

A. INTRODUCTION

Henry George defended the principle of land value taxation on grounds of both efficiency and justice. LVT is equitable, said George, because the value of land is not created or maintained by the landowner, but by society. He believed that private collection of land rent is the chief cause of extreme and growing income inequality. LVT is efficient because--unlike other taxes--it does not impair any useful economic incentive. LVT even removes incentives for inefficient land use, including land speculation and land monopoly, that arise when land is subject to private property.

George also believed that land values would increase just as government's legitimate expenditures grew, so a full land value tax would always be sufficient to meet public needs. Finally, taking a wider view, George argued that LVT is efficient precisely because it is equitable: To permit the growing injustice resulting from private collection of rent is, ultimately, to put the very survival of civilization at risk.

Although opponents of the Georgist philosophy have offered innumerable counterarguments, the potentially most devastating criticism may be the claim, frequently encountered, that "land" as Henry George conceived it does not constitute a meaningful category of economic thought.

The classical economists distinguished three categories of productive agents: Land, labor, and capital. Factor incomes were called, respectively, rent, wages, and interest (or sometimes profit). George accepted this classification, and took special care in finding suitable definitions of the terms. Exposing the disparate and contradictory ways in which they were used in the standard works, he "endeavor[ed] so to fix the meaning of words that they may clearly express thought."¹

He drew a fundamental distinction between "land", the "passive factor" supplied by nature, and "labor", the "active factor" supplied by man. "Land" includes "the whole material universe outside of man himself,"² while "labor ... includes all human exertion."³ Together, land and labor produce all wealth. Capital, "that part of wealth devoted to production,"⁴ was a secondary factor, itself the product of labor applied to land. George intended his terms "land," "labor", and "capital" to denote comprehensive and mutually exclusive categories.

In economics today, this division of factors is still often employed as a convenient shorthand, but it is widely rejected as a theoretical construct.

The objections of economists to George's basic definitions appear to throw doubt on both the efficiency and the equity arguments for LVT. If economic "land" cannot be satisfactorily defined, then "land value taxation" cannot be special, and Georgists really have nothing to talk about.

This paper examines the reasons for the rejection of the tripartite classification, and evaluates its implications for the principle of land value taxation.

B. HETEROGENEITY AND SUBSTITUTABILITY

It is sometimes said that the categories of land, labor, and capital are crude or meaningless because a wide variety of heterogeneous agents is subsumed under each. Public finance economist Kenneth Boulding, who writes rather favorably of Henry George, rejects the traditional factor categories and suggests an alternative classification:

"... we need to reevaluate the classical theory of production in terms of land, labor, and capital as factors of production.... I have argued that land, labor, and capital are in fact quite heterogeneous aggregates useful only in certain rather crude analyses of production.... Know-how is the active factor; energy and materials are necessary limiting factors. To these three factors of energy, know-how, and materials we also should add space and time, for all processes of production require these. Space and time may also be limiting factors.... Land, labor, and capital are each mixtures and aggregates of these five essential factors."⁵

I have not discovered the rationale underlying Boulding's own choice of categories. What items, for example, are included under "materials", and what is the point in distinguishing "materials" from "energy"? Are oil and coal to be classified as materials, or as energy? What makes "know-how" or technology "active", while energy is passive?

It should be obvious, at least, that Boulding's categories are quite as heterogeneous as the classical ones. But this in itself is not a valid criticism. Virtually any concept subsumes a wide variety of things. No one, for example, doubts that the concept of "chair" is meaningful and useful. Yet chairs come in countless shapes, sizes, styles, colors, and materials. Many have four legs, but some have three, or one, or six. Some have a support for the back or arms; others do not. Some are hard, some soft. Some are on wheels, some on rockers. One would be hard put to find qualities common to all chairs. But there need be no more

than one common characteristic to warrant the classification of heterogeneous objects under a single concept. That is the nature of conceptual thought. If we can find such characteristics for "land", "labor", and "capital", and if they have economic relevance, then the terms are meaningful.

Related to the heterogeneity argument is the common observation that productive agents of different classes may be used to produce similar results. They are substitutable in production; and an item from one category may well be a closer substitute for an item from a different category than for other items in its own class. Thus, a computer (capital) is a better substitute for certain types of office workers (labor) than for a plough or a truck (capital). This complaint is brought forward, for example, by Frank Knight.⁶

So productive factors are substitutable in demand. Many textbooks, indeed, ask us to note that the marginal productivity theory, which is a theory of the demand for productive inputs, applies symmetrically to all factors. This is quite true, of course; but the classical distinctions among the three factors refer to their conditions of supply, not of demand. Thus, perhaps, capital is produced in economic processes; labor is produced, if you will, by a biological process; land is not produced at all, but is naturally existing. We may wish to question whether those or some alternative distinctions hold up under scrutiny; but until then, we certainly cannot reject the tripartite classification on the basis of either heterogeneity or demand-side symmetry.

