amplify the community's resources
and subsidize the public sector. Attracting richer rather than
poorer inhabitants at the very least protects residents against re-
distributive drains through the local public sector.

Local governments have at their disposal certain tools of market
design: building codes, zoning regulations and public relations.
Building codes can be designed to ensure that residents are of a

certain income/wealth level. Some states allow minimum cost require-
ments in the building code. In states where this is illegal, the
same effect can be achieved by controlling minimum floor space,
basements, car garages, etc. By determining in this way the price
range of the home and by setting tax rates, the local government
dictates the disposal of a substantial portion of the prospective
resident's income. (A conservative estimate would be an average of
about 30%, by the time we add up mortgage or rent payments, school
and local taxes). Zoning regulation can also be used in the same
manner. The employment of large lot requirements as a way of build-
ing exclusive communities is notorious.

In addition, the combination of local government public rela-
tions efforts and informal practices of realtors and home-sellers
round out a team of policies which make suburbia almost airtight,
racially as well as economically. A glance at the racial statistics
of the 1970 census for local government divisions[5] suffices to demon-
strate the effectiveness of the deployment of these defensive weapons.

Rule 2. Manipulate the tax _form_. A regressive tax form en-
sures that if low income households do move into the community, they
will at least pay as many dollars (or greater than proportional) as
the wealthier households, thus damping the innate redistributive
nature of the public sector. In turn, the regressive tax discour-
ages low-income households from entering the community, since they

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[5]See Chapter VII for Detroit figures.

will likely not be able to satisfy their utility-maximization conditions. A simple example can be drawn from our ideal case in Chapter III: a family willing to pay a proportional amount of their lower income in school taxes will be unwilling to pay a greater than proportional amount. Since the tax base/expenditure studies[6] indicate a tendency to compensate low tax base with hither tax rather, it may be that this willingness to pay more will hamper the effectiveness of regressive taxes as an exclusionary tool. Nevertheless, the more regressive the tax structure, the harder it is on low-income households, and the more apt it is to discourage migration effectively.

One might object here that the property tax, the principal component of this regressive tax system, is highly unpopular. However, one can counter that its unpopularity may be chiefly due to its assessment in one lump sum (therefore its high visibility), its poor administration and its hardship on older people, not to its regressiveness. Once voters start looking at alternative forms of taxation, it is possible that they will decide that the property tax is not all that bad after all.

Rule 3. Exclude as many handicaps as possible. Since handicaps are adverse inputs into the production process (they raise costs), rules should be adopted to keep them out.

A. To the extent that handicaps are attributable to individual households, exclusionary practices should be employed. For

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[6]Metzer, Dick, "Federal, State and Local Finance," p. 442.

instance, the latest crime studies show that the crime rate is closely related to poverty, drugs, broken families, and obsolete infrastructure. It is higher among blacks. Therefore, a community can adopt zoning rules that eliminate any potential resident except families of a certain size, a certain income level, a certain race, and as far as possible, a certain social respectability. Unofficial racism re-enforces this attempt by excluding blacks. Here again, zoning devices (single-family zoning, etc.) can be quite effective, and fortunately, since there is a high correlation between income/wealth and handicap characteristics (negative), the use of these tools is unambiguous.

<u>B</u>. To the extent that handicaps are part of the physical plant (e.g., the old narrow streets and firetraps of the 19th century), the best way to exclude them is to build a community anew on the cornfields or mountains or orange groves at the periphery. Thus the new community naturally has the edge with respect to handicap inputs.

Rule 4. Practice urban removal. (The inverse of rule 3.) This rule simply counsels the removal of those handicaps with which a city may have the misfortune to be saddled. This is usually the typical form in which central cities and inner ring suburbs practice market design (e.g., Detroit, Hantramck and Dearborn's efforts to remove ghettos and their residents). Attacking ghetto housing by demolition has the pleasant result of removing both obsolete high-cost physical

plant and poor, unhealthy, crime-inclined blacks.

Rule 5. Rip off as much as possible from other areas. In the
first instance, this is done by maintaining political independence
and screaming loudly for home rule every time the legislature re-
considers it or threatens to impinge upon it. Beyond that, it is
possible to construct an entire theory of "rip off maximization"
which would include concessions of minimal compromise (e.g., a frac-
tional non-resident income tax rate) and efforts to minimize the
cost of access (e.g., freeways).

Rule 6. Manipulate the distribution of services within the com-
munity to the advantage of certain groups. If the suburb is non-
homogeneous, the undesirable elements can be encouraged to leave
(it's only the richer that want the poorer to leave, not vice-versa)
by ensuring that they cannot participate fully in local services
unless they have some status-related entree. Streetcleaning and
public parks can be differentially allocated, public funds can be
used to construct golf courses and snowmobile trails without adequate
fee compensation.

Rule 7. Lobby for preferential treatment at higher levels of
government. Since state and federal governments often threaten to
take over some local functions or to subsidize them in a redistri-
butive way, it behooves each better-than-average community to work
hard to assuage the redistributive effects of such policies. So
far, coalitions of suburban/rural forces have prevented large-scale
relief for the cities, where the problems of local government are

most acute but so concentrated that their political pull higher up

is ineffective. The history of revenue-sharing proposals at both

state and federal levels is a testimony to the ability of suburbs

to protect their differential position.[7]

These rules are the essence of a policy of willful market de-

sign. Of them, all except rules 2 and 6 are politically unanimous;

every member of the community, regardless of income, wealth, status,

age, will welcome them. A working class slip-in in a higher income

community will welcome rules which effectively exclude any more of

his kind. However, the same taxpayer will object to attempts by the

higher income groups to manipulate tax and distribution structures

at his expense. He will likely lose on those issues, however, for

the higher income group can also take advantage of its mobility if

it does not prevail, whereas the worker is probably still better off

in this community than in one with his peers. To the extent that

a community achieves homogeneity, there is no conflict here, for a

regressive tax structure is actually only flat rate if everyone has

about the same income (and similarly for distribution structures).

Differentials on these two accounts are useful in a preventive

sense mainly, and, as noted, to lighten the redistributive burden in

communities where "undesirables" have managed to remain. I should

also note that individuals or families subject to the assault of

urban removal will, of course, object, but chances are they will be

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[7]See Chapter III, Section D-6, for a discussion of federal
revenue-sharing provisions.

a tiny minority against a unified consensus.

Note that rules 2 and 6, too, are apt to introduce into our ideal model precisely those circumstances under which households with disparate incomes will not be able to agree on a mutually satisfactory tax rate and output level. Therefore, while it might appear that some people migrate because they cannot attain the satisfactory public and private good mix in a particular community, the frustration of their goals may have arisen from policies adopted to aid or harm them on a distributional level.

What if we allow for disparate utility functions? It appears that if a household with a rather low income desires to spend a large proportion of it on local public services at the expense of private consumption, then there should be no objection by high income groups to its presence in the community (a la Tiebout). However, the community can adopt only one set of rules governing immigration, and cannot make an exception for a person who they suspect might have different priorities. (It cannot insure, for instance, that this household will sell to a similarly inclined household in the future.) The rules adopted, therefore, generally do not allow this exceptional family to purchase a house within their means in the higher income community. The maximizing conditions for this household are thus thwarted by the distributional rules governing its possibilities.

Now, again a clarification of the argument is needed. If we admit different utility functions (and the idea of an ambitious

working class family eating beans in exchange for a good education
is not strange), then we would expect either to see them happily
settled in a community of unequals or unhappily stuck in a community
of their peers. The first proposition remains to be tested, al-
though we have postulated that market construction rules prevent it.
The second, as we have noted, does not pertain—at least we have
little political indication of disgruntlement (again, outside the
central city) within the local community.

However, another suggestion can be made here. That is, that
while it is true that some members of an economic or social class
may have different public service aims from their peers, they are
prevented from achieving them by the demands for conformity to the
group consensus as well as by barriers to emigration. Thus the
ambitious working-class family would be considered "uppity" or pre-
tentious by their skeptical neighbors if they were to propose or sup-
port a large tax increase for education. Wood, in <u>Suburbia</u>, makes
a strong case for the power of this conforming behavior in the
suburbs. (This is a paraphrase of the Marxist analysis of class
interests and institutionalized tastes.) If we accept this possi-
bility, then we are back to uniform utility functions within a class,
with an occasional allowance for a few truly unhappy families who
cannot get the public services they want, but do not raise a politi-
cal ruckus because their impact would be negligible.

D. *A Word about Non-residential Location*

To this point, we have not considered the relationship of business and commercial location to local politics in this analysis. This was for two reasons: (1) the burgeoning of suburbs in the metropolitan area is primarily (and initially) a residential phenomenon, with the exception of a few older communities in the inner ring, and (2) government policy is responsible to voters, not to businessmen, a legal pressure which works fairly well in every metropolitan local government except the central city, for reasons we stated above.

However, it is not difficult to fit business into this analysis. Non-residential land use is carefully controlled by every suburban community, with the exception of pseudo-rural suburbs at the outer edge, which may have a significant amount of land in agricultural use (but which will fall under the communities' design sooner or later). Since the local government is politically immune from the influence of outside businessmen (unless a local offical is bribable or can profit personally from a venture), it can dispassionately view the advantages and disadvantages which alternative uses of land will bring to the public sector of the community. We can imagine a sort of cost-benefit calculation going on in the zoning board's heads; will the change in the tax base from this new use compensate for its public service cost impact? If on balance the result is favorable, the new use will be granted.

Of course, the zoning board, as the mirror of community

interests, does not only take into account the dollars and cents impact on the public budget, but the impact of the new land use on the individual well-being of its members as well, on their private consumption. Thus a community might turn down a rezoning request for a manufacturing plant on the grounds that it would pollute the communal air, or accept it because of the jobs it would generate within the community.

There are, of course, some interesting speculations about special situations like Ford Motor Company's presence in Dearborn. But these are interesting sideshows in the generally dull suburban political circus. We can close our analysis of local government policy by saying that non-residential land use is viewed in the same way as residential land use: as a tool for maximizing residents' utility and designing the most favorable public service market.

E. A Marxist Counterpart

In Chapter III, we talked briefly about class determination of residential choice as derived from the Marxist analysis. In a straightforward and simple manner, class analysis portrays the differentiated suburban landscape as the outcome of class preservation and reproduction. This view leads directly to an analysis of local government as a tool for attaining class interests. Here, as before, the Marxist analysis is more powerful than the utility arguments underlying the government analysis in this chapter, mainly since it obviates the need for the representativeness arguments in the latter.

Since suburbs are class-bound phenomena, it is logical that the local government that represents a class will conduct its affairs in ways that will enhance the position of that class. The government will use all means at its disposal to protect the private property of its constituents, to provide services which will enhance suburban functions such as the class assimilation of children, to insulate its residents from potential social costs that could be imposed in a larger local public sector and to facilitate the exploitation of various central city services without compensation.

In carrying out these aims, suburban governments will employ strict immigration barriers, in the form of minimum regulations on private expenditures such as land and housing costs, and tax rates and structure. These barriers will ensure the class-bound nature of suburbs. However, the dynamics of class segregation, where each subclass continually tries to outdo the others and households continually try to associate with the highest subclass within their reach, will lead to excessive suburb-building and outward sprawl. Thus the problems of the central city are simply the outcome of a social and economic structure which does not engender community, but encourages class divisions within the community that spawn the suburban structure. Suburbs are both enclaves of escapism from the social problems of capitalism and predators on the community services which the central city provides.

In the next chapter, we shall extend the analysis of this and the previous chapters by projecting the impact of the behavior and policy hypothesized on the future of the metropolitan area.

CHAPTER VI

THE DYNAMICS OF MARKET CONSTRUCTION

IN A METROPOLITAN AREA

We have inferred the behavior of each local government from
the behavioral motives of each household. Now we can go one step
further and infer the pattern of growth of local governments across
a metropolitan area and the results of this growth.

A. Fragmentation and Stratification along Income and Hardship Lines

First of all, we expect that distribution motives, re-enforced
by efficiency motives, will result in a fragmented multiplicity of
local governments. At most, there will be N/n_o (where N is the
total metropolitan population, n_o is the minimum feasible size for a
local government) of these units. The promise of distributional
gains will encourage the development and maintenance of independent
units rather than consolidated growth within the existing political
entity.

While the desirability and maintenance of fragmentation is also
postulated by a Tiebout-type analysis, our model suggests that the
degree of community proliferation is a result of strong distribu-
tional forces which may overrule the efficiency gains forthcoming
from a partial or complete political consolidation for providing
public services. The distributional forces unequivocally favor frag-
mentation while efficiency gains argue for fragmentation only if
preferences differ significantly and production economies are not an

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impediment. Since the list of ills proferred by critics of frag-
mentation is headed by externality problems like pollution and lack
of rational planning, and internal diseconomies such as inadequate
scale and duplication of effort, we might conclude that such inef-
ficiencies associated with a multiplicity of local governments are
a part of the price willingly paid for distributional gains accruing
to the suburbanite.

