PUBLIC EXPENDITURES DETERMINED BY VOTING WITH ONE'S FEET AND PUBLIC CHOICE*

David E. Wildasin

University of Illinois at Chicago Circle, Chicago, Illinois, USA

Abstract

This paper analyzes the nature of individual demands for local public goods in a model developed by Negishi. It is shown that under certain circumstances ("full equilibrium") a household's demand is determined by marginal benefit and tax-price as orthodox theory would suggest; under other circumstances, however, households will support "fiscally profitable" (property-value-enhancing) expenditure proposals. Thus on occasion—but not always—the fiscal profitability rule is politically viable. It is also shown that in full equilibrium, if Negishi's condition on preferences is satisfied, marginal benefit and tax-price are equated for every household and a Lindahl solution obtains.

I. Introduction

According to the "fiscal profitability" theory of local public expenditure determination suggested by Margolis (1968), local governments pursue policies aimed at maximization of property values. Using this concept, Negishi (1972) has recently constructed a model of political and economic equilibrium for an economy with multiple local governments. He demonstrates that a Pareto optimum is achieved in politico-economic equilibrium: with households maximizing utility, firms maximizing profits, and governments acting according to fiscal profitability, the optimality conditions for private and public good provision are satisfied.[1] It is reasonable to inquire, however,

* This paper is drawn from Chapter III of my unpublished dissertation; Wildasin (1976*a*). While absolving them of responsibility for errors, I wish to acknowledge the helpful comments of my thesis committee.

[1] In Negishi's model, public goods may enter private sector production functions as well as consumer utility functions, so that the Samuelsonian public good optimality conditions must be generalized as in Kaizuka (1965). I ignore this elaboration here for the sake of simplicity. Incidentally, while Negishi's conclusion that public goods are optimally provided is undoubtedly of greatest interest, the demonstration that private goods are optimally allocated is not insignificant. In recent work, Buchanan & Wagner (1970), Buchanan & Goetz (1972), and Flatters et al. (1974) have argued that private goods allocation in a many-community economy will generally be *inefficient*. The argument turns on the effects of local taxes on equilibrium allocations. Elsewhere, however, e.g. in Wildasin (1976*b*), it has been shown that as long as local spending is financed by taxes on locationally-fixed commodities, the competitive private goods equilibrium will remain undistorted (i.e. optimal). Negishi's model, in which locationally-fixed land is the tax base for local governments, provides one example of such a result.

whether there is any compelling reason why local governments should base their policies on the fiscal profitability rule. Presumably, a community's taxes and expenditures are determined in accordance with the desires, somehow articulated and aggregated, of the households residing there. Until it is shown that fiscal profitability is a politically viable rule, which is to say, until it is shown that this rule is consistent with the interests of at least some of the residents of a community, there is no reason to expect this rule to be operative. What I propose to do here, within the context of a model essentially identical to Negishi's, is to examine the determinants of households' demands for local public goods, and from this analysis, to develop a *public choice* model of local public expenditure determination. I then show that (i) fiscal profitability is indeed politically viable under certain circumstances, and (ii) if one imposes the restriction on households' preferences introduced by Negishi (hereafter, the "Negishi condition"), then in full politico-economic equilibrium, all of the residents within each community will prefer a common level of public good provision, and, moreover, this unanimously-preferred level will be optimal. Result (ii) is quite similar to Negishi's theorem, the principal difference being that in the present model, public choice rather than Negishi's "imperfect fiscal profitability" rule serves to determine the level of local public expenditures.