C. ELASTICITY OF LAND SUPPLY

It was not George but David Ricardo who provided the argument that a tax on land rent is neutral and unshiftable. "A tax on rent would affect rent only," he wrote; "it would fall wholly on landlords, and could not be shifted to any class of consumers."⁷

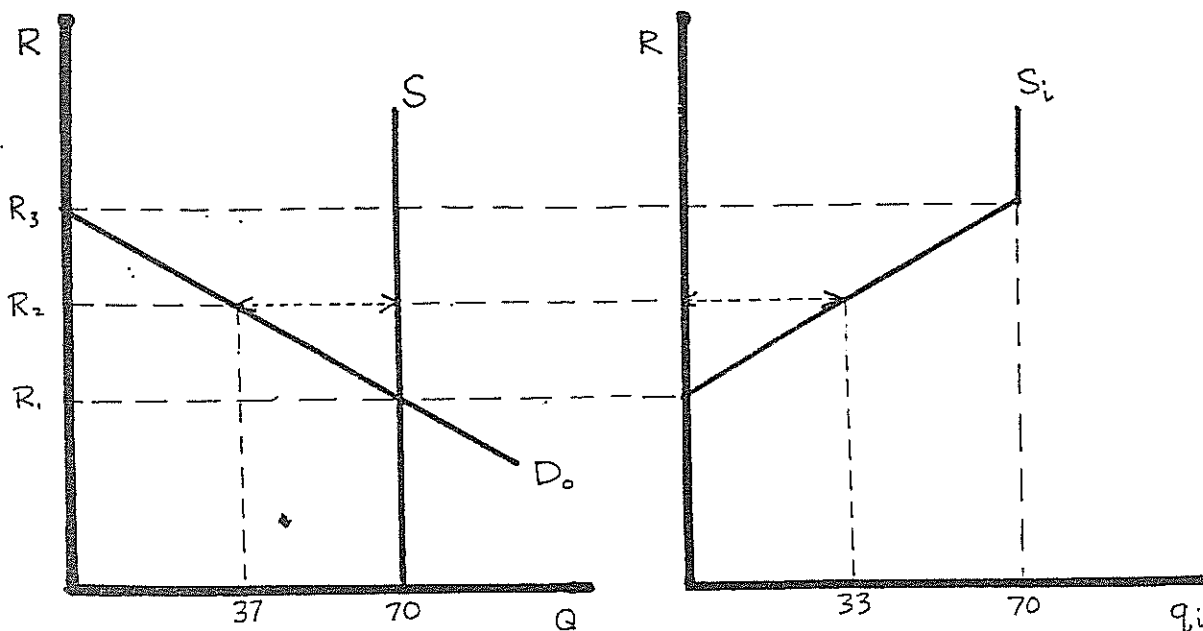
Traditionally, economists illustrated the tax neutrality argument by drawing a perfectly inelastic (vertical) supply curve for land. If the supply of a factor is perfectly inelastic, a tax on it does not influence economic behavior and is therefore efficient. In most textbooks, this is the only efficiency argument for LVT that is mentioned.

Today, however, the notion of a perfectly inelastic supply of land is widely disputed. In a sense, those who reject the vertical supply curve are correct. But writers who make note of this fact usually conclude that a tax on rent is not, after all, neutral in the Ricardian sense. This inference is not valid. One source of confusion has been the failure to distinguish between, on the one hand, the amount of land available in a taxing jurisdiction, and, on the other, the aggregate supply of land to the market or the supply of land to a particular use.

In her 1988 dissertation, for example, Mary Edwards argues that LVT is not neutral, and that it has much the same effect as an excise tax on produced capital. She bases this belief upon the view that the supply curve of land is positively sloped. Edwards says: "More land will become ready for use in a specific industry if the rent for that land increases."⁸

Even if all land is perfectly uniform, it is quite true that the supply curve for land to a particular use may be highly elastic--that is, quantity supplied is responsive to price. The demonstration of this is straightforward. At each price, the quantity of land supplied to a single industry equals the

aggregate quantity supplied minus the quantity demanded by all other industries at that price. [See diagram.]



Q = aggregate quantity of land
 q_i = quantity in industry i
 R = rent of land

S = aggregate supply of land
 S_i = supply to industry i
 D_o = demand by other industries

Moreover, even if the total amount of land is absolutely fixed, if there are non-market uses for land, the aggregate supply curve of land to the market is positively sloped. Jack Hirschleifer, in a popular microeconomics text, writes, "The supply curve of land to all uses (including reservation uses) will indeed be a vertical line independent of price. But," he goes on, "this is true for any resource, including labor. ... Meaningful supply curves always refer to quantities offered for market use, excluding reservation uses."⁹

To this it must be answered, first, that it is simply false that other resources apart from land and, perhaps, human population are fixed in total amount regardless of price. Surely we cannot suppose that the supplies of intermediate goods will be independent of price, except in the very short run. These

resources are ordinarily produced for the purpose of employing them in market activities. Without the inducement of price, they would not come into existence.

