



Land Speculation as an Obstacle to Ideal Allocation of Land

By Dr. Mason Gaffney

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Land Speculation as an Obstacle to Ideal Allocation of Land

By

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Merrill Mason Gaffney
A.B. (Reed College) 1948

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Economics

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA

Approved:

.....*David Weeks*.....
.....*Howard S. Ellis*.....
.....*J. D. Hicks*.....

Committee in Charge

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INTRODUCTION

I. Summary of study

Where man has joined economic forces with nature under the organizing genius of the market he has met, along with some notable successes, some sharp disappointments. To be sure the market has outperformed some other institutions for organizing the land economy, but still its performance seems often to fall short of standards to which we might reasonably aspire.

This is a study of the imperfect union of land with man that the market achieves in a free or partly free economy like our own. Formally it is addressed to this question: do market forces tend to allocate land to its most productive use? It concludes that some do, according to traditional theory, but others not contemplated in traditional theory obstruct the beneficent forces from achieving ideal allocation. The major obstructive force is the difference among interest rates, explicit or implicit, accounted by different individuals. The net result of the forces is a land market performance rather short of perfection.

The original reason for the study was the writer's suspicion that the land market tends to function imperfectly, quite apart from any monopoly elements such as one usually has in mind when speaking of "imperfect markets." This

suspicion was aroused both by direct observation of land use and deduction from the principles of capitalization. As to the first, one need not look far to find anomalies and problems such as idle lands amid crowded lands; holdings below optimal size amid holdings much larger than necessary to achieve economies of large-scale operation; lands abused by tenants; premature subdivision and scattered settlement.

As to the deduction, the suspicion arose originally from the simple fact that different individuals in the same land market have access to funds at different interest rates. As the major annual cost of holding land is generally interest on the price of the title, it may well follow that individuals paying or imputing lower interest rates tend to add land to their enterprises until the last unit yields them a smaller increase than the last unit must yield to enterprises paying or imputing higher interest rates. If so, some land would be put to uses less productive than others from which it would be preempted.

Although its original motivation and its conclusion both suggest the desirability of considering the many proposals for improving present land policies, the present study stops short of entertaining any of these proposals, other than to list some of them briefly in Section Four of Chapter Five for the purpose of establishing their reality as alternatives to present policies. As understanding must precede intelligent action, this study undertakes only to develop a

conceptual framework for evaluating the performance of the market as it is, and, by applying the conceptual framework to that purpose, to suggest whether it would later be worth while to use it for analyzing reform proposals.

But the orientation of this study, and the writer's willingness ultimately to entertain alternatives to present policies is worth emphasizing now to obviate later misunderstandings. This is not an evaluation of how successfully individuals adjust themselves to the alternatives the market offers them. Rather, it is an evaluation of the market itself as an allocating agent. It seeks to penetrate the veil of prevailing institutional arrangements and policies to ultimate economic realities, and evaluate the institutions in terms of those ultimates. In the background always stands the thought that there are alternative policies to choose from.

Thus the study strikes some unfamiliar notes, as much economic analysis today proceeds on the assumption that prevailing institutions and policies are "given" and themselves constitute ultimate economic realities. For example, several leading economists have rationalized farm tenancy on the grounds that it represents the best adjustment for the individuals concerned, within the framework of existing land prices. No doubt it often does--its very existence seems to tell us that, unless we assume widespread ignoring of self-interest. But in the present study we

cannot rest content with this answer. The study asks, "Is a land market that draws men and land into a relationship as inhibiting to production as tenancy tending to allocate land to its most productive use?" This point is developed further in Chapter II, Section IV, "The Function of Tenancy."

The plan of study is first to describe some major land problems from direct observations, and second to adapt some of the tools of economic theory to analyze forces controlling the land market, relate the problems to theory and, through theory, to each other.

The study has two major parts.

Part I, "The problem of malallocated land," consists of three chapters surveying three basic and interrelated land problems common in market economies. These are: unused land; tenanted land; and land operated in holdings of non-optimal sizes. In this survey there inevitably appears some analysis, but this analysis is strictly subordinate to the survey, and only foreshadows the fuller analysis of Part II.

Most, but by no means all the data surveyed are from agriculture. This particular industry is selected only because of easier access to relevant data in it, and not because the theoretical analysis applies more closely to agriculture than to other industries. This point is elaborated in the introduction to Chapter 2. Most, but again not all the data are from the United States. Let it

be understood, the study does not concern agriculture as such, nor the United States as such, but land as such. Therefore the writer has not hesitated to introduce data, where available and relevant, from other countries and other industries, or to suggest that his conclusions might have some bearing in other countries and industries as well.

Part II, "Analysis of the Problem," takes up the hypothesis that individuals accounting lower interest rates tend to add land to their enterprises until the last unit yields them a smaller increase than the last unit must yield to individuals accounting higher rates. The word "accounting" is taken to include situations where interest is paid out explicitly on borrowed funds, as well as situations where implicit interest is merely imputed on funds owned by the individual. The first chapter of Part II, Chapter Four develops this hypothesis, and Chapter Five takes up objections to it, and modifies it somewhat. The final chapter draws together and summarizes the analysis, indicating its application to the three land problems of Part I. It concludes, in answer to the original question posed by the study, that, as previously stated, some market forces do tend to direct land to its most productive use, according to traditional theory, but others not contemplated in traditional theory obstruct ideal allocation. The major obstructive force is the difference among interest rates, explicit or implicit, accounted by different individuals.

The net result of the forces is a land market performance quite short of perfection.

This net result probably falls short, also, of attainable approximations to perfection. As mentioned, this study concludes without developing any reform program, such as would be necessary to know if anything better is within our reach. Thus the study ends as it begins, in a critical vein. But the author's purposes are not primarily negative. He has developed his analysis in the hope that it may prove useful in the more important enterprise of devising means to improve on present policies.

II. Basic Assumptions

Inasmuch as every study must begin and end, the author has indulged himself the luxury of certain assumptions, which he will not defend. Many of these must go unspoken, but certain ones should be explicit:

A. Only the land market is under scrutiny here. Let ceteris paribus rule. For the present study we take as given, for example, tariffs and other trade barriers. The question is, how do landholders respond to the price and cost stimuli that a market economy relies on to guide their decisions? We deplore the confusion of issues introduced by one writer who, on hearing the Junkers indicted as unworthy cultivators of the German soil, countered that they could only have raised grain in any event, which in the absence of protection they should not have done. We would

instead judge the Junkers' efficiency as land managers in terms of the price system within which they operated.

B. The privilege of holding title to part of a nation's limited land resources is a public trust, and properly the object of public scrutiny and concern. The justification of a land policy must be its effectiveness in promoting the highest use of resources. "Private property" and "vested interests" are means to that end, not ends in themselves.

C. It is desirable to maximize the net product of given land resources. We do not share the monopolistic philosophy which counsels solving the problems of each industry by retiring resources to lower output and raise price. Our philosophy is the classical one of facilitating output and income payments in all industry, whereby few need suffer lower relative prices, save as some can lower unit costs by greater volume. As to aggregate demand, there seems no reason to fear that a better allocation of land would fail to increase demand by as much as output: to allocate land more economically is to make it more accessible to its complements, labor and capital. It is tantamount to opening a new frontier, offering new investment opportunities to balance any increased savings, and new employment opportunities to increase wage payments and consumption.

Nor do we share the philosophy that a fall of land prices, that might ensue from improving land allocation and thus increasing the effective supply of land, is a loss to

the economy. We would echo R. H. Tawney: "A society is rich when material goods are cheap and . . . human beings dear."

III. Definition of the term "land"

The word "land" in this study means the natural attributes of the earth, including site (extension plus location). Some distinctive features of this resource are these:

A. It is not produced by man. The activities of men may wittingly or unwittingly affect its productive capacity, just as they may affect the productive capacity of labor and capital, but land, the physical entity, is nature's contribution, with no cost of production.

