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BY

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EFFICIENT COMMUNITY MANAGEMENT

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I. **Introduction**

This paper asks the question: If a local government wishes to be efficient, what criteria should it use to decide on the menu of locally provided government goods and services and on the mix of financing formula? Subject to a number of conditions, the most important of which is that the local housing market be competitive, our answer calls for the management of a community to adopt the decision-rule of maximizing profits (in the usual accounting sense) generated by local real estate, meaning structures and sites. This criterion will be shown to imply that the services mix be chosen by the application of marginal productivity analysis and that the financing mix be chosen on the basis of minimizing tax distortions. In principle, the proposed decision-rule can be implemented empirically although to do so requires a rather large amount of information.

Models of local government have, since the seminal work of Tiebout [1956], proliferated, and there appears to be little evidence that any one model is regarded as the most appropriate one for understanding actual local governments.¹

We view a local government as a firm in the sense of an organization that produces or has produced for it a product or products.² Typically
a government-firm provides a variety of products -- a menu or a bundle. Government decision-makers must decide somehow or other on the ingredients of this menu; hence, they need a decision-rule to determine the characteristics of any given menu. In principle, such a rule might be to continue supplying the same menu this year that was supplied last year; a menu they think will keep them in office; a menu similar to that of neighboring communities; they may interview the "media voter" and ask him/her to make the decision for them. Our proposed decision-rule calls for selecting a menu that maximizes profit generated by real estate, defined as

\[ G = R - (D + M + T) \]  

(1)

where \( G \) is the gain of the equity owners and mortgage holders, \( R \) is the rental, \( D \) is depreciation, \( M \) is maintenance, insurance and operating expense, if any, and \( T \) is the tax imposed upon the property -- ordinarily an advalorem property tax, summed over all structures located within the jurisdiction of the town. Like many others, we examine only a homogeneous residential community, although in a more ambitious effort we hope to apply a similar analysis to mixed communities, including cities. The recipients of the menu are residents or renters of houses. Owners or landlords are the suppliers of housing services; owner-occupants are to be viewed as people who, on the one hand, rent houses and, on the other hand, own houses; hence, they rent from themselves.
For simplicity, consider a newly constructed community that is in the process of being occupied. The developer has constructed, along with houses, all of the durable community facilities that become the property of the town. Such facilities include paved streets, sidewalks, utilities, fire and police stations, school structures, the town hall, and perhaps, tennis courts, swimming pools, and a golf course. The town starts off free of debt because the developer had decided that it was more profitable to recover the construction costs of community durable facilities by sale of houses than to have sold debt and encumbered houses with initial tax liabilities.

The town is located in a metro region that consists of a variety of local governments, including suburbs and cities. People become residents by "voting with their feet." The town boundaries are fixed because its boundaries are the boundaries of other towns or cities. We do not assume that the town is of optimum size. By definition, residents who have jobs work at locations outside the town in question.

The developer having seen a preliminary draft of this paper has promised buyers of houses that for the time he retains political power, he will appoint a capable town manager who will be given explicit instructions to select a menu of local government services all of which are to be supplied by the town (no overlapping jurisdictions) and a financing mix that together will, as closely as is humanly possible, maximize the sum of the gains as defined by equation (1) and balance the town's budget.
To get ahead of our story, the newly appointed manager opts for an American type property tax and the town council appoints an assessor to administer the tax. We assume this nonobvious conclusion at this stage to assure that buyers of houses are made fully aware that they will receive tax bills from the assessor when the town becomes operational, consistent with budget-balancing and the value of their houses. The buyers are also told that each household is entitled to participate in the menu of local services on the basis of some objective criteria of rationing. Children of a given age are entitled to attend a certain class in school for so many hours per year. Police will respond to calls for apprehending burglars, but not for calls to deliver the morning paper. Firemen will respond to fire alarms, but not to rescue cats from trees. In some cases there may be nominal prices for some services, such as using the tennis courts. Thus, we are not assuming that all public services are public goods in the Samuelson [1954] sense. There is no difficulty, for example, in pricing education service but a community may nevertheless opt for "free" public education. All prospective renters, including owner-occupants, are informed of these rationing rules.5
II. *Selection of the Optimum Menu*

People are moving into the town and the manager is obliged to get the town ready to supply the optimum menu. He proceeds in the following fashion.

The optimum output of a single local public good, police services, will be determined first. The community manager examines the market for housing, carefully assessing the impact of varying amounts of police services on the demand for housing services in the community. Figure 1 shows the demand schedule for housing services treated as homogeneous, assuming the prices of housing services in all relevant competing communities are given. This is an actual, not imagined, schedule as determined in the market; its price elasticity will be greater the larger the options open to families seeking housing accommodations. Let \( D_1 \) be the demand schedule with zero output of police services; \( OQ \) is the assumed fixed quantity of housing services, \( OP \) is the unit price of housing, and \( OPRQ \) is the total rental value of housing. Increasing the quantity of police services, at least up to a point, will make housing in this community more attractive, increasing the demand for housing, say, to \( D_2 \) where the rental value of housing has increased to \( ONSQ \).
Figure 1
Figure 2 shows the functional relation between the total value of housing services per period and the quantity of police services per period. The shape of line segment AB reveals the assumption that the value of housing services increases at a decreasing rate as the quantity of police services increases. The vertical distance OA in Figure 2 equals the area OPRQ in Figure 1; i.e., OA represents the rental value of housing services in the absence of police services. As the output of police services is increased, the local demand for housing will continue to increase up to the point at which the line AB becomes horizontal, beyond which additional police services are valued negatively. Beyond point M, additional police services reduce the demand for housing services, as there is absolute overpolicing of the community. The optimum level of police services, however, occurs before point M. Point M would be the optimum position only if police services were free.