More importantly, although market supply curves are indeed relevant for many purposes, they are surely not relevant for all. For the question at hand, what is relevant is the total amount of land available to a taxing jurisdiction, regardless of whether or how the land is used.¹⁰ This quantity is independent of price; the tax base cannot shrink in reaction to the imposition of the tax. The possibility of an upward-sloping market supply curve of land has no bearing whatever upon the issue of LVT neutrality.

D. CAN LAND BE DISTINGUISHED FROM IMPROVEMENTS?

A further reason is usually given, however, in support of the view that a tax on land values will cause a diminution of the tax base. This is the argument that land is, in whole or in part, man-made; that land cannot be distinguished from improvements.

Thus, Frank Knight asserted that land is "produced" since resources must be devoted to its discovery, appropriation, and development.¹¹ Now, it seems plain to me that land must first exist before it can be discovered, appropriated, or developed. But Knight's view appears to have won the day, as a perusal of almost any modern textbook shows. Hirschleifer, for example, argues that the distinction between land and capital "collapses once it is realized that the actual powers of the soil are as much a human creation as any building or machine." And he concludes that the supply curve of land is not perfectly inelastic, since "more land will be provided at a price (if necessary, reclaimed from the ocean)"¹²

We may attribute this attitude partly to Hirschleifer's decision to use, not George's, but Ricardo's narrower definition of "land" as the "natural and inexhaustible productive powers of the soil".¹³ In George's definition, land includes all natural agents; the ocean is as much a part of "land" as is the soil.

Beyond this, however, the argument is based upon the view that "land" is improved by human effort. This view figures importantly in Edwards' dissertation. She defines "economic land" as "land which has been cleared, plowed, or otherwise prepared for a particular use".¹⁴ Land values are thus influenced by the efforts of landowners.

From the Georgist view, Edwards' "land" is actually a composite of true land and produced capital. It will be noted that her distinction between improvements which count as "land" and those

which count as "capital" is purely arbitrary. If clearing and plowing constitute "production" of land, why not also building? All these activities involve the use of human labor to alter the positions and combinations of materials. And most buildings are no more mobile or separable from the land than are fertilizer or irrigation ditches.

Edwards offers no clear rationale for her choice of definition of "economic land". Instead, she appeals to the authority of an early critic of Henry George, Alvin Johnson.¹⁵ An examination of his views is instructive. Johnson systematically examines, and rejects, several criteria upon which various authors have attempted to define "land" as a separate factor of production.

Among them is the Georgist distinction between land as the free gift of nature and products of labor. Johnson says that, if land is to be distinguished from capital as an agent which does not derive its powers from any act of man, then "coal in the depths of the earth becomes capital the moment when the first earth is removed from the mouth of the shaft."¹⁶ He concludes that to distinguish land from capital on the basis of natural or human origin leads to absurdity.

In the end, Johnson proposes a new criterion for distinguishing land, labor, and capital--one which, significantly, Edwards never mentions. Johnson groups together productive agents whose incomes he believes rise or fall from the same causes.¹⁷ He asserts that an increase of capital will cause interest to fall, but will cause wages and rent to increase. Similarly, an increase in "economically available land"¹⁸ will cause rent to fall, while the returns to the other two factors will rise.

It is on this basis that Johnson classes some improvements with land and others with capital. Thus, presumably, an increase in buildings or machines will lower interest and raise the rent of land; but an increase in irrigation works or transportation agencies will have the opposite effect.

This is the rationale which underlies the definition of "economic land" which Edwards borrows from Johnson. She is perhaps wise to neglect mention of it. For whether an increase in the use of a productive agent raises or lowers the marginal productivity of another agent depends upon demand-side considerations: upon whether the particular agents operate chiefly as substitutes or chiefly as complements in production. For example, an increase in the use of elevators may tend to reduce, rather than increase, the rent of urban land by making it feasible to build more intensively upon each acre: Are we, then, to include the elevator with the irrigation canal as a type of land? I know of no writer who has explicitly adopted Johnson's criterion for distinguishing among the factors of production.

Still, many others have advanced the same criticism of George's classification. Johnson's well-known contemporary, Frank Fetter, expressed it well:

"The material of everything in the world was once 'natural'. When did it become 'artificial'? At what moment did the bit of iron ore, the piece of coal, the piece of wood, the piece of 'land', miraculously become capital? Was it at the first touch of man's hand? Then is every cultivated bit of land artificial, and by that token is capital? ... No wonder, then, that many economists have lost their faith in the old Ricardian theory of rent and the land concept."¹⁹

But this objection does not afford us a reason to reject the land concept. Economists who dismiss the tripartite classification of factors do not, I think, generally claim inability to distinguish among particular inputs in a given production process. Economists use the marginal productivity principle to measure the separate contributions of individual inputs in production. The same principle can be used to sort out the contribution of land from the values added by other factors to the value of a cultivated field or city lot. We can define our land tax base so as to exempt improvements contributed by users, past and present.