B. It is not reproduceable. So-called "made land" is, of course, only an underwater site whose improvement has called for, in addition to the usual expenses, considerable fill. The location, extension and substructure remain nature's contribution.

Subdivision and attendant public improvements are sometimes said to "produce" land. It is true they increase the supply of land for those uses which require the improvements, but they take it from other uses. In our terminology they are only means of transferring land between uses. They do not affect total supply, unless in the special sense that better allocation of an existing supply has effects similar to increasing the supply.

Man's contribution to the fertility of soil is not "land", but an improvement. The practical problem of distinguishing the human from the natural contribution to farm value is more than negligible. But the fact that farm land prices vary so much less within soil groups and natural regions than among different ones attests to the identifiability of nature's contribution and the limits of man's influence.

C. Land is uniquely located relative to its environs, immobile in space.

D. The site is never consumed in production, although its value may rise or fall due to economic or climatic changes. Its substructure is ordinarily permanent too, although nature over the eons will certainly change it by vulcanism and erosion, and man may accelerate the erosion. Topography, also, is usually enduring, again with a few outstanding exceptions.

Some economists have taken the exceptions for the rule, and treated the land as simply another form of capital. We will treat of it ordinarily as a permanent resource. This means that our analysis and conclusions do not apply strictly to those natural resources that are consumed in production, such as virgin timber and minerals. We devote a few special words to them in Chapter Five.

As land has these unique qualities, the price of land is likewise unique: no cost of production affects it,

nor any threat of reproduction; it is based solely on anticipated future yields, and these extend into the indefinite future.

Let it be understood that land, measured by price, is not primarily an agricultural resource. In 1954 the estimated market price of land and improvements in all American cities over 30,000 was about \$250 billions; but the price of all farm real estate in 1950, near the peak, was only \$75 billions.¹ Let it also be understood that the ratio of land to improvement value does not become small even in the centers of cities. On Manhattan Island the ratio of land to improvement values is almost 3 to 2,² higher than in many farm areas.

IV. Criterion of "ideal allocation" of land

A. Diverse criteria now used

On originally looking into the subject of this study the author assumed that there must be among professional economists some general agreement as to what constitutes the most productive use of land. But there is not. Among criteria there are the widest divergences, ranging from the doctrine that maximum output per acre is ideal, regardless of cost, to the opposite doctrine that minimum costs per acre are ideal, regardless of output. These, and many between, and others on unrelated standards, are all seriously advanced or more generally assumed by some one. Obviously no amount of agreement as to facts can bring harmony

among those holding such incompatible concepts. The first step in this evaluation of how ideally the market allocates land must be to establish a standard of excellence by which to judge it.

B. The criterion of "ideal allocation": the equimarginal principle

1. The equimarginal principle

As the criterion of "ideal allocation" we take the simple and by now traditional equimarginal principle. This principle derives directly from the axiom that given resources will be allocated so as to maximize their aggregate net output when it is impossible to increase their aggregate net output by reallocating any of them. The increased output achieved by shifting a small unit to a new use is called the marginal product of that unit in that use, and the marginal product divided by the unit is the marginal productivity, or rate of change of output with respect to the resource. According to the equimarginal principle, in order to maximize aggregate net output from the resource its marginal productivities must be equal in all different uses to which it is applied (in the stage of diminishing returns), since if they were not equal the market could increase aggregate net output by shifting some of the resource from uses with low marginal productivities to uses with high ones.

George Stigler put it this way:

A difference between alternative cost and the value of the marginal product in any firm or industry is proof of inefficiency, and the magnitude of the difference is a clue to the extent of the inefficiency.³

Some would prefer definitions of "efficiency" other than Stigler's, which is actual output from given resources as a percentage of maximum possible output from those resources. But if we substitute his meaning in place of the word it is clear he has in mind the same equimarginal ideal we have expressed. We present his statement here to indicate that our criterion is also that used by a recognized master of economic theory.

The words "marginal productivity" need not necessarily appear in all applications of the equimarginal principle. For the principle is nothing more than an elaboration of a statement so self-evident that it may be likened to an axiom of geometry, the statement that given resources will be allocated so as to maximize their aggregate net output when it is impossible to increase their aggregate net output by reallocating any of them. The elaboration in terms of marginal productivity is useful for many purposes, but the principle may be understood and sometimes applied without the elaboration. A violation of the principle is indicated simply by showing that net output could be increased by reallocating the resource. No explicit reference to marginal productivity is necessary. It is obvious that the marginal productivity of the shifted resource must then have been

higher in its new use than its original use, else shifting it would not have increased aggregate net output.

The words "different uses" are to be interpreted broadly. The equimarginal principle is satisfied only when marginal productivities are equal, not only among different "uses" in the narrow sense of "crops", say, but also among different enterprises and tenures. Shifting land from one "use" to another might mean shifting a marginal acre from, say, a wheat farm to a neighboring truck farm. But it may also mean shifting the acre from one wheat farm to another wheat farm. Finally it may mean simply shifting title from one person to another while crop and operator both remain the same. That would occur if a tenant bought out his landlord, and might materially affect the net output from the land.

In designating some lands as "underused" one runs the risk of imposing his own arbitrary standards of excellence or intensity where they do not apply. Some of our less imaginative European visitors have been guilty of this, criticizing American farmers, miners and lumbermen for failing to follow intensive European-type practises that are uneconomical within our structure of costs and prices. But the equimarginal principle avoids this error. "Underused" land is that held by enterprise A which, if transferred to B, would increase net output more by joining B than it would reduce output by leaving A. In this there is no imposition of arbitrary standards on a sinful world. The

author accepts the principle of consumer sovereignty. He criticizes the land market only insofar as it fails to allocate land so as, in the aggregate, to yield its utmost, net of costs, of that assortment of worldly goods desired by ultimate consumers.

But is the marginal product of just one factor, land, a sufficient criterion for judging the relative efficiency of different enterprises? No, it is not--and that is not what we use it for. It is quite possible that firm 5 might be more efficient, in an overall evaluation of the firm, than firm 13, and yet the marginal product of land alone might be higher for firm 13. And it is normally true that the marginal products of complementary inputs vary inversely, according to the well known principle of variable proportions. If farm G has many men per acre, and farm H few, the marginal product of land will probably be higher on farm G: but the marginal product of labor will probably be higher on farm H. These facts do not contradict but support each other. This point is formalized in Stigler's Theory of Price,⁴ and below, Chapter Three, Section II, B, 2, a.

Taking the marginal product of just one input, land, is a means of focussing analysis on exactly the matter of interest, not excluding relevant facts about other inputs but marshalling these facts to bear on the question at hand. Thus the marginal product of land, as we will show more fully in a moment, is much affected by the marginal products,

intensity and cost of other inputs, its complements. To know the marginal product of land we must take all these other factors into account. Indeed, much of what we know of the marginal product of land we know only indirectly, by inference from what we know more directly about the complementary factors of land. So we are by no means ignoring other inputs. It is a question of how these are taken into account, and to what purpose. Our purpose is to evaluate the functioning of the land market as an allocating agent, and for this end the marginal product of land, as used in the equimarginal principle, is a sufficient concept.

2. Meaning of the "marginal product" of land

The "marginal product" of a small unit of land, we have said, is the increased output achieved by adding it to an enterprise. But this brief definition still leaves some vital details to the imagination. Not all economists would fill in each detail the same. Worse, many skeptics question that the concept has much substantive content in real affairs. It therefore falls on us to round out the marginal product concept as we will use it, particularly in relation to land.

a. Unit of measurement the dollar

The marginal product is probably most often measured in physical units, and these then translated into dollars. There may be good reasons for this practise in some studies, but there is none in this one. We will

measure the marginal product directly in its dollar values. As we are dealing with production economics and not price economics we will throughout the study assume that individual sellers have no influence on price. This is not to be taken as indicating that the author believes that the economy is perfectly competitive. On the contrary, he believes the present study may contribute something toward an understanding of how industrial concentration develops. But as the present purpose is to analyze phenomena that occur independently from monopolistic motives we will for the present dispense with this much of the intellectual apparatus of price theory.

b. Adaptability of complements

1. Form and location of complements

Leading exponents of marginal analysis generally insist, in defining the marginal product, that complementary resources be allowed to adapt their form to the increased quantity of the variable input.⁵ In this usage we concur. The marginal product of a unit of land added to an enterprise is not the immediate increase of output, but the increase after the complements have adjusted to the new proportions and scale of operations (meaning in both instances output per unit of time, of course). Better yet, it is the increased output of the larger over the smaller enterprise if both are originally planned with their respective amounts of land.

