



Land Ownership and Land Use

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Article citation:

Gaffney, Mason. "Land Ownership and Land Use." No date. Working paper.

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LAND OWNERSHIP AND LAND USE

I

Land is misallocated in our economy. We concede ownership to the highest bidder on the plausible presumption that he will be the ~~highest~~ best user, but experience casts doubt on this presumption. Some speculators hold land absolutely unused, and this seems to be only an extreme manifestation of a more general distortion. Most land offers a long, uncertain series of yields, so most landowners are perforce land speculators. The same economic forces that make some owners hold land completely idle can be shown to make most owners hold land partly idle, i.e. underused. This study aims to define "full use" and explain "under-used" land.

One must search his own ^{motives} ~~and~~ before criticizing market judgements. Too many condemn them simply for recognizing tastes other than their own. While tenantry, absenteeism, speculation and other evils offend our private ideals, the market, that indispensable social arbiter which reconciles our various opinions and desires, decrees they should exist. Should we not defer to the majority rule and accept speculation in land as we accept whiskey and women's hats? Not

necessarily. There are objective standards by which to judge land use. While accepting ultimate market judgements, I maintain the land market fails to enforce those judgements. The market for consumer goods may be the supreme court wherein our various ideas of what is valuable are reconciled, but the land market is only a lower court whose decisions are revocable where they contradict the higher ones. I do not propose to substitute my personal judgements for those of the market, but to show that the land market obstructs a maximum production of market values.

At first sight the raw evidence appears enough to prove this. The facts are overwhelming. Wherever our economy has penetrated, land speculators have accompanied or preceded it. Many historians have chronicled their activities, of whom a few are cited in the notes. They testify that speculators have often held land idle for long periods, forcing settlers to move to poorer land. One cannot survey this evidence and doubt that land can be seriously misallocated despite free markets.

Evidence as clearcut as this, however, is generally limited to economic frontiers, areas into which higher uses are expanding. It only shows that much frontier land is temporarily misallocated, not that all land use is distorted. One may infer that the system which fails at the fringe is also wanting at the center, but

one has not proved it. To be sure, the fringe itself is appreciable. Frontier land economics are today re-enacted at urban fringes,² an area estimated in the United States to equal that of Pennsylvania. These are just the areas where construction is concentrated, bank credit is expanded, and other key decisions made in an expanding economy. But the more valuable land is at the center, not the fringe. In settled areas the evidence is harder to interpret. The frontier is not subtle, its secrets are laid bare for all to see. In the center raw facts reveal less, and analysis counts for more.

The parallel between frontier speculators and latter-day absentees is suggestive. Where land values are rising fast, speculators buy in.³ Like frontier speculators they value land for its future more than its current yields. Frontier speculators neglected current yields entirely and the misallocation was plain to see. Modern speculators usually take a small income from land while holding it,⁴ and our statistics and concepts are too crude to tell us forthwith if the land is "fully used" or not. We think land would yield more under an owner operator, but this is not self-evident. After all, if it is so, why does an owner-operator not outbid the absentee? Perhaps the absentee serves some useful function -- even he has advocates. Although the system is clearly suspect, it does not stand condemned.

The suspicion must be better formulated. As it stands it can hardly be tested. How show that speculators use land less ably than others when, as aforementioned, all landowners are perforce land speculators? How judge any land use when "full use" is undefined? No statistics can show the relationship of speculation to full use when both concepts are hazy. And, to anticipated when they shall have been defined the relationship will be quite clear.

This is fortunate for inquiry a posteriori is hopeless. Even theoretically, as will be seen, "full use" is an elusive concept. In practice, degree of use is impossible to measure. Consider some of the difficulties. The investigator must find the net yield. This involves evaluating all the costs and revenues, including implicit ones such as the pleasure derived from salt spray or the pain from a soap factory. He must evaluate the use over many years, as no short period can be assumed representative. He must compare the actual use with various alternatives which exist only in conjecture. He must quantify what he can hardly conceive.