It is frequently countered that although the distinction between land and improvements on the basis of origin may be meaningful in principle, it is hopelessly difficult in practice. This argument was offered, for example, by Willford King:

"... in practice, it might not be easy for the average assessor to differentiate between the true rent of the bare land and the rent of the improvements made thereon by the present or past owners of the land. ... the assessor would not be able to ascertain the amount invested a hundred or two years ago in clearing the land from timber and stones."²⁰

But H. G. Brown had already answered that objection in the article to which King's criticism is addressed: Such permanent improvements as clearing and grading

"could be regarded as being amortized into bare-land value so gradually--say over a period of thirty to fifty years--as not seriously to discourage the owner from making them. Then, in a succeeding generation, when evidence of their cost was no longer available, the problem of assessment would not be complicated by them."²¹

Henry George himself recognized the problem, and argued similarly:

"A swamp drained or a hill terraced by the Romans constitutes now as much a part of the natural advantages of the British Isles as though the work had been done by earthquake or glacier. The fact that after a certain lapse of time the value of such permanent improvements would be considered as having lapsed into that of the land, and would be taxed accordingly, could have no deterrent effect on such improvements"²²

E. LAND VALUES ARE SOCIALLY CREATED

Land possesses not only "natural" qualities but what we may call "social" qualities, that is, accessibility to people--to their works and their activities, to markets, to government services. The traditional definition of land as the contribution of "nature" obscures the fact that, by virtue of its geographic immobility, land value and even land itself is generated by human beings.

But the spirit, if not the letter, of the Georgist conception of "land" reflects this relationship. Although George defined economic "land" as "all natural materials, forces, and opportunities",²³ he emphasized that the productivity of land depends on its location with respect to markets and social activities. Moreover, as George observed, even the value of natural resources depends upon the demand for them--which depends upon the activities of society.

Some writers have seen in this a contradiction, arguing that land values are created by man, not by "nature", and that George's distinction between land and produced wealth is therefore erroneous.²⁴ As Georgists have always replied, this conclusion is plainly unwarranted. Although the value of any particular parcel of land does indeed arise largely from labor, it is the labor of people other than the landowner. The view that rent can be taxed without impairing any economic incentive is not invalidated by this admission--at least not in the way that George's critics contend.²⁵ In the Georgist view, land rent is to be defined as that part of the value of a real estate parcel which cannot be attributed to any action of the landowner as such (present or past).

One implication of this outlook is that the common notion that land grows less important as economies become more highly urbanized is erroneous. A standard text in urban economics for example, says that "urban areas are places where large amounts of

labor and capital are combined with small amounts of land in producing goods and services. ... the ratio of nonland to land inputs is greater there than in suburbs."²⁶

Measuring land in terms of area, this is plainly true. But in terms of the qualities relevant to economic behavior, a rural acre and a downtown acre are as apples and oranges; their magnitude cannot be meaningfully compared in terms of area alone.²⁷

We get closer to the truth by comparing land values, but only if we can count on the market valuations of individual attributes to be uniform and constant. If not, we encounter the so-called "identification" problem: We have not made clear whether land price differentials are due to differences in supply or in regional demand. Why are urban land values so much higher than rural land values? The usual answer is that the demand for urban land is more intense. But in an economic sense, an acre of urban land is worth more than an acre of rural land because it contains "more" land--a greater supply of the qualities for which land is valued.

Economists' habit of drawing supply and demand diagrams to illustrate their theories graphically may largely explain why this point often goes unnoticed. To construct such a diagram, it must be assumed that the good or factor referred to is perfectly homogeneous, so that a "unit" of it may be defined along a single dimension and so that units can be meaningfully summed. But under this assumption, we can illustrate a rise in the value of a fixed number of land only by shifting out the demand curve.

If demand shifts were the only way in which land values change, then the Georgist argument that "rent belongs to the community because it is created by the community" would be spurious. But the community increases (or decreases) the supply of land by creating externalities and public goods.

So the effect on land of man-made externalities can be

incorporated into the definition of "land" without doing violence to the Georgist conception. On the contrary, the observation that land values are socially created affords a powerful argument in favor of LVT. If society creates economic land, it is both equitable and efficient that society claim common property in land and recover its value through taxation.

F. THE FACTORS OF PRODUCTION

In his textbook, Hirschleifer rejects as "analytically indefensible" the "three categories of 'functional' factor returns, namely: wages to labor, rent to land, and interest to capital."²⁸ "Most important of all," he explains, "the original source of any productive power is only of historical, not of economic or functional, significance."²⁹

I argue, on the contrary, that the source of a productive power--specifically, whether it is produced in response to economic incentives, or not--is of primary economic significance. History is ongoing. It is because capital originates in an economic process, while land does not, that a tax on the ownership of capital will in the long run reduce its amount, while a tax on the ownership of land can have no such effect.

There remain, however, some serious theoretical problems with the classical tripartite division of factors. Hirschleifer goes on to reject the distinction between labor and capital, appealing to the notion of "human capital". Let us, then, examine George's explanation of the relation between labor and capital.