If police services are assumed to exhibit constant marginal, and thus average, costs, as shown by OC in Figure 2, the community manager finds the optimum solution at point J where the marginal value of police services, the slope of AB at J, is equal to the marginal costs of police services, the slope of OC. The line OC may exhibit economies or diseconomies of scale for various ranges of output, but the optimal solution remains at the quantity that equates the marginal cost of producing police protection for the community to the marginal
valuation of police services as objectively determined by the responsiveness of the market demand for housing. The efficient community manager will not offer police output beyond \( J \) in Figure 2, since the additional services increase costs in excess of the increases in the rental value of housing.

When the community manager considers supplying two types of public goods, the efficient solution requires an expenditure that minimizes the cost of the mix of services that produces the same value product. Of these possible bundles of services, the community manager will choose the one that makes the value of the marginal product of the bundle equal to the marginal cost of the bundle.

In Figure 3, units of police and fire protection are employed in cost-minimizing combinations to yield a given rental value of local real estate. At the origin, in the absence of either police or fire protection, there will be some rental value of local real estate, say, $30 million per period. Isoquants \( I_{40}, I_{48}, I_{54}, \) and so forth are shown along with the expansion path, \( OF \). Any point on \( I_{40} \), for example, defines the combination of the two services that leaves the rental value of local real estate at $40 million per period. The convexity property follows from the conditions that both services are valued positively and that the two classes of service are not perfect substitutes. The isocost lines \( AB, A_1B_1, \) and so forth are defined as the amounts of the two services that can be purchased for a minimum expenditure. As in the normal production case, the point \( C \) is a combination of the two services that minimizes expenditures for the "output," \( I_{40} \). The expansion path
Figure 3
OF is generated by the minimum expenditure solutions of all possible "outputs," or all possible values of housing services in the community. 6

The expansion path OF in Figure 3 is translated into a functional relation depicted in Figure 4, where the vertical axis represents the rental value of real estate and the horizontal axis represents local expenditures on local public goods. The line AB shows the value of the services of local housing per period as a function of local expenditures on police and fire protection services per period, when the combination of services corresponding to any given expenditure maximizes the value of housing, i.e., is a point on the expansion path OF, Figure 3. The diminishing returns to local public expenditures depicted in AB derive from the existence of a given number of houses. As in Figure 2, OA represents the rental value of real estate in the absence of the locally provided services, and point M represents the absolute maximum of rental values obtainable by varying the level of local spending. Drawn at a 45° angle to the horizontal axis, the line OC has a slope of one and represents the minimum efficient costs of providing local public services. The community manager finds the optimal solution at J, where the slope of AB equals the slope of OC, meaning that a dollar of expenditure produces a dollar of increased rental values. Thus, OE is the efficient expenditure for this community. 7

The community management follows these same principles when determining the efficient output of any number of services. The community manager provides that menu of local services that 1) minimizes
Figure 4
expenditure for any given output (a constant rental value of real estate) and 2) equates the marginal cost of a bundle of services to the value of its marginal product (the change in the rental value of real estate).

III. The Housing Market Structure

The previous analysis has assumed that the market for housing services in the town approximates that of perfect competition. The case for adopting profit-maximizing as a decision-rule requires this condition; a monopolist who maximizes profits does not on that account make the industry in question efficient. Accordingly, we need to examine the structure of the housing market.

There seems to be general agreement among close students of real estate that the housing market satisfies the conditions of a competitive market structure in certain respects. There exist large numbers of buyers and sellers and an offer-bid system of setting prices. Prices vary freely in response to variations in the demand-supply facts in any given community. But, as has been pointed out by Ellickson, et.al. [1979, p. 3], housing markets violate two of the requirements of competitive price theory, namely, "... the homogeneity and divisibility of commodities in a given market." Are these violations fatal?

Relying on the pathbreaking work of Mas-Colell[1975] on differentiated commodities, Ellickson, et.al., have shown that the market for housing may be competitive [1977, pp. 11-15]. To put the point in another way, Mas-Colell has demonstrated that homogeneity and divisibility of commodities are not necessary conditions for competitive
equilibrium. It is necessary that consumers regard the commodities in question as close substitutes. This condition seems clearly the case for housing markets. Thus, Ellickson, using Mas-Colell's analysis has provided support for the earlier position of Olson [1969] that the market for housing can validly be treated as competitive.