II. The Model

Communities. The model to be developed is basically one of orthodox static general equilibrium under conditions of certainty. It is assumed that there are m communities (indexed k, $s=1, ..., m$) each of which provides a single pure public good, with quantity denoted g_k. The total amount of homogeneous and perfectly divisible residential land or property in community k, denoted L_k, is assumed fixed. Each community uses inputs of the n private goods (indexed $j=1, ..., n$) to produce the public good; let $z_k=(z_{k1}, ..., z_{kn})$ denote these inputs. Let us select good 1 as *numéraire*, so that the prices for the n private goods may be written $p=(1, p_2, ..., p_n)$. In these units, we can denote the minimum cost of providing a given level of g_k as $c_k(g_k)$, assumed differentiable. This cost is to be financed by a proportional tax on residential property value. If r_k denotes the price of property in community k (with $r=(r_1, ..., r_m)$), and if τ_k is the tax rate on property value, then τ_k is implicitly defined by the constraint that each local budget be balanced:

$$\tau_k r_k L_k = c_k(g_k). \tag{1}$$

Firms. I make the following convenient assumptions about firms in order that they may be included in the model with minimum clutter. First, all firms operate competitively under conditions of constant returns to scale, so that maximized profits are zero in equilibrium. In addition, assume that firms do not benefit from the provision of local public goods (ie., local public

goods are not factors of production), and that firms are not taxed by local governments. Under these assumptions, we need not be concerned with any particular firm and so may denote the aggregate net supply vector of the entire industrial sector as $Y=(Y_1, ..., Y_n)$.

Households. Letting primes denote vector transposition, the private good consumption (resp. endowment) vector of each of the H households (indexed $h=1, ..., H$) is denoted $x_h=(x_{h1}, ..., x_{hn})'$ (resp. $\bar{x}_h=(\bar{x}_{h1}, ..., \bar{x}_{hn})'$). Similarly, let the household's property consumption (resp. endowment) in each community k be denoted l_{hk} (resp. $\bar{l}_{hk}$), with $l_h=(l_{h1}, ..., l_{hm})'$ and $\bar{l}_h=(\bar{l}_{h1}, ..., \bar{l}_{hm})'$. All land in each community is initially owned by households so that $L_k=\sum_h \bar{l}_{hk}$, and at market-clearing prices, all land will be purchased, so that $L_k=\sum_h l_{hk}$. I assume that the buyers (or consumers) of property services—i.e., those for whom $l_{hk}>0$—pay local property taxes. The budget constraint for household h is thus

$$px_h+\sum_k (1+\tau_k) r_k l_{hk}=p\bar{x}_h+r\bar{l}_h \tag{2}$$

or, substituting from (1),

$$px_h+\sum_k \left(r_k+\frac{c_k(g_k)}{L_k}\right) l_{hk}=p\bar{x}_h+r\bar{l}_h. \tag{3}$$

A household will be considered a resident of a community *after* trading takes place if it purchases property there ($l_{hk}>0$), while it is considered a resident of the community *before* trading takes place if its endowment of land there is positive ($\bar{l}_{hk}>0$). It is assumed that only households who purchase (i.e., consume the services of) property in a community benefit from the public good provided there; that is, there are no interjurisdictional externalities. In such a world, we can think of a household's consumption of the public good provided in a community as the output of a household production process involving two inputs, one private and one public.[1] The private input is the household's land consumption, and the public input is the local government's provision of the public good. If we denote household h's consumption of public services in community k by ϕ^{hk}, we have more formally that

$$\phi^{hk}=\phi^{hk}(l_{hk}, g_k), \tag{4}$$

where

$$\phi^{hk}(0, g_k)=0 \quad \text{(for all } g_k\text{)}. \tag{5}$$

The latter condition incorporates the no-spillover assumption: if the household does not reside in the community ($l_{hk}=0$), it cannot consume the public good provided there ($\phi^{hk}=0$). When $l_{hk}=0$, ϕ^{hk} is a constant function in g_k. Hence $\partial\phi/\partial g_k=0$ for $l_{hk}=0$.

[1] This approach to public goods theory, implicit in Negishi's model, has been discussed in Sandmo (1973).