George believed that the wages of labor and the interest of capital must rise together and fall together. This view enabled him to set the laborer and capitalist together on one side against the landlord on the other in the struggle over the distribution of wealth. He defended this position on the ground that "labor and capital are but different forms of the same thing--human exertion." Capital is "labor impressed upon matter".³⁰

Several criticisms can be levied against this view.

First, even in George's definition, capital is the joint product of both labor and land. Thus, on his reasoning, the rent of land as well as the wages of labor must be reflected in the interest of

capital.

Second, the production cost of capital must be distinguished from its income or interest. Land and labor costs do enter into the cost of production, and hence the price, of a capital good. But interest is the income earned from the use of capital as a proportion of that price. In short, George seems to confuse interest with principal.

Third, George's treatment of capital fails to account properly for the role of time in production. If productive processes were instantaneous, then in a study of the basics of production, we could ignore the intermediate stages in which land and labor produce the capital goods which are then employed in the production of final goods. But production takes time, and interest is a consideration for its contribution. There is thus no basis for the claim that wages and interest tend to rise and fall in unison. Does this mean that interest, as well as rent, should be taxed under a consistent Georgist policy? Not at all. Time may be a primary factor, but it is a factor possessed and controlled by individuals. Interest is paid as an inducement to forgo present use of owned resources, entailing a transfer of the power to produce or to consume.

Fourth, to return to Hirschleifer's criticism, much of what is designated the wages of labor is in fact return of principal and interest on what we today call "human capital". Scarce resources are expended on the education and training of workers. This constitutes investment: The reward comes later, in higher lifetime income. For that matter, all incomes that are not simultaneous with services rendered include some interest.

George was aware of the concept of human capital, and took pains to reject it, on the ground that it caused hopeless confusion of thought. He preferred to say that education constitutes an increase, not of capital, but of the productive powers of labor.³¹ Wishing to clarify the standard terminology of political economy,

he could not admit that wages include in large part a payment to capital.

This evasion would not have been possible had he identified time as the crucial element in the capital concept. But in any case, it was unnecessary. Just as we can measure the separate contributions of land and improvements on the basis of marginal productivity, we can, in principle, distinguish the contribution of human capital to the income of workers. Unfortunately, George's approach may blind us to an important source of distributional inequality--which, after all, is the very issue motivating George's inquiry in Progress and Poverty.

Another difficulty with George's theory of distribution is its exclusion of economic profit. He correctly saw that the so-called "profit" earned by virtue of superior management is actually wages. And he recognized that monopoly power conferred profit, but excluded it from his analysis because he was chiefly concerned with the operation of a competitive system.

But George also neglected the profits of risk-taking, arguing that, in the aggregate, losses offset gains. This attitude conceals another source of distributional inequality. Moreover, it is not legitimate to assume that the profits of risk-taking sum to zero in the aggregate. If people are risk-averse, in competitive equilibrium gains will on average exceed losses; that is, people require a "risk premium" as a condition of engaging in relatively risky activities.³²

Note, too, that the profits and losses of risk-taking are not the sole province of professional entrepreneurs. This point has been well expressed by Dean Worcester who, in advocating the adoption of the term "factor profits", noted a "parallel" between "the entrepreneur of a firm and the 'entrepreneur' disposing of his personal services":

"In a free economy each agent is responsible for finding its own

employment and may be thought of as a little firm selling a productive service. Any failure to follow market conditions may result in a loss ... and any advantage taken of a fortuitous situation will result in profit"³³

Now, one may wonder how a productive agent such as a machine or a parcel of land "is responsible for finding its own employment". It would be more correct to say--and Worcester evidently intended this meaning--that the owner of each agent is responsible for finding its employment. This observation will prove useful in evaluating George's distinction between "active" and "passive" factors of production.

G. ACTIVE AND PASSIVE FACTORS: THE METHODOLOGY OF ECONOMICS

"Labor," said George, "is the active and initial force" in production.³⁴ Land is "passive"; it is "the mine from which must be drawn the ore that labor fashions."³⁵ George's contrast between active and passive factors was an insightful, though imperfect, attempt to root his definitions in sound economic methodology.

Economics is the science of choice: Faced with a scarcity of the resources needed to gratify our myriad desires, humans must economize. In 1932, Lionel Robbins offered the now classic definition of economics as "the science which studies human behavior as a relationship between ends and scarce means which have alternative uses."³⁶ The basic categories of economic thought which George defined and used reflect this conception of economics as the study of human choice subject to resource constraints.

The passive factor, land, as George used the term, represents the ultimate fund of resources from which man draws his sustenance. The active factor, labor, represents the human being, the subject of our science, the agent who makes economic choices and sacrifices. The secondary factor, capital, since it is produced, is subject to no long run supply limitation save the limitations imposed by the scarcity of labor and land.