The governing body of a local government may, however, itself adopt rules that more or less sabotage a competitive market for housing within its jurisdiction. Rent controls are a well-known illustration. Restrictive practices such as disallowing the entry of potential residents with "swarthy complexions" are others. Zoning laws can be used to restrict competitive housing markets in a great variety of ways. We shall attempt to show that a number of tax laws are also illustrations. Accordingly, we are suggesting that local governments choose their menu of locally provided goods and services and their financing mix in a way that maximizes the profits generated by local real estate subject to the constraint of avoiding practices that interfere with competitive local housing markets. In addition to avoiding various restrictive practices and rent control laws, local governments should also, if they are to be efficiently managed, avoid financing formula that interfere with competitive markets for real estate. Thus, we shall be obliged to examine tax formula from this point of view.

IV. The Choice of Financing Method

The determination of the optimum level of local public services is directly dependent upon the financing method employed by the community.
The line OC in Figure 4 represents the minimized costs of providing each level of local services. When the community manager decides output levels using these costs, the efficient outcome has been objectively determined for the assumed quantity of housing services. Community managers and property owners alike require links between the output of housing services, the output of local service bundles, and the financing devices to act as incentives to achieve efficiency. In this section we examine the choice of the financing method when account is taken of a variable supply of housing services by landlords; in the following section we examine the role of property taxes in providing efficiency incentives for community managers.

Dropping the assumption of a fixed supply of housing services, we incorporate the process of "filtering," whereby landlords vary the supply of housing services produced with a given stock of housing by altering the input of maintenance and amenities. A landlord or owner-occupant can make a given structure produce more (or fewer) housing services by stepping up (or down) repairs, alterations, or landscaping and, in the case of apartment houses, by providing cleaner (or dirtier) common facilities and better (or worse) security provisions [see Olsen, 1969]. Through filtering, the supply of housing services will be upward sloping as shown in Figure 5, becoming vertical when the capacity has been reached for increasing housing services by adding amenities to the existing stock of structures. The upward sloping supply of housing services generates an AB schedule in Figure 4 that incorporates increased rental values not only due to increased public services, but also due to the increased quantity of housing services.
The determination of the optimum quantity of housing services supplied in the community is shown in Figure 5. The price of housing services, \( p_0 \), is consistent with the optimum menu of local government services when an outside agency pays the community exactly the amount necessary to finance this menu. In Figure 5a, some landlord who owns a given number of dwelling structures within the community will maximize his gain, \( G \), by "filtering up" the quantity \( q_1 q_0 \), thereby making his marginal cost equal to the price of a unit of housing service.

(Insert Figure 5)

Since the community must finance itself by substituting tax revenues for the assumed outside grant, the community needs a tax device that will induce landlords to manage their properties efficiently. The governing board instructs the manager to examine the following types of taxes: 1) head taxes, 2) income taxes, 3) an excise tax on housing services, 4) profits taxes, and 5) an American type property tax.

A head tax may be examined first. We assume this tax is legally imposed upon residents (as opposed to landlords when they are not the same persons). Consequently, this tax introduces a two-part pricing system, one part being the head tax per period and the other part being the rental per period. In the famous market classification system introduced by A.C. Pigou, such a pricing package fits his class of first-degree price discrimination [Pigou, 1960, pp. 275-281]. If it were feasible to tailor a head tax so that each resident is required to pay an amount equal to his consumers' surplus, owners of real estate could at the limit charge the competitive price for housing services and in addition add to their profits the monetary equivalent of the sum of consumers' surpluses of all renters.
Figure 5

a. Single Landlord

b. Community

A. Single Landlord
B. Community

Figure 5

(Q = \sum q_i)

Quantity of Housing Services
As already pointed out, profit maximizing as a decision-rule for local government management requires, as a necessary condition, that the market for local housing be competitive. The two-part pricing system is a form of price discrimination and, hence, of monopoly pricing.

In fact, head taxes would lead to inefficiency. A head tax must be imposed in some uniform manner such as equal taxes per head or per household. Consequently, the resulting two-part pricing system will lead those potential residents who (1) demand a relatively small amount of housing services and/or (2) have little or no attachment to the community to shop for housing elsewhere. Thus, the total demand for housing falls within the community and this in turn induces landlords to reduce the quantity of housing services supplied below the optimum level (see Figure 5).

Consider next a proportional income tax. Such a tax could result in the same tax liabilities as a head tax if all actual and potential residents have the same incomes. With unequal incomes, some people with high incomes would shun the community in favor of housing in other communities that have no income taxes, reducing the demand for housing services even more than in the case of head taxes. Consequently, local income taxes are also unacceptable.

The community manager now considers an excise tax on housing services of $BC$ per unit in Figure 5b. While leaving consumer demand, $D_o$, unaffected, the excise tax reduces the net tax price of housing services received by landlords to $D_n$, creating the incentive to reduce the quantity of housing services by $q_nq_o$ in Figure 5a for a single
landlord and by \( Q_n Q_o \) in Figure 5b for all landlords. This outcome is also inefficient. In the absence of the excise tax the supply of public services is optimally determined as shown in Figure 4, and landlords supply the quantity of housing services at which the price equals marginal cost as shown in Figure 5. By raising the price above the marginal cost of housing services, the excise tax induces landlords to provide less than the efficient quantity of housing services; hence, this tax formula is rejected by the community manager.\(^{10}\)

A profits tax that takes some fraction of the sum of the area \( G \) in Figure 5a for all property owners will not affect the supply of housing services offered by profit-maximizing property owners. However, a profits tax does have a serious practical difficulty. Some owner-occupants may not be able to calculate their profits from owning local real estate, leading to possible expensive controversies between the town's tax collector and owner-occupants.