The fragmented units, in addition to being numerous, and per-
sistent, will be clearly differentiated along socio-economic lines.
In the abstract extreme, if income were the only socio-economic
feature of households and public sector factors the sole determinant
of locational choice, then we would expect suburbs to represent a
heirarchy of income enclaves. That is, if each household in the
population is ranked by its income position, then we would find
Suburb 1 with households ranked 1 through 20,000, Suburb 2 with house-
holds ranked 20,000 through 40,000, and so on. Allowing for other
socio-economic features of households, this stark pattern will be
modulated by an overlay of other factors, particularly race and age
of population. Higher-income blacks may not be acceptable residents
in a high-income suburb; households with a high proportion of young
and old dependents may not be acceptable either. Allowing other
influences outside the public sector to explain a person's presence
in a particular community, such as distance to place of work, we
will likely observe some households whose needs or advantages on a
private score override public service incentives to seek the commun-
ity of likes.

The tendency toward homogeneity is an inevitable consequence of the distributional game. Whatever rules are adopted by a local unit, it will generally find that in the long run, its average relative income cannot be much above the level existing at any one time or above the level required of a potential immigrant, whichever is lower. This is true of cost factors too. Higher income and lower cost households will naturally locate in community which offers them better distributive conditions, while those who will locate in a particular community are those at or below its "standards" (who cannot get into a better-favored community). Since a community's rules eliminate those potential immigrants who are below its "standards," then it is apt to attract only newcomers who are exactly like the households presently residing in the community. Each household, then, will move into the least redistributive (i.e., most exclusive) community that will allow it in, and that community is bound to contain people with similar socio-economic characteristics. It should also be obvious that the higher the relative income level, and the lower the cost level, the better the distributive spoils to be attained through the compartmentalization of the public sector.

B. Centrifugal Movement

The model suggests that there will be a tendency for the population to disperse outwards into these independent municipalities at a faster rate than would be expected on the basis of population growth alone. Peripheral growth will not simply occur in accord with changes in congestion and distance costs. There is also an added

incentive to move out in the distributive nature of the local public sector.

The newest communities are the most favored in the dynamics of market design. First of all, they have much greater leverage over their own structural features, since they will have the greatest amount of land unzoned and unoccupied. Older, more built-up areas do not have this kind of power over their contemporary structure. The preference that some urban residents might have for family/neighborhood tradition and comfortable old homes is usually overwhelmed by the gradual deterioration of an entire sector of the city and by the crime and change in racial composition of neighborhoods accompanying age, so that the cost of remaining in your traditional family home (costs both in terms of wealth and maintenance) becomes intolerable.

In addition, newer communities do not have to live with "mistakes" from the past. They can design their communities to take advantage of the advances in public service technology. Cities designed in a pre-auto age, when public safety was produced on the beat, are highly handicapped in an age when law enforcement is best carried out with the Chevy V-8 cruiser.

Central cities are truly the American dung heap in this process. They are the residuals, left with the lower income strata and the highest costs, the elements which have been excluded from the new community-building on the periphery.

It is quite possible that this bias towards outward progression

brought about by potential individual distributive gains, may result in inefficiency over the metropolitan area as a whole (e.g., empty central cities). Much as a system of tariffs impedes efficient allocation, the construction of insulated markets for public services might also prevent the best resource allocation. While it is not within the scope of this thesis to specify the impact of fragmentation and proliferation of municipalities on efficiency in the local public sector, we do suggest that distributional gains may be traded off against efficiency and that localized versus area-wide public service provision is at the very least Pareto non-comparable.

C. Further Resistance to Metropolitanization

The model predicts further resistance to metropolitanization. Metropolitan government, with monolithic tax, distribution and expenditure functions, can indeed be viewed as a return to the original egalitarian concept of the public service sector. But the enthusiasm for this idea comes generally from the central city (i.e., those who had it redistributed away from themselves). Since we can expect that some suburban residents paid a premium for real estate or committed themselves to sacrifices in the private sector (e.g., a longer commuting trip) in order to gain the preferred distributional gains they will fight hard to retain them.

D. Resistance to Economic and Racial Integration

There are no incentives to lighten the immigration restrictions in the future. Even if a community wishes to be broadminded, it

faces disastrous competition from its neighboring communities, which will tend to attract all the wealthier dissenters away, starting a reverse redistribution which will affect the whole community. A little charity, then, will result in a much greater loss.

E. Institutional Rigidity

Finally, we observe that the institutional constructs of this process are vast. Such institutions include the elaborate zoning and building codes which mold land use in a community; these legal tools are sanctioned by state law and tradition, and have a long history of support in the courts. A more subtle companion to these legal constructs is the entire body of private property law, which upholds the sanctity of private property and limits the right of any public body to undertake policies which will affect the value or use of privately-held land. Present attempts to fashion meaningful land use legislation in the public interest are greatly encumbered by the philosophical and legal protection of private property rights.

The political survival of local municipalities in the urban area is guaranteed by another set of tenets, engrained in the American consciousness and state constitutions--Home Rule. The unequivocal right to self-determination protects distributional enclaves. Periodic attempts to limit home rule have been unsuccessful, and there is little hope that this record will change in the future. Suburban interests, whose numbers are growing, have successfully blocked such attacks in state legislatures with the help of rural votes.

The existence and use of these institutions has made the fragmented metropolitan area one large institution in itself. Entire communities are designed to capture public sector distributional gains. To a large extent, the sprawl and pace of metropolitan community building represent a capitalization of these gains. Because of the permanency of land use decisions, we will have to live with the present deformed pattern of urban development for a long time to come. Ultimately, in order to change the "inequality" in the public sector, it may be necessary to dismantle the structure, and its supporting institutions, entirely.

These prospects are decidedly gloomy. They suggest that the metropolitan problem is not simply an accident, which can be corrected now that we see our folly. On the contrary, even though most urbanites might agree that the entire structure is seriously deformed, their own respective interests may find them staunchly opposed to the organizational reform which is needed for the viability of the area as a whole. It may be that new cities, more rationally planned, will grow up elsewhere, and that older cities will become deserted, modern ruins of a self-interested, competitive economy. Although the energy crisis of late presents a tightening throttle on growth, we should nevertheless experience future rapid growth of medium-sized cities in the West, and no growth or decline of most large urban areas in the Northeast quadrant of the country. It may be too late to help cities like Detroit.

In the next chapters we will test the hypotheses advanced in Chapter III through VI. We will try to gauge the extent of the problem, as outlined in this thesis, to canvass urban varieties in different areas of the country, and to investigate the prognosis of the future as presented in this chapter.

CHAPTER VII

EMPIRICAL EVIDENCE OF MARKET CONSTRUCTION:

HOMOGENEITY AND STRATIFICATION

Having completed the exposition of the market construction hypothesis, we want to test the implications of such a theory. To do so directly, we would want to specify supply and demand relationships for local public output within each community in the metropolitan area. The following diagrams show the typical relationships we would expect for a local public service such as public safety:

Figure 1. Cost Functions.

Community 1: high income, white suburb

Community 2: low income, aging, increasingly black central city

*Index of Crimes per Thousand
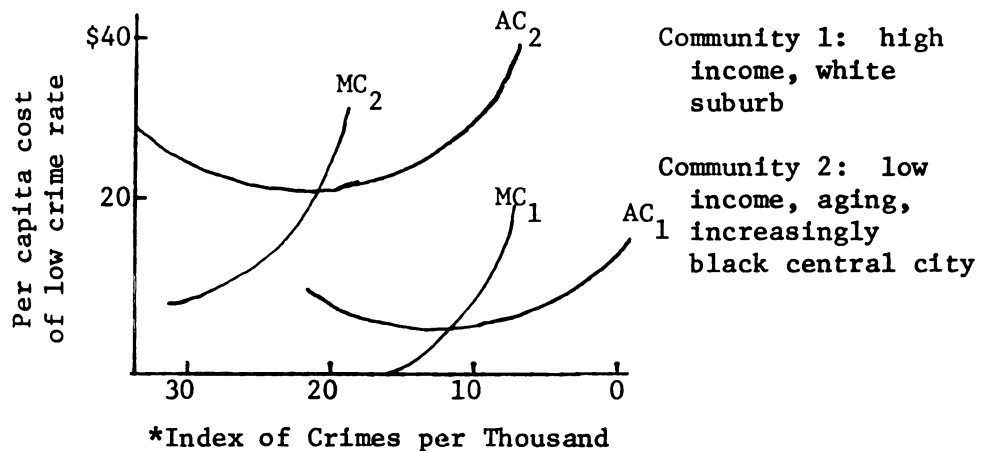
* Output of public safety <u>increases</u> to the right along the horizontal axis.

Each set of curves represents the market which the community in question has constructed for itself. On the supply side, the urban

Figure 2. Demand, Supply Functions.

*Index of Crimes per Thousand
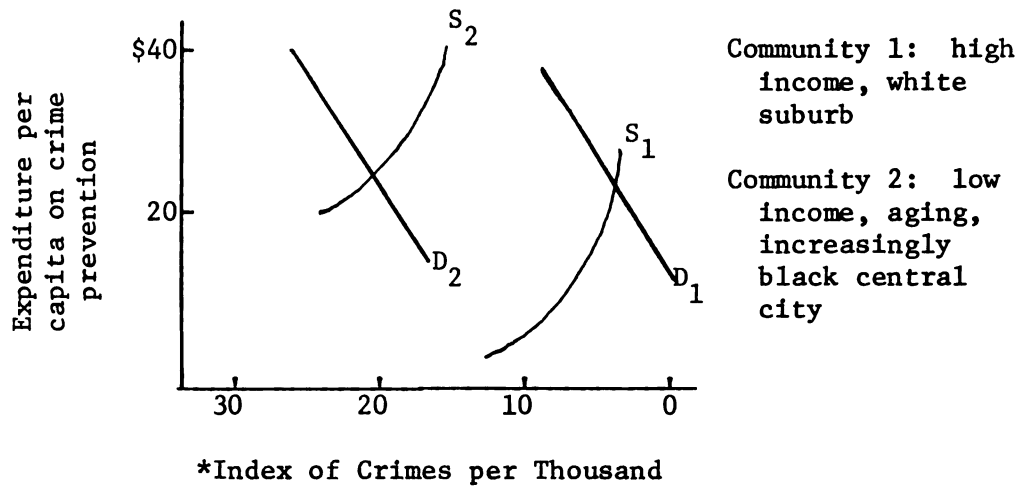
* Output of public safety <u>increases</u> to the right along the
   horizontal axis.

core community (e.g., Detroit) faces much higher cost functions than

its suburban neighbor. The concentration of the poor, of racial

minorities and of deteriorating physical plant mean that safety is

achievable only at a much higher cost. The suburban community, on

the other hand, by keeping out the lower end of the income distribu-

tion and the socially oppressed, faces a drastically reduced cost for

a low crime rate. On the demand side, one can postulate that personal

and property safety is a normal good, and that therefore the demand

is apt to be higher where incomes are higher.

Unfortunately, it is impossible to specify these relationships

empirically. Since we do not know the nature of underlying utility

and production functions, we can only estimate the demand and

supply functions. When we try to do this, we confront the identifi-

cation problem; it is impossible to estimate the structure of demand

unless we have a situation in which supply conditions change and demand conditions remain constant, allowing us to sketch out the shape of the demand curve.[1] The converse is true for estimation of supply curves. We simply do not have enough information to carry out this effort successfully.

In addition to the problem of statistical demand and supply curves, we are further handicapped in the public sector by the lack of an adequate measure of output. Economists have traditionally used expenditure as a measure of local output. The dangers of using such a measure are obvious. Figure 2 indicates that if expenditure were used as a measure of put for the stereotypical communities shown, the viewer would conclude that the two communities enjoyed nearly equal benefits from the public sector. Expenditure can be used for a proxy of output only if production and cost functions are identical across the communities studied and if the composition of output is identical. Such assumptions are not acceptable, because they obscure the important differences in supply conditions which do exist and therefore the real differences in output that residents of metropolitan communities enjoy.

As indicated in Chapter IV, revealed preference methods are of no use here either, for choice of community represents not only personal evaluation of an output mix and level, but also choice of a set of cost and distributional characteristics that affect his

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[1]See Friedman, _Price Theory_, pp. 31-36, for a detailed explanation of this problem.

well-being. Thus conventional methods of testing microtheory pro-
positions are not useful for our purposes. We are forced to resort
to indirect tests of the theory.

