American Journal of Economics and Sociology, Inc.

Site Value Taxation and the Timing of Land Development
Author(s): Richard W. Douglas Jr.
Source: *The American Journal of Economics and Sociology*, Vol. 39, No. 3 (Jul., 1980), pp. 289-294
Published by: American Journal of Economics and Sociology, Inc.
Stable URL: https://www.jstor.org/stable/3486109
Accessed: 27-02-2022 21:47 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at https://about.jstor.org/terms

American Journal of Economics and Sociology, Inc. is collaborating with JSTOR to digitize, preserve and extend access to *The American Journal of Economics and Sociology*

Site Value Taxation and the Timing of Land Development

By RICHARD W. DOUGLAS JR.*

ABSTRACT. Recent writers have challenged the traditional view that a *tax on site value* is neutral, but there is still disagreement as to the effects of the tax. The site value tax affects the timing of *land development* in that it provides an incentive for landowners to develop land sooner than under a property tax levied on improvements also. Confusion has resulted from a failure to distinguish *market value* from *development value*. The *incidence* of the site value tax must take into account the dynamics of untaxing *capital* and of the capitalization of the tax increase on *land values*, as well as of the resulting increase of *land supply* and its effect in further reducing land values. The increased profitability of *capital improvements* could then increase *land rent* from the demand side. Obviously, amidst such dynamic changes, the overall effect on land values and rents is unsettled pending further research.

I

INTRODUCTION

THE TAX ON LAND VALUE, or site value, has long been considered neutral. Economists as far back as Ricardo have held this view, as have modern writers such as Netzer and Holland (1). They have argued, in essence, that landowners cannot alter their behavior to escape the tax since the supply of land is fixed by nature. The tax reduces landowners' surplus but does not distort resource allocation, etc.

Fairly recently, however, some economists have considered the dynamics of site value taxation and have concluded that the tax may produce non-neutral effects (2). Still, there exists some confusion as to how the tax affects the timing of land development, if in fact it does so at all. This paper shows that a site value tax encourages land to be developed sooner than it would be otherwise, and that some writers have failed to reach this conclusion because they have not distinguished between land's *market value* and its *development value*.

II

THE MODEL

SUPPOSE THAT A PIECE OF LAND can be sold to a developer in period 0 to yield an income of R per period over an infinite time horizon. Such

* [Richard W. Douglas Jr., Ph.D., is associate professor of economics, Bowling Green State University, Bowling Green, Ohio 43403.]

American Journal of Economics and Sociology, Vol. 39, No. 3 (July, 1980).
0002-9246/80/030289-06$00.75/0

development is assumed to preclude future redevelopment in another use due to the condition that Bentick calls "capital obsolescence." That is, the initial project must be continued for the duration of the useful life of the capital involved so that an appropriate rate of return (on the cost of the capital) can be realized (3). If r is the site value tax rate and i is the discount rate that is appropriate for land rent capitalization the developer is willing to pay, then

$$V_0 = \frac{R}{i + r} \qquad [1]$$

Suppose also that the present owner can, if he wishes, postpone the sale for one period, after which the land can be developed in an alternative project that is not presently viable due to technological or market considerations. Land rent from this project is $R^* > R$. If this project can also be continued indefinitely, the price at which the land can be sold at the time of development is

$$V_1^* = \frac{R^*}{i + r} \qquad [2]$$

Assume that the present owner can realize an income $C < R$ from putting his land to a temporary use during period 0 before selling to the R^* developer in period 1. The present value of C income and the sale is

$$V_0^* = \frac{R^*}{(i + r)(1 + i + r)} + \frac{C}{(1 + i + r)} \qquad [3]$$

The land's *development value is* V_0 in period 0 and V_1^* in period 1. Its *market value* depends on whether selling now or later is more profitable (that is, on which strategy has the higher present value). If $V_0 > V_0^*$, market value is V_0 in all periods. If $V_0^* > V_0$, market value is V_0 in period 0 and V_1^* in period 1 and subsequent periods. The owner will keep the land during period 0 instead of selling it if $V_0^* > V_0$. This condition is satisfied if

$$a_d > \frac{(i + r)(R - C)}{R}, \qquad [4]$$

where $a_d = (R^* - R)/R = (V_1^* - V_0)/V_0$ is the rate of appreciation of development value.

Clearly a high enough value for r can reverse the inequality and cause the owner to sell immediately. Therefore the imposition of a site value tax (or an increase in an existing site value tax) encourages land to be developed sooner than it would be otherwise (4).

A numerical example may be helpful in interpreting [4]. Assume a piece of land can be developed immediately to yield \$10,000 rent per year. If the tax rate is zero and the discount rate is 10 percent, its development value in period 0 is \$100,000. If postponing development one period allows an alternative project that yields \$11,100 rent per year, the land's development value increases by 11 p.c. (to \$111,000) from period 0 to period 1.