Like a profits tax on real estate, an American type property tax, with the base defined as the assessed value of real estate and the tax rate as uniform per dollar of assessed valuation, does not induce owners to reduce the output of housing services. A property tax is, however, superior to a profits tax since it encourages the efficient management of housing by owners. A tax on profits is equivalent to a tax on market values when rates of return on real estate investments in the community are identical and, consequently, the present values of property are some multiple of after-tax profits.\(^{11}\) The presence of different degrees of skill in managing real property generates diverse
rates of return on investments. Since a property tax assigns the same
tax liability on two structures commanding the same market price, the
poorly managed property carries no smaller tax liability than the well-
managed one; the local government does not share in the reduced profits
resulting from inept management of dwelling units. Any extra profit
that new buyers of such dwellings can achieve via better management is
subject to a zero marginal tax rate under the property tax.

From this brief survey, we conclude that financing the optimum
level of local public services by a property tax promotes the efficient
management of privately owned housing units. 

V. Property Taxes and Efficient Community Management

By employing the property tax, the community manager can expect to
recover for the town treasury a portion of the increased rental values
resulting from community provided services. The optimum provision of
local public services financed by property taxes has maximized the
after-tax rental values in the community. In Figure 4, the community
has incurred KE costs in providing services that increased the rental
value of housing from OA to JE. Taxing property owners to cover these
costs fully will yield an average tax rate of (KE/JE) \cdot (100), and the
marginal benefits to property owners will just equal the marginal taxes
paid. The market pricing equivalent quid pro quo relationship has been
established between those who pay for and those who receive the
financial benefits from the local public services. The existence of
these local services has increased the income of all property owners by
JK minus OA, after paying the required taxes. All intra-marginal units of the local services have yielded increases in rental values in excess of the increases in the tax costs incurred.

Local services in residential communities are used by residents. Residents fully pay for the benefits they derive from these services by paying rent (or imputed rent). The owners of property, however, collect in extra rent the money value of the benefits resulting from the provision of more or better government services, and a system of non-redistributive taxation calls for assessing them in proportion to their gains. In a community of 10,000 dwellings, each of which supplies an equal number of units of housing services, the local government by increasing its expenditures by $1,000 per month may increase the local price of housing service from $500 to $503 per month. If each owner is required to pay in proportion to his gain, each is assessed an extra 10 cents in tax per month. Owners reap a "taxpayers' surplus" of $2.90 per month. Where there exists an unexploited taxpayers' surplus (e.g., points to the left of J in Figure 4), increased expenditures and taxes will increase the profits of owners of real estate. Efficient local management will reduce the marginal taxpayers' surplus to zero by moving to point J. A strict application of the benefit principle requires that OC (the costs) be subtracted from AB (the gross rental values) and that real estate owners pay taxes for the optimum level of local services in the proportion KE/KE.  

Breaking the benefit link between taxing and spending may lead to a non-optimal solution. Suppose, for example, that property owners do not pay the full costs of services, in event of a subsidy of a
50 percent matching grant from an outside agency; OC is shifted to OC_s in Figure 4. The local manager will now increase the expenditure on local services to OE_s, increasing the net benefit of taxpayers' surplus. Presumably the outside agency can justify both the services in excess of the locally determined optimum and the redistribution of income implicit in the local response. However, the excessive level of expenditures reveals how the goal of rental value-maximizing, unconstrained by a benefit tax financing requirement, may misguide the community manager.

The local government's responsiveness to the property market when requiring the use of property taxes to finance local services also creates incentives for cost minimization. Failing to minimize costs will create fewer services to be provided at each level of expenditures. Rather than leading to excessive levels of spending, however, excessive costs will reduce spending in communities limited to property taxes in financing local services. If, due to bureaucratic inefficiency affecting the level but not the composition of output, the costs of services in a community lie above OC, say, at OC' in Figure 4, then the level of spending will lie to the left of OE at OE', rental values will be less than JE at J'E', and property owners will find average tax rates higher (K'E'/J'E' > KE/JE) in the inefficiently-run community. While governmental inefficiency can persist indefinitely, the linking of the output and financing decisions arms the governing board with the criteria necessary for evaluating the community manager's performance. Finding that owners are paying avoidable extra property taxes, the governing board has an incentive to replace the community manager who fails to minimize costs.
While the price-like characteristics of property taxes have been recognized since Marshall's analysis, the underlying rental-value maximizing efficient bundle of local services has generally been overlooked. The underlying efficient bundle of local services suggests that both equity and efficiency are sacrificed by either an excessive or an insufficient level of service provision, i.e., by property taxes that are either too low or too high. The employment of property taxes contributes to the goals of fiscal equity and economic efficiency by disciplining the supply of local services to the effective demand as registered in rental values and by providing community management with the proper criteria by which to evaluate its success.