Finally I assume that a household's preferences can be represented by a suitably differentiable quasi-concave utility function[1]

$$u^h(x_h, l_h, \phi^{h1}[l_{h1}, g_1], \ldots, \phi^{hm}[l_{hm}, g_m]). \tag{6}$$

III. Market and Political Equilibrium

A. *Market Equilibrium: Temporary and Full*

The prices and quantities of all private goods in this model are determined as follows. Households, qua consumers, select bundles x_h and l_h which maximize their utility functions (6) subject to budget constraints (3). They take as parameterically given their endowments, all prices, and the public good supplies of all communities. Thus the market choice problem for each household h is to

$$\max_{\{x_h, l_h\}} u^h(x_h, l_h, \phi^{h1}[\cdot], \ldots, \phi^{hm}[\cdot]) \text{ subject to (3).} \tag{7}$$

For future reference, note that the first-order conditions associated with this problem are

$$\frac{u_j^h}{u_1^h} = p_j \quad j = 1, \ldots, n; \tag{8.1}$$

$$\frac{u_{lk}^h + u_{\phi k}^h \phi_l^{hk}}{u_1^h} = r_k + \frac{c_k(g_k)}{L_k} \quad k = 1, \ldots, m; \tag{8.2}$$

together with the constraint (3). Here $u_j^h = \partial u^h / \partial x_{hj}$, $u_{lk}^h = \partial u^h / \partial l_{hk}$, $u_{\phi k}^h = \partial u^h / \partial \phi^{hk}$, and $\phi_l^{hk} = \partial \phi^{hk} / \partial l_{hk}$.

The household's market choice problem (7) yields individual and thus market demand functions for all private goods and land which depend on the parameters of the problem. Firms take prices as given and maximize profits. Supplies and demands are thus determined, and prices are established which satisfy the market-clearing conditions

$$\begin{aligned} \sum_h x_h + \sum_k z_k &= \sum_h \bar{x}_h + Y \\ \sum_h l_h &= \sum_h \bar{l}_h \end{aligned} \tag{9}$$

To facilitate the interpretation of later results, let us now recast this model within the setting of a series of Hicksian weeks. Imagine that markets are convened each "Monday" in which households and firms come together to make contracts to be executed in the course of the "week". It is assumed that

[1] Quasi-concavity of the objective function in the choice variables is needed to make demands continuous functions of parameters. Though common, this assumption is more troublesome than usual in the location context, and it would obviously be desirable to accommodate non-convex preferences.

all local government policy decisions, that is the selection of the g_k's, have been made prior to the opening of the markets on Monday, and that all households know that these decisions will be in force over the week. Each household comes to the market with an endowment of property $\bar{l}_h$ which is now interpreted as the property which it had acquired in the previous week's trading. In this setting a tâtonnement takes place, contracts are made, and markets close. It will be evident that the preceding discussion describes the resulting equilibrium, which, following Hicks, may be called a *temporary* equilibrium.

Now for the moment assume that all g_k's remain fixed not only for the current week but for all subsequent weeks as well. Property purchased by a household this Monday will become a salable asset next Monday: if $l_h(t)$ is the household's demand vector for property for week t, its endowment on Monday of week $t+1$ will be $\bar{l}_h(t+1) \equiv l_h(t)$. Based on this endowment and on prices at $t+1$, the household will have some demand $l_h(t+1)$ for property, and so on. With all g_k's fixed for a sufficiently long time, households' demands for property and equilibrium prices will be unchanging from week to week, establishing what we shall call a *full* equilibrium.[1]

B. *Political Equilibrium*

We must now study the behavior of individuals as they collectively determine the levels of public expenditures in all localities. In the interests of utmost simplicity, let us ignore all problems of political representation, party behavior, and the like. Suppose that each Sunday all of the residents in each community participate in a popular referendum in which the community's level of public expenditure is fixed for the coming week. Again for simplicity, assume that voters are confronted with alternative levels of public expenditure which differ only marginally from the level of the preceding week. The decisions reached on Sunday become parameters for households who make their private consumption choices, as previously described, when markets open the next day. Given that group decisions are reached in popular referenda, a theory of political equilibrium for this system must build upon a theory of individual voting behavior. We shall therefore study the choice problem of a household who, on Sunday, is considering (marginally different) alternative levels of public good provision and their implications for the market equilibrium which will be achieved on Monday. From this perspective, let us note that the households who reside and vote in (say) community s on Sunday will bring to market positive property endowments $\bar{l}_{hs}$ the next day. That is, the