It is easy to find evidence of underused land if one is uncritical. Many conservationists and city planners, for instance, measure the land system against their own ideals and find it wanting. These, at bottom, are usually

private opinions without objective economic meaning. Or, we read that many "irrigable" acres are not irrigated.⁵ But what is an "irrigable" acre? Where are those unirrigated irrigable acres? I have seen some of them in an irrigation district under a dry ditch that was dug to establish a claim to water. The water is used elsewhere in the district; the ditch was probably a fraud. Other acres are hummocky. Water is available, but levelling cost is prohibitive --- according to some people. More acres have erratic rainfall. Irrigation is only insurance against dry years --- at least, apologists say so. Are these the real reasons, or just the "good" reasons? Lifetime students of irrigation disagree. The deeper one digs into the evidence, the less conclusive it seems.

Many further allegations of misused land spring from misconceptions, and cannot be accepted; nor need we grasp at straws when the truth, as will be seen, is so substantial. But the straw is in the water and might deceive us, so best we ~~brush it aside~~ clear it away. It will help understand misuse to know what is not misuse.

Full use need not be the most intensive use. Full use is that yielding the highest net return, not gross. The number of people employed, or the capital invested on land are not direct measures of use. The less labor and capital used for given results, the higher net yields. When land is turned to less intensive uses opportunities

for labor or capital are reduced. Their sympathizers often condemn the new land use and, in their ardor, say the land is no longer "fully used". To some, full use means labor-intensive use. Complaints are common against those who lower costs and seem to "destroy jobs". If labor has a price, this cannot be accepted --- and it is often in response to labor scarcity that land is turned to less intensive uses. The land may indeed be underused,--most land is,--but not for the reasons given.

In depression times, some think, the social cost of using labor and capital should be considered zero. Whatever the merits of this idea in some connections, it has no place where the issue is allocating land to a particular use. If private costs are not social costs, all land is underused, because all land users economize on labor. The point of the study would be proved and this would be its end. No land would be fully used until used so intensively that the marginal productivity of labor and capital were zero. The study can only proceed with the understanding that highest net yield represents the highest use. Many a stark, abandoned white elephant bears mute witness that intensive use is not always best use. Valuable labor and capital, wasted creating things people do not want in places they do not want them, are a social loss, and not to be treated as Sheep runs in 16th century England and 19th century Australia were widely criticized on this score.

X free goods.

Another error is to judge land use on the basis of the present only. Land use must be judged over the years, unless the present use is unrelated to past and future. Houses are built to last many years; we do not expect a new one on every lot each year. Old buildings, perhaps even slums, may sometimes be the best use of land. Even vacant lots may be economical provision for expansion. They may be held in anticipation of lower building costs, or because anything erected this year would only be torn down next as an expected "higher use" materializes. Exhaustible resources may be held in anticipation that society will need them more later -- this is the essence of conservation. These may not always be sufficient reasons for seeming underuse, but they are usually of some bearing. Their value must be weighed and accounted before one can conclude that land is underused.

Further, land use cannot be judged, as it so often is, by explicit revenues and costs alone. Never all, and frequently ? but little of these are ever expressed in cash transactions. Not only the hogs sent to market, but the view and the breeze and the neighbors yield annual returns. One hears of ancient farmers who cling sentimentally to the old homestead, refusing to sell to ambitious youngsters who might bring forth twice as much corn. Is the land fully used? The grain alone is no In land settlement, owners may delay occupying land to let others make the initial costly mistakes which create a communal fund of local farming lore. This reduces the support of local institutions like irrigation systems, churches and schools, as well as wasting years of land yields. But it sometimes prevents mass disaster, and these various matters must be weighed before reaching a judgement.

criterion, for the old man's memories may be worth more than the young man's corn. ~~Is the land fully used?~~ If we accept the market's judgement they certainly are. We have not yet accepted it -- indeed, that is the very issue -- but we cannot condemn the market, as some carelessly do, because it recognizes value in an old man's sentiment. If the widespread landownership of old men be wrong, there must be other reasons.