In this example it is advantageous to postpone development even if the land generates no income at all in period 0 ($C = 0$), for the rate of appreciation of development value exceeds the discount rate. "Speculators" (those who hold land idle) who foresee the appreciation can outbid those who would develop the land immediately. Their bids set the market value at \$100,909 (\$111,000 discounted one period).

Now impose a 2 p.c. tax. Development value is $\$10{,}000/(0.10 + 0.02) = \$83{,}333$ in period 0 and $\$11{,}100/(0.10 + 0.02) = \$92{,}500$ in period 1 (still 11 p.c. higher). Speculators discount the latter value one period and bid $\$92{,}500/(1.12) = \$82{,}589$, but market value is determined by the developers' bids of \$83,333. The tax has encouraged present development, for the rate of return from current use has risen to 12 p.c. and now exceeds the 11 p.c. appreciation of development value.

It is possible to explain this result intuitively. The tax increases the rate of return (or rate of market value appreciation) required by a landowner from 10 p.c. to 12 p.c. to compensate him for his tax liability each period. The market value of the land must fall until the rate of return (or market value appreciation) rises sufficiently to make land competitive with other (non-taxable) assets. The tax encourages present development because, as the increase in the required rate of return shows, the owner's preference for present *vs.* future income has shifted so that he now prefers present income—out of which the tax must be paid—more strongly than before. This explains why the market value of the land now indicates that present development is the more profitable alternative.

III

MISTAKEN VIEWS ON SITE VALUE TAXATION

As previously stated, it has been (and still is) commonly believed that the site value tax is neutral. The model presented in the preceding section shows this is not true as long as the pattern of development can be altered to bring rental income closer to the present.

The key to this result is that, because of the lock-in effect produced by a development project, land value in a future period may be determined in part by the existence of capital on the land in that period. If one were to presume, as Schall does, that land's value is always equal to the price it would bring *if it were vacant,* then capital that exists due to a previous development would not affect value (5). Moreover, the tax would be neutral, for no development decision the owner can make now or could have made previously can affect his tax liability.

But this view is incorrect. It essentially mistakes development value, which is independent of previous development decisions, for market value, which does depend on previous development. In the numerical example used previously, a 2 p.c. tax causes the land's development value to be higher than its market value in period 1 ($92,500 *vs.* $83,333) because the decision to develop in period 0 commits the land to the $10,000 project in all subsequent periods. While it is true that its market price would be $92,500 if it were vacant, neither the present owner nor anyone to whom he might sell would choose to end the $10,000 project prematurely and incur the cost of termination (6).

Skouras has made an error that is somewhat similar (7). Though he recognizes that the tax may speed the development of idle land, he mistakenly asserts that a tax discourages early development when it is possible to terminate an existing project prematurely at a cost that is low enough to make redevelopment profitable. In this case, Skouras claims that the owner must pay an unchanged termination cost out of (net) rents that have been reduced by the tax, so that he is more likely to avoid that cost by postponing development.

Skouras overlooks the fact that the termination cost is itself a negative component of market value and is therefore subject to a higher discount factor if a tax is imposed. Since the decision to develop early and terminate prematurely should involve the receipt of rental income before the termination cost is paid, the tax should, by increasing the owner's preference for present income, encourage early development (8).

Smith provides another example of the confusion that exists between market value and development value (9). Like Skouras, Smith correctly notes that a site value tax encourages the development of idle land. However, he also claims that the effect is ambiguous if a predevelopment interim use is possible. According to Smith, land will be held rather than sold for development if the rate of appreciation of its development value plus the rate of return from its interim use exceeds the discount rate plus the tax rate (10).

Smith's inequality is incorrect (see [4] in Part II), though a similar condition may be used to describe equilibrium in the land market. If a_m is the rate of appreciation of market value (rather than development value) and c is the rate of return from the interim use, the land market is in equilibrium if,

$$a_m + c = i + r \qquad [5]$$

Unless [5] holds, land is either overvalued or undervalued compared to alternative assets, and its price can be expected to adjust such that the benefit from owning land ($a_m + c$) is equal to the cost ($i + r$). Thus [5] determines market value but does not show whether or not development should be postponed (11).

The problems described in this section indicate the importance of the distinction between market value and development value. Once that distinction is made, it is clear that a site value tax unambiguously encourages the early development of land.

IV

POLICY IMPLICATIONS

RECENT INTEREST in site value taxation has resulted from dissatisfaction with the present form of the property tax (on land and capital) and the possibility that the site value tax may be substituted for the present tax (12). Since the substitution involves removing capital from the present tax base (or at least lowering the tax on capital), the increased profitability of capital improvements should encourage land development. It is interesting that, as the analysis in this paper shows, the higher site value rate that would be required by the substitution should reinforce the development effect produced by untaxing capital.