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[1] Cf. Hicks (1946) and Archibald & Lipsey (1958). This verbal restatement of the static model developed above does not of course provide a satisfactory dynamic model. The quasi-dynamic verbal discussion is merely a convenient expository device to help interpret the results and make them suggestive. It is possible but less enlightening to maintain a strictly static interpretation of the model.

electorate in a community consists of households who have positive endowments of property there, come Monday.

Because market activity takes place in this model after political decisions are made, these political decisions may have important economic consequences. Subject to the constraints of costly information, rational voters will try to anticipate the consequences of the proposed public policies upon which they must decide. In general, of course, the level of public good supply in any one community will affect equilibrium prices and quantities for all private goods, and presumably also the levels of public good provision chosen in all other communities as well. Undoubtedly, voters will not be so well-informed that they correctly anticipate *all* of the effects of their public expenditure decisions. On the other hand, it does not seem reasonable that they will be completely ignorant of all these effects. Indeed, a cornerstone of much of the recent literature of local public economics is the assumption that households are aware of, and (through their locational choices) respond to, interjurisdictional variations in public good provision.[1] This implies that the demand for and hence price of property in a community is directly affected by local public good supply decisions. As a working hypothesis, therefore, I assume that voters in (say) community s (i) anticipate the change in the price of property in the community associated with a small departure from the existing g_s (i.e. ,they know dr_s/dg_s), but (ii) anticipate no other price changes as g_s changes, and (iii) take the existing levels of public good supply in all other communities as given.

Thus a voter in community s expects that if Sunday's vote sets $g_s = \tilde{g}_s$, then, on Monday, he will be able to choose a utility-maximizing bundle $(\tilde{x}_h, \tilde{l}_h)$ subject to the budget constraint which obtains given $g_s = \tilde{g}_s$. That is, the household expects to engage on Monday in the choice problem (7), subject to

$$\begin{aligned} &g_s = \tilde{g}_s; && r_s = r_s(\tilde{g}_s); \\ &g_k = \bar{g}_k, \ k \neq s; && r_k = \bar{r}_k, \ k \neq s; \\ &p = \bar{p}; \end{aligned} \tag{10}$$

where, in line with assumptions (ii) and (iii) above, $\bar{g}_k$, $\bar{p}$, and $\bar{r}_k$ are variables which the voters in community s believe to be independent of g_s. The problem of (7) and (10) yields the household's demand for private goods and land as functions of g_s, indirectly, through $r_s(g_s)$, as well as directly:

$$\begin{aligned} \tilde{x}_h &= \tilde{x}_h(\tilde{g}_s, r_s[\tilde{g}_s]); \\ \tilde{l}_h &= \tilde{l}_h(\tilde{g}_s, r_s[\tilde{g}_s]); \end{aligned} \tag{11}$$

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[1] See Tiebout (1956). While Tiebout's work has been extended in a number of directions (by Oates (1969), Buchanan & Goetz (1972), McGuire (1974), and Wheaton (1975), *inter alia*), the assumption of household responsiveness to local spending levels is not generally questioned.