VI. *Sources and Implications of Inefficiency*

The efficient expenditure levels yielded in our model are not necessarily equilibrium levels. Actual communities may not be profit maximizers. There are many forces at work pushing local governments away from the optimum expenditure levels. Fiscal inefficiency can result from poor management practices such as failing to minimize costs or employing the wrong expenditure criteria, as well as from outside political influences, producing services mandated by higher level governments, and laws which earmark some tax revenues, place restrictions on taxes or expenditures, or limit market responses (e.g., rent controls) to changes in fiscal variables. As this list illustrates, sources of inefficiency are ubiquitous; the history of government has generally been one of varying degrees of inefficient behavior.
A common form of managerial inefficiency is the provision of the wrong mix of local services. There may be political forces in communities lobbying for some special interest, and governments frequently yield to these forces. A strong law and order campaign may produce a bias in favor of police services relative to other services (irrespective of the relative impact on rental values) such that the wrong mix of local services is produced. Producing the wrong mix of services will achieve for any given level of expenditures a level of rental values less than that attainable. A consistent bias will produce an expansion path such as $OF'$ rather than $OF$ in Figure 3 and yields an actual $AB'$ below the attainable $AB$ in Figure 4. The consequences of such systematic bias are that the taxpayers' surplus is reduced, the level of total expenditures will be too low, property values will be lower than those attainable, and there will be a redistribution of consumption favoring those especially benefiting from the relatively expanded service.

The bias producing the wrong mix of local services may result from the use of the wrong spending criteria as readily as from outside political influences. The determination of property-tax financed service levels according to benefits attributed to users or residents is one such misleading criterion. Taking account of service benefits unregistered in increased rental values will yield an inefficient mix of local services, just as will use of the needs or requirements approach in determining outputs of any services, providing mandated services, or supplying special services from earmarked revenues. The existence of special districts and overlapping governments providing
alternative services financed by the property tax may create institutional barriers to achieving the optimal balance of local services. Similarly, partial budgeting of each service rather than a unified determination of the whole bundle of local services will generally yield an incorrect mix. As these examples suggest, communities are unlikely to provide an optimal mix of local services in the absence of supporting fiscal institutions.

While the correct mix of local services is one for which each service yields an equi-marginal impact on rental values, the correct level of services is one that yields a dollar gain in rental values for a dollar of costs at the margin. As services are extended beyond the optimum level, each extra dollar of costs yields less than a dollar increase in rental values, and the taxpayers' surplus is reduced. Rental values continue to increase (up to the maximum point M in Figure 4) but not fast enough to keep up with costs. If all property owners were rental value maximizers, clearly property owners would increasingly oppose local government spending increases beyond the optimum. Furthermore, a community that is producing the wrong mix rather than the correct mix of services, will generate property owner dissatisfaction with the level of local expenditures.

Even if the local management provides the correct mix of services, there are various political interests that may press for too much or too little spending in general. The divergent interests of tenants, who focus on the expenditure benefits of local services, and owner-occupants, who have to take into account the property taxes they pay, suggest the
nature of the pressures on efficient management. Renters, not understanding that more services will increase rents, may exert political pressure for excessive spending, thus exploiting some of the taxpayers' surplus generated by the optimum provision of local services. Some owner-occupants, not understanding that their tax liabilities are just right, might wish to sacrifice a little in net rental values in return for lower taxes. Owner-occupants may press for less, while tenants may press for greater than optimal spending levels. The community manager is the focus of special interests attempting to influence local spending to their benefit.

In addition to inefficiency arising from managerial response to special interests desiring non-optimal mixes or levels of services, laws restricting taxes, expenditures or property market responses to fiscal variables may lead to inefficient spending levels. Rent control laws are one such restriction. The ill effects of rent control laws on private markets are well known. Rent control can limit public expenditures as effectively as a law directly limiting the size of the local budget. In Figure 4, if rents are limited to a level below $R$, say, to the level $R''$, then the efficient local manager will limit expenditures to $OE''$, since beyond that level another dollar of expenditure will bring no increase in rental values by legal restriction. Just as rent control laws may induce landlords individually to reduce housing services by undermaintaining their properties, so too will rent control induce landlords collectively to support the efficient manager in reducing taxes and expenditures below the original optimum level. To the extent that tenants not only can pass rent control laws but also
can produce the votes to maintain the original efficient level of local spending (or to increase spending further), the combination induces landlords to limit their "adjustments" to their private properties, encouraging a further reduction in housing services to tenants. Thus, rent control laws without expenditure limits are likely to encourage even greater deterioration of local real estate.