This distinction between "active" and "passive" factors holds considerable intuitive appeal. Nevertheless, Frank Knight offers a criticism which cuts to the bone:

"It is characteristic of the enterprise organization that labor is directed by its employer, not its owner, in a way analogous to material equipment. ... We must not confuse the agency actually performing work with the personality of its owner, and it appears that a tool or a building or a piece of land is in this regard similar to a man's hand or brain."³⁷

Taking cues from Worcester as well as Knight, I would revise George's interpretation of the tripartite division of factors: The person--the choosing, economizing human being--is the active and initial force; the person is the employer of passive capital, of land, and even of his own labor. The person is the risk-taker, the entrepreneur, who receives the factor profits or suffers the factor losses consequent upon his decisions.

Does this suggest that economic "land" cannot be defined as a base for Georgist LVT? It does not. At most, it allows that a tax on raw human potential may be equally efficient and equitable. But several considerations greatly diminish the force of this admission.

First, the value of human potential is profoundly difficult to observe and measure--particularly since human resources are non-transferable. The inherent problems make the difficulties in separating land values from improvement values seem simple.

Second, wages, although they are a very large share of national income, consist largely of returns to human capital. A tax which includes the latter in its base will tend to discourage investment in human capital. But the base of a tax on the value of pure human resources must be so small that the revenue potential of the tax would be negligible.

Third, there is evidence that birth rates are somewhat responsive to economic incentives. To the extent that this is true, such a tax is likely to be nonneutral.

Fourth, a tax on land value is, in an important sense, not really a tax at all. If a community switches to LVT from some other tax system, there is, obviously, a distributional issue that arises in the transitional period, since people owning land at the time of the switch bear the burden of the tax. But this is a temporary problem, and one that is common to all changes in government policy. Once adjustment to the tax has occurred, the process of

tax capitalization ensures that future land users bear no burden-- that is, they pay no more for the use of land than they would have had to pay under a system of private ownership. They merely pay to a public fund rather than to a private owner.³⁸ No analogous argument can be made for a tax on human resources.

Observe, too, that land tax capitalization implies that the tax is not inequitable (after the transitional adjustment is completed) even if it is applied at different rates in different regions. In sharp contrast, difficult equity issues arise if human resources are not taxed at uniform rates. In fact, equity issues arise even if they are taxed uniformly: Some people may feel, for example, that such a tax ought to be progressive, taxing persons with greater natural ability at relatively higher rates--but how much higher?

Finally, we have concentrated here on merely one of the several arguments in favor of LVT: The Ricardian argument that the tax is neutral with respect to rational land use in a competitive, static world. Georgists consider their program to have a powerful ethical basis as well. And George and his followers have put forward a number of other efficiency arguments for LVT: some relevant to a dynamic economy with market imperfections; others relevant to a competitive urban economy with government activity; still others relevant to the issue of savings and capital formation. These suggest that LVT is not merely consistent with efficient markets, but indispensable for achieving full efficiency.

H. LAND VALUE AND PARCEL SIZE

I have argued that the usual arguments brought forward in denial of the existence of economic "land" in the sense used by George force us to adjust our language in some respects, but fail to discredit George's fundamental thesis. There is, however, a real difficulty that needs to be addressed: The total rent imputed to a region depends upon the manner in which that land is carved up, for assessment purposes, into individual parcels.

First, land has a "plottage value" which is maximized when lot size is optimal for the appropriate land use.³⁹ William Vickrey has suggested that where a tract is "subdivided into inappropriately small parcels ... neutrality requires that the small parcels be assessed at a level representing their share of the value of the assembled block...."⁴⁰ This approach abandons the attempt to use market value as the tax base. By no means does it make the job of assessors easier: They would now be required to determine whether lot sizes are optimal in order to make assessments. Moreover, the value of an assembled block may be of little relevance where lots are fully developed; yet to limit the practice to undeveloped land makes the tax depend upon the state of development, which is plainly contrary to the intent of its advocates.

Second, the observation that externalities affect land values implies that those values are sensitive to the pattern of land ownership that obtains. This difficulty has been widely neglected by LVT theorists.

Suppose, for example, that a dam is built to form a lake suitable for recreational uses. As an external effect, nearby house lots rise in value; under LVT, their tax bills would rise commensurately. But suppose that a large development company owns the entire area, including the house lots. The firm incurs the expense of building the dam only if the project is expected to pay

rise in value; under LVT, their tax bills would rise commensurately. But suppose that a large development company owns the entire area, including the house lots. The firm incurs the expense of building the dam only if the project is expected to pay for itself in increased housing rentals.

If the tax assessment rises as a result, as Vickrey has suggested,⁴¹ we have a case in which rent is taken to be directly influenced by the landowner--a situation which is again contrary to the intent of the Georgist tax policy, and with unfortunate result. The firm may not undertake the investment in the first place if it anticipates a consequent increase in its tax bill.⁴²

Vickrey suggests a possible solution, one that incorporates the Pigouvian tax-subsidy scheme for achieving an efficient level of externalities: Land developers might be offered a subsidy as a reward for generating beneficial externalities. For a large developer who internalizes many of his own externalities, the subsidy would offset the increase in his land tax bill, eliminating the bias.