The first such indirect test of the theory developed in this
thesis, and of its claimed superiority over the Tiebout analysis,
tests for the existence of stratification and homogeneity. The first
hypothesis can be formulated as follows:

> Hypothesis I: Metropolitan sub-communities are strati-
> fied and internally homogeneous with respect to
> income and public service cost conditions.

To further support our theory, we will look in the next chapter
at the historical development of fragmented local government, includ-
ing the status of annexation and consolidation tools today. The
second hypothesis is thus:

> Hypothesis II: The creation and maintenance of inde-
> pendent local governments within the metropolitan
> area has been pursued successfully by suburban
> metropolitan citizens and their political
> representatives.

Finally, we shall look at trends over time in differentials
among local units. Our hypothesis in this final chapter is:

> Hypothesis III: The socio-economic differentials
> among central cities and suburbs are not
> diminishing.

The presence or absence of homogeneity will cast some light on the competing theories. The Tiebout model predicts that communities will be populated with like-minded people who have the same preferences for a public-private consumption mix, regardless of income. Thus we may expect that people whose preferences differ from the average of their own general socio-economic group (e.g., wealthy groups unconcerned with education and poor groups very concerned with it) would be found side-by-side in communities with non-peers, consuming unique combinations of public and private services.

The prediction of the theory developed in this thesis is that people with similar income, wealth, and socio-economic backgrounds will be found together in communities, regardless of preferences. Taking into account both efficiency and distributional motivations for moving, we postulate that either all persons have identical utility functions, in which case both motives encourage homogeneity, or in the case of differing preferences, distributional considerations override, and distributionally-provoked institutions prevent, heterogeneity.

> Hypothesis I: Metropolitan sub-communities are
>   stratified and internally homogeneous with
>   respect to income and public service cost
>   conditions.

The hypothesis will be disproved if we find substantial heterogeneity within communities outside the central city, except in cases where recent change indicates that a community is in transition.

It is interesting to note that the phrasing of this hypothesis does not explicitly contradict Tiebout. However, on closer look, the resulting homogeneity means either of two things for the Tiebout approach: (1) either all preferences are the same, across any one income group, in which case efficiency motivation boils down to income differences, or (2) preferences differ, but are overridden by the distributional aspects. In either case, the substance of the Tiebout argument is lost, for in the former there are no unique preferences to cater to, and in the latter they aren't catered to regardless of their presence.

Several detailed studies have been done on differences between suburbs and cities. Unfortunately, such studies generally lump all suburbs together and contrast them with the central city. This seriously restricts our use of such studies to provide evidence for a wide range of differentiated communities across an array of metropolitan communities. Nevertheless, we shall mention them briefly.

The Advisory Commission on Intergovernmental Relations has twice examined disparities between central cities and suburbs on a nationwide basis. The first attempt was in 1965.[2] In this study, the ACIR concludes

> The picture revealed in this report is disquieting.
> Population disparities between central cities and

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[2]Advisory Commission on Intergovernmental Relations, Metropolitan Social and Economic Disparities: Implications for Intergovernmental Relations in Central Cities and Suburbs (Washington: Government Printing Office, 1965).

suburbs and among suburban jurisdictions themselves
are significant. Governmental structure in our
metropolitan areas is growing more complex. The re-
sultant need for services and the ability to provide
those services are drifting apart.[3]

However, on the basis of their comparison of aggregated suburbs and

central cities:

Very few generalizations about central city-suburban
population differences are applicable to most metro-
politan areas. The extent and direction of disparities
for most characteristics vary enormously, especially
with respect to the nonwhite population.[4]

The second ACIR study was done in 1967.[5] It concludes:

After assessing relative levels of various social and
economic indicators in central cities and suburbs, it
is clear that the Nation's central cities are becom-
ing inhabited to an increasing extent by "high cost"
citizens. The central city has a concentration of the
nonwhite, the elderly, and the low income population
often living in unsound housing, without an adequate
education for today's world and without hope for the
future.[6]

This second study also points out that the disparities are the great-

est in the large Northeast and Midwestern metropolitan areas.

Southern and Western SMSA's are a mixed group, since some have been

able to prevent the proliferation of suburbs.

Robert Wood, in his study Suburbia, came to much the same

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[3]Ibid., p. 123.

[4]Ibid., p. 23.

[5]Advisory Commission on Intergovernmental Relations, Fiscal
Balance in the American Federal System, Vol. 2, Metropolitan Fiscal
Disparities (Washington, D. C.: Government Printing Office, 1967).

[6]Ibid., p. 55.

conclusion. Data from the 1950 census "speaks to the success of the
suburban population in differentiating itself in certain ways from
the mother-city in its own metropolitan area."[7] Wood's study of the
available evidence confirms the thesis of a systematic differentia-
tion among suburbs. He took 106 suburban municipalities in six major
metropolitan areas and tabulated variation among them on a number of
indicators such as employment, income and sex ratio. While it is
impossible to examine the stratification of individual suburbs on all
accounts because of Wood's aggregation procedure, it is evident, as
he concludes, that

> these limited excursions into quantitative comparisons
> make it clear that the overall suburban disposition to
> gather together a disproportionate share of middle
> class, better-educated Americans is, within itself,
> fragmented and divided. The broad tendencies toward
> homogeneity in occupation, education, orientation to
> family life, and age are intensified in particular
> suburbs, and their differences from other American com-
> munities are even further exaggerated.[8]

The only intensive analysis of a single metropolitan area is
the Williams, Herman, Liebman and Dye study of Philadelphia. They
also conclude that differentiation is characteristic of the metro-
politan area:

> Municipalities in the more urbanized portion of the
> metropolitan area (Suburbs) are more specialized and
> differentiated from one another than the semi-urban
> municipalities (towns and townships). Suburbia, far
> from being a uniform social landscape, is really dis-
> tinguished by its highly varigated character ...

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[7]Wood, Suburbia, p. 111.

[8]Ibid., pp. 117-120.

> The pattern of variation is one of extreme complex-
> ity. Few of the variables that contribute to the
> pattern of differentiation vary from community to
> community in a consistent fashion. Most community
> characteristics appear to be independent of one
> another. Although social rank, wealth and some of
> the property characteristics are correlated, the
> intermunicipal variation among them is far from
> congruent.[9]

The variables compared in the Philadelphia metropolitan area study

were age, education, occupation, social rank, race, religion, wealth,

property composition, and size of total population.

A final reference on existing literature is necessary. There

have been some attempts by geographers to develop a classification

scheme for local units of government. The most recent and compre-

hensive of these is Richard Forstall's work.[10] Forstall designs an

elaborate classification scheme which distinguishes local communities

on the basis of size, socio-economic status, stage in the family

cycle, non-white population and presence of manufacturing activity.

While the system is constructed purely for statistical description,

it is possible that data gathered for such a classification could

serve as the basis for widespread empirical work on disparities

among local units in the future.

Despite these efforts, there is no existing study which focuses

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[9]Oliver Williams, Harold Herman, Charles Liebman and Thomas Dye, Suburban Differences and Metropolitan Policies (Philadelphia: University of Pennsylvania Press, 1965), p. 72.

[10]Richard L. Forstall, "A New Social and Economic Grouping of Cities," in The Municipal Year Book, 1970 (Washington, D. C.: International City Management Association, 1970), pp. 102-159.

on the community differentials which are specified in our model. A test of our theory involves examining the socio-economic characteristics which directly affect the local fiscal sphere. The Williams, et al. study, while it does not disclose its correlation results, implies that correlation among socio-economic variables is low; this may be a result of the inclusion of such variables as size of population and religion, which we would not expect to be strongly correlated from our model. Our model does suggest that correlation among cost and income factors affecting the local public sector should be strong, especially on the lower and upper end of the distribution. We need a test area to ascertain this. In addition, we want to examine the degree of stratification and of internal homogeneity across a set of metropolitan communities.

This thesis uses the Detroit metropolitan area, familiar to the author, as its test area. We shall examine here the cross-sectional disparities among Detroit and its suburbs for the 1970 census. At the end of this chapter we shall look briefly at the trend of these disparities over time.

A map of the study area follows. The Detroit SMSA consists of Wayne, Oakland and Macomb counties. The municipalities chosen include all incorporated cities in this area with populations of over 10,000 in 1970 and those not incorporated which are classified by the 1970 census as urbanized places. This gives us a sample of 47 municipalities, which account for 82 per cent of the total SMSA population. These areas cover a continuous area radiating out from

METROPOLITAN DETROIT
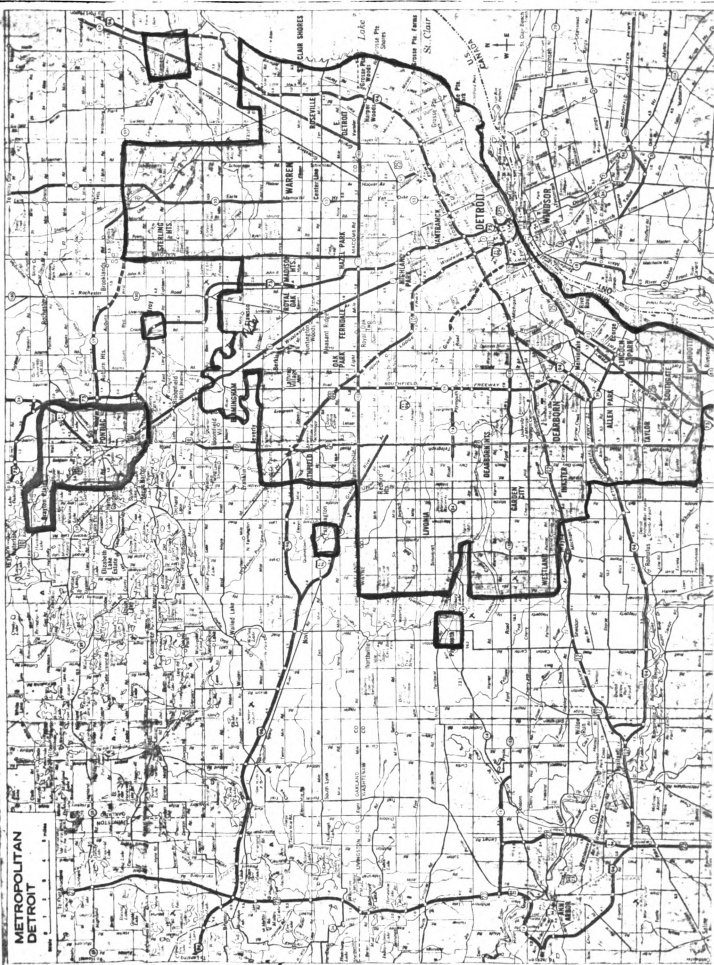
the city of Detroit, with the sole peculiar exclusion of Redford
Township (not classified as urbanized by the census), and ignoring
several areas which have remained unincorporated or are too small to
count: Grosse Pointe Shores Village, Grosse Pointe City, and
Lathrop Village. The sample also includes outlying population
centers such as Plymouth, Farmington, Troy and Mount Clemens, and
the "other central city," Pontiac.

Table 1 contains the data for this set of municipalities. These
figures represent the demand and cost factors which influence the
structure of the local public service market. We want to investi-
gate this data set for evidence on the following propositions: area
communities are highly stratified with respect to income and cost
factors; correlation among cost and income factors is high; within
each community a high degree of homogeneity exists.

The table itself provides the best evidence for examining the
stratification hypothesis. Without testing for equality of the means,
it is evident that a large number of communities have a median sig-
nificantly different from the areawide median in each of the cate-
gories. Several of the distributions are highly skewed; income is
skewed on the upper end, poverty on the lower end, inadequate plumb-
ing on the lower end. The growth figures are highly erratic. The
percent black population is clearly a bi-modal distribution with
Detroit and a few of its inner ring suburbs accounting for nearly
all the area's blacks.