Thus, if $\tilde{g}_s$ is actually selected, the household's utility will be

$$u^h(\tilde{x}_h, \tilde{l}_h, \phi^{h1}[\tilde{l}_{h1}, \bar{g}_1], \ldots, \phi^{hs}[\tilde{l}_{hs}, \tilde{g}_s], \ldots, \phi^{hm}[\tilde{l}_{hm}, \bar{g}_m]). \tag{12}$$

The utility function written as (12) captures the dependence of the household's utility on g_s. From it we see that the household will prefer or oppose a marginal increase in g_s as the total derivative of (12) with respect to g_s is positive or negative, that is, as

$$\sum_j u_j^h \left(\frac{\partial x_{hj}}{\partial g_s} + \frac{\partial x_{hj}}{\partial r_s}\frac{dr_s}{dg_s}\right) + \sum_k (u_{lk}^h + u_{\phi k}^h \phi_l^{hk}) \left(\frac{\partial l_{hk}}{\partial g_s} + \frac{\partial l_{hk}}{\partial r_s}\frac{dr_s}{dg_s}\right) + u_{\phi s}^h \phi_g^{hs} \gtrless 0, \tag{13}$$

where, of course, $\phi_g^{hs} = \partial\phi^{hs}/\partial g_s$. If we differentiate the budget constraint (3) with respect to g_s, respecting conditions (10), we have

$$\sum_j p_j \left(\frac{\partial x_{hj}}{\partial g_s} + \frac{\partial x_{hj}}{\partial r_s}\frac{dr_s}{dg_s}\right) + \sum_k \left(r_k + \frac{c_k[g_k]}{L_k}\right) \left(\frac{\partial l_{hk}}{\partial g_s} + \frac{\partial l_{hk}}{\partial r_s}\frac{dr_s}{dg_s}\right) + l_{hs}\left(\frac{dr_s}{dg_s}\right) + \frac{1}{L_s}\left(\frac{dc_s}{dg_s}\right) = \bar{l}_{hs}\left(\frac{dr_s}{dg_s}\right). \tag{14}$$

Substituting from (14) into (13) using (8) shows that the household will vote for or against a marginal increase in g_s as

$$\frac{u_{\phi s}^h \phi_g^{hs}}{u_1^h} - \frac{l_{hs}}{L_s}\left(\frac{dc_s}{dg_s}\right) + (\bar{l}_{hs} - l_{hs})\frac{dr_s}{dg_s} \gtrless 0. \tag{15}$$

This condition characterizes the voting behavior of each individual in the system. Together with a specification of the percentage of votes needed to carry a proposal, a knowledge of individual voting behavior suffices to determine a political equilibrium, thus closing the system. It remains to interpret (15) and to establish its implications for political equilibria.

IV. Properties of the Political Equilibrium

A. *The General Case*

Let us unitially examine the meaning of (15) without imposing any restrictions on households' preferences. Consider first a situation of full equilibrium, in which by definition every household's demand for property is precisely equal to its endowment: $l_h = \bar{l}_h$. Then (15) reduces to

$$\frac{u_{\phi s}^h \phi_g^{hs}}{u_1^h} - \frac{l_{hs}}{L_s}\left(\frac{dc_s}{dg_s}\right) \gtrless 0. \tag{16}$$

It is easy to identify the first term in (16) as the household's marginal rate of substitution of the *numéraire* good for the public good g_s, or perhaps more familiarly, the household's marginal valuation of the public good. The second

term is equal to the household's share of property in the community times the marginal cost of the public good, or in other words, the marginal tax-price of g_s. From (16), then, we conclude that in full equilibrium the household will support or oppose a marginal increase in the provision of the public good as the marginal valuation placed on the good exceeds or falls short of its marginal tax-price. This is a familiar conclusion, and in fact is nothing but the expression in this model of the orthodox theory of demand for public goods as expounded, for example, by Buchanan (1968).[1] Note that there is no reason to expect that (16) is consistent with the goal of property value maximization; the fiscal profitability criterion will produce poor predictions of local public expenditures when the system is in full equilibrium.