Finally, the study is limited to land economics. Quotas, subsidies and other market obstacles may distort land use as much as anything peculiar to land economics. For this inquiry, however, the array of prices as they impinge upon the landowner is taken as given. The land system alone is on trial.

II

Why is land sometimes held idle? Whatever is the reason may also cause more widespread distortion. The everyday explanation is that the land is held for a rise in value. This does, indeed, seem to describe the motives observed in reality, but it leaves another question: why does the owner not use the land while waiting for the rise? Why forego all that potential revenue? In reality, again, the answer is usually clear: he is not in a position to use it conveniently. He is in the wrong business, lives too far away, is otherwise occupied, and so on. But why, then, did he buy it at all? Why was he not outbid by someone who was in the right business, lived nearby, and had time to use the land? Increments to land values are not reserved for those who hold land idle. Any landowner receives them, whether he uses the land or not. Generalizing, we must answer this question: how can one who gets lower yields or no yields outbid one who gets higher yields from land? Why does the market allocate land to anyone besides him who would use it best? An answer to this question will not only explain why land is sometimes held unused, but also show, a priori, that most land is underused.

Suppose, by that magic wave of the wand which is theory's prerogative, we have overcome all measurement problems previously mentioned, and established the existence of net land yields, expressible in simple numbers. Consider two individuals, Mr.

over

if 5 units are possible, why does
"not" Rich also try to get them?

Rich and Mr. Poor, both interested in buying the same land.

Rich anticipates yields of 4 units annually, Poor of 5, thus: *make it \$ --- after saying you mean implicit + explicit.*

Yields	5	Poor
	4	Rich
	3	
	2	
	1	
	0	

Time

Poor gets ~~the~~ higher yields, but it does not follow he is the higher bidder. He is buying an infinite series of future yields, and his bid depends on the rate at which he discounts the future. Suppose Rich discounts the future at 4%, and Poor at 5%. Both will bid just 100 units for the land. If Rich discounts the future at any less than 4%, or Poor at any more than 5%, Rich will outbid Poor. Thus land is kept from from the use with highest yields.

forced

While capital allocation is somewhat distorted also, this is primarily a problem of land economics, because land is expected to last forever and to rise in value, while capital is expected to fall in value until it is worthless. The difference between discounting at 4% and at 5% is negligible one year in the future --- only 1% of the discounted value. Over time the difference looms up to dominating proportions, as a glance at discount tables will reveal. ^{do so} The following graph is the same as the preceding one with the addition of two falling lines which represent the present values of the future yields. In the first few years the discounted values do not depart much from the yields themselves, but over time the influence of the discount rates becomes paramount. The present value of a higher yield, discounted at a higher rate, becomes smaller than the

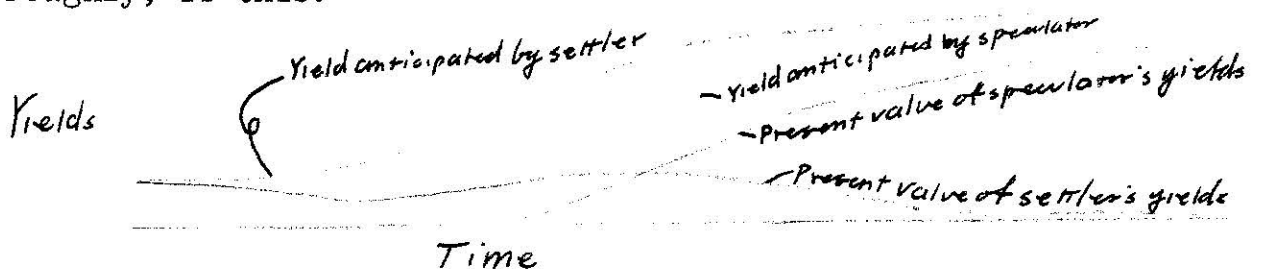
unclear

value of a lower yield discounted at a lower rate.