When the variable input is land, not only the form but the location of complementary resources changes, as they must move to the new land. For this reason it may require more mental effort to conceive of the marginal product of land than the marginal product of labor or equipment. But once the marginal concept is firmly in mind there is no difficulty.

One should be wary of a natural misconception of the marginal product of land. It would be easy, especially in some farm operations, to fall into the error of identifying the marginal product of an additional acre with the crop harvested from that particular acre. But the marginal product is the increase of output of the whole enterprise, which is the crop harvested from the new acre minus reduced output on the original acres. Output from these falls as complementary factors move off them to the new acre. The amount of the fall, incidentally, will equal the sum of the marginal products of the complements transferred.

11. Quantity of complements

Does one allow changes in the quantities of complementary inputs in defining the marginal product of land? It is hard to find just what convention would dictate on this score, as so many theorists have not thought the detail worth explicit mention. This is understandable since, as we will see, the detail does not as a rule materially change the result as long as the increase of inputs is very

small. But we will be dealing with changes over a wide range, as well as with small ones, so we cannot pass the matter over.

To avoid any ambiguity we will, as many economists have done implicitly, and a few explicitly, distinguish two concepts: "marginal product" and "marginal net product." "Marginal product" is a ceteris paribus concept: other quantities are held strictly equal. "Marginal net product" is a mutatis mutandis concept: other quantities are changed appropriately, and the increased cost subtracted. "Appropriately" means until their marginal products equal their marginal costs. Thus, to find the marginal net product of an additional acre we add with it labor and capital, simultaneously of course adapting their forms to the new acreage, until the marginal products of labor and capital each equal their respective marginal costs; then we subtract the costs of these increased complements from the gross increase of output, and have the marginal net product of the acre.

Now which of these two concepts have we in mind when judging the excellence of market allocation of land by the equimarginal principle? In the event of conflict, the marginal net product is the ultimate criterion, containing as it does no artificial limitations on the individual's freedom to economize. But ordinarily there is no conflict since, in a given situation, the marginal product equals the marginal net product, just so the inputs are very small.

Marshall long ago pointed this out, and Stigler in 1941 elaborated on the theme in his Production and Distribution Theories.⁶ Let us lay out the essential reasoning.

If one adds to an enterprise an acre of land, with the complementary labor and capital fixed in quantity but adaptable in form and location, the marginal product of the acre is the gross output harvested from it minus the cost of the labor and capital used on that acre. The cost of the labor and capital is, of course, the reduced output from the original acres that results from their being withdrawn. That is the sum of the marginal products of the labor and capital.

Now how does the "marginal net product" differ from that? Instead of drawing the labor and capital from other lands on the same enterprise one draws them from other enterprises. That is the only difference between the two concepts: the labor and capital, whose costs must be deducted, come from different enterprises.

It clearly follows that marginal product and marginal net product are equal so long as labor and capital from outside the enterprise are not available at less cost than the marginal productivity of labor and capital within the enterprise, and labor and capital within the enterprise do not have better alternatives outside it. These conditions imply also that inputs of land be very small, as large inputs affect the marginal productivities of labor and capital within the enterprise.

Now it is generally true that labor and capital from outside an enterprise are not available to it at costs less than the marginal productivity of those already employed there. That is not to say they do not exist, but they are not available to the enterprise, for one reason or another. If they were they would have been hired already. By the same reasoning, labor and capital within an enterprise do not generally have what the people involved consider better opportunities outside it. We say "what the people involved consider" because in the opinion of outside observers they may be mistaken or uninformed. Many of these outside observers are economists, who are more likely to read this than are the people involved. I hope the economists will understand, they may be quite right, but that only the opinions of the people involved are relevant to the present point, and these opinions are not likely to change in result of adding a small unit of land.

It follows, then, that marginal product and marginal net product are in practice generally equal, provided inputs of land are small. It is generally possible to plan various sized enterprises differing from each other by only a small acreage. Therefore in using the equimarginal principle we need not ordinarily trouble to specify whether the quantity of labor and capital is held fixed or let vary. To do so religiously would be, in fact, rather misleading, inasmuch as the results would differ little. As mentioned, when a choice

must be made, marginal net product is the more adequate concept; but as a rule they are interchangeable.

c. Schedules of marginal productivity and marginal net productivity: ceteris paribus vs. mutatis mutandis

After what has passed one may wonder if it is worth troubling to distinguish marginal product and marginal net product at all. Probably it would not be were we always interested in them only at a point. But also very useful are entire schedules on which these points lie. Such schedules may be developed by simple reasoning from known data on costs and output per unit of land on enterprises of varying scale and intensity, and are vital tools of inference for bringing these facts to bear on the question whether land is equi-marginally allocated among such enterprises. Over even a moderate range of acreage the two schedules will diverge considerably. To obviate any confusion it would be well to go over how one may construct these schedules, how they relate to each other, and how one may use them in conjunction with the equimarginal principle.

1. The marginal product schedule, with ceteris paribus

This schedule is developed on the assumption that all inputs but land remain fixed. It is useful in awakening the minds of young economists and in demonstrating the effect of varying proportions on the marginal product of land, although even for this purpose it is less than perfect since,

as Chamberlin has pointed out, when one factor is allowed to vary absolutely it is not just proportions that vary, but also in some degree scale. This schedule is familiar to all economists and need not detain us here.

What points on a schedule of marginal productivity also equal the marginal net productivity? Whatever point or points at which the marginal costs of complements hired externally equal their respective marginal products within the enterprise. For if these complements are available more cheaply outside, the marginal net product will of course be higher; while if cheaper inside, the marginal net product will again be higher, since its definition allows the entrepreneur to dispense with whatever labor and capital he can that are not earning their keep.

Just where these points of equality are, and how many, depends on the assumptions made in drawing the curve. In general it would require some unlikely assumptions to produce equality throughout the schedule, and we will not make such assumptions.

11. The marginal net product schedule, with mutatis mutandis

This schedule is developed on the assumption that all inputs are variable. The marginal net product is the increased gross output from an additional unit of land with appropriate complementary inputs joined and minus the costs of the complementary inputs. On the schedule, as each

additional acre is added, it is added to a larger base, not only of land but also of complementary inputs. It is this shifting base that particularly distinguishes this schedule.

One might at first sight think to distinguish the two schedules by calling the marginal product "short run," the other "long run." But this would be misleading. In defining the marginal product we have had to allow time for the enterprise to adjust the form, organization, and location of complementary inputs to the new land. In terms of time, there is no difference between the marginal and the marginal net products. Therefore we distinguish the two instead with "ceteris paribus" and "mutatis mutandis": the marginal product schedule is ceteris paribus because all inputs but land remain constant in quantity; the marginal net product schedule is mutatis mutandis because other inputs change appropriately in response to changes in land.

This schedule of marginal net productivity is a most valuable analytic tool for analyzing economies of scale, particularly as they affect the marginal productivity of land. While the marginal product schedule illustrates a simple principle in artificial form, the marginal net product schedule illustrates the same principle in much more realistic form and, free as it is from restrictive assumptions, brings theory to the threshold of reality.