Let us next turn to the stituation in which many households are making large changes in their property holdings from period to period. In fact, to take an extreme case, suppose that no household residing in community s on Sunday chooses to remain there, so that $\bar{l}_{hs}>0$ implies $l_{hs}=0$. (In this sense, we can say that the system is far from a full equilibrium.) Then by the no-spillover assumption (5) we have $\phi_g^{hs}=0$. From this it is clear that (15) becomes simply

$$\bar{l}_{hs}\left(\frac{dr_s}{dg_s}\right)\gtrless 0 \tag{17}$$

for a household h residing in community s on Sunday. That is, a household will support or oppose a marginal increase in g_s if this increases the price of property in community s, which is to say that the household prefers that level of g_s at which property values are maximized. In this case, marginal benefit and tax-price considerations completely vanish and the household's demand for the local public good is entirely determined by the wealth enhancement or fiscal profitability criterion.[2]

The above conclusions have intuitive appeal; it makes sense that a household's demand for local public goods will reflect a mixture of cost-benefit and wealth considerations of the type suggested in (15). If one were planning to leave a community, it is reasonable that one would be concerned only with the effects of political decisions on one's wealth position since the direct consequences of these decisions will be felt only by subsequent residents. On the other hand, if one plans to remain a resident, then wealth effects due to property value changes are irrelevant because they will never be realized through the sale of property, while the marginal costs and benefits of the good *are* relevant because they will be directly experienced.

[1] For empirical studies of the demand for local public goods built upon this theory, see Barr & Davis (1966), Barlow (1970) together with the 1973 "Symposium", Borcherding & Deacon (1972), and Bergstrom & Goodman (1973).

[2] This possibility has received only limited attention. Aside from the work of Margolis and Negishi, there is a brief comment suppesting the importance of wealth-enhancement as a determinant of voter behavior in Deacon & Shapiro (1975). See also Wildasin (1976*c*) and the discussion of Sonstelie & Portney (1976) in an important recent paper.

Now consider the political equilibrium of the system in the light of (15). First, if the system is far from a full equilibrium, households will generally try to set local expenditures at levels which will enhance the value of their property holdings. Since (in this model) all of the property in each community is homogeneous, households aiming to increase the value of their individual property holdings will agree on the level of local expenditures, for they all share the same maximand, the price of property in the community. In this case, the political equilibrium levels of public good supply are consistent with the fiscal profitability rule.

When the system is in full equilibrium, there is no apparent reason why a similar conclusion should obtain. Different people have different tastes (for public goods and for land, both of which are important), so that the expression in (16) will not (in general) vanish at precisely the same value of g_s for all voters in community s. In full equilibrium, then, not all households will agree on the level of local expenditures, and the political equilibrium will be characterized by dissatisfaction on the part of some voters.[1] At least this is so in the general case. Under special assumptions, however, the picture changes.

B. *Political Equilibrium Under the Negishi Condition*

A household's preferences (cum household production function) satisfy the Negishi condition (Assumption 1 of Negishi, 1972) if, for all s,

$$\frac{\partial u^h/\partial g_{hs}}{\partial u^h/\partial l_{hs}} \equiv \frac{u^h_{\phi s}\phi^{hs}_g}{u^h_{ls}+u^h_{\phi s}\phi^{hs}_l} = \frac{l_{hs}}{g_s}. \tag{18}$$

As Negishi notes, (18) (and the necessary convexity conditions) will be satisfied if property consumption per se provides no utility ($u^h_{ls}=0$) and if the "production" function is of the form

$$\phi^{hs}(l_{hs}, g_s) = f(l_{hs}g_s) \tag{19}$$

for any f with $f'>0>f''$. (This of course is sufficient, not necessary.)

To examine the full equilibrium which obtains when households' preferences satisfy the Negishi condition, it is helpful first to set out the conditions for optimal public good supply. This is the familiar equation of summed marginal rates of substitution and marginal cost:[2]

[1] Note that this dissatisfaction can persist: households will not necessarily leave a community in which they are dissatisfied with the existing level of local public expenditures, though much of the discussion of the "Tiebout hypothesis" might suggest otherwise. The conditions under which a household's locational equilibrium is achieved simultaneously with an individual political equilibrium (in the sense that the terms on the left-hand side of (16) exactly counterbalance each other) have been explored in Wildasin (1976*a*, 1976*c*). Such conditions do exist, but are not satisfied in the present model.