Good

The frontier speculator can plan to hold land idle for some years and still outbid settlers, because he can bid more for the expected future yields. A settler would also receive those future yields, but he cannot often bid much for them because of his high personal discount rate --- or, as it is often expressed, his lack of capital. The early years, for which he is prepared to bid, are years of relatively low yields. He is, therefore, often outbid. The picture, roughly, is this:



These simple examples, with but two bidders, may not seem true to life. But if there were hundreds of Mr. Riches and hundreds of Mr. Poores, it would not make any difference. True, there might be some with the high yields of Mr. ~~Rich~~ Poor and the low discount rate of Mr. Rich but, even so, the individual with the highest yields would probably not be the individual with the lowest discount rate. Some individual with lower yields and a lower discount rate might outbid him. Rich and

Poor are simply symbolic of the two highest bidders out of a great number of bidders. They are also symbolic of two economic types; one of whom becomes an absentee landowner, the other his tenant.

Unnecessary over If the speculator plans to sell, rather than take the future yields himself, he is not bidding for the future yields but for the resale value he anticipates. This resale value of course is simply the value given at some future date to the infinite series of then future yields. The speculator may value that resale value higher than any user values all the future yields. ~~the future yields.~~

2

As the land value is expected to mount to that resale value gradually over the years, speculators may be and often are said to be bidding for the "annual increment to land values". This is not a distorting factor distinct from that described above, but a particular manifestation of it. Without the explanation above we could not ~~say~~ say why the speculator's interest in increments permitted him to hold land idle and still outbid land users. Now it is clear: he places a higher value on a lower sum of yields because of his lower discount rate.

Repeat & stress this basic idea.

In addition, one who has outside income is inclined to count capital gains as realized even before the land is sold, and therefore to discount a large part of the increment over a smaller number of years than one who lives from hand to mouth and cannot count gains as realized until he has cash in hand.

767

Frontier speculation now is seen to be only an extreme and especially visible misuse of land. The same economic force that causes frontier speculation causes all land to be misallocated. Frontier speculation differs only in detail. The basic cause is the same: infinite future yields are bid for by individuals with different discount rates. The original suspicion is confirmed. In explaining frontier speculation we have shown a general distortion of land use. This casts a new light on land speculation. It cannot be dismissed as a passing phase of the unruly, exceptional frontier. It distorts land use everywhere.

To be sure, some land is worse allocated than other, depending on certain conditions. Misallocation increases with three causes: divergent discount rates*; future yields high relative to current yields; and yields high relative to differences among individual yields. Land is worst allocated, correspondingly, where wealth is unequally distributed and capital markets are poor; where land yields little in the present and is expected to yield much more in the future; and where land is most valuable. The first condition is seen, for example, in Latin American and Mediterranean lands. The second is characteristic of frontiers, ~~The third, valuable land,~~ where speculation is so notorious. As to the third, it has been often observed that farm tenancy increases with land values.⁶

2 | *Strictly, where low discount rates are correlated with low yields, and vice versa. In our own society land allocation is much improved by the fact that many individuals with low discount rates are also enterprising producers who get high yields from land. For simplicity and generality however, I will assume a random distribution of high and low discount rates among individuals. |

These conclusions stem from a simplified formulation. The simplification is useful, for it shows the main distorting force at work. It is dangerous, however, to generalize from such simple examples as that of Mr. Rich & Mr. Poor. We cannot be really sure of the conclusions until we have defined "full use" formally. Consider, first, the possibility that the highest bidder is the best user, after all. This has proved a workable hypothesis in many markets. Society sometimes concedes a higher value to the rich man's whim than the poor man's hunger, in reward for the rich's income producing capacity. May this not be analogous? Society is conceding a higher value to given future yields when they are owned by richer people. It is allowing the rich to outbid the poor for future incomes, just as it allows the rich to bid more for filet mignon and Persian rugs. Is it not the same?