Another implication of our approach is that local expenditure or property tax limitation laws are as capable of reducing as they are of increasing government efficiency. Any spending or tax limitation law, if the limits are set low enough to have an effect, either 1) reduce service levels below the optimum, whereupon property owners are not reaping the full benefits from the existence of government, or 2) redistribute income to property owners, if other tax devices are substituted for the property tax while maintaining spending levels. To the extent that a community spends beyond the optimal level, yielding less than maximum rental values in the community, tax rate or spending limitation laws may move things in the right direction. However, the excesses may indicate the limits of local spending. Perhaps the added services should be provided by the state rather than at local levels; i.e., such services do not increase the attractiveness of living in the community by enough to justify providing the services locally out of property tax revenues. People living in communities that have a history of failing to minimize costs or of providing the wrong mix of services may create a lobby to institute tax or spending limits, but these will not cure the basic problems; in the former case services are at too low a level; in the latter, only some services are provided in
relative excess, while others are in relatively short supply. Thus, expenditure or tax limitation laws cannot generally cure the ills which give rise to such laws. The economically correct way of stating a government limitation law is to require the local management to follow our optimizing rule -- limit expenditures (and the property taxes to finance them) such that the last dollar of expenditure in all directions yields a dollar of increased rental values.

Efficiency in community management requires the same freedom from restriction as do efficient markets themselves. Efficient community management additionally requires the employment of correct fiscal rules and an independence from special interests.

VII. *Rose-Ackerman's Objection*

Susan Rose-Ackerman has presented an objection to urban models of the type here proposed claiming that they may be unstable. The objection in her words is as follows:

To understand how instability can occur, consider first a simple case that omits both "politics" and the land market. Suppose that there are two towns, One and Two, and that the level of \( b \) [quantity of a public good] has been fixed by higher levels of government and is equivalent in each town. Each town, however, must finance the provision of \( b \) with a uniform per capita tax. The average cost of producing the mandated level of \( b \) falls with population up to some minimum average per capita cost and then increases. The total population of the region equals twice the minimum cost population. Clearly, the efficient equilibrium is one with the population divided equally between the towns. Suppose, however, that initially the population is unequally distributed
and that the town with the smaller population, One, has the higher average costs. Residents will migrate to the larger community, Two, raising costs still further in One. Unless costs in Two increase very rapidly as population grows, the entire population can end up in Two. [Rose-Ackerman, 1977, pp. 329-330.]

This reasoning permits one town to be emptied and a competing town to acquire all residents of the region. Our model of town decision-making by contrast gives stable results. Let us, as a first step, suppose that the only tax being used is the property tax and that both towns are in equilibrium. Town One loses residents for some random cause. The first effect of the change is the posting of "for-sale" and "for-rent" signs in town One in greater than customary numbers. Since the market for housing services is competitive, monthly rents fall in town One which may be graphically shown by thinking of the now reduced demand schedule to be the line \( D_n \) (Figure 5); thus, the price of a unit of housing services falls from \( P_o \) to \( P_n \). Accordingly, town One becomes a more attractive place to live because rents are now lower.

Town Two, on the other hand, being the only other town in the region, will initially find rents increased because the group that decided to leave town One is trying to enter town Two, unless the "random cause" was a decision by the group to move out of the region altogether. But these differences in rents are not equilibrium outcomes because the assumptions are that the towns provide the same quantities of housing services and provide the same quantity of the same public good. Otherwise it would not be true that "... the efficient
equilibrium is one with the population divided equally between the towns" (see the above quotation). Equilibrium is reestablished when the price of housing services is again identical in the two towns. As in any competitive market, competition wipes out differences in prices for the same commodity in the same market. Notice that there is no persistent difference in the yields of property taxes in either town and, in our model of multiple public goods, no reason for either manager to change the composition or the quantity of public goods' bundles provided the local populations.

Rose-Ackerman has no property tax in either of the two towns. The only tax is an assumed head or household tax. Let us now deal with that case. Let the size of houses in both communities be, for simplicity, the same and, hence, in the initial equilibrium, house rentals are the same and let the tax be a "household tax," meaning that the tax is equal per household and hence in either case equal per house. If, then, the tax is legally placed on the landlord, we have exactly the same outcome as with a proportional property tax if all houses are managed with equal efficiency. From the point of view of landlords, the household tax is efficient in the sense that a dollar of tax generates a dollar of extra rent at the margin (see Figure 4). If, on the other hand, the household tax is legally placed upon the buyers of housing services, the total rent to the tenant becomes the household tax plus the now reduced rent -- lowered on our assumption by exactly the amount of the household tax. Thus, the total price of housing to tenants remains unchanged.
A random shift in the demand for housing services between the two towns will initially reduce the total rent or the net rent (equal to the total rent minus the household tax) per house in town One and increase rents per house in town Two. Again, this is not an equilibrium outcome because different prices exist for the same commodity in a competitive market. The reasoning of Rose-Ackerman assumes that the prices of housing, called the "land market" (see first sentence of the above quotation), are independent of the demands for housing services. That being so, the stabilizing features of reduced rentals in the one town and increased rentals in the second town are not allowed to come into play -- hence, the instability conclusion.