[2] This condition can be found by combining the derivatives of the Lagrangian formed from the problem of maximization of a social welfare function subject to the market-clearing constraints (9) and to the production functions for public and private goods. An explicit treatment can be found on pp. 66–71 of Wildasin (1976*a*); but this procedure is familiar to us from the work of Samuelson (1954).

$$\sum_h \frac{u^h_{\phi s}\phi^{hs}_g}{u^h_1} - \frac{dc_s}{dg_s} = 0. \tag{20}$$

When the Negishi condition holds, this can be rewritten, using the first-order conditions (8.2), as

$$\sum_h \left(\frac{u^h_{\phi s}\phi^{hs}_g}{u^h_{ls} + u^h_{\phi s}\phi^{hs}_l}\right)\left(\frac{u^h_{ls} + u^h_{\phi s}\phi^{hs}_l}{u^h_1}\right) - \frac{dc_s}{dg_s} = \sum_h \frac{l_{hs}}{g_s}\left(r_s + \frac{c_s}{L_s}\right) - \frac{dc_s}{dg_s}$$

$$= \frac{L_s}{g_s}\left(r_s + \frac{c_s}{L_s}\right) - \frac{dc_s}{dg_s} = 0. \tag{21}$$

In full equilibrium, a household's most-preferred level of g_s is that at which the terms on the left-hand side of (16) cancel, as the preceding discussion has indicated. If this expression is set to zero and rewritten, substituting from (18) and (8.2) once again, then the level of g_s most preferred by household h is characterized by the condition

$$\left(\frac{u^h_{\phi s}\phi^{hs}_g}{u^h_{ls} + u^h_{\phi s}\phi^{hs}_l}\right)\left(\frac{u^h_{ls} + u^h_{\phi s}\phi^{hs}_l}{u^h_1}\right) - \frac{l_{hs}}{L_s}\left(\frac{dc_s}{dg_s}\right) = \frac{l_{hs}}{g_s}\left(r_s + \frac{c_s}{L_s}\right) - \frac{l_{hs}}{L_s}\left(\frac{dc_s}{dg_s}\right) = 0. \tag{22}$$

Finally, suppose that public goods are optimally supplied in all communities, so that (21) holds. Then it is easy to see that (22) is also satisfied. That is, *the optimal level of public good provision is unanimously preferred by all households*. Thus the political equilibrium is determined unambiguously because of the unanimity of voters' demands, and this equilibrium is optimal. This, of course, is nothing other than a Lindahl solution to the local public good problem.

V. Conclusion

In a general way, one of the objectives of this paper has been to extend the theory of individual political choice in a federal system. The main feature which distinguishes the approach here from earlier work is that I have allowed for the fact that voters can be concerned with the economic ramifications (specifically, the effect on equilibrium prices) of local public expenditure decisions as well as, or in some cases instead of, the marginal benefit and tax-price of local public goods. The orthodox theory of demand is a special case of the more general theory developed here.

On a more concrete level, the discussion above offers some support, from a public choice perspective, for the fiscal profitability thesis. Under certain conditions, households will vote for levels of public good supply which are expected to enhance local property values. Equally important, however, is the conclusion that the fiscal profitability rule coincides with the demands of households only under limited circumstances. In full equilibrium, marginal

benefit and tax-price emerge as the determinants of individual political choice, with no role for wealth-enhancement effects.

It was further shown above that when households' preferences respect the Negishi condition, and when the economy achieves a full equilibrium, the optimal level of public expenditures is unanimously preferred by all households and is therefore an equilibrium of the system. The public choice implications of the Negishi condition are thus quite strong; and indeed it appears that this condition is considerably more interesting in the public choice context than in the context of the fiscal profitability question.

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