The analogy is not admissable. If owning future values were alone involved, it would be all right. Let the rich bid up securities, no harm is done. Allocating resources is another matter. Consider land that is used as an instrument of production, and not at all for direct gratification. The free market in instrumental goods is useful if it allocates the goods to those who will get the highest yields from them. This is the only basis for the highest bidder's prerogative. The value of the yields themselves is the ultimate criterion of use, not the value which individuals give to the instruments

that produce them. The instrumental market is to be judged by its success in aiding production of consumer values. An ownership which permits less than the maximum possible yields is thwarting the dictates of the consumer market.

Def. 1
If the land is to be used for direct personal pleasure, and the yields are implicit, the conclusion is the same. The implicit yield for which a poor man would pay \$5.00 is worth more than that for which a rich man would pay \$4.00. Landownership is not the ultimate gratification, but only the means to obtain it. For best allocation, landowners should be those who take gratifications of highest value from the land. Where they are not, the highest bidder has proved to be less than the best user.

If a future value of only one instant be all that is involved, the highest bidder should indeed be the owner. When wine is aged, for instance, the raw stuff cannot be sold for years.

Def. 2
The wine must be carried over these years by someone with a low discount rate. The highest bidder for raw wine would be someone who discounted the future at a low rate. This does not distort allocation however, for, when the wine has matured and is ready for sale, time discount no longer affects bids. The wine's value is a present value, and is not discounted. It has simply been carried through the waiting years by him best able to do so. But when future yields are integrally connected with present yields, as with land, differential bidding for future yields distorts the allocation of present yields; and when the future yields have become present yields allocation will still

be distorted because another future will lie ahead.

There is no magic, then, in the highest bid. It need not come from the best user. It offers no excuse for accepting yields lower than the highest possible as "best use".

The answer to the original problem is looming up in rough outline. It still wants delineation. Thus far the answers have been negative. It is easy to say what is wrong; but what is right? We may discover that the present system, despite its demonstrated shortcomings, is better than any alternative. To be on firm ground we must define "full use" formally. This is not as easy as it may at first appear.

As previously mentioned, land use must be judged over the years. The judgement takes far more than simple addition. We ask not just "how much?", but also "when?" Future yields are worth less than equal present yields, and must be discounted.* Some plans sacrifice present yields for future, others stress quick returns. To make such varied plans commensurable, we discount them to the present.†

Bidders in the market, of course, discount infinite futures
*Or past yields must be magnified, if the judgement is in retrospect.

† Discounting is also necessary to give finite values to infinite series. Definite use plans of different individuals extend various periods, and vague plans run on indefinitely. No one year can be chosen in which all plans naturally end. Ultimately, no doubt, all plans fuse into a hazy identity, but we cannot say just when. We must therefore compare them through infinite time, and discount them to make the values finite.

to the present, and the bids so determined allocate land. If every individual discounted futures at the same rate this allocation would be perfect. Since in fact, and even in theory*, individuals do not, at what rate should the future be discounted in defining best use? It makes a difference: at 15% the best use crowds highest yields into the first few years; at 1% a high annual average is more important. A rate must be chosen before full use can be defined.

Keep this matter distinct from that analyzed in the example of Rich and Poor. That example showed that, even where time distribution of yields is no issue, bidding is distorted by differences among individual discount rates. The present matter is that, when time distribution is an issue, the definition of full use depends on the discount rate chosen.