In our approach, differences in the costs of a given menu of public services and, hence, differences in tax liabilities are not of themselves a source of instability either. Consider Rose-Ackerman's two towns and suppose that town One has higher average costs than town Two for all outputs with both providing the same menu of public services and both containing the same quantity of housing services. It follows that owners of property in town One will have lower incomes after tax (assuming a property tax) than owners of property in town Two. To tenants, these differences are irrelevant; they pay the same rent in either town. To owners, landlords, they too are indifferent as between owning houses in the towns because, unless they entertain the belief that the differences in costs of government and hence the differences in property tax liabilities per house are transitory, equilibrium prices of houses considered as assets will be such as to generate equal expected rates of return in the two towns. Houses in
town Two are then more expensive than in town One. This condition can cause trouble in the sense that, in the case of great inefficiency, the high costs in town One and hence equivalently high taxes, owners may board up their properties or walk away from them because any investment including maintenance is no longer worthwhile. This result differs only trivially from that of an inefficient private firm being driven out of business by zero profits or persistent losses.

VIII. Conclusions

We have examined how a residential community should operate if it is to supply the optimum menu of local government services. As far as we are aware, there is no local government in the United States whose governing body self-consciously uses our suggested decision-rule. If and when one does, the management would need to know how rental values respond to variations in the mix and size of local government services. Such information would be difficult and costly to acquire.

Even if all bedroom communities were to behave as our decision-rule suggests and do so successfully, it does not follow that the "industry" -- the provision of local government services -- would be efficient. It is also necessary for mixed communities including cities of all sizes to be efficient as well, since their jurisdictions contain a substantial portion of total residential property. In addition, the efficient menu of local services provided to various types of private enterprise would need to be defined. Externalities both positive and negative among neighborhoods are obviously of great importance in large
cities. The opportunities for research on the topic of efficient (and inefficient) local government seem endless.
1The literature on theoretical models of local government is enormous and is growing at a rapid rate. Two recent papers are especially useful in assessing much of this literature -- Rufolo [1979] and Rose-Ackerman [1979]. Our emphasis on real estate in connection with community management is by no means novel. Thorstein Veblen [1923] regarded country towns as real estate ventures as has been pointed out by Michael Boskin [1973]. Veblen regarded the influential town people as exploiting farmers operating within the economic sphere of influence of the town (see Veblen [1923, pp. 142-165]). Much earlier, Alfred Marshall used the illustration of a developer (master-builder) in his Mathematical Appendix to explain among other matters marginal productivity (Marshall [1920, pp. 847-849]). Had he treated the developer as building an entire new town, Marshall might have gone down in history as the second urban economist -- the first of course being Johann Heinrich Von Thünen. More recently in a cogently reasoned article, Sonstelie and Portney [1978] hold that profit maximizing behavior on the part of local governments would lead to efficient "... allocation of resources in the local sector" [p. 276]. This approach and ours have much in common. Their view has been challenged by Rose-Ackerman [1979, pp. 329-333]. Her criticism is examined in Section VII.

2"Club" models of local government have been developed by Martin McGuire [1974] and James Buchanan [1965] among others. Such models lead to the concept of a "tax-price" as a rationing device for government services whereas ours has no such feature.
Ours is consistent with Wallace Oates' [1969] paper and with much of the empirical literature that followed. Brueckner [1979] provides a bibliography of this literature and advances the discussion by raising the question of the efficiency of local public goods provision.

In Tiebout's words [1956, p. 418], "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." There have been a number of papers arguing that footvoting is not sufficient to yield a determinate solution to the optimal supply of local goods. (See, for example, McGuire [1974] and Stiglitz [1977].)

Buchanan and Goetz [1972] argue that the Tiebout migration process will not generally yield Pareto efficient results unless the local public goods and services are provided by institutions characterized by proprietary ownership arrangements. They dismiss such a "regime of private cities" as unrealistic. We, on the contrary, provide a community manager with a spending decision rule that generates under certain conditions efficiency, the "profits" being shared by the community's property owners. Like Tiebout's model, mobility plays a crucial role in our approach in achieving local government efficiency. Unlike Tiebout, we require a local community manager to select the menu of locally provided services.

Our model of local government is consistent with the fact that people with grown children often continue to reside in communities with expensive public schools.
6 Lines such as AB in Figure 3 assume that the prices of inputs to police and fire protection are fixed, and AB will be linear when police and fire protection themselves are measured in units of inputs such as the number of policemen, patrol cars, etc. Since we measure the services in units of outputs, say, in units of crime reduction and fire damage prevention, the lines such as AB, A_1B_1, etc., may be concave, convex, or wavy, as they depend on scale economies or diseconomies in production; this permits the possibility of multiple solutions, one of which the community management must choose.

7 This outcome is to be understood as depending on what all remaining communities are providing in the way of public services. For an industry to be efficient, all firms must individually be efficient.

8 In this connection, see M.J. White's paper "Fiscal Zoning in Fragmented Metropolitan Areas" in Mills and Oates [1975].

9 Head taxes are popular among tax economists because of their lack of price effects. But local head taxes are not true head taxes in the traditional sense because a person is subject to the tax only if he chooses to reside in the community.

10 A local retail sales tax might be included in the list of taxes to be considered. In a purely residential community, a retail sales tax and an excise tax on housing services come to the same thing. If a shopping center is allowed, the two taxes are no longer identical since goods and services provided by a shopping center would be subject to tax. One can show that in such communities, a local retail sales tax
reduces the income of shopping center facilities and is inefficient for much the same reasons as we show for an excise tax on housing services.

