Revenue Sharing under Land Value Taxation

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The proposition that the rental value of land should be collected by governments and used for public purposes has a powerful moral rationale: Since no one made the land, no one can properly claim to own it. There is a simple efficiency rationale as well: Social collection of the rental value of land does not interfere with incentives to be productive. If governments do not collect the rental value of land, then they will levy taxes that discourage productive activity.

When "government" is not a monolith but a collection of entities with responsibilities in different geographic and functional areas, these rationales for land value taxation leave unanswered **the question of how the rental value of land should be allocated among governments.** That question is addressed in this paper.

To simplify the analysis, it will be assumed that there are at most two levels of government, local and state. It will also be assumed that each governmental entity promotes the welfare of its citizens. The question of whether the rental value of land can provide sufficient revenue will not be addressed.

Inefficiencies and Inequities of Some Systems

Before introducing a system that promotes efficiency and equity, it is interesting to explore the limitations of some other systems. These systems illustrate a variety of potential inefficiencies and inequities, some of which are obvious and others subtle.

Consider first a world with only local governments, each of which levies a tax on the rental value or the sale value of the land in its jurisdiction. Such a system encounters difficulties with justice or efficiency or both, if the per capita values of rent minus public expenditure are unequal among localities when labor is allocated efficiently among localities.

Suppose for example that one locality is rich in natural resources, and that the local government collects revenue from those who extract those resources, without corresponding expenditures. Whether the revenue is used to lower taxes, increase public services or provide citizens with a dividend, the existence of those extra revenues will make the locality more attractive to potential immigrants. People will move until the level of well-being that they can achieve in each locality is the same as in any other locality. But if some of the benefit of living in one place comes from sharing in the bounty of natural resources, then the population of that area will be greater than the population that would maximize total output. The opportunity to share in the benefits of natural resources by moving to a different locality is a private benefit but not a social benefit. This

discrepancy between private and social benefit induces an inefficient allocation of people among places.

This inefficiency could be avoided by a rule that the benefits would be divided among those who resided in the locality when the resources were discovered, but then there would be a problem of inequity. It would not be possible to justify the fact that some persons received these benefits while other did not.

If the problem were confined to natural resources, it could be resolved by a rule that natural resources would be managed by a level of government corresponding to the territory over which people were free to migrate. However, the same problem of inefficient migration occurs whenever differences in natural endowment, such as ports or particularly fertile land, make it efficient to have a distribution of population in which the difference between per capita rent and per capita government expenditure varies among localities.

The same problem of inefficient migration occurs whenever there are services, such as education or welfare, that are provided to citizens without payment or with payments that are less than the marginal cost of providing the service. Starting from a situation in which people are allocated among localities in such a way as to maximize total output, people will have an inefficient incentive to move to places that offer more services for which they are not required to pay.

A second simple system that might be considered would be one in which all localities levy taxes on the same base, namely land in all localities. This would remove the incentive for people to crowd inefficiently into localities with excellent natural opportunities. However, such a system would have a serious difficulty of its own. Local governments could be expected to spend money without regard to whether the benefits were as great as the costs, since their own citizens would pay only a small fraction of the cost of whatever they decided to do.

The inefficiencies and/or inequities induced by local variations in natural endowment when local governments operate independently suggest that some form of federalism is needed. However, federal systems can have inefficiencies of other sorts.

Consider a system of states and localities in which both state and local governments finance their activities by taxing every parcel of land in their jurisdictions, according to the rental value that the parcel would have if it were unimproved. Suppose that a state government placed a tax of 10% on the value that land would have if it were unimproved, and suppose that there was a local project that would cost $95,000 per year and raise the rental value of local land by $100,000 per year. The project would be socially beneficial, and if there were no national tax on the rental value of land, the local government would find that undertaking the project would improve the welfare of its citizens. However, one

effect of the project would be to increase by $10,000 (10% of $100,000) the amount of money that the citizens of the locality were required to pay to the state government. Therefore it would not be in their interest to undertake the project. Thus taxation of the rental value of land by both states and localities does not promote efficiency in a federal system.

Now consider the possibility of having both levels of government levy a tax on the sale value of all land in their jurisdictions. This system would motivate efficient local decisions if every factor other than land were perfectly mobile, and if there were no possibility of inefficient management of projects.

With resources other than land perfectly mobile, the impact of local decisions on the welfare of a locality's residents can be measured by the value of the land in the locality, since returns to labor and capital are determined by conditions over which the local government has no control. To promote the interests of its citizens, a local government would maximize the sale value of the land in its jurisdictions. If a state government placed a tax on the value of land, the welfare of the local citizens would still be maximized by undertaking every activity that raised local land rent by as much as the activity cost.