As the market never establishes one universal discount rate, it seems logical that each individual should discount future yields at his own individual discount rate. That is the

*I do not think, even in "perfect competition", it makes sense to assume that everyone discounts future values at the same rate, any more than it makes sense to assume the price of oranges is the same in Los Angeles and New York. Two markets may be separated by competitive transfer costs and still be part of the same market, prices differing only by the constant transfer costs. In theory, as in practice, the cost of transferring capital by loan is finite. It is perfectly analogous to the cost of transporting oranges between cities, and prevents a single price being established, even though competition is unrestrained by any element of monopoly.

Neither does it make sense to carry the assumption of homogeneous units so far as to assume all individuals have identical discount rates to begin with. If all individuals were thus homogeneous there would be no cause for markets or trade of any sort, hence no social economics.

rate prevailing in the "market area" of his economic decisions. Yet, harking back to the example of Rich and Poor, discounting future yields at different discount rates is the cause of distorted land allocation. We do not want to define best use in such a way that constant yields of 4 units per annum are called a higher use than constant yields of 5 units per annum. How resolve this dilemma?

We might choose one discount rate, some average of market rates, call it the "correct" one and make judgement by it. This would be all right if decisions had only to be made among various yield series with constant annual value. It would make Poor, with his 5 units annually, a higher user than Rich, with his 4. But where use plans with different time distributions must be evaluated, the standard thus created is no norm. Each discount rate places a premium on a certain time distribution. Often one use would be defined as higher than others only because in accordance with the arbitrary discount rate. No arbitrary rate provides the normative standard of full use we seek. The best time distribution for each individual is that which has the highest value when discounted to the present at his own discount rate. Each individual's personal "capital market" is analogous to, say, a regional lumber market. It is surrounded by high transfer costs. We do not judge the Utah lumber economy in terms of Oregon lumber prices, nor national average prices. Only Utah prices are relevant in Utah. Neither can we judge Poor's capital economy by Rich's standards, nor by average standards.

The method I use, to introduce my ~~subject~~ solution slyly by using it to define full use, is indirect, & unnec. complex. Make the main point first, then complications of time distrib. This way, I cannot make the ltr point w/o the time distrib. one. & reader is not thrilled, for he thinks he is just reading tedious details of a sterile ¹⁹⁻ definition. I was inspired by academic timidity to slink up to my point this way. Shd. def. give simplest outline first, come to conclusion as soon as possible. Call it

Each individual plans his land use after his own needs. He compares different time distributions with each other in terms of his own discount rate. If we judged his use against an arbitrary discount rate we should be condemning him for following the economic guideposts of his own market area. This would be like criticizing Utah builders for using brick because lumber is cheap in Oregon. We cannot discard individual discount rates.

a hypothesis, proceed to test it. -- i.e. elaborate finer points for those who are interested.

The dilemma remains. To define ~~highest use~~ full use normatively one must discount futures at individual rates, yet this causes a distortion, as shown in the example of Rich and Poor. To define ~~best~~ full use, individual discount rates must be preserved and yet prevented from distorting the definition.

The means to this end is really very simple. It is like the answer to one of those baffling parlor mathematical conundrums which lure the mind up complex blind mazes, but reduce to trivia when the easy approach is seen. Recall the three elements which ~~lead~~ increase distortion of land allocation: differences between individual discount rates; high ratio of future to current yields; high ratio of yields to differences between individual yields. Each of these is a clue pointing to a possible means of defining full use. The first has ~~proved~~ ~~led~~ led to a cul-de-sac. The second will prove equally fruitless. The third leads directly to a solution.

The second clue suggests that we might ignore yields anticipated

Hard to concentrate on so much, suddenly. Open up these 3, e.g. in outline

Unnec. to follow these 'clues'

anticipated further than, say, 20 years hence, and compare use plans for just 20 years. The main distortion is in the valuation of far future yields. But this is too crude. Use plans last various intervals. There is no magic in 20 or any other number of years. Some users may plan to sacrifice yields for 20 years in order to increase them thereafter. Furthermore, even within 20 years bidding is appreciably distorted by differential discounting.