Unfortunately, however, we cannot effectively measure the value of externalities generated by an individual firm; far simpler is it to measure the externalities received from all sources by a specific location, for these are at least in part accounted for in land values.

Moreover, this approach begs the question of how the boundaries of land parcels are to be determined for tax purposes, if, as this scenario assumes, a single large holding is divided into several pieces. Whether those boundaries are based on historical, geographical, or other considerations, they would seem to be rather arbitrary; yet the choice will affect measured land value.

Also, as Vickrey notes, the net revenue raised by the combined tax program would be far less than that raised by LVT alone. I am not convinced that this scheme represents "the logical conclusion", as Vickrey puts it, of "the single tax philosophy"; but I agree with

him that there is little likelihood of this extension being carried out.⁴³

The problem was mentioned half a century ago by Pigou, who reported on the manner in which the difficulty was handled under New Zealand land tax law.⁴⁴ Pigou discusses the case in which the cutting of a drain on site A improves the productivity, not only of site A, but of adjoining site B.

If A and B have different owners, the value of site B is increased when the improvement on A is carried out. If, however, sites A and B belong to the same person, only the cost of the improvement is imputed to capital; the land value, both before and after the improvement is made, equals the total improved value minus the cost of the improvement.

Thus, before the drain is cut, the value of site B is higher if both parcels are under the same ownership than if they are under separate ownership. (Pigou does not evaluate the extent to which assessors are successful in carrying out this policy!)

In both cases, it is argued, the owner of A (call him "Andy") has an undiminished incentive to carry out the improvement; his tax assessment does not increase when he cuts the drain. And in neither case does the owner of B ("Betty") receive a windfall gain.

Ownership is often ambiguous, however; there may be several joint owners and several layers of property rights over a particular parcel.⁴⁵ Suppose, for example, that Andy has a share in the ownership of property B. Prior to the cutting of the drain, how shall the value of site B be assessed?

Even if there is no ambiguity as to ownership, the tax described by Pigou may be nonneutral. If there is no tax, Andy has an incentive to buy plot B before cutting the drain, since he can then benefit from internalizing the externality. Under full LVT, he does not have this opportunity: The assessment of parcel B

rises at the moment the sale takes place. This tax seems to discourage large landholdings, relative to the tax-free situation.

Moreover, even if each parcel is and remains under separate ownership, it appears that efficiency-enhancing transactions among neighboring property owners of the sort suggested by the Coase Theorem would be discouraged by such a land value tax.

Suppose that the direct benefit to property A is less than the cost of the improvement, but the total benefit to A and B exceeds the cost.⁴⁶ For example, assume that the cost of the drain is \$100. The improvement raises the productivity of parcel A by \$60 (in present value terms), and raises the productivity of B by \$80. If there are no other external effects, it is clearly efficient to cut the drain, which would leave a net gain of $\$60 + \$80 - \$100 = \40 . But acting independently, Andy has no incentive to cut the drain, and under the New Zealand law, the value of A is not enhanced at all by the fact that the drain could be cut.

In the absence of taxes, however, Betty is willing to pay up to \$80 to persuade Andy to cut the drain. And Andy is willing to make the improvement if Betty offers a payment of at least \$40. If transaction costs are not prohibitive, a private bargain will be struck that achieves the efficient outcome. That is the Coase Theorem.⁴⁷

The problem is that under full LVT of the New Zealand type, the cutting of the drain would increase Betty's taxes by \$80--so Betty now has no incentive to bribe Andy to cut the drain. Thus the tax is neutral only if such voluntary transactions are already precluded by high transaction costs--that is, only if the efficient outcome would not have occurred anyway.

It is ironic that opponents of the Georgist program, who insist on false grounds that a line between land and improvements cannot be drawn, seem not to have noticed this dilemma. Perhaps there is a way out of it that I have been unable to discover.