The stratification is perhaps easier to see if we group these

TABLE 1. Socio-Economic Characteristics of Detroit-Area Localities[a]

Locality	Population	b Median Family Income ($)	c Median Household Income ($)	d % Households Below Poverty Level	e % Over 25 With High School Educ.	f % Without Some Plumbing	g % Population over Age 65	h Date of incorporation	i % Growth 1960-1970	j % Black	k Millage Rate for City
Entire SMSA		12,117	10,444	10.0	52.1	2.0	8.0	--	+ 10.6	18.0	--
Highland Park	35,444	8,716	6,660	17.9	43.0	6.58	12.8	1917	- 6.9	55.3	21.6
Hamtramck	27,239	9,395	7,130	18.4	30.9	4.22	15.7	1921	- 20.2	20.2	23.6
Detroit	1,511,322	10,045	7,944	16.4	41.8	2.75	11.4	1806	- 9.5	43.7	27.5
River Rouge	15,921	9,433	8,051	18.3	35.5	2.31	9.9	1921	- 12.1	31.9	20.1
Pontiac	85,364	9,681	8,228	14.5	37.7	2.89	8.5	1861	+ 3.7	26.7	15.6
Ecorse	17,525	9,706	8,336	16.8	29.5	2.92	7.8	1941	+ 1.1	38.3	22.3
Mount Clemens	20,532	11,210	9,118	12.9	54.0	4.56	9.5	1918	- 2.6	16.2	16.8
Wyandotte	41,061	11,283	10,063	8.8	42.1	1.19	8.9	1867	- 5.6	0.0	15.5
Ferndale	30,854	11,525	10,265	7.0	51.9	1.28	11.5	1927	- 1.6	0.3	20.2
Inkster	38,522	11,290	10,331	11.2	47.2	0.79	4.7	1926	- 1.3	44.5	20.2

TABLE 1. (Continued)

Locality	Population	b	c	d	e	f	g	h	i	j	k
Hazel Park	23,784	11,208	10,357	9.4	37.4	1.05	7.2	1942	- 7.02	0.0	18.9
Melvindale	13,864	11,523	10,403	7.4	42.1	0.76	5.9	1932	+ 5.9	0.0	18.7
Wayne	21,074	11,878	11,193	6.4	50.0	1.00	5.1	1960	+ 31.3	0.1	17.9
Plymouth	11,795	13,082	11,210	5.7	65.7	2.53	8.7	1932	+ 34.1	0.0	12.7
Lincoln Park	53,016	12,131	11,286	7.2	42.9	1.09	6.3	1925	- 1.8	0.0	14.8
Dearborn	104,187	13,257	11,429	7.6	57.5	2.98	11.3	1927	- 7.0	0.0	20.0
Roseville	60,567	12,262	11,493	6.2	49.7	1.30	4.2	1958	+ 20.6	1.0	19.8
Taylor	70,057	11,977	11,530	5.1	47.2	0.71	3.0	1968	+ 21.5	0.0	15.1
Center Line	10,375	12,621	11,544	6.1	49.9	0.54	6.8	1935	+ 2.1	0.0	17.5
Madison Heights	38,620	12,681	11,705	4.8	54.1	0.52	3.1	1955	+ 15.8	0.0	13.3
Berkeley	22,618	12,948	11,771	5.7	62.2	-.57	7.1	1932	- 2.8	0.0	18.8
Westland	86,562	12,687	11,907	4.1	56.9	0.51	3.8	1966	0.0	2.6	10.8
Drayton Plaines	16,700	12,573	11,912	5.9	56.9	0.94	3.9	U	n.a.	0.0	--

TABLE 1. (Continued)

Locality	Population	b	c	d	e	f	g	h	i	j	k
Royal Oak	85,718	13,619	11,985	5.4	66.6	1.05	8.3	1921	+ 6.1	0.0	15.3
E. Detroit	45,867	12,943	12,088	6.3	47.7	0.82	7.2	1928	+ 0.4	0.0	16.0
Harper Woods	20,176	13,534	12,164	4.8	59.7	0.78	10.8	1951	+ 1.0	0.0	17.5
Clawson	17,646	13,170	12,315	5.4	62.8	0.60	4.6	1940	+ 19.1	0.0	13.1
Southgate	33,904	13,058	12,372	4.2	52.1	0.57	3.3	1958	+ 15.3	0.0	13.8
Garden City	41,878	12,994	12,467	4.3	53.1	0.46	3.0	1933	+ 10.0	0.0	16.4
St. Clair Shores	88,086	13,598	12,725	4.9	58.3	1.12	5.8	1950	+ 14.9	0.2	15.8
Warren	179,246	13,452	12,749	4.2	54.7	0.83	3.8	1955	+100.9	0.1	13.7
Dearborn Heights	80,130	13,499	12,768	4.2	57.2	1.02	4.8	1963	n.a.	0.0	10.2
Fraser	11,868	13,548	13,023	3.3	59.7	0.32	3.5	1956	+ 68.9	0.0	13.9
Sterling Heights	61,576	12,793	13,250	2.7	65.2	0.74	2.3	1968	+319.9	0.1	8.6
Riverview	11,342	13,913	13,257	3.8	59.4	0.84	3.0	1958	+ 56.7	0.0	19.8

TABLE 1. (Continued)

Locality	Population	b	c	d	e	f	g	h	i	j	k
Oak Park	36,743	14,274	13,359	4.7	68.2	1.51	7.3	1945	+ 0.4	0.2	15.7
Troy	39,414	14,955	13,399	3.8	70.2	0.89	4.8	1955	+103.2	0.0	10.7
Allen Park	40,749	14,153	13,464	3.2	59.9	0.30	5.9	1956	+ 8.7	0.1	11.2
Trenton	24,084	14,581	13,888	3.6	74.2	0.95	4.3	1958	+ 30.8	0.0	11.2
Grosse Pointe Park	15,594	17,760	13,904	6.0	75.1	0.99	13.6	1950	+ 0.8	0.1	16.1
Livonia	110,199	15,216	14,467	2.9	69.7	0.59	4.4	1950	+ 65.1	0.0	12.7
Birmingham	26,190	17,292	14,557	4.2	85.4	0.33	10.0	1932	+ 2.5	0.1	16.3
Farmington	13,396	16,819	14,910	2.3	77.2	0.27	8.9	1926	+ 93.8	0.0	8.9
Southfield	69,186	18,141	16,256	4.1	74.2	0.53	6.8	1957	+199.9	0.1	8.2
Grosse Pointe Woods	21,885	18,981	17,674	2.9	79.5	0.28	8.8	1950	+ 17.8	0.0	14.6
Grosse Pointe Farms	11,691	21,798	18,380	3.2	84.8	0.23	15.1	1949	- 3.9	0.3	14.6
Beverley Hills	13,573	22,909	21,770	2.1	90.6	0.29	7.6	U	+ 57.5	0.1	--

TABLE 1. (Continued) Footnotes.

^a Table includes all incorporated localities in the SMSA with a population of more than 10,000, and unincorporated areas classified by the 1970 Census as urbanized areas. The table is arranged by median household income status in descending order. Population figures from 1970.

^b U. S. Bureau of the Census, Census of Population and Housing: 1970, General Social and Economic Characteristics, Final Report PC(1)-C24, Mighigan, Tables 89 and 107.

^c Ibid. These figures differ from the previous column due to the inclusion of unrelated individuals in the latter set.

^d Ibid., Tables 90, 107.

^e Ibid., Tables 84, 103; and U. S. Bureau of the Census, Census of Population and Housing: 1970, Census Tracts, Final Report PHC(1)-58, Detroit, Michigan SMSA, Table P-2.

^f Regretably, the 1970 Census does not have published figures for deteriorating and dilapidated housing, as it has in past census reports (although this information can be constructed from information on tapes). These percentages have been calculated from numbers in Table H-1 of Census, Census Tracts - Detroit, quoted above, and from U. S. Bureau of the Census, Census of Housing, 1970, Vol. 1, Housing Characteristics for State, Cities and Counties, Part 24, Michigan, Tables 8, 18 and 23.

^g Calculated from Census, Census Tracts - Detroit, Table P-1.

^hState of Michigan, Michigan Manual, 1969-70, pp. 354-375. Date of Incorporation column figures used except in the case of Inkster, which became a home rule village in 1926, but was not formally incorporated as a city until 1964. It was felt that the former date gives a better indication of its independent existence.

ⁱ U. S. Bureau of the Census, Census of Population and Housing: 1970, Final Population Counts, Advance Report PC(V1)-24, Michigan, Table 2. Figures for Sterling Heights, Westland and Taylor were calculated from census tract data for 1960 and 1970; it was not possible to do the same for Drayton Plains and Dearborn Heights because tract data does not correspond directly for the two census periods.

TABLE 1. (Continued)

[j] U. S. Bureau of the Census, Census of Population and Housing: 1970, General Population Characteristics, Advance Report PC(V1-24), Michigan, Table 1. A percentage of 0.0 does not mean that there are no blacks in the city, but that their numbers are so small that they are insignificant (i.e., less than 00.05 percent).

[k] Michigan State Tax Commission, 1970 City Tax Levy, Internal Paper, 1970.

communities into subgroups with similar characteristics. The follow-
ing groups are useful for this purpose:

Group 1	Subgroup A	Detroit, Highland Park, Hamtramck, Pontiac
	Subgroup B	River Rouge, Ecorse, Mount Clemens, Inkster
	Subgroup C	Wyandotte, Ferndale, Hazel Park, Melvindale
Group 2	Subgroup A	Lincoln Park, Dearborn, Center Line, Berkeley, East Detroit
	Subgroup B	Plymouth, Clawson, Garden City, Royal Oak
	Subgroup C	Wyane, Roseville, Taylor
	Subgroup D	Madison Heights, Westland, Drayton Plaines, Harper Woods, Southgate, Dearborn Heights, Riverview
	Subgroup E	St. Clair Shores, Warren, Fraser, Sterling Heights
Group 3	Subgroup A	Livonia, Troy, Southfield, Beverley Hills, Trenton, Allen Park, Oak Park
	Subgroup B	Farmington, Birmingham
	Subgroup C	Grosse Pointe Woods, Grosse Pointe Farms, Grosse Pointe Park

This ranking is a descending order of "betterness"; the communities

at the top of the table are those ridden with high cost factors and

low income levels. Those at the bottom have ample resources and few

public service cost burdens.

Group 1 includes the twelve communities which are clearly low

income, high cost areas. They have the lowest income groups, the

highest incidence of poverty, the worst housing stock, and a large

percentage of the aged. All of them are older areas which incorporated before World War II, and have been experiencing slow or negative growth in recent years. Despite the industrial base in many of them, they generally have very high municipal millage rates.

Three subgroups can be distinguished within this group. The first is a collective that properly speaking represents the central city. Both Highland Park and Hamtramck are totally surrounded by Detroit and Pontiac is an old central city in its own right. These communities represent the very bottom of the socio-economic ladder.

A second subset includes four suburbs that are heavily black and share the low status profile of the former. Three of these, River Rouge, Inkster and Ecorse, are typical black inner ring suburbs; Mount Clemens is an outlying small town that has become a poor, and increasingly black, suburb.

A third subset consists of four inner ring suburbs which have successfully prevented invasion by blacks. These are "poor white" communities, sharing in all other respects the disabilities of the former.

The second group contains 23 middle income, middle status communities. These communities are distributed around the mean for each of the characteristics in question. The most obvious common characteristic is the almost total exclusion of blacks from their populations.

The five cities classified under subgroup A are older, pre-World War II suburbs which can be broadly termed "working class suburbs."

These are inner ring suburbs which are all-white, lower middle income areas, with an average education level and very slow of negative growth rates; they fall in the lower half of the poverty distribution and have a relatively high percentage of older people.

Subgroup B consists of older, outlying areas which have striven successfully to achieve middle-class status. Each of these areas has had enough vacant land to expand significantly in recent years. They have average income and educational levels, a relatively young population, and a low city tax rate.

Subgroup C consists of new working class suburbs, post World War II incorporation which are stuggling to maintain a middle-class aura. While they are all white, these cities have a relatively poorly-educated population, and a relatively high incidence of poverty, even though they have a generally young population and a fast rate of growth.

Subgroup D includes a large group of typical post World War II middle-class suburbs. Each of these has an average level of income and educational attainment, a small incidence of poverty, few if any blacks, a new and undeteriorated housing stock, a relatively young population, a rapid growth rate, and moderate local city taxes.

Subgroup E contains the middle-class "superstars," communities which have been very successful at building middle-class constituencies in very recent years. Each of them experienced very rapid rates of growth in the 1960's, at least 69%. Each has a median income considerably above average, a low incidence of poverty, an above

average educational level, less than 1% of housing without complete plumbing, a very youthful population and relatively low millage for city purposes.

The final group contains the twelve communities which qualify for upper middle class status. Each has a median family income above $14,000. Educational levels are very high. This group, however, shows surprising variety, especially in the age category. The differences become clearer with the subgroupings.

Subgroup A contains new suburbs which have achieved exclusive status by guarding entry closely. These communities have all incorporated since 1945; they have grown rapidly in recent years, experiencing little poverty, and have relatively young populations. These communities have low millage rates, despite the expansion in recent years.

Subgroup B consists of two old peripheral farming communities which have been absorbed into the metropolis in recent years. They have become elite communities in their own right, with large lot zoning of former farmlands and upper middle class subdivisions moving in. The older roots of the communities explain the relatively high percentage of older people living there.

Subgroup C consists of the Grosse Pointe complex, a very exclusive string of communities lining the Detroit River north of Detroit. These communities date back to the early part of this century, even though they were not incorporated until after World War II. They were the first exclusive bedroom suburbs, places where families

making money in autos or related industries moved to display their wealth and enjoy their newfound fortunes. Today they experience little or no growth and have a high percentage of older people; at the same time, they have many of the wealthiest, most educated metropolitanites in their communities.