Regrettably, one finds little precedent for the use of marginal net product schedules. The marginal net product

concept is used by a few: Marshall (who called it "net product"), Pigou (who does not really define it), and Lerner (who uses it only briefly) are examples. But in their works, and works of Hicks, Stigler, Chamberlin, Carlson, Samuelson, the Robinsons, Black, Heady, Boulding, Weintraub, Machlup, Edgeworth, Robertson and Bain, the author has unearthed no schedule of marginal net productivity. There is no inherent difficulty in the concept but, as it is unfamiliar, it will pay to spell it out, together with the method of deriving it from available data.

Marginal net product schedules may be derived by simple reasoning from data on output per acre and costs per acre for different sized farms, which are available, albeit inadequate. Let us trace the reasoning, and see the general shape of the schedules that typical data produce.

Studies of economies on scale of farm operations generally indicate that as acreage increases (with more or less homogeneous land) operating costs per acre fall very rapidly at first and then level out. This is because certain inputs of capital and labor are imperfectly divisible below some moderate sizes, while as to land "If some definite size is taken as the smallest unit, it is done so, not because of any limited divisibility of land, but because of the limited divisibility of its complementary factors."⁷ With this knowledge we construct a schedule we will call "Average Complementary Costs"--"average" meaning "per acre"

of course. The word "complementary" indicates that these are the costs of the complementary factors to land only, and not of the land itself. Naturally we do not want to subtract the cost of an input itself in computing any productivity of that input.⁸ From this schedule, designated "ACC", we immediately infer the marginal complementary costs, or "MCC" (Fig. 1). Note, a, that MCC are very low early in the schedule, and, b, that they rise, even while ACC are still falling.

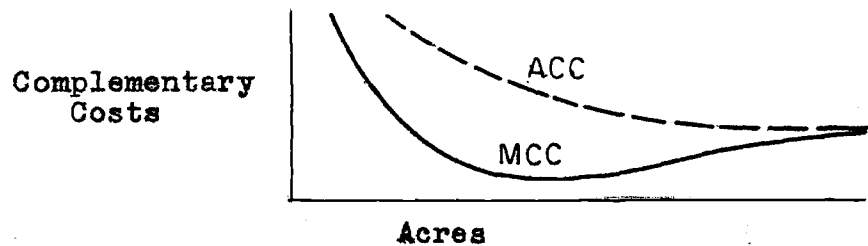


Fig. 1: Complementary costs, average per acre (ACC) and marginal (MCC)

This gives half of what we need to construct the schedule of marginal net productivity. The other half is marginal gross product, which we derive from known data on output per acre. Heady has observed that "Extension of the number of acres operated with one machine unit eventually results in lower acre yields."⁹ Perhaps there is also an initial stage of increasing acre yields, as larger acreages permit of more advanced techniques and more specialized machines that more than compensate for reduced intensity--probably this is true in some operations and not others.

We will, at any rate, assume a brief stage of mildly increasing acre output.

Thus in a general way we know the shape of a typical schedule of output per acre, which we will designate "average gross product" (AGP). From it we immediately infer the marginal gross product (MGP) (Fig. 2).

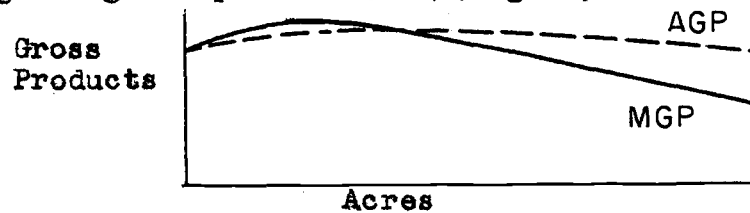


Fig. 2: Gross products, average per acre (AGP) and marginal (MGP)

The marginal net product (MNP) is now simply marginal gross product (MGP) minus marginal complementary costs (MCC) (Fig. 3a & b).

Marginal Complementary Cost and Marginal Gross Product

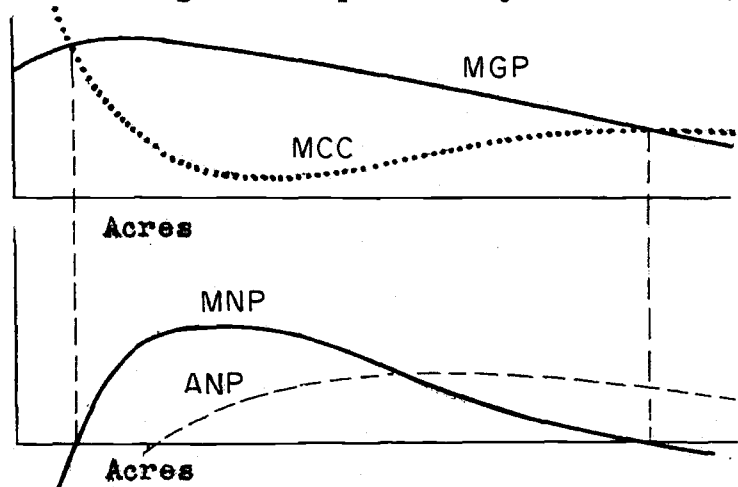


Fig. 3a & b: Marginal net product (MNP) derived by subtracting marginal complementary costs (MCC) from marginal gross product (MGP)

Note that MNP becomes zero while AGP is still higher than ACC.

Alternatively, we might compute the schedule of average net product (or economic rent of land per acre) as the difference of average gross product and average complementary costs. Then from that we could immediately infer the marginal net product schedule. For one who prefers to think in terms of economic rent of land, this latter procedure is more desirable.

As is customary in production economics, the cost and output figures given are the best that the entrepreneur or entrepreneurs in question would achieve with the conditions at their disposal--best, of course, in relation to each other, for all costs are undertaken in order to achieve output. Note also that the word is "would" achieve--not "could." We take human beings as they are. An exceptional individual might keep continually high gross output and low cost over a tremendous range, as some do. And many, many more could if they would. But it is a general rule that the marginal satisfaction from assets tends to diminish as more are acquired, while at the same time, as Black observed, "as a manager brings more and more management to bear on an enterprise, he must exert himself more and more to do it. The first managerial effort comes forth easily; the last, only at great sacrifice of comfort and leisure."¹⁰ These are major factors tending to diminish returns to scale, and must not be assumed away.

A useful feature of the schedule of marginal net productivity is that every point on it is also the marginal productivity, for that particular mixture of land with its complements. For at each point one assumes that complements have been added until each of their marginal products equals its marginal cost. A curve of plain marginal productivity, recall, is not equally versatile, and does not represent the marginal net productivity, for it involves no such assumption, and the marginal products of the complements keep rising in the enterprise as more land is added.

A regrettable feature of the schedule is its unfamiliarity. The author would apologize for imposing a new concept on a profession already bending low under its overloaded pack of "tools." But actually this is only a new combination of accepted techniques. The mutatis mutandis concept is now the common property of economists; and the device of varying one input and then letting others catch up to it is taken directly from Boulding's Economic Analysis.¹¹ The novelty is not in basic conception or principle, but only in departing from what are becoming stereotyped textbook forms which are inadequate to bring the full power of marginal analysis to bear on the present subject.

The marginal net product schedule developed out of the needs of the present subject and is used only because it is exactly fitted to it. It solves the problem of what unit to choose on the abscissa when all inputs are varied

and marginal productivities are under investigation. It opens new possibilities in the analysis of economies of scale as they relate to the marginal productivities of particular inputs. It offers a technique for resolving the tortured questions "What size enterprises achieve most efficient use of resources," and "what economic forces encourage and what obstruct the achievement?" It resolves the questions into the simple ones, where are marginal productivities higher, and what keeps them from equality? It permits answering the first question from simple data on costs and output per acre. It also integrates marginal productivity analysis with traditional economic rent concepts (a matter discussed below) and permits definition of a socially optimum scale of operations without reference to the cost of land--something that is necessary when the system of pricing land is itself the thing under scrutiny, and cannot be assumed to be an adequate index of social alternatives.