ENDNOTES

1. Henry George, Progress and Poverty (1879; reprinted New York: Robert Schalkenbach Foundation, 1981), p. 32.
2. *Ibid.*, p.38.
3. *Ibid.*, p.39.
4. *Ibid.*, p.48.
5. Kenneth E. Boulding, "A Second Look at Progress and Poverty", in Richard W. Lindholm and Arthur D. Lynn, Jr., eds., Land Value Taxation: The "Progress and Poverty" Centenary (Madison: University of Wisconsin Press, 1982).
6. Knight, Risk, Uncertainty and Profit (1921; reprinted New York: Harper & Row, 1965), p. 123.
7. David Ricardo, The Principles of Political Economy and Taxation (1821; reprinted London: Everyman, 1973), Book X.
8. Mary E. Edwards, The Economic Effects of Taxing Land Values (Ph.D. dissertation, Texas A&M University, 1988), p. 26.
9. Jack Hirschleifer, Price Theory and Applications, 3d ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1984), p. 384.
10. Mason Gaffney, "Property Taxes and the Frequency of Urban Renewal", Proceedings of the National Tax Association (1964), p. 275.
11. Frank H. Knight, *op. cit.*, pp. 159-160.
12. Hirschleifer, *op. cit.*, p. 384.
13. *Ibid.*
14. Edwards, *op. cit.*, p. 10.
15. Alvin S. Johnson, Rent in Modern Economic Theory: An Essay in Distribution, Publications of the American Economic Association 3(4) (N.Y.: Macmillan, 1902).
16. *Ibid.*, p. 23-24.
17. *Ibid.*, p. 37.
18. *Ibid.*, p. 38.
19. Frank A. Fetter, "Landed Property as an Economic Concept and as a Field for Research--Discussion", American Economic Review (Papers and Proceedings) 7 (March 1917): p. 35.
20. Willford I. King, "The Single Tax Complex Analyzed", Journal of Political Economy 32 (1924), p. 605-606.
21. Harry G. Brown, "The Single Tax Complex of Some Contemporary Economists", Journal of Political Economy 32 (1924), p. 170-171.

22. George, *op. cit.*, p. 426. George notes that this objection to LVT "is one which concedes its advantages." [p. 424] He writes: "If it discourage production to tax values which labor and capital have intimately combined with that of land, how much greater discouragement is involved in taxing not only these, but all the clearly distinguishable values which labor and capital create?" [p. 425]
23. George, *op. cit.*, p. 38.
24. Edwards, for example, includes among the determinants of land value the "accessibility gained by improved transportation and communication." "To the extent that land rent is influenced by labor," she concludes, "it is not an unearned increment." *Op. cit.*, p. 21.
25. See section H.
26. Edwin S. Mills and Bruce W. Hamilton, Urban Economics, 4th ed. (Boston: Scott, Foresman and Company, 1989), p. 96.
27. Area is not even sufficient to describe the purely spatial qualities of land. It collapses two spatial dimensions (length and width) into one, and ignores the third (height). Two plots of identical area but of different shapes and otherwise identical will in general have different values.
28. Hirschleifer, *op. cit.*, pp. 383-384.
29. *Ibid.*, p. 384.
30. George, *op. cit.*, p. 198.
31. George, *op. cit.*, p. 39.
32. If people are "risk-loving", losses will on average exceed gains.
33. Dean A. Worcester, Jr., "A Reconsideration of Rent Theory", American Economic Review 36 (3, 1946), p. 274.
34. *Ibid.*, p. 163.
35. *Ibid.*, p. 272.
36. Lionel Robbins, An Essay on the Nature and Significance of Economic Science (1932).
37. Knight, *op. cit.*, p. 126-127.
38. Terence M. Dwyer, A History of the Theory of Land Value Taxation, Ph.D. dissertation, Harvard University (Cambridge, Mass., 1980), p. 286.
39. Marion Clawson, "Urban Sprawl and Speculation in Suburban Land", Land Economics 38: pp. 99-111.

It would seem that a tract divisible into two or more lots, all of optimal size, ought to have maximum plottage value also, minus the administrative costs of subdivision. Even here, the plottage value of the larger lot might be depressed,

either because of the difficulties of financing and managing a larger purchase, or because of uncertainty on the part of a small user as to how the adjacent lots will eventually be used.

Shape (see note 27) and specific boundaries also matter. For example, a long strip of land too narrow for building may be, by itself, nearly valueless; and to subdivide in such a way that a back lot has no access to the road would reduce the value of that lot and of the entire tract.

40. William S. Vickrey, "Defining Land Value for Taxation Purposes", in Daniel Holland, ed., The Assessment of Land Value (Milwaukee: U. of Wisconsin Press, 1970), pp. 32-33.
41. *Ibid.*, p. 31.
42. Similarly, large holders may prevent negative externalities.
43. Vickrey, *op. cit.*, p. 32.
44. Arthur Cecil Pigou, A Study in Public Finance, 3rd ed. (London: Macmillan, 1947), p. 151.
45. Thus, Pigou mentions the problem of how to assess the land values created by local government expenditures when levying the national land value tax.
46. This example is related to Vickrey's version of the Henry George Theorem, which he labels the "GHV Theorem" (for George, Hotelling, and Vickrey): If decreasing cost industries use marginal cost pricing, which is efficient, they incur losses, since marginal cost is less than average cost whenever average cost declines as output rises. Such industries, which generally include public utilities, must either employ inefficient pricing schemes or receive a subsidy from government. If they price at marginal cost, however, the value of land which gives access to the low-priced service will increase; under certain conditions, land rent will rise by precisely the amount of the necessary subsidy. Thus a tax taking the full rent of land is both necessary and sufficient to support the optimal pricing scheme. William S. Vickrey, "The City as a Firm", in Martin S. Feldstein and R. Inman, eds., The Economics of Public Services (London: Macmillan, 1977).
47. Ronald H. Coase, "The Problem of Social Cost", Journal of Law and Economics 3(1).