11This point has been made by Sonstelie and Portney [1978, pp. 271-272]. Our definition of the profits generated by local real estate differs from theirs; they include the construction costs of a building as part of current costs (see p. 267).

12A property tax has the seeming potential disadvantage of reducing new construction within the community because any structure must be expected to earn a rate of return equivalent to that of other investments plus the effective rate of the local property tax. Although this is not an issue here since we are considering how to operate a community that is already in existence, incentive considerations are highly relevant for determining the rate of construction of new communities and the redevelopment of old ones.

Paradoxically, legal limitations on property tax rates illustrated by Proposition 13 in California (one percent of market value) may effectively prevent the construction of new communities. Suppose, for example, that for a feasible location and acreage, a new town's optimum menu would require a two percent property tax rate to generate the necessary revenue. Proposition 13 would block its construction if the total prospective profits of local real estate are reduced below the amounts which when capitalized are less than construction costs plus necessary developer's profit.

13This is an optimum for property owners as a group. At the optimum service level, the sum of all property owners' taxes per unit of
service will equal the marginal cost. The optimum beneficial property tax rate is a marginal-cost "price" of public amenities to property owners as a group; thus, property taxes facilitate efficient location choices among communities.

14 Marshall [1920, p. 797] said, "Such local rates as are remunerative are in the long run paid by the occupier, but are no real burden to him." Marshall is correct that these rates are no burden to the occupier, but is he correct in his view that the taxes are paid by or shifted to the occupier? In our view, the property owners alone "pay" the taxes; but that does not mean they are "burdened" in a net sense.

15 A property tax on real estate is a strictly nonredistributive levy only if real estate is homogeneous within the community and the property tax assessments are uniform with respect to capital values. Except in the most homogeneous community, there is almost certain to be some redistribution. Similarly, local output of all but the most "pure" public good will generally involve some redistribution via rental values. Disciplined by the market, however, efficient community management assures all actual and potential property owners that the local government will be maximizing the value of the whole town.

16 This assumes that the local government must spend all of the grant on services. If the local government were free to dispose of the revenues as it pleased, then it would continue to provide the optimum level of services while giving property owners a tax rebate.
Since the use of property taxes is indicated for determining the optimum local expenditure, i.e., for achieving the maximum overall return to capital, there is reason to question Mieszkowski's [1972, p. 94] conclusion that "The introduction of the benefit-side in no way alters our basic conclusion that the property tax system for the nation as a whole depresses the return on capital . . ." It is unsatisfactory to attempt to assess the incidence and effects of property taxes independently of assessing the incidence and effects of the deviations in local services from the optimum financed by property taxes.

Netzer [1966, p. 214] expresses the confusion regarding this issue: "The problem is that there is no real way of distinguishing between services to property as such and services to residents." Actually, our model is built on the distinction between services to property and to residents. Services to property are those for which residents are willing to pay increased rents.

Buchanan [1963] argues that earmarking of tax revenues affords public responsiveness to individual preferences. In contrast our model shows that general fund budgeting is responsive to individual preferences as revealed in the markets for housing when service levels are determined by market determined rental values.

Such barriers may be alleviated by intercommunity cooperation. For example, if there are communities located along the right-of-way of a railroad terminating in a central city and if the railroad charges high prices based on average costs in order to avoid losses, the communities by agreement might negotiate with the railroad for it to
charge much lower marginal-cost prices. Such an arrangement would pay
the local communities if the reduced commuting costs, by making the
communities more attractive places to live, result in higher rents
sufficient to increase the profits of local real estate after allowing
for the extra property taxes the communities would need to collect to
pay for some or all of the overhead costs of the railroad.

21The marginal cost of, say, police service to a renter is the
additional rent he has to pay because the community has become a more
attractive place to live. He may be ignorant of this relation.

22In recent years these forces have generated various proposals
for tax relief; to aid fixed income homeowners, circuit breakers, which
rebate that portion of the property tax liability that exceed a
certain percentage of income, have become popular.

23Since rental values are increasing at a decreasing rate in
response to spending increases, the average tax rate is an increasing
function of expenditures. High or low tax rates in themselves tell us
nothing about efficiency. Focus on tax rates alone in the political
forum may lead a majority of the citizens in a community to believe that
taxes are too high when in fact taxes and expenditures are too low
for efficiency.

24Brennan and Buchanan [1977, 1978] have proposed constitutional
constraints on the choice of tax instruments in an effort to restrain a
revenue maximizing government. Suggesting a particular form of earmarking,
Brennan and Buchanan [1978, p. 309] point out that "What is required for
the disciplinary influence of selected tax base constraints on governmental
fiscal behavior in disposing of tax revenues is a tax base that exhibits a strongly complementary relationship with the public good, and is sufficiently broad to finance its provision."

Our model imposes a spending rule on community management that enforces the efficient complementarity between the tax base and the services provided.

Contrary to our assumption of the same menu of local services in the two towns, the town with higher costs should, if it is otherwise efficient, provide a smaller menu (see Figure 4).
REFERENCES


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