Suppose for example that a state government levied a tax of 20% per year on the sale value of land, while a local government levied a tax at a rate of 50% per year, and the market interest rate was 10% per year. Suppose that the rental value of all land in the locality was $1,000,000 per year. The sale value of the land (assuming that no changes in rent, taxes or interest rates are anticipated) would be $1,000,000/(.2 + .5 + .1) = $1,250,000. Local government revenue would be $625,000, state government revenue from the locality would be $250,000, and private appropriation of rent would be $125,000.

Now suppose that a project that cost $95,000 per year and raised land rent by $100,000 per year were undertaken. The local tax rate would have to rise, since the existing local tax rate would produce only $50,000 per year in additional revenue. To find the new tax rate, one solves the simultaneous equations

$$V = \frac{\$1,100,000}{.2 + x + .1} \quad (1)$$

$$Vx = \$720,000, \quad (2)$$

where V is the sale value of all land in the city and x is the local tax rate. The first equation says that the value of all land must be rent (1,000,000 originally plus 100,000 from the new project) divided by the sum of tax rates and the interest rate. The second equation says that local revenues, the product of the value of land and the local tax rate, must equal the original spending of $625,000 plus the new spending of $95,000.

The solution to the pair of equations is

$$V = \$1,266,667 \quad (3)$$

$$x = .56842. \quad (4)$$

State revenues rise by $3,333, and private appropriation of rent rises by $1,667. The general rule that is exemplified here is that the ratio of the benefit to the state to the local benefit is equal to the ratio of the state tax rate to the interest rate. There is a local benefit for any combination of state tax rate and interest rate, as long as the project has positive net benefits. Thus the combination of local taxation and state taxation of the sale value of land, unlike the combination of local taxation and state taxation of the rental value of land, does not discourage localities from undertaking efficient projects.

One of the assumptions of the above analysis was that factors other than land were perfectly mobile. But this is not the case. Suppose that the project reduces the value of buildings by $2,500, because they are no longer so well suited for their locations. This effect makes the project no longer locally worthwhile. One remedy for this impact is to include in the project payments to the owners of buildings to compensate them for the reductions in the value of buildings.

Another (implicit) assumption of the above analysis is that identifying worthwhile projects is a costless activity. If there is a cost to the city of determining that a project is worthwhile, then the fact that some of the benefit of the project will go to the state as a whole will eliminate the incentive to discover some worthwhile projects. In principle, this difficulty could be overcome by including the expected cost of discovery as a project cost that must be paid.

This suggests another source of inefficiency. If a project could be undertaken either in a more efficient or a less efficient way, and if local citizens will receive extra income from the less efficient choice and pay only a third of the extra cost of that choice, then some bias toward the less efficient choice can be expected. There seems to be no way around this source of inefficiency within a system in which both state and localities levy taxes on the sale value of land.

An Efficient and Equitable System of Land Taxation by Multiple Jurisdictions

Efficiency and equity can both be achieved in a system of taxation of land by multiple jurisdictions, if the following features are incorporated in the system:

1. A distinction should be made between sources of the rental value of land. There is, on the one hand, the value that land would have in the absence of local development--the value that it would have for agriculture, for the extraction of natural resources, or as the site of a new town if there were no town there. This

component of the rental value of land should be regarded as the common heritage of the largest possible collectivity. There should be some system of compensatory payments among local governments to equate per capita receipts of this component of value. On the other hand, there is the addition to rental value that comes from the growth of communities and the provision of public services. This component of value should be regarded as the income of the locality, which the locality may collect and spend as it sees fit.

2. If there are two levels of government, the higher level should collect only two kinds of taxes:

(1) levies on land for the addition to the rental value of land that is produced by the services that are provided by the higher level of government and

(2) appropriation of a portion of the pre-development value of land that would otherwise be allocated among localities in proportion to their populations.

This insures that a locality cannot reduce its obligation to the higher level of government by acting inefficiently.

3. Citizens should not be able to oblige localities to spend money on them by moving from one place to another. Any citizen entitlements should be independent of migrational decisions. If the citizens of some locality wish to support their own citizens, or if they wish to support anyone who chooses to move to their community, this does not entail an inefficiency. The inefficiency arises only if localities are legally obliged to support migrants whether they wish to do so or not.

Conclusion

The ideas in this paper can be regarded as a variation on the Pigouvian idea of equating marginal private cost and marginal social cost. Independent localities with free migration are inefficient because of the resulting discrepancy between the marginal private cost and the marginal social cost of migration. Taxation of a common base is inefficient because of the discrepancy between the social cost of local government spending and the cost of such spending to localities that make spending decisions. Taxation of the rental value of land by both localities and states is inefficient because it causes the local cost of a project to exceed its marginal social cost. Taxation of the sale value of land by both localities and states is inefficient because it causes the cost to the locality of being inefficient to be less than its social cost. The system that does not have inefficiencies is one that avoids externalities in migration decisions and makes the local contribution to state coffers independent of actions that localities take.