To sum up these observations on the marginal product concept: the marginal product, as the term is used in the equimarginal principle, is the increased output yielded by increasing the input of land by one small unit, where the marginal costs of complementary factors outside the firm equal their marginal products inside the firm. In these circumstances the marginal product equals the marginal net product. In other circumstances, marginal net product is the more proper concept to use with the equimarginal

principle. Schedules of marginal net productivity are deduced from observed data on intensity and output as functions of scale, and are invaluable tools for analyzing economies of scale.

d. Some incompletely resolved problems in defining the marginal product

Few general definitions can be used in particular situations without some additional labor. We have defined the marginal product down to that degree of detail necessary to pursue this study, and would leave further details to the common sense of the reader. We would mention, however, two unresolved problems, in order to assure the reader that their neglect is a matter of choice and not oversight.

1. Differing time distributions of net output

It may sometimes occur that on enterprise A, after the complete adaptation of complements specified in our definitions, the marginal productivity of land would be higher per year than on enterprise B; but B would adapt more quickly, or has already adapted, so that, for a period of years, marginal productivity would be higher on B. Would a perfect market assign the land to A or B? In practise this is not likely to be a serious problem. First, the enterprise on which the ultimate marginal productivity would be higher would generally be under greater pressure to adjust quickly, probably being more crowded with underutilized complementary factors. Second, where there is a

conflict the ultimately higher marginal productivity will in most instances be the more desirable, since the influence of a few years can hardly offset the influence of a large number of later years, except at very high discount rates. Third, an ideal market would often find means of leaving land with the speedier adapting enterprise until the other was ready.

But more generally there is a problem of reconciling different time distributions of planned output. An enterprise may sacrifice current yields in order to accumulate capacity to increase future yields. In general we would handle this problem simply by treating the accumulation of capacity to yield future incomes as a form of capital accumulation. The increase of capital is part of "output" in the year of accumulation. Its value is found by discounting anticipated future yields at the interest rate used by the particular enterprise. Only a part of future yields can be attributed to present sacrifices of the current incomes. It is only this part that should be discounted to figure the present value of the capital accumulation.

We have occasion in the following pages to criticize some farmers for poor "conservation practises." This is not to be taken as identical with criticizing them for having too much current output. Some conservation practises increase both current and future output. It is quite possible to have low current output without conserving land well, either for present or future use. In other words, "production" and

"conservation" are by no means antonyms. Only sometimes is there a conflict between the two. Where there is, it is . reconciled, as we have indicated, by treating positive conservation practises as capital accumulation in the year undertaken; and failure to prevent depletion as negative capital accumulation, or depletion, in the year suffered.

Criticizing farms for following poor conservation practises, therefore, is to criticize them for not taking as full advantage as they might of economical opportunities to increase future yields by increasing current expenses, or reducing current salable output. "Economical" means that, in the opinion of those expert in this field, the values of the future increased incomes from conservation practises, discounted at appropriate interest rates, would exceed their present costs--costs, that is, to some farmer with more incentive than the present operator to take advantage of these opportunities.

ii. Difficulty of establishing a homogeneous unit of land

Most of our analytical techniques assume a homogeneous unit of land. Of course there is none, for land or for labor or capital either. The easiest solution is to devise common sense substitutes for homogeneity. The problem is probably easier with land than with other inputs.

There are two general solutions. One is to take area as the measure of land. This is quite all right so long as

one selects areas within which land quality is quite uniform. It is often forced on us by the fact that so many data are collected in this way. The second is to measure land by its value, or some other expression of its productive potential. Due to the primitive state of the art of land valuation this is also far from satisfactory, but about the best that one can hope for until such time as those with the money and power to collect information see fit to improve on their methods of evaluation and land classification.

3. The equimarginal criterion and the economic rent criterion

Ely and Wehrwein have written that "rent acts as the 'sorter' and 'arranger' of this pattern (of land use)."¹² Certainly this is the traditional criterion: that use is best which yields the highest economic rent. This has also the advantage of being more welcome to those who, for reasons good or bad, have not reconciled themselves to the use of calculus in economic analysis. Why then should we depart from it?

First, as a matter of exposition, the equimarginal principle is very simple, clear, and irrefutable. The rent criterion is based on the same thinking, at root, but involves more mental steps. Too, the term "rent" has come to have so many meanings other than "the net income imputable to land" that it is well to dispense with it.

Second, the two principles are equivalent so long as scale of enterprise is no issue. As long ago as 1906 S. J. Chapman demonstrated that rent, residually determined, is the same as the marginal product of land.¹³ But Chapman's demonstration depended on the assumption of constant returns to scale. Where returns to scale are not constant, we will see, the marginal product differs from economic rent. And in this study we want to deal with situations where returns are other than constant.

For the convenience of having a point of reference, let us define the acreage at which average net product, or rent per acre, is a maximum as the "ultimate optimal acreage." This is sufficiently analogous to the usual concept of a "long run optimal scale" so as to need no special explanation here--and we have already explained our reasons for eschewing the phrase "long run." This point is also the one where returns are constant, where marginal net product equals average net product or rent per acre. It is at this point that the rent criterion and the marginal product criterion are identical. But in comparing enterprises below the optimum with those above it the simple concept of land rent, while it points to the truth and nothing but the truth, does not reveal the whole truth.

Economic rent per acre is output per acre minus complementary costs per acre. Both above and below the optimum scale this difference becomes less, so economic rent per

acre falls. But, this apparent symmetry masks an important difference. For moving below optimum scale both output and complementary costs per acre become larger; above it, smaller. Doubtless an acre added to a smaller, more intensive enterprise would increase output more than on a larger, less intensive one, even though rent per acre was the same on each. Thus it would be an error to think that land was necessarily ideally allocated between two enterprises just because economic rent per acre was the same on each.

Putting it another way, below optimum scale rent per acre is rising, while above the optimum it is falling. Rent per acre is the same as average net product of land--a close relative of marginal net product of land. From the fixed relationship that always obtains between an average and the corresponding marginal schedule, we know that when the average is rising the marginal is above it; when falling, below it. Therefore just below optimum scale, or maximum average net product per acre, the marginal net product is higher than it is above optimum scale (Fig. 4).

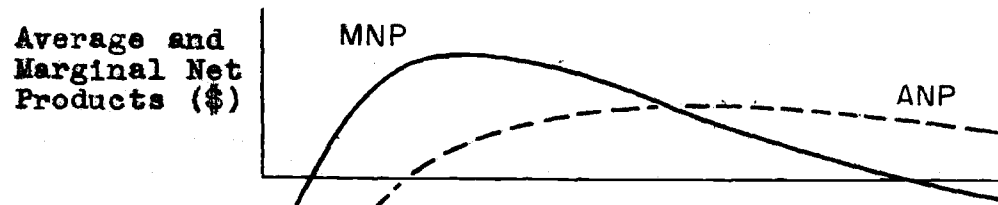


Fig. 4: Relationship of rent per acre, or average net product of land, to the marginal net product of land

This figure shows the relationship that obtains between rent and marginal net product of land as an enterprise passes through different scales. Note that to the right of the optimum scale (or maximum ANP) the marginal net product falls very low, even while ANP is still well above zero. On the other hand, to the left of the maximum ANP, marginal net product is higher than ANP.

4. The opportunity cost of holding land

We have written thus far as though it were self evident that the opportunity cost of holding land is the marginal product of the land in its best alternative use. And this does seem self-evident. But many persons write as though the alternative cost of land were actually the best alternative use of the funds tied up in holding title--i.e. interest on the price of the title. And, in fact, to the individual this is the cost of holding land. In a market where there was only one interest rate the opportunity cost of the funds tied up in the title would be the same as the opportunity cost of the land. But actually as we know funds are available to different individuals at different interest rates, so that the interest burden to some individuals may be less than the best alternative use of the land, and to others the interest burden may be more. Where there is a conflict between the two alternative costs, clearly the ultimate social criterion is the alternative use of the land itself. If the interest cost is different from this, then

there must be some conflict between the individual's incentives and the social welfare.

We will not now analyze this point further, for it is in fact the main theoretical burden of this thesis. Here we would only warn of the possible confusion, and state our position.