This overview suggests that stratification is indeed great within the metropolitan area. Although one could contend that Tiebout's choice might still operate within the small subgroupings we have constructed, the data does indicate that choices are narrowly circumscribed and that distributional factors are much more important in characterizing the supply and demand conditions of local public service sectors than the small within-group variation.

A second proposition that we want to examine is the correlation among the cost and income factors analyzed above. Our theory suggests that at the extreme, the privileged, exclusive suburb will have the best of everything, while the central city and its nearby inner ring suburbs will have the worst of everything. Public sector incentives will encourage market construction and result in "winner" communities in which incomes are high, poverty is non-existent, dependency is low, housing stock is good, municipal tax rate is low, and so on.

Since most of the data tabulated in Table 1 cannot be assumed to have a particular distribution, it is necessary to use non-parametric tests. The best of these for testing the relationship between two sets of variables is the Spearman rank correlation

coefficient. This statistic, when compared with the most powerful

parametric correlation (the R used in much of econometric and statis-

tical work), is about 91% as efficient. That is, if the data did

have a bivariate normal distribution and we used rank correlation

techniques instead of direct correlation, we would be able to reject

the null hypothesis that no correlation existed .91 times as often

as with the latter.[11]

The Spearman rank correlation coefficient can be used for any

two of the community socio-economic characteristics in Table 1. It

has been calculated for each pair. However, in order to get a sta-

tistic which reflects the relationship across the entire matrix of

characteristics, it is necessary to use another statistic, the Kendall

coefficient of concordance, W.[12] This statistic measures the amount

of agreement across any set of m rankings. Its value is close to

that of the mean Spearman coefficient, to which it is linearly re-

lated. Since the mean Spearman coefficient is difficult to calculate

directly, we use the coefficient of concordance instead, test its

significance and then calculate the mean Spearman coefficient of

rank correlation from the former.

Table A-2 in the Appendix shows the rank correlation coefficients

and corresponding t statistics for the set of nine community

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[11]Sidney Siegel, _Nonparametric Statistics for the Behavioral Sciences_ (New York: McGraw-Hill Company, Inc., 1956), p. 213.

[12]Maurice Kendall, _Rank Correlation Methods_ (London: Charles Griffin and Company, Ltd., 1948), Chapter 6.

characteristics.[13] A coefficient of 1.0 indicates complete correlation; a coefficient of 0.0 would indicate no correlation. The critical value for t with 40 degrees of freedom (we actually have 45 but the table does not cover this size sample) is 2.704 at the .01 level of significance. Of the thirty-six rank correlations, only four show insufficient relationship to reject the null hypothesis that there is no correlation between the two sets of ranking in question. All of these include the dependency ranking as one of the pair; evidently our age indicator of dependency (people over age 65) is not a good socio-economic indicator of cost burden. All other pairings have a rank correlation coefficient of .4 or higher, indicating a strong degree of relationship.

The coefficient of concordance was calculated for all nine ranks and certain subsets.[14] In all cases, the coefficient and its relative, the mean Spearman coefficient of rank correlation, were large (over .6) and significant at the .01 level for the chi-square test. Although the dependency ratio is not well correlated with variables such as income, poverty, education, housing condition and tax rate, it is highly correlated with date of incorporation and growth rate. Apparently, some older suburbs with a large percentage of older people and a slow or zero growth rate have still managed to maintain

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[13]The data on race is not included here because of its bimodal distribution; it is impossible to develop meaningful ranks for it. Ranks assigned appear in Table A-1 of the Appendix.

[14]See Table A-3, Appendix.

a high status complexion in their communities; the Grosse Pointes are obvious examples and may be in themselves largely responsible for the disagreement in the data.

These tests support us in the contention that the array of communities in the metropolitan area tends to be characterized by correlative rankings over a whole set of socio-economic characteristics, and that in general, low income communities are also high cost communities. The correlations also indicate that high municipal tax rates are strongly correlated with low income and the presence of high cost factors. This evidence supports the market construction hypothesis.

The final proposition which we wish to examine is that homogeneity is characteristic within individual communities. The only socio-economic characteristic for which variation is tabulated in the Census is family income.[15] The data itself presents serious problems. The mean family income for the entire SMSA is $13,532. The income figures are presented in interval form; unfortunately these intervals are unequal. There are ten intervals of $1000 up to $10,000; the succeeding intervals go from $10,000 to $11,999; $12,000 to $14,000; $15,000 to $24,900; $25,000 to $49,000; and over $50,000. There are only three intervals above the mean interval and eleven below it. Therefore the data is very crudely organized

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[15]Data from Census, 1970, Census Tracts - Detroit, Michigan, Table P-4. Data are listed in the Appendix, Table A-4.

for the upper end of the income distribution.

However, since these data are all that exist, it is useful to test for equality of variance between individual communities and the general SMSA. If homogeneity exists, we would expect the variation within each community around its own mean to be significantly less than the variation of all SMSA incomes around the area-wide mean. Rejecting a null hypothesis that the variances are equal will not prove homogeneity, but will indicate a strong tendency toward homogeneity.

In this test we used the twenty-seven largest communities in the sample, since the data for these communities were already compiled by the Census. The results of the test were mixed.[16] The F statistic was significant for twenty-two of the communities. However, the remaining five, all with means above the areawide mean, and including the four with the highest mean income in the sample, had variances larger than the areawide variance. In addition to the crude grouping problem mentioned above, there is another source of this problem. Since the variance measured in this test is <u>absolute</u> variance, the variance of grouping on the upward end of the distribution will naturally be larger than that of the entire distribution about their respective means. Despite this bias, eight communities whose means fall above the SMSA mean still had variances significantly less than the areawide variance.

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[16]Statistics for this and the following exercise are listed in The Appendix, Table A-5.

In order to correct the bias introduced by skewness in the distribution, the relative variance was calculated for each city. This statistic divides the absolute variation of incomes from mean income by the mean income itself, yielding a measure of relative variance which is not affected by its position in the income distribution. The results cannot be tested for significance, but the large size of the sample makes it likely that these statistics are close to their true values.

The results are listed in Table A-5, the Appendix. The coefficient of relative variation is smaller than that for the whole SMSA in all but three communities. The exceptions are Detroit, Hamtramck, and Highland Park, the three "central cities" of the SMSA. It is not surprising that these three areas, once the original heterogeneous community, should still contain diverse income groups. Detroit, of course, has large neighborhoods which are upper middle class. The results of this exercise support our hypothesis that outside of the central city there is a strong tendency toward homogeneity.

The coefficients indicate another interesting observation. The relative variation is smallest for communities in the middle of the income distribution. This suggests that it may be the middle-income communities that demonstrate the strongest interest in suburb-building and in excluding the unwanteds. However, this could also result from the simple fact that there is a larger number of middle income households and thus greater ease in homogenizing such communities.

The evidence on income homogeneity shows only that there is a strong tendency toward less income diversity within local communities than within the areas as a whole. It does not prove that units are homogeneous; in fact, the data indicate that every community does have residents in every income class (temporary yearly income fluctuations may explain many of these observations). However, this thesis does not contend that homogeneity is complete, even given all socio-economic characteristics. Our contention is that public sector incentives encourage homogeneity, and the existence of this tendency in the income data supports the theory.

CHAPTER VIII

EMPIRICAL EVIDENCE OF MARKET CONSTRUCTION: USE OF

ANNEXATION, CONSOLIDATION AND INCORPORATION

WITHIN THE METROPOLITAN AREA

We have hypothesized that distributional motivation will prompt
all but the poorest governments and voters to oppose metropolitan
unification because it would destroy their carefully constructed and
insultaed markets for public services. We will provide evidence for
this hypothesis by surveying the existing information on annexation
and consolidation: the legal limitations imposed historically, the
success and failure record of annexation and consolidation proposals
in the U. S., and the limited evidence on factors influencing voter
and government positions on annexation issues.

American local governments have always been creatures of the
States. The structure and functions of local government are estab-
lished in state constitutions, and can be molded and changed by the
state legislature within certain limits. However, municipal govern-
ments in most states are generally protected by a constitutional
guarantee of home rule, a sort of "local Bill of Rights" in the
State Constitution. An integral element of home rule is the right
of self-determination, which protects any local government with
home rule status from involuntary seizure or annexation by a
neighboring community.

The laws governing annexation and consolidation evince a familiar economic principle. It is almost as if economists had donated their fundamental welfare principle to the drafters of legislation concerning municipal boundaries. The welfare criterion so familiar to economists, Pareto optimality, is enshrined in constitutional and legal requirements for such changes. The guiding principle can be stated like this: no adjustment of boundaries or change in the constituency of municipal government, either by annexation or consolidation, shall take place unless all the concerned municipal governments (or a majority of their respective voters) approve (i.e., gain from) the change.

On the other hand, there is no law that prevents suburban escape from central city responsibility; in fact, incorporation law is quite liberal. Thus the Pareto-optimal criterion is applied in a somewhat lop-sided manner.

It is the consensus of most political scientists that this bias in boundary law emasculates annexation and consolidation as tools for solving metropolitanwide problems. It is the contention of this thesis that the law and practice governing the formation and protection of a multiplicity of local units in a metropolitan area is a result, in part, of the public service sector incentives which encourage households and their governments to construct their own insulated market for public services. The following inquiry into annexation and consolidation will provide evidence for this hypothesis.

Hypothesis II: The creation and maintenance of

independent local governments within the metro-

politan area has been successfully pursued by

suburban metropolitan citizens and their

political representatives.

1. The Historical Use of Annexation and Consolidation. Annexa-

tion and consolidation were the conventional means of city growth in

the 19th century. Annexation, a term referring to the addition of

unincorporated territory to an existing municipal unit, and consoli-

dation, a term referring to the merging of two or more existing local

governments, paralleled population growth of Eastern American cities.

Such expansion was often characterized by very large territorial

acquisitions of relatively unurbanized land.

Wood quotes the following figures as indicative of the success

of annexation before 1918.

> Until 1918, America's largest cities managed to annex
> sizable territory without substantial difficulty. The
> ten largest at least doubled their areas and some in-
> creased from three- to tenfold. In 1891, New York com-
> pleted the greatest single extension of territory,
> adding over 250 square miles to the city; Boston
> doubled its size in 1914; Baltimore added 60 square
> miles in 1918, and St. Louis gained 43 square miles
> in 1876. For cities of more than 100,000 residents,
> 605 square miles were annexed between 1890 and 1900,
> 413 in 1900-1920, and 628 and 521 square miles respec-
> tively in the next two decades.[1]

Similarly, consolidations in the 19th century were responsible for

the creation of four of the largest U. S. cities: New Orleans (1813),

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[1] Wood, Suburbia, p. 77.

Boston (1821), Philadelphia (1854) and New York (1898).

Annexation and consolidation were relatively easy in the 19th century for two reasons. One was that the outlying areas depended on the central city for certain critical services, like water supply. The other was that there was no major reasons to fear merging with the city since the public service sector was at the time very small.

However, as soon as these simple relationships began to change, urban expansion under one municipal government was no longer a matter-of-course. The end of annexation as a popular tool for expansion arrived early in Boston. In 1873, Brookline voted to remain separate. The state legislature created special state-managed agencies which took over the water, sewer and park building, freeing suburban communities from service dependence on Boston.

> By the 1800's, with but one exception, no suburban
> town ever again seriously considered annexation ...
> It was already apparent in the 1880's that to join
> Boston was to assume all the burdens and conflicts
> of a modern industrial metropolis. To remain apart
> was to escape, at least for a time, some of these
> problems.[2]

By the turn of the century, many local governments were choosing to remain independent of the central city. As early as 1910, social critics like H. G. Wells were attacking the proliferation of independent suburbs, and by 1930, a large number of experts agreed that fragmentation was indeed a problem and should be curtailed.[3] The

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[2]Same B. Warner, Jr., Streetcar Suburbs: The Process of Growth in Boston, 1870-1900 (Cambridge, Massachusetts: Harvard University Press and the M.I.T. Press, 1962), p. 64.

[3]Wood, Suburbia, pp. 74-75.

suburb was, in the view of Lewis Mumford, "a pharisaic way of passing by on the other side, leaving the civic organism itself in the gutter."[4]

In the decades of the 1920's and 1930's, there was considerable interest in consolidation, at least on the part of urban crusaders. Consolidations were proposed for Alameda County (1921), St. Louis (1926), and Pittsburgh (1929); all were defeated at the polls. Consolidation movements were strong, but never came to a vote, in Boston, Cleveland, Portland, Seattle and St. Paul; interest was expressed among groups in Detroit, Buffalo, Milwaukee, Cincinnati, Jersey City, Kansas City (Missouri), Rochester and Wilmington.[5] The argument for consolidation during this era was based on a critique of fragmentation as an accidental historical development, as a structure injurious to the good of the whole population, hurting its development and encouraging corruption. Consolidation would be possible if only politicians weren't so self-interested and citizens so ignorant.[6] The naivete of this critique, demonstrated by sustained 20th century resistance to consolidation, lies to a large extent in its failure to consider the incentives for fragmentation

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[4]Lewis Mumford, The Culture of Cities (New York: Harcourt, Brace, 1938), p. 216.