The third clue leads to a solution. Distortion also increases when yields are high relative to differences among the yields anticipated by different individuals. The higher the yields, the higher the capital value of land, ~~the higher~~ the sum bid for at different discount rates, and the greater the distortion caused by any difference between rates. On the other hand, the larger the difference between yields anticipated by different individuals, the greater the likelihood that he with the highest yields will outbid all others. For example, if Poor anticipates yields of 6 per year instead of 5, the difference between yields of different individuals is increased. Rich and Poor retaining discount rates of 4% and 5% respectively, misallocation is impossible. Or, if the difference between the yields anticipated by Rich and Poor remains 1 unit, but the size of the yields is reduced to 2 and 3 units, allocation is likewise improved. Distortion is reduced when differences between yields are magnified, and absolute size of yields minimized. To define full use we need a means of exaggerating these differences relative to yields.

This is accomplished by supposing land to be taxed. Individuals only bid for the privately collected yields of land. If land's capital value is deflated by anticipated taxes, less remains for individuals to evaluate at different discount rates. The distorting element is reduced. At the same time differences between yields anticipated by different individuals are as great as ever. The primary allocating force is preserved, while the distorting element is destroyed.

Return now to Messrs. Rich and Poor. Poor anticipates 5 units annually, Rich 4. Because Rich discounts the future at 4%, and Poor at 5%, each bids 100 units and the land is in danger of being misallocated. Suppose a tax of 4 units annually is anticipated. Rich bids nothing; Poor bids 20 ($1/.05$). The land is safely allocated to the one with highest yields.

Graphically this simple reasoning shows up even more simply simpler. Everyone knows how a percentage difference in two points on a graph is exaggerated by cutting off the base. That is, in effect, what taxation does. It cuts off the base of the yields to exaggerate the difference between the yields anticipated by different individuals.

With no tax, the 1 unit annual difference between the yields of Rich and Poor is but 20% of Poor's yields, and is offset

Very good

by the 20% difference of their discount rates. With the tax, the 1 unit difference is 100% of Poor's yields. The influence of differential discounting is completely eliminated.

It is now easy to define highest use without reference to any arbitrary discount rate. The highest user is he who will bid something for the land when anticipated taxes are so high that no one else will bid anything. "Full use" is the use to which he will put the land.

In the above examples, time distribution was no issue. But the ~~whole~~ purpose of choosing this definition is to preserve individual discount rates for evaluating different time distributions. This graph pictures the situation when annual yields fluctuate:



Time

Good. The BULK of future yields is no longer evaluated at individual discount rates; the FORM of future yields, -- i.e., their time distribution -- is evaluated at individual discount rates.

The difference between the tax and the anticipated yield is evaluated at individual discount rates and so, thereby, is the entire time distribution. The user is under pressure, determined by his discount rate, to shift yields toward the present. Both in the mind of the user and in our evaluation of his use, present values command a premium over future values determined by individual discount rates.

This is on the assumption that anticipations are correct. In fact they are not and, in retrospect, this can be seen to ~~cause~~ have caused misallocation. In prospect, though, we cannot evaluate the soundness of anticipations, and must accept them as the best measure of ~~planned~~ use, recognizing this weakness in our definition.

While individual discount rates are thus prevented from influencing allocation of the bulk of land yields, they are left with two important functions. First, the individual with lower rates can use more capital on the land, and account a lower price for what he does use, thus increasing the yields he imputes to the land. Second, he has greater power to shift yields to the future, where that will increase total yields. Superior command of capital is not allowed to let an individual outbid others for what might be called the "basic rent" of land, that which is independent of individual use and user. It is allowed to influence the definition of full use where it helps actually increase yields from land.

To sum up, consider this graph:

A

B

C

A, B, and C are the yields anticipated by three different landowners potential landowners. After the year 40 the yields merge into a hazy identity. The total yields under B are greatest, while those under A are more immediate.