C. Use of the equimarginal criterion in this study

The office of the equimarginal criterion in this study is to test the excellence of land use by comparing one use directly with feasible alternatives. Herodotus wrote: ". . . pure gold is not recognized by itself; but when we test it along with baser ore, we perceive which is the better."¹⁴ In like manner full use of land is not recognized by itself, but when we test it along with a baser use we perceive which is the better. We compare the marginal product of land in its present use with the marginal product in the best alternative use to determine if the present use is the best. When we find lands in uses such that their marginal productivity is less than it would be in feasible alternative uses, we conclude that the land of lower marginal productivity is "underused," and the market has not succeeded in allocating it to its best use.

The first three chapters, or Part I, survey three general types of situations in which land seems not to be allocated very strictly by the equimarginal criterion.

Chapter One takes up the problem of "unused land."

It is not held to be a problem that land beyond the limits of settlement lies unused--there is no implication in the chapter, that is, that all land should be used. On the contrary, a full use of the better lands would probably result in less total use of land. It is rather a question of which lands should be used. When good lands are held unused in the midst of other lands used very intensively, and when much of the unused land is better located and more productive than much of the used land, then it seems clear that the marginal productivity of the land now unused, i.e. with marginal productivity equal to zero, would be higher in some alternative use, and therefore that the market is not allocating these lands in accordance with the equimarginal principle.

In the strict logic of marginal analysis "unused land" might be thought to include land "used," in the obvious sense of the word, but in such ways that its marginal net product was zero or less--that is, land for which the increased complementary costs of using it equalled or exceeded the increased gross product. But the nature of the surveys from which our data come is such that "unused land" refers only to land from which there is no output. The more subtle problem of land for which marginal complementary costs equal marginal gross product is reserved for Chapter Three, where it is treated as part of a more general problem.

On the other hand, not all lands called "unused" in Chapter One are absolutely without any output or complementary costs. To use available data one must go along with whatever definitions the surveying agencies use. Obviously where things are classified by kind, rather than ordered by degree, there are many borderline cases. Examples are downtown lots "improved" only with a billboard or condemned tenement, or fertile fields "complemented" only with an occasional pack of foxhounds. Some of these inevitably find their way into the "unused" category--some, also, into the used. This problem is elaborated in Chapter One itself.

It is of little consequence whether these lands are "unused" in some absolute sense. The point is that they are either that or so close to it that their marginal products are very low relative to what they might be in some other use from which they are preempted. It is this contrast that makes the fact of disuse meaningful.

Chapter Two deals with tenanted land. Here, as elsewhere in the study, a questionable use of land is judged by comparing it to an alternative and asking if land, shifted from the present use to the alternative, would increase net output more in the new use than it reduced it by forsaking the old.

In Chapter Two the questionable use is tenancy; the alternative is owner-operation. The equimarginal criterion of ideal allocation remains unsatisfied, as we said, so long

as it remains possible to increase net output by shifting land from one tenure to another. This is the most subtle concept of shifting "uses" of land, and it is important to understand it. Crop and operator may remain the same, but the "use" is different, in this sense of the word, if the tenure conditions change.

The chapter indicates that there are unrequited costs and many frustrations in the landlord-tenant relationship, such that the market could increase net output from given land resources by shifting title from absentee landlords to tenant operators, making these latter owner-operators. This conclusion is taken to indicate that the market is not allocating land by the equimarginal criterion.

Some readers may protest that the above statement makes no mention of marginal productivity. But recall that, as mentioned when we first introduced the equimarginal criterion, it requires no explicit reference to marginal productivity to show a violation of the equimarginal criterion, but only the simple reasoning of the preceding paragraph. But as some readers may disagree, and as it is possible to deduce quickly from the preceding paragraph that the marginal productivity of land must be higher on owner-operated farms, we will do so.

If the net output of the lands in a tenant farm would be higher if the tenant were the owner, then it follows that the net output per acre, or average net product of land,

would also be higher, since the number of acres remains unchanged. Now we have already seen that, when enterprises are of optimal scale, marginal net product of land equals average net product of land. So in that case clearly marginal net productivity would be higher on the owner operated farm.

If the farm in question were not of optimal scale the marginal net product would not equal the average net product exactly; but the two schedules would shift up and down together, so that if, at a given acreage, average net product of land is higher on the owner-operated farm, marginal net product must be higher also, unless the shapes of the curves also change in some unlikely ways.

And even should these unlikely changes of shape occur, it would still remain true that, for the average net product to be higher on the owner-operated farm, the marginal net productivity must also be higher throughout most of its range, since a high average is built up from a succession of high marginal increments. And the market's failure to allocate land to owner-operated farms within the range where marginal productivity remained high would still indicate a failure to allocate land equimarginally.

The chapter also indicates higher marginal productivity of land on owner farms over another line of reasoning. We have seen, in defining the marginal productivity of land, that it varies inversely with the cost of its complementary factors. The evidence of Chapter Two indicates that on

tenant farms there are extra costs involved in applying labor and capital, costs which are obviated when tenants become their own landlords. It follows directly that the marginal productivity of land must be higher on owner operated farms.

One might well inquire at this point whether it is necessary to go to as much trouble as we have to introduce and develop the equimarginal criterion for the additional clarity it provides in this chapter. The answer would probably be no. The conclusion of this chapter could have been stated in terms simply of land rent or net product of land. However, the equimarginal criterion is as good as any here--at root they all involve the same basic reasoning. And the equimarginal criterion is very useful in Chapter One, and essential to Chapter Three, which could hardly have been written without it. It is valuable to use it in all three chapters, to show their essential unity and pave the way for a simplified and generalized hypothesis and conclusion.

Chapter Three concerns land in holdings of non-optimal size. This chapter contrasts the marginal productivity of land on large, lightly used holdings with that on small, intensive holdings. It develops the contrast by inference from available data on the availability of labor and capital on the different farms, and also from studies of economies of scale. The tools of inference are the schedules of marginal productivity and marginal net productivity developed in this introduction. Chapter Three concludes

that the marginal productivity of land tends to be higher on small, intensive farms than on large, tightly used ones, and therefore that the market has not achieved an equimarginal allocation of land between these two general classes of farms.

Chapters Four and Five treat of time economics, and can be read without reference to the equimarginal principle, just so one understands what is meant by the rent of land. These chapters may be linked with the equimarginal criterion by recalling that the rent of land is the same as its net product.

Chapter Six integrates the time analysis of Chapters Four and Five with the equimarginal analysis to round out the hypothesis of how differences of individual interest rates tend to obstruct an equimarginal allocation of land. From the time analysis it is observed that the annual marginal cost to the individual of holding land depends on interest rates, and as funds are available to different individuals at different rates, different individuals tend to add land to their holdings to different margins of productivity, contrary to the equimarginal ideal. That is the major conclusion of the study.

CHAPTER I

UNUSED LAND

I. Introduction to Part I

Part I, consisting of the first three chapters of this study, presents a survey of three basic and, as the analysis of Part II will show, interrelated problems of land use. Each is a "problem" in the sense that it represents a failure of the market to allocate land according to the equimarginal criterion postulated in the Introduction to this study.

Probably no one doubts that there are here and there particular instances where the land market has gone astray. All markets are in some degree less than perfect. The important question is, is the amount of malallocated land great enough, is the overall damage to economic life severe enough to warrant attention from economists preoccupied with other serious problems?

Part I presents the data that have led the writer to conclude that the market's failure to allocate land according to the equimarginal ideal is not merely localized and transitory, but is a general rule, a problem which, with its many ramifications, is well worth the serious attention of economists. Each chapter purports to establish that

the phenomenon it discusses is a violation of the equi-marginal ideal, and also to present such measures as the nature of the problem and available data allow of its extent and probable future trend.