[5]Robert Warren, Government in Metropolitan Regions: A Reappraisal of Fractionated Political Organization (Davis, California: University of California, Institute of Government Affairs, 1966), p. 9.

[6]Chester Maxey, "The Political Integration of Metropolitan Communities," in National Civic Review, Vol. XI, August, 1922, pp. 229-253.

presented in this thesis.

Despite the advocacy of metropolitanization by many articulate spokesmen, both annexation and consolidation declined between 1900 and the end of World War II. This was not merely an accidental occurrence:

> In order for opposition to the one government concept to be effective, it was necessary to get state legislatures to make municipal annexation and consolidation difficult to use successfully. In many states this was accomplished, with a coalition of suburban and rural legislators usually the decisive force.[7]

During this era, stringent controls on annexation and consolidation were introduced, usually by making any such expansion subject to the initiation and/or approval of the voters of the annexed unit.

2. Post World War II Activity. There was some resurgence in annexation activity in the years after the 2nd World War. However, it is generally agreed that this phenomenon was not very widespread and did not offer the solution to the metropolitan problem. Wood says of this period:

> Annexations did not keep pace with metropolitan growth, and just at the time when the metropolitan problem became critical, annexation petered out. Despite a few sizable territorial additions to Detroit and Los Angeles, and a spurt of small acquisitions after the Second World War, political opposition to the absorption of outlying towns increased. Completely surrounded by the territory of the central city, enclaves in Los Angeles, Boston,

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[7]John C. Bollens and Henry J. Schmandt, The Metropolis: Its People, Politics and Economic Life (New York: Harper and Row, 1965), p. 406.

Cincinnati, Cleveland, Detroit and Pittsburgh
clung to their separate identities and they were
joined by towns and villages on the fringe.[8]

The ACIR has analyzed the record of annexation in the '50's.

They find that annexation has been the exception rather than the rule,

and that in most cases where it has been used, it has involved a

negligible amount of land:

> During the 1950-60 decade, only 22 of these (130
> most populous) cities annexed as much as 30 square
> miles to their respective areas, and in only 12 of
> these instances was the territory added to the city
> during the decade as much as 60 square miles.
> Furthermore, 44 of the 130 largest cities experienced
> no change in area during the entire decade, while 36
> others each added only from 1 to 10 square miles of
> territory.[9]

State-wise, their data indicates that the larger annexations took

place almost exclusively in the South and West.[10]

The record on consolidation in recent years is also poor. City-

county consolidations succeeded in Baton Rouge in 1947, and in

Nashville in 1962. In the latter part of the '60's, Dade County in

Florida; Richmond, Virginia and Jacksonville, Florida have all

succeeded in unifying a larger area. The failure list is much

longer: Newport News, Albuquerque, Knoxville, Durham, Macon,

Columbus (Ohio), Memphis, St. Louis, Chattanooga. All the successes,

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[8]Wood, Suburbia, p. 78.

[9]Advisory Commission on Intergovernmental Relations, Governmental
Structure, Organization and Planning in Metropolitan Areas (Washington, D. C.: U. S. Government Printing Office, 1961), p. 16.

[10]Ibid., p. 23.

and in fact most of the attempts, have been south of the Mason-Dixon

line. It is possible that southern cities fear a black take-over of

the central city where all the white commercial interests are and

that whites thus prevent such black accession to power by consolida-

tion. This is rumored to be the case with Richmond and Jacksonville.

In the larger cities of the country where consolidation has been

urged because of the massive problems of fragmented local government,

there have been literally no attempts or achievements by the forces

for consolidation. Generally the legal and political requirements

governing consolidation are so stringent that crusaders abandon

this route before they start.

The legal arrangements governing annexation and consolidation

developed from the philosophy of self-determination and were cemented

into state laws by the 1930's. Annexation laws vary across states;

methods include legislative determination, municipal determination,

judicial determination or quasi-legislative determination, in addi-

tion to the most commonly used, popular determination.[11]

In 1961, the ACIR published a comprehensive study of metropoli-

tan government.[12] Their first two recommendations are strong attacks

on home rule and its ability to "hamper the orderly and equitable

extension of municipal boundaries." The report calls for "assertion

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[11]Frank S. Sengstock, Annexation: A Solution to the Metropoli-
tan Area Problem (Ann Arbor: University of Michigan Law School, 1960),
pp. 9-41.

[12]ACIR, Government Structure, quoted above.

of legislative authority regarding metropolitan areas," and "authorization of municipal annexation of unincorporated areas without the consent of areas annexed.[13] Unfortunately, these recommendations do not suggest an easy means of dealing with metropolitan areas where all the land surrounding the central city is already built up and incorporated. The ACIR recommends a number of legislative innovations to facilitate cooperation and voluntary consolidation, but does not attack home rule in this context.

In 1966, the National League of Cities published their report, Adjusting Municipal Boundaries.[14] Their conclusions are similar to the ACIR's; they recommend greater freedom for cities to annex unincorporated areas, but offer no real solution for simplifying the complexity of metropolitan area government without consent of all constituencies involved.

3. Studies of Voter Reaction. Despite the strength and frequency of such recommendations, little use of annexation or consolidation has been made in this recent era of renewed interest in the city. There are few studies of citizen reaction to such proposals. The only general survey of attitudes is the 1962 ACIR study of eighteen reorganization proposals. Only seven of the proposals

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[13]Ibid., pp. 18-21.

[14]Department of Urban Studies, National League of Cities, Adjusting Municipal Boundaries: Law and Practice (Washington, D.C.: National League of Cities, 1966).

[15]Advisory Commission on Intergovernmental Relations, Factors Affecting Voter Reactions to Governmental Reorganization in Metropolitan Areas (Washington, D.C.: Government Printing Office, 1962).

which they studied were drastic reorganization plans involving the consolidation of two independent governments. The rest were partial consolidations or special district creations.

In every instance, proposals lost in the suburbs if they did not win in the central city. In twelve cases, the proposal won or lost in both locations; in six, the proposal won in the central city and was rejected in the suburbs. Surprisingly, the ACIR concluded that suburban homeowners were not a significant interest group in defeating consolidation proposals. However, it is possible that the aggregation of the data over all suburbs in all study areas on all the diverse proposals wipes out the impact of this group; it may also be that this group relies upon local public officials to represent them and thus plays no visible leadership role.

Several studies have been made of individual attempts at consolidation. In addition to specific critiques of the campaigns in question, these generally conclude that opposition _is_ characteristic of middle class suburban groups who are well provided for by their own local governments.[16]

This brief overview of the nature and history of annexation and consolidation yields some insight into the theory developed in this

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[16]Examples are David Booth, Metropolitics: The Nashville Consolidation (East Lansing: Michigan State University, 1963); Henry Schmandt, Paul Steinbicker and George Wendel, Metropolitan Reform in St. Louis: A Case Study (New York: Holt, Rinehart and Winston, 1961); and Annie Hartsfield, Group Involvement in Municipal Consolidation: The Defeat of a Unification Proposal in South Brevard County, Florida, unpublished doctoral dissertation, University of Colorado, 1968.

thesis. We can accept the hypothesis that suburban independent

municipalities have successfully attained independence and defended

it from the onslaught of urban reformers. This acceptance must be

qualified, however. It appears that this pattern is unequivocally

true of all the large cities of the Northeast and Midwest, and of

some of the older ones in the West (e.g., Los Angeles). However,

some of the older Southern cities have successfully consolidated a

number of independent governmental units, and many of the younger

middle-sized cities in the Southwest have employed annexation success-

fully to prevent the development of a surrounding ring of independent

communities. If the former phenomenon may arise from rather spurious

reasons (fear of black takeover), the latter is a small light on the

horizon. Perhaps Southwestern cities have learned from the experience

of older Eastern cities and will be able to prevent encirclement in

the initial stages.

Despite the forecast for the Southwest, most political scientists

and urban observers do not believe that annexation and consolidation

is a realistic solution for most cities in the U. S. Adrian

concludes:

> What of the Future? Despite evidence of pessimism
> by suburbanites concerning the future viability of
> their independent municipalities, prospects for the
> future would appear to imply conservatism in the mak-
> ing of readjustments. The projection of current
> trends a decade or two into the future indicates that
> both the size and number of metropolitan areas will
> increase. These areas will not usually be governed
> by areawide governments, except for a few adoptions
> of city-county consolidation plans, and for the ex-
> panded function of the traditional county, whose

> boundaries will in only rare cases be changed to
> fit the urbanizing pattern.[17]

The political resistance to changing the home-rule foundations

of the laws governing local units prejudices the ability of planners

to recommend and achieve unified, rational metropolitan government:

> Popular determination as a method of annexation
> exists in some form or other in the majority of
> states. Apparently, the political philosophy of
> the nation is committed to it. Reforms in annex-
> ation laws are predestined to failure unless cog-
> nizance is taken of this fact; no proposed unqual-
> ified repudiation of it will succeed in the
> majority of states.[18]

Such observations bear out the contention of this thesis, that

individual public sector incentives encourage citizens to protect

their self-constructed local public service markets by insulating

their independent governments from the larger public sector of the

entire metropolitan area.

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[17]Charles Adrian, "Public Attitudes and Metropolitan Decision-Making," in Issues in State and Local Government, ed. by Russell Maddox, Jr. (Princeton: D. Van Nostrand and Company, Inc., 1965), p. 319.

[18]Sengstock, Annexation: A Solution, p. 19.

CHAPTER IX

EVIDENCE ON FUTURE TRENDS FOR METROPOLITAN AREAS

In support of the implications of the market construction model

drawn in Chapter VI for the future of the metropolitan area, we will

offer here some meager evidence of the trends characteristic of the

city-suburban dichotomy. In addition to the 1968 Hodge-Hauser study

of population trends and future projections for American metropolitan

areas, we will examine the pattern of the recent past in the Detroit

area directly from census data.

We hope to determine whether the trends suggest that stratifi-

cation, homogeneity, and fragmentation of local governments in a

metropolitan area is lessening or worsening. We can formulate the

null hypothesis in the following way:

> Hypothesis III: The differentials among central
>
> cities and their suburbs are diminishing over
>
> time.

1. Population Growth in Cities and Suburbs. The Hodge-Hauser

projections indicate that 79% of national population growth over the

period from 1960 to 1985 will be absorbed by the suburbs of SMSA's.[1]

The percent population concentrated in metropolitan areas will con-

tinue to grow and suburban areas will grow much faster than their

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[1]Patricia Hodge and Philip Hauser, The Challenge of America's
Metropolitan Population Outlook, 1960 to 1985 (New York: Praeger,
1968), p. 51.

central cities:

TABLE 1.   Percent of SMSA Population in Cities and Suburbs[2]

Year	Central Cities (Per Cent)	Suburbs (Per Cent)
1950	59	41
1960	51	49
1985	37	63

Given this pattern, it is inevitably that the American suburb will represent the dominant form of community life in America for the fore-seeable future. The same pattern can be expected in the Detroit area, where the central city population fell by 10 per cent from 1960 to 1970, while its suburbs grew by 28 per cent.[3]

2. Fragmentation. Political fragmentation is likely to continue to accompany the outward expansion of population in the metropolitan area. As we have seen in the preceding section, incorporation laws are permissive and annexation or consolidation very difficult. In the Detroit area, suburbs incorporated since World War II account for 26.9 of present SMSA population. From 1950 to 1960, fifteen cities were incorporated around Detroit, all of which have

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[2]Ibid., developed from data on pp. 13-15.

[3]U. S. Bureau of the Census, Census of Population and Housing: 1970, General Demographic Trends for Metropolitan Areas, 1960-1970, Final Report PHC(2)-24, Michigan, p. 6.

populations in excess of 25,000 and together account for 18.2% of the total current population. From 1960 to 1970, five more large cities were incorporated, accounting for 7.6% of present SMSA population. In addition to the burgeoning of these larger units, some thirteen other cities with populations under 10,000 have incorporated in the Detroit SMSA since 1950. Thus in the last twenty years alone, thirty-three new independent municipalities have been created around Detroit.[4]

The recent decades, then, have been characterized by extensive fragmentation. It may be that the slowing of population growth will damp this trend in the future. However, the vast scale of recent suburb-construction suggests that regardless of the pace of new community-building in the future, the central city is already irrevocably ringed by a multiplicity of independent municipalities.