Furthermore, an increase in the site value rate might cause an even greater reduction in land values than would result from capitalization of the tax increase, for the supply of land available for immediate development should increase, thus reducing the rent that land users pay landowners. This further complicates the issue of substitution, for the increased profitability of capital improvements could increase land rent from the demand side (13). The overall effect on land values and rents is unclear. Obviously, the issue is far from settled.

---

1. See Daniel Holland, "A Study of Land Taxes in Jamaica," *Land and Building Taxes: Their Effect on Economic Development,* A. P. Becker, ed., (Madison: Univ. of Wisconsin Press, 1969), p. 24; Dick Netzer, *Economics of the Property Tax* (Washington, D.C.: Brookings Institution, 1966), p. 205, and David Ricardo,

On the Principles of Political Economy and Taxation, R. Sraffa, ed., (New York: Cambridge Univ. Press, 1951).

2. See Donald C. Shoup, "Advance Land Acquisitions by Local Governments: A Cost-Benefit Analysis," *Yale Economic Essays,* Vol. 9 No. 2 (Fall, 1969), pp. 147–207; B. L. Bentick, "Improving the Allocation of Land Between Speculators and Users: Taxation and Paper Land," *Economic Record,* Vol. 48, No. 121 (March, 1972), pp. 18–41, Thanos Skouras, "The Allocation of Land Between Speculators and Users Under A Land Ownership Tax: A Comment," *Economic Record,* Vol. 50, No. 131 (September, 1974), pp. 449–450, and R. S. Smith, "Land Prices and Tax Policy: A Study of Fiscal Impacts," *American Journal of Economics and Sociology,* Vol. 37, No. 1 (January, 1978), pp. 51–69. All of these writers confront the issue of the effect of a site value tax on the timing of development. In addition, a non-neutral effect of a different nature has been noted by Martin Feldstein, "The Surprising Incidence of a Tax on Pure Rent: A New Answer to an Old Question," *Journal of Political Economy,* Vol. 85, No. 2 (April, 1977), pp. 349–58. Feldstein notes that a site value tax may cause a shift in the (asset) demand for capital.

3. Bentick, *op. cit.,* p. 28.

4. The two period model could be extended to predict the date of development. Inequalities of the same form as [4] could be used each period to determine if development should take place. If a_d is assumed to decline over time, a tax would move the date of future development closer to the present.

5. Lawrence D. Schall, "A Note on Externalities and Property Valuation, *Journal of Regional Science,* Vol. 11, No. 1 (April, 1971), pp. 101–105.

6. To further clarify this point, suppose that the present landowner also owns the capital associated with the $10,000 project. If he were to demolish his capital after period 0, he could sell the land for $92,500 in period 1, but his loss on the capital would, it is assumed, more than offset the increase in the land's value. Alternatively, suppose the owner leases the land to a developer in period 0. The developer will not agree to the lease unless it runs for the life of the project, so that the owner cannot break the lease without compensating the developer for the life remaining in his capital, which he would choose not to do. Thus if the owner decides to sell the land in period 1, the lease agreement would be transferred with the land. The new owner would pay $83,333 for both land and lease, and would similarly choose not to break the lease.

7. Skouras, *op. cit.*

8. Suppose, for example, the owner can develop the land to yield R income in period 0, terminate that project at a cost K in period 1, and redevelop the land in period 2 to yield R income. Suppose that he can, alternatively, hold the land idle in periods 0 and 1 and then develop the R* project in period 2. He will choose present development plus termination if

$$\frac{R}{(1+i+r)} - \frac{K}{(1+i+r)^2} + \frac{R^*}{(1+i+r)^3(i+r)} > \frac{R^*}{(1+i+r)^3(i+r)}$$

This condition is satisfied if $r > K/R - (1+i)$. A high enough tax rate causes the owner to choose present development.

9. Smith, *op. cit.,* pp. 51–56.

10. Smith claims that, since the tax reduces market value, it increases the rate of return from current use, so that the effect on his version of the inequality is unclear.

11. $a_m + c = i + r$ holds for the model developed in Part II. If V_0^* is market value, then $a_m = (R - C)(i+r)/(i+r/(R+C(i+r)))$ and $c = C/V_0^* = C(1+i+r)(i+r)/(R+C(i+r))$. If V_0 is market value, $a_m = 0$ and $c = i + r$. The equilibrium condition is satisfied in either case.

12. See, for example, Netzer, *op. cit.,* pp. 210–211.

13. See S. Thorndike, "Some Theoretical Aspects of Building Tax Burdens on Landowners," *Land Economics,* Vol. 46, No. 1)February, 1970), pp. 59–67; R. Richman, "The Incidence of Urban Real Estate Taxes Under Conditions of Static and Dynamic Equilibrium," *Land Economics,* Vol. 43, No. 2 (May, 1967), pp. 172–180, and Netzer, *op. cit.,* pp. 210–11.