II. Introduction to Chapter One

Probably the most salient shortcoming of the land market is that it somehow consigns a good deal of valuable land to no use at all. Some private holders, that is, evidently find it or consider it to their interest to preempt and withhold land from any use. Were there no demand for the land's services, no "huddled masses yearning to breathe free" in teeming alleys, or thin-pinched peasants cramped on miniature farmlets, no latent talents frustrated for lack of space: were there none of these, good idle land might bespeak no fault in our land system. But as things are, it seems, at least on first glance, to represent some waste of natural and human potentialities. Thomas Adams put it this way:

In New York, and in many cities and villages in the New York region, there are multitudes of dark rooms for lack of space about buildings to enable people to live in comfort; and yet there is abundance of accessible space awaiting a market. . . .

Were overcrowding and congestion necessary because accessible land was scarce, or because the cost of making it accessible was prohibitive, only then would it represent unavoidable waste. But where there is overcrowding in one place it is offset by underloading in another place. Both are complementary and economically unsound in a region having great unbuilt spaces.

The area of the city of New York is 190,161 acres-- of which about 83,000 acres consisted of vacant land in 1920. . . .¹

Clearly Adams implies a violation of, without using the term, the equimarginal ideal. A small amount of additional land integrated into the crowded tenements would have added a great deal to the annual value of the "dark rooms," yet over 40% of the city's area was not so integrated, was not used for anything at all, not even for raising the food for which New York's millions provide one of the world's most concentrated markets.

Such an anomaly strikes the inquiring economist between the eyes. The high rents and congested quarters of New York City are legendary. The total value of her lands compares with that of all the farms in the southeastern states, and her skyscrapers, pushed upwards by the pressure to economize on this high-priced land, are the world's tallest. Yet in 1920 nearly half the city's area was yielding none of the urban services so strongly demanded, nor any income to its holders. Does the land market then fail to allocate this resource to its most productive use?

To answer, we first must know if the area of good accessible land still idle is enough to rouse any concern. This chapter surveys the problem.

To survey one must first define. When is land "unused"? What about vacant lots used occasionally for parking, or baseball? What about idle cropland sometimes grazed or

hunted? Are billboards a "use," and derelict shacks "improvements"? To ask the questions is to suggest the answer. No land is literally absolutely unused, and there is no sharp line neatly dividing the desert from the sown. There are only degrees of use, from 100 per cent full capacity down towards complete disuse. Anyone who estimates the area of "unused" land draws his own arbitrary line, and nearly every published study draws it--if it bothers to draw it at all--differently.

We cannot, therefore, in a broad survey where we must draw on many sources, pretend to any nice precision, or comparability of data. "Unused" land is really only "extremely underused," so extremely that the surveyor, because it is easier to classify things by kind than rank them individually by degree, has, in his wisdom, called it "unused."

But precision based on some arbitrary standard would be a delusion anyway. In fact, the full meaning of our data lies exactly in the fact that they cannot be precise. If only a hair divides the "used" and "unused," then "unused" land is only the most extreme manifestation of a more general condition. For every lot or acre counted "unused," there may be another just across the borderline counted as "used," and perhaps several more working below capacity. So the data of this chapter by no means measure the entire defection of our lands and the shortcomings of our policy. They only introduce the subjects, as this chapter introduces

those that follow.

Thus oriented, let us apprise ourselves whether "unused" lands comprise any problem substantial enough to warrant probing further.

III. Unused lands in some relatively static and underdeveloped areas

In the United States one sees vacant land most commonly, although not exclusively, in "zones of supersession," that is in areas where one land use is giving way to another, usually more intensive. Accordingly, many casual observers have inclined to discount the phenomenon as only a passing growing pain, even now of interest mainly to historians of the old frontier. But a harder look must dispel that idea. For in many economies less dynamic than our own large areas still lie unused.

The late administration of Jacobo Arbenz Guzman in Guatemala brought some of this land to world attention in 1952. This administration expropriated 234,000 acres out of 299,000 that United Fruit held in the Tiquisate area of Guatemala's Pacific Coast, under a law permitting the government to redistribute unused lands among the peasants. Later Arbenz took another 174,000 acres on the Caribbean Coast. The land was of some value, United Fruit claiming \$16 billions, or \$68 an acre compensation for the Tiquisate lands. United did not allow that the lands were completely idle. Conceding

that only 25,000 acres of the Tiquisate lands were in bananas, they held that only 20 per cent of the total was entirely idle. Perhaps the true figures lie between the disputants claims, but clearly United Fruit held a substantial area unused. That is also their practice in some of the other countries where over 3 million acres lie.²

In this practice United Fruit is not alone. Arbenz also found many idle lands other than theirs to expropriate.³ In contrast to the large native holders, United Fruit may be quite progressive in developing its lands. Throughout Central America "huge tracts or latifundia were conferred upon individual colonists and then allowed, for the most part, to stand idle."⁴

Throughout the whole of Latin America a good deal of cultivable land seems to lie idle. Soule, Efron and Ness have provided data for several countries.⁵ More generally, the recent United Nations study of "Land Reform" has this to say of Latin America (excepting Costa Rica, El Salvador, Haiti and Mexico):

. . . large estates take up the greater part of the cultivable land area throughout the continent. . . . While much of the land is not suitable for crop production, a substantial proportion consists of idle lands that have been held for generations. Large plantations are also included in these great landholdings, but do not account for the greater part of the land so held.⁶

According to de Castro, only 20 per cent of the cultivable land of South America is used!⁷

Now consider some of the lands of Asia. Admiral Raymond A. Spruance, retiring U.S. Ambassador to the Philippines, "... gave a piece of parting advice to the Filipinos on land reform, which he considers essential to the progress and orderly development of the nation. The Philippines, he said in an interview, has a great deal of unproductive land whose owners are content to let it remain idle while the pressures of an increasing population increase its value."⁸ In the Philippines, 1.1 million hectares out of 6.7 million hectares in farms were idle in 1939. (Besides that the government holds a vast domain off the market. The Bureau of Forestry estimates that 7.6 million hectares of this are suitable for agriculture.)⁹ In Malaya, like the Philippines long harassed by landless Communist guerrillas, Jacoby reports an "abundance of arable land, and an almost unlimited reserve of virgin soil waiting for cultivation."¹⁰ In south Viet Nam, anti-Communist refugees from the north have recently found that "Fortunately, there are large areas of vacant land available for them. Already a third of the refugees are installed in new homes and are at work cutting timber."¹¹ That, in a country of such microscopic and intensive farms as characterize parts of Viet Nam, is quite remarkable.

Turn to Africa. In Southern Rhodesia there is an European reserve of 49 million acres--about one and a half times the area of England. In all that area there are only

5,400 farms and ranches, some running to over 40,000 acres.

"Immense areas of cultivable land are not cultivated," according to New York Times correspondent Albion Ross, although only a fraction of the 145,000 Europeans in Southern Rhodesia hold any farm land. As to the Africans, some two million of them produce most of what is produced in Southern Rhodesia from small, more intensive farms in their reserve of 30 million acres. But:

Great acreages in the immense European reserve lie idle or are used only occasionally. . . . Thus it is the European today with his great idle acreages who practices the agriculture of the old native tribal days and lets the tired land rest until he gets ready to come back to it.¹²

In Kenya, the recent Mau Mau uprising has brought to world notice a parallel, if less extreme, condition.¹³

Look now at the "fertile crescent." In their small portion of this ancient garden the modern Jews are demonstrating what an enterprising people can do there. A central agency, the Jewish National Fund, bought up Arab lands and made them available to settlers on reasonable terms. While by no means an unqualified success, and in some measure subsidized, still the Jewish experiment puts nearby Arab landowners in a bad light. Warriner writes "At first sight the main crop of Syria appears to be thistles, and so it is in fact. . . ."¹⁴ Only about one-third of the cultivable land is ever cultivated there, according to her figures, and the "cultivated" includes

fallow.¹⁵ She writes of equal waste of land in Iraq. FAO data suggest that the Levant in general contains a higher proportion of "unused but potentially productive" land than any major world region, mainly in Syria, Iraq and Iran.¹⁶ The English geographer W. B. Fisher supplies these figures:

TABLE I

UNUSED LAND IN THE LEVANT¹⁷

	<u>Percent Cultivable</u>	<u>Percent Actually Cultivated</u>	<u>Percent Cultivable that is Cultivated (Computed)</u>
Turkey	30	15	50
Cyprus	65	55	85
Syria and Lebanon	30	8	27
Trans-Jordan	5	4	80
Palestine	44	33	75
Iraq	20	3	15
Iran	10	2	20
Egypt	5	4	80

A few writers have mentioned "labor shortage" to help explain why lands in the above regions are idle. This seems a very careless interpretation. The facts do not allow of it. Although the regions are thinly peopled, most of the people have little or no land, live in abject poverty, often work their small holdings intensively down to a very low margin, and offer their labor for next to

nothing. Thus any one landholder could hire all the labor he needed very cheaply. In Southern Rhodesia, for example, natives work on the European reserve for 2 to 5 cents an hour.