If full use were defined by choosing one discount rate, ~~the~~ the decision between A and B would depend on the rate chosen. At high rates A is the higher use; at low rates B is the higher. This sort of definition would succeed in discriminating against uses like C, which are lower at any discount rate, but it

gives no normative decision between A and B, where time dis-

present for future yields. One can do this just as well when land is taxed. Ely was using men like B to nationalize men like C

Very good

With this I can show that time distrib. is properly taken care of by ~~my~~ taxing.

Note that Ely's 'ripening costs' are taken care of. For they come to this, that one sacrifices present for future yields.

tribution is an issue.

Under the present system of landownership futures are discounted at individual rates and the decision between A and B does not depend on any arbitrary rate. However the time distributions of A and B will affect the decision very little. The individual with the lower discount rate probably will be the higher bidder, whether he be A or B. The individual with lower discount rate will value the great bulk of anticipated yields higher than the other. This influence will ordinarily outweigh any other. Not only will the decision between A and B be so determined, but even C may be the highest bidder if his discount rate is enough lower than the others'.

If the land is expected to be heavily taxed, C will bid nothing, the tax will be over his head. B will be a higher use than A if B's discount rate is enough lower than A's, ~~so that~~ and the two rates are low enough, so that the lateness of B's yields is more than compensated for by their greater size. Time distribution plans will be judged according to individual discount rates, and still differences in rates will not distort the bidding for the bulk of the land's yields.

Here, then, is a norm of "full use" which the present land system obviously does not achieve. As long as land has a capital value, and individuals discount the future at different rates, land will be misallocated. The problem of this study is solved. "Full use" has been defined, and "underuse" explained.

A word on the practical implications of this analysis is in order. Two policies to improve land allocation are implied: equalizing discount rates; and taxing land values. Both are desirable, I think, but the former may cost society more than it is worth, while the latter helps finance government.

Anything tending to equalize wealth distribution tends to equalize discount rates. This is no conclusive argument for wealth redistribution, but it is a consideration. This subject involves too much more than the present issues, however, to cast much light on them.

The issue is clearer when the means proposed for equalizing discount rates is government subsidy of capital markets. This is a policy of long standing in Europe, and rapid growth in the United States. Costs of capital transfer keep the free market from equalizing discount rates. If the government bears these costs and provides cheap credit to bad risks, rates can be brought much closer.

When bad risks are provided with cheap credit to purchase land, the cost of transferring the capital, borne by the public, is greater than the gain from improved land allocation. When land is transferred, only a finite number of ~~the~~ future yields are actually allocated, since human life and plans extend only finite periods. Any gain is within this finite period. However, the infinite future of the land must be transferred, and capital enough to buy it transferred to the buyer. The cost of transferring this much capital will exceed the gain

from improving land allocation for, if the gain exceeded the cost, the private capital markets would have already engineered the loan. Public subsidy of capital markets does not get rid of the basic diseconomy involved, it simply changes its incidence and manifestation. Instead of ~~misallocated land~~ ^{would} misallocating land we/waste tax money, and the amount wasted would exceed the present loss from misallocation.

Taxing land, on the other hand, by deflating land's capital value, would entirely do away with the cost of transferring capital for land purchases. Not only would land transfers now uneconomical be made economical, but land transfers now economical would be made much cheaper.

It is important to note that anticipated taxes, rather than current taxes, are the cause of improving allocation. Current land taxes, if expected to fall, worsen allocation, for future untaxed yields are in prospect for those with low discount rates, while current yields, which are more important to those with high discount rates, are not available to private individuals. Where heavy taxes are temporarily imposed, therefore, allocation is worsened. Where communities are heavily bonded, so that high taxes are expected for decades, allocation is improved.

In summing up, I would stress this interpretation: land taxes can replace other taxes and, while other taxes distort resource allocation, land taxes improve it.

NOTES

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