3. Trends in Income Composition. The Hodge and Hauser study does not include income projections. The following table has been constructed for a sample of Detroit area units on the high and low ends of the income distribution to show the differentials among them for median income for the three most recent census periods. These figures reveal that relative differentials among municipalities have stayed fairly stable; the wealthiest communities have

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[4]Figures from 1950, 1960 and 1970 Census; Incorporation dates from _Michigan Manual_, pp. 354-375. The thirteen smaller incorporations in the Detroit SMSA were Keego Harbor, Memphis, Northville, Novi, Wixom, Orchard Lake, Richmond, Rochester, Walled Lake, Woodhaven, Gibralter and Flat Rock.

TABLE 2. Median Income for Selected Detroit Area Cities, 1950-1970

Median Income City	Census Year 1950[a]	1960[b]	1970
Mount Clemens	3,180	6,229	11,210
Inkster	3,227	6,664	11,290
Highland Park	3,375	5,696	8,716
Hamtramck	3,412	5,345	9,395
Detroit	3,465	6,069	10,045
Allen Park	4,634	8,492	14,153
Birmingham	5,373	10,723	17,292
Grosse Pointe Woods	6,054	11,160	18,981

consistently had a median income about double that of the poorest.

The trend seems to be slightly worsening; Beverley Hills median fam-

ily income of $22,909 is 2.6 times that of Highland Park today. While

relative differentials may not have changed much over the postwar

period, absolute differentials have. In 1950 the average Grosse

Pointe family had $1,679 more to spend than their Highland Park

[a]U. S. Bureau of the Census, U. S. Census of Population: 1950, General Characteristics, Michigan (P-B22), Table 10. Figures here include unrelated individuals who were not treated separately in this census year. Therefore the comparison with the two later years, where family income is used, is valid only for showing differentials within the group, not absolute changes over time.

[b]U. S. Bureau of the Census, U. S. Census of Population: 1960, General Social and Economic Characteristics, Michigan (PC91-24C), Table 33.

neighbor; in 1970 they had $10,265 more. There is no evidence to suggest that stratification by income will lessen; we may expect this trend to continue.

4. Trends in Racial Composition. The following figures are the Hodge and Hauser projections for black and white proportions in the central cities and suburbs in 1960 and 1985:

TABLE 3. Racial Composition of U. S. Central Cities and Suburbs[5]

| | Percent of Total SMSA Racial Group Living in: | | | |
| | White | | Black | |
Year	Central City	Suburb	Central City	Suburb
1960	48%	52%	78%	22%
1985	30%	70%	75%	25%

While whites comprised 82% and blacks 18% of central city population in 1960, by 1985 whites will account for only 69% of central city population and blacks will constitute 31%. While black population will increase slightly in the suburbs (it is impossible to tell from this data whether this growth is concentrated in several black suburbs, as is likely), the shift of whites from the central city to suburban areas will intensify the imbalance of race between the two. By 1985, 70% of whites in the SMSA will be living in its suburbs, while more than 70% of its black population will be living in the

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[5]Hodge and Hauser, Challenge, pp. 34, 51.

central city. Hodge and Hauser's conclusion is that

> If the geographical separation of white and non-
> white population occurs as projected, America by
> 1985 would be well on the road towards a society
> characterized by race stratification along social
> and economic lines as well as geographical
> structures.[6]

Our data on Detroit reveal what most disparity studies do not:
that the aggregation of all suburbs together in juxtaposition with
the central city obscures the divergence among the suburbs them-
selves. This is particularly true of racial statistics. The per-
centage of non-whites in the Detroit suburbs is an average 4%. How-
ever, instead of a normal distribution of communities around this
mean, there is a bimodal distribution with eight suburbs accounting
for almost all these nonwhites, and the remaining suburbs worthy of
the label lily-white.

The following table has been constructed from 1950 and 1970
data on the percentage black population in a number of Detroit area
communities. The trends for the so-called lily-whites are not shown
because they have simply remained all white. The general trend
among these communities is for the black population as a percent of
the total to increase. Inkster is a surprising exception.

5. Trends in Dependency Ratios. Hauser and Hodge project de-
pendency ratios for central cities and suburbs. A dependency ratio
is the ratio of the number of dependents, children under 15 years
and adults over 65, to the number of residents between ages 15 and

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[6]Ibid., p. 53.

TABLE 4. Percentage Population Black, 1950 and 1970[7]

City	1950	1970
Highland Park	8.6	55.3
Detroit	16.4	43.7
Ecorse	32.5	38.3
Inkster	53.7	44.5
River Rouge	31.8	31.9
Pontiac	9.5	26.7

64. They found that in 1960, central cities had a dependency ratio of 61, which is expected to increase to 62 by 1985, while suburban areas had a 1960 ratio of 67, expected to crease to 62 by 1985. Thus the burden of dependency is expected to grow in central cities and decline in the outer areas.[8]

The following table was developed for selected Detroit area cities to show the relative disparities in old age dependency among cities in 1950 and 1970. The table indicates that the differential has widened. Older area communities have more than their share of the elderly, while the younger peripheral communities have very low dependency ratios. Segregation by age appears to be increasing.

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[7]Figures for the 1950 year from Census, 1950, Table 10.

[8]Hodge and Hauser, Challenge, p. 46.

TABLE 5. Dependency (% Population over 65) Ratios, 1950 and 1970[9]

City	1950	1970
Hamtramck	5.0	15.7
Grosse Pointe Farms	6.0	15.1
Grosse Pointe Park	8.8	13.6
Highland Park	9.4	12.8
Ferndale	4.7	11.5
Detroit	5.7	11.4
Madison Heights	-	3.1
Taylor	-	3.0
Garden City	2.7	3.0
Riverview	-	3.0
Sterling Heights	-	2.3

6. Trends in Eduational Background. The following table com-
pares the educational status of selected Detroit area cities in 1960
and 1970. The figures represent percent population over age 25 who
have at least a high school education. The table indicates that
there has been some increase in formal educational status of resi-
dents in all areas. This increase appears to be fairly equally
distributed among the cities. There is no apparent diminution of

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[9]Census, 1950, Table 10; cities which have no ratio were either
smaller than 2,500 or not considered urban places in 1950.

the gap.

TABLE 6. Education Status, 1960 and 1970[10]

City	1960	1970
Ecorse	23.1	29.5
Hamtramck	22.8	30.9
River Rouge	27.4	35.5
Hazel Park	31.9	37.4
Pontiac	27.7	37.7
Detroit	34.4	41.8
Farmington	67.6	77.2
Grosse Pointe Woods	67.8	79.5
Grosse Pointe Farms	74.4	84.8
Birmingham	79.2	85.4
Beverley Hills	79.0	90.6

7. Trends in Housing. The data on housing suggests that differentials in price range of housing among metropolitan communities is increasing. The 1970 census shows that the increase in median value of owner-occupied housing in Michigan's central cities was an average 30%, while the increase in the suburbs was 55%. The average central city home went from a median value of $11,800 to $15,300,

[10]Figures for 1960 from Census, 1960, Table 32.

while its suburban counterpart went from $13,300 to $20,600.[11] A

selected number of Detroit area median values changed as follows:

TABLE 7. Changes in Median Value of Owner Occupied Housing, 1960
and 1970[12]

City	1960	1970
Hamtramck	8,700	10,100
Highland Park	10,700	13,600
Ecorse	10,400	14,200
Detroit	12,000	15,600
Warren	12,600	23,400
Allen Park	15,800	22,100
Birmingham	20,200	31,900

Data on indicators of housing quality are hard to compare because
of the change in tabulation of published data by the 1970 census. The
figures below represent 1970 figures for percent housing without com-
plete plumbing facilities and 1960 figures for percent housing without
complete plumbing facilities and all units classified as dilapidated
in that year. While different data inclusions make it difficult to

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[11]Census, 1970, Demographic Trends, p. 10.

[12]Census, Housing-Michigan, 1960, Table 1; Census, Housing-
Michigan, 1970, Table 1.

TABLE 8. Housing Quality in Selected Cities, 1960 to 1970[13]

City	1970	1960
Highland Park	6.58	11.33
Hamtramck	4.22	9.08
Detroit	2.75	6.21
Warren	0.83	1.19
Livonia	0.59	0.65
Allen Park	0.30	0.22
Farmington	0.27	0.74
Grosse Pointe Farms	0.23	0.33

compare these two periods, we can at least note that the differential remains very great. On balance, the housing evidence indicates that differentials are not diminishing.

The trends sketched above should be interpreted with caution. They are presented here only as indicators of changes over time in the socio-economic and demographic features of communities in the metropolitan area. In order to predict future change, we could project these trends into the future, as Hodge and Hauser have done in their study. Such projections are only as good as the assumptions underlying them.

[13]Census, Housing-Michigan, 1960, Tables 12, 18, 22, 25; Housing-Michigan, 1970, Tables 8, 18, 23.

We can note, however, that the time series data on our social indicators attests to the continuation, and in some cases exacerbation, of differentials among communities. We can comfortably reject the hypothesis that differentials are diminishing. Thus the data offer limited support for the predictions of Chapter VI.

D. <u>Conclusion</u>

The indirect evidence assembled in this Chapter supports the market construction hypothesis. It confirms, with both behavioral and socio-economic characteristics, the suggestion that the role of the local municipal government in a metropolitan area is not simply a parroting of the firm in supplying local public services in a competit-ve atmosphere, but that it involves shaping the cost and demand characteristics of its own local market. The analysis of the Detroit area reveals that citizens and their governments have successfully patterned a stratified array of communities in which there is clearly a distributional hierarchy. The historical study of annexation and consolidation confirms the suspicion of a concerted effort on the part of suburbanites to construct and maintain an independent local market for public services, protected from the redistributional implications of participation in the larger metropolis.

CHAPTER X

SUMMARY AND CONCLUSIONS

We have attempted in this thesis to develop a new theory of
local public output. This new theory emphasizes that the distribu-
tional impact of the local public sector is a strong factor in in-
fluencing the residential location choice of households, in addition
to and perhaps in conflict with the allocative motivation presented
in the Tiebout theory. The inclusion of the distributional factor
allowed us to construct a theory of local government behavior and
performance which predicts that the economic role of the local govern-
ment is to construct as best it can its own market for its services,
by manipulating community entry and public sector tax and expendi-
ture structures.

We began by surveying the literature. We reviewed Tiebout's
hypothesis that a plurality of local governments in a metropolitan
area facilitates efficient resource allocation in the public sector
by allowing public service customers to express their preferences by
voting with their feet. No adequate empirical test of this hypothe-
sis has yet been undertaken. Other economists have worked on public
choice, migration and externality approaches to the existence and
desirability of fragmented metropolitan government.

Our theory involves the use of utility theory to analyze the
choice confronting the household in deciding upon a community in

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which to reside. Concentrating on public sector characteristics, we look at the local tax and expenditure impact on household utility, noting that the public sector process is necessarily redistributive. Thus there are actually two ways in which a particular local government affects the well-being of a potential household. First, as Tiebout hypothesized, the mix of public-private consumption available in that community has an allocative impact on the household. Second, the redistribution of income or the benefits of income toward or away from the household within the public sector process constitutes a distributive impact.

We demonstrated that since both these impacts exist, it is impossible to predict which is actually more important in the household location decision. Thus we rejected the Tiebout conclusions that residential choice reflects a revealed preference for a certain package of local public services, since a move could be as much or more a response to a preferred distributional position and may even violate a preference-maximizing position in the process.

Since households themselves respond to two different incentives, we proceeded to examine the behavior and performance of local governments in their role as producers of local public output. We hypothesized that since communities tend to be socio-economically homogeneous, given the conditions for satisfaction with one's community derived from the above analysis, governments tend to be responsive and to operate straightforwardly in the interests of residents as if they were maximizing the representative utility function

themselves. Decision-making includes not only the allocation of budget funds to different public services, but also the determination of tax and expenditure structures and the molding of entry into the community. We termed the local government's economic role as primarily one of market construction, in which it attempts to minimize cost elements and maximize revenue potential in the community.

Local governments, therefore, exacerbate the tendency toward stratification by adopting rules that engender homogeneity and discourage socio-economic variety among households. In the long run, this pattern of behavior and differentiation of communities develops into a dynamic process of community building in an outward direction away from the hub of the metropolitan area, sapping the central city and its inner suburbs of sources of public revenues and leaving them the highest-cost elements of the population and physical structure.

A Marxist class analysis leads to similar results. Uniqueness of individual utility functions is replaced here by assuming that various classes have the same "tastes" within their ranks, providing the same stratification of communities on the basis of class or subclass position. The analogy with colonial imperialism can be made.

Finally, we attempted to test the validity of our theory. The evidence presented in support of the theory was indirect. However, it was sufficient to confirm the major points of the theory with some exceptions.

First of all, the inquiry into stratification and homogeneity indicated that there are large disparities among communities in

metropolitan areas. The data on Detroit illustrated this well; cost and income differentials are large and tend to parallel each other across the ranking of communities. The variance analysis indicated that there is significantly less variety within communities than across the entire metropolitan area. These results, and the non-existence of similar studies for other metropolitan areas, indicate that further empirical work should be done on disparities. In addition, such studies should not lump all suburbs together to contrast them with the central city, but should treat them individually.. Until such work is done, it is impossible to know if the Detroit pattern is representative.

The brief excursion into the history and usage of annexation and consolidation as devices for achieving unified local government in urban areas indicated that neither has been very effective in the past nor is very promising for the future. Suburban and rural interests have managed to institute and maintain legal safeguards for their insulated local public service markets. There is little hope that areawide consolidation will be successful in the large metropolitan areas of the East, Midwest and the older cities in the West. There are two groups of cities which are exceptions, however. The older cities of the South have in some instances managed to use consolidation to unify central cities with outlying areas. The younger middle-sized cities of the Southwest have in some cases been able to use annexation to prevent defensive incorporation of surrounding areas and to grow as cities unified under one or very few

local governments. However, with these exceptions, the success of
home rule and voter resistance to metropolitanization in general
supported our contention, in Chapter V, that local governments and
their constituents have constructed and maintain their local public
service markets to achieve distributional gains (or insulation from
distributional losses) from the larger areawide public sector.

Finally, trend analysis indicated that the predictions of
Chapter VI are valid, at least for most large urban areas in the
country. Fragmentation, stratification and homogeneity will continue
to be characteristic of the complexion of metropolitan America.

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APPENDIX

Table A-1. Assigned Ranks

LISTING OF RANK DATA MATRIX, 47 ROWS BY 7 COLUMNS.

AREA	HH-Y	FAM-Y	POVRTY	EDUC	AGE	INCORP	GROWTH
HIGHPK	1	1	3	10	4	4	6
HAMTRK	2	2	1	2	1	6	1
DETROI	3	6	5	6	6	1	3
RIVROU	4	3	2	3	10	7	2
PONTIA	5	4	6	5	16	2	22
ECORSE	6	5	4	1	18	22	19
MTCLEM	7	8	7	20	11	5	10
WYANDO	8	9	10	7	12	3	7
FERNDL	9	12	14	17	5	12	12
INKSTR	10	10	8	11	33	10	13
HAZLPK	11	7	9	4	21	23	4
MLVNDL	12	11	12	8	27	15	24
WAYNE	13	13	15	16	30	41	37
PLYMTH	14	25	21	35	15	16	38
LINCPK	15	15	13	9	26	9	11
DEARBN	16	27	11	26	7	13	5
ROSVLE	17	16	17	14	37	37	34
TAYLOR	18	14	25	12	44	44	35
CENLNE	19	18	18	15	24	20	20
MADHGT	20	19	27	21	43	31	30
BERKLY	21	22	22	32	23	17	9
WESTLD	22	20	35	23	39	43	14
DRABLN	23	17	30	24	38	46	23
ROYOAK	24	33	23	36	17	8	24
EDETRT	23	21	16	13	22	14	15

Table A-1. (Continued)

AREA	FH-Y	FAM-Y	POVRTY	EDUC	AGE	INCORP	GROWTH
HARRWD	26	30	28	29	8	30	18
CLAWSN	27	26	24	33	34	21	33
SOGATE	28	24	31	18	42	38	29
GARCTY	29	23	28	19	45	19	27
STCLSH	30	32	26	27	29	26	28
WARREN	31	28	32	22	40	31	44
DRBNHG	32	29	33	25	31	42	32
FRASER	33	31	40	30	41	34	42
STGWGT	34	34	45	34	47	45	47
RIVRVW	35	35	37	28	46	39	39
OAKPAK	36	37	29	37	20	24	16
TROY	37	39	38	39	32	33	45
ALLNPK	38	36	41	31	28	35	26
TRENTN	39	38	39	40	36	40	36
GRPTPK	40	43	19	42	3	27	17
LIVONI	41	40	43	38	35	28	41
BIRMHM	42	42	34	46	9	18	21
FARMTN	43	41	46	43	13	11	43
SFIELD	44	44	36	41	25	36	46
GRPTWD	45	45	44	44	14	29	32
GRPTFM	46	46	42	45	2	25	8
BEVHLS	47	47	47	47	19	47	40

Table A-2. Rank Statistics

TABLE OF RANK CORRELATIONS

	HH-Y	FAM-Y	POVRTY	EDUC	AGE	INCORP	GROWTH	PLUMB	TAX R
HH-Y	1.000	.968	.920	.886	.248	.582	.610	.714	.690
FAM-Y	.968	1.000	.872	.943	.122	.493	.570	.617	.655
POVRTY	.920	.872	1.000	.819	.427	.689	.710	.763	.783
EDUC	.886	.943	.819	1.000	.026	.415	.517	.555	.631
AGE	.248	.122	.427	.026	1.000	.648	.625	.370	.399
INCORP	.582	.493	.689	.415	.648	1.000	.645	.470	.525
GROWTH	.610	.570	.710	.517	.625	.645	1.000	.452	.678
PLUMB	.714	.617	.763	.555	.370	.470	.452	1.000	.551
TAX R	.690	.655	.783	.631	.399	.525	.678	.551	1.000

TABLE OF T STATISTICS

	HH-Y	FAM-Y	POVRTY	EDUC	AGE	INCORP	GROWTH	PLUMB	TAX R
HH-Y	999.99	26.06	15.78	12.83	1.72	4.81	5.16	6.85	6.39
FAM-Y	26.06	999.99	11.95	19.05	.82	3.80	4.66	5.26	5.81
POVRTY	15.78	11.95	999.99	9.59	3.16	6.37	6.76	7.93	8.44
EDUC	12.83	19.05	9.59	999.99	.18	3.06	4.05	4.48	5.46
AGE	1.72	.82	3.16	.18	999.99	5.70	5.37	2.67	2.92
INCORP	4.81	3.80	6.37	3.06	5.70	999.99	5.66	3.57	4.14
GROWTH	5.16	4.66	6.76	4.05	5.37	5.66	999.99	3.40	6.20
PLUMB	6.85	5.26	7.93	4.48	2.67	3.57	3.40	999.99	4.43
TAX R	6.39	5.81	8.44	5.46	2.92	4.14	6.20	4.43	999.99

Table 3. Full Matrix Statistics

COEFFICIENTS CALCULATED FOR RANKS 1 THRU 9.

    COEFFICIENT OF CONCORDANCE =   .645

    MEAN SPEARMAN COEFFICIENT =   .600

    COEFFICIENT OF SIGNIFICANCE = 266.880

COEFFICIENTS CALCULATED FOR RANKS 1 THRU 4.

    COEFFICIENT OF CONCORDANCE =   .926

    MEAN SPEARMAN COEFFICIENT =   .902

    COEFFICIENT OF SIGNIFICANCE = 170.419

COEFFICIENTS CALCULATED FOR RANKS 2 THRU 4.

    COEFFICIENT OF CONCORDANCE =   .919

    MEAN SPEARMAN COEFFICIENT =   .878

    COEFFICIENT OF SIGNIFICANCE = 126.792

COEFFICIENTS CALCULATED FOR RANKS 5 THRU 7.

    COEFFICIENT OF CONCORDANCE =   .760

    MEAN SPEARMAN COEFFICIENT =   .639

    COEFFICIENT OF SIGNIFICANCE = 104.821

COEFFICIENTS CALCULATED FOR RANKS 1 THRU 7.

    COEFFICIENT OF CONCORDANCE =   .663

    MEAN SPEARMAN COEFFICIENT =   .606

    COEFFICIENT OF SIGNIFICANCE = 213.383

Table 4. Listing of Community Income Data

AREA	500	1500	2500	3500	4500	5500	6500	7500	8500	9500	11000	13500	20000	37500	60000	MEAN Y	TOT PUP
								INCOME INTERVALS 1 - 15									
SMSA	18163	20899	27502	29560	33312	33408	37904	48236	59840	65771	139978	184450	271609	61838	11227	13532	1043897
FLORPK	326	337	476	370	421	494	570	543	610	576	901	912	1195	198	20	9812	7951
HAMTRK	700	236	410	306	335	320	440	491	587	565	950	1066	1013	165	12	10139	7096
PONTIA	414	547	811	838	872	858	1038	1478	1442	1693	2895	3134	2979	446	26	10413	20101
DETROI	11184	12241	16552	16529	17850	17499	19111	22752	26138	25262	47990	55005	70375	12333	1566	11015	372407
INKSTR	211	200	257	265	262	263	326	583	600	634	2433	1617	2075	308	17	11836	9051
MELRDO	124	197	283	327	322	356	473	454	806	869	1769	2150	2237	307	18	11878	10692
TAYLOR	214	187	233	240	301	372	538	858	1116	1416	3093	3944	4280	442	10	12453	17184
ROSVLE	190	184	224	273	343	360	441	663	811	1134	2394	3648	3509	453	44	12705	14671
FERNDL	55	70	287	219	316	290	373	469	495	639	1318	1486	1997	327	25	12726	8296
LINCPK	168	176	271	388	360	342	372	521	705	1101	2508	2952	3728	474	26	12894	14082
MADHGT	62	112	130	135	202	204	227	382	545	670	1551	2102	2754	331	11	13098	9441
WESTLD	144	187	181	207	455	474	578	807	1152	1472	3500	4717	5996	626	41	13119	20599
GARCITY	44	108	120	113	175	151	218	243	480	885	1712	2362	2933	328	16	13391	9712
EDETRO	152	143	202	293	247	267	334	440	861	788	2563	2544	3574	551	49	13493	11836
SOGATE	34	73	97	123	104	117	191	270	414	651	1405	1947	2623	354	0	13692	8491
WARREN	331	441	631	649	719	821	798	1484	2156	2749	6284	10124	14544	2061	137	14033	43929
STCLSH	157	235	240	332	478	462	519	820	986	1277	2967	4751	7430	1289	64	14267	22007
STCHGT	100	116	136	191	204	250	281	414	573	794	2167	3850	5296	746	36	14324	15054
DEARBN	295	383	507	781	915	860	850	1174	1331	1530	3409	4923	8724	2233	280	14566	28195
TROAK	165	244	282	463	496	556	594	799	972	1126	2988	4503	7330	1543	170	14607	22231
LRNHG	172	144	206	294	440	373	422	739	1002	1251	2934	4330	6561	1285	129	14736	20282
ALGDR	44	71	124	144	239	184	189	306	337	552	1451	2228	3799	736	107	15271	10542
LIVNI	139	121	200	268	296	324	376	643	833	1029	3222	5435	10918	2202	229	16104	26226
TROY	54	114	107	111	171	204	255	302	289	347	1159	1925	3833	1076	80	16110	10036
BKPAK	86	167	132	161	201	206	253	364	414	468	1257	1786	3316	1121	208	16387	10154
LIVTM	60	56	59	126	83	106	168	116	160	214	654	1174	2500	1211	407	20457	7090
FIELD	137	162	169	203	287	341	269	278	456	520	1467	2580	6649	3393	1024	21489	17955

Table 5. INCOME STATISTICAL BREAKDOWN

AREA	F-STAT.	EQUAL. OF VAR.-STAT	COEF. OF REL. VAR.	SQRT OF REL. VAR.
SMSA	1.000	91560022	.500	.707
HIGHPK	1.572	58254295	.605	.778
HAMTRK	1.771	51699301	.503	.709
PONTIA	1.765	51867594	.478	.692
DETROI	1.356	67507080	.556	.746
INKSTR	1.560	58686197	.419	.647
WYANDO	1.775	51578674	.366	.605
TAYLOR	2.069	44263148	.285	.534
ROSVLE	1.737	52726525	.327	.572
FERNDL	1.473	62140793	.384	.619
LINCPK	1.706	53682526	.323	.568
MADHGT	1.797	50941940	.297	.545
WESTLD	1.864	49129843	.285	.534
GARCTY	1.863	49152849	.274	.524
EDETRO	1.372	66756215	.367	.606
SOGATE	1.760	52019237	.277	.527
WARREN	1.521	60213230	.306	.553
STCLSH	1.380	66338616	.326	.571
STGHGT	1.591	57537152	.280	.530
DEARBN	.950	96395952	.454	.674
ROYOAK	1.111	82390691	.386	.621
DRBNHG	1.233	74261697	.342	.585
ALLNPK	1.100	83253628	.357	.597
LIVONI	1.130	81009520	.312	.559
TROY	.969	94533454	.364	.603
OAKPAK	.745	122842857	.457	.676
BIRMHM	.482	190075423	.454	.674
SFIELD	.480	190794842	.413	.643