All the same, the idea persists in some quarters that this land lies idle because no one wants it. It is more telling, therefore, to find idle land amid the world's densest clusters of humanity.

Consider Italy: Many vocal Italians say their country is "overpopulated." Teeming humanity seems to be pressing against the limits of nature in an inexorable Malthusian advance to starvation. Step by terraced step, agriculture has climbed the hills only to meet more terraces climbing the opposite slopes. Families huddle in hillside villages and some even in caves, as though there were no room, and in the cities employers fabricate "busy work" to keep alive some pride of being in men grown superfluous. Here, it would seem, is a people who have wrung the last drop from their meager natural resources, a people whose only hope is to emigrate. And yet, in 1949, in the southern Italian province of Calabria:

Thousands of peasants, with their children and their crude belongings, swarmed onto 1,235,000 acres of unused land belonging to rich and titled absentee owners. The police killed a few but thousands more staked out and plowed the land.¹⁸

1,235,000 acres of unused land is one-third the area of Calabria. Perhaps the figure is too high--again, it

doubtless depends on what one means by "unused." But clearly large parts of that "overpopulated" province are nearly unpopulated.

And in this Calabria is not alone. A high Bank of America official, Harry McClelland, then Chief of the Food and Agriculture Division of the ECA mission to Italy, stated in 1949 that much of southern Italy has vast "idle or undeveloped lands in the hands of owners who have not, can not, or will not develop them."¹⁹ Again, "Hundreds of thousands of acres in Italy are undeveloped, especially in the south. No roads, no electricity, no houses."²⁰

Accordingly, the flames from Calabria quickly spread. Peasants seized idle lands in Crotona, Catanzaro, Sicily, Apulia, Sardinia, Rome province and elsewhere, where the sparks of revolt found the combustible mixture of idle lands and hungry men.²¹ Premier de Gasperi finally extinguished the flames only by promising to buy some of the unused and poorly used lands and divide them among the peasants, providing technical aid and some capital to boot. Meantime, it was left quite clear that a good deal of land in southern Italy had been lying idle.²²

India is another country often called "overpopulated." But in 1952, when Nehru divided 60 million acres in Uttar Pradesh among 12 million peasants, the New York Times reported a good deal of "potentially rich wheat land now unworked," and stated "half the land to be parcelled out in

Uttar Pradesh is now uncultivated."²³ And so successful has been Bhave, India's unique land reformer,²⁴ in persuading large landholders voluntarily to give some of their "surplus" lands to the landless, one is tempted to infer there are yet in India many "surplus" lands yielding no income. In Ceylon, according to a roving correspondent, three-fourths of the arable land is unoccupied.²⁵

England is a third country of dense population, a country moreover whose normal high demand for food is enhanced by its vulnerability to naval blockade. Yet in the last century of growing population and growing risk, market forces have tended to remove land from cultivation. From 1867 to 1880, about one million acres formerly cultivated were turned to pasture.²⁶ Sir J. Russell estimates that about 3 million acres have been abandoned since 1891.²⁷ The English "primary" rural population has declined from 1871 to 1950 from about 24 to about 20 per acre, and by an even larger percentage if one includes the "secondary" population in small farm towns.²⁸ Some private parks have grown fantastically large: the 11th Duke of Devonshire's "Chatsworth House," for example, being set on 50,000 acres of park and woodland in Derbyshire--that is one acre for every 600 in England. In 1943 the 22 Dukes of England were reported to hold an average 45,000 acres each, including some of the most valuable urban, suburban and mineral lands.²⁹

Some hint of the untapped potential of English agriculture was revealed during the second world war when English farmers plowed up 38 per cent of their grassland, increasing the cultivated area by more than 50 per cent.³⁰ This they did not through market incentives, but due to direct land use controls. And in 1947, the Agriculture Act, "aimed at reforming pre-war conditions under which 'millions of acres of cultivable land lay derelict,'"³¹ carried forward wartime land use controls because "In our crowded and indebted island we can neither afford the luxury of idle or ill-used acres. . . ."³²

And might we not mention, too, the French chateaux of the Loire and the Gironde; the immense underdeveloped holdings of Spain, the part-idle lordly holdings of pre-Communist Prussia, Hungary, Poland, and Rumania? Might we not circle the globe with evidence of unused land? I think so. But without further detail it is clear that the incentives of the market, in some areas fail to incite landholders to put land to any use at all, even though there is great potential demand for these lands on the part of those living and working in crowded conditions nearby.

IV. Unused Lands in the United States

In the more dynamic United States economy, idle land appears most conspicuously in a more dynamic context, in "zones of supersession" where one land use is superseding an earlier, less intensive one.

That is not to say there are in the United States no more or less static idle holdings. It is, after all, a United States corporation, United Fruit, that we have seen holds considerable land idle in the Carribean area, and lesser U. S. interests do the same. Whatever motivates them there may prompt the same course at home. Texas' King Ranch,³³ California's Kern County Land Co.,³⁴ Irvine Estate, and Southern Pacific³⁵ appear to have strong tendencies in this direction. In the Pacific Northwest, non-restocked cutovers are conspicuous because the figures have been compiled for a public interested in forestry. About one-third of the Douglas Fir cutovers are not restocked, and most of this non-restocked land is around Puget Sound and on the Western slope of the Coast Range, the best timberland. Other timberlands are in a sense idle because they are still under deteriorating virgin timber which adds no annual growth.³⁶ Between Philadelphia and Atlantic City the 100,000 acre Wharton estate has lain idle for decades. In Revolutionary times it supported thriving towns and industries, but later was assembled into one holding and went out of use.³⁷ In North Carolina there are over a million acres of idle cropland.³⁸ And besides these examples there are myriad others. Their lack of public roads obscures much of them from outside observers, and their exact area, and its latent productivity, remain largely mysteries. But in most regions one need spend but a few hours hunting, fishing,

or otherwise knocking about off the beaten tracks to discover a good deal of such "wild" land, much of it never yet captured under the nets of basic public works that enable an advanced society of independent producers to occupy and develop the potentialities of land.

But one can hardly call most of these regions in the United States "static." Static they might be for any activity of those who hold idle land. But to such a degree have American pioneers settled among and around and beyond such lands that much of the country has become, in a broad sense, one, or rather several, vast and loosely bounded zones of supersession, broken littorals over which a rising tide is probing and trickling inland along lines of least resistance, leaving headlands and promontories high and dry in its wake. Here and there one may pick out especially prominent islands of resistance, approximating the latifundia of less dynamic areas. But to classify these as distinct species of unused holdings would be arbitrarily to turn a difference of degree into a difference of kind, at great effort and to no good purpose. We will not try, therefore, sharply to distinguish static from dynamic areas in the United States. We will treat of three major zones of supersession, understanding each to contain a vast area, loosely bounded, and understanding that these do not include all zones of supersession. These three are the frontiers (A) of cultivation; (B) of irrigation, and (C) of the city.

A. Frontiers of cultivation

The 19th and early 20th century farm frontier was a zone of land speculation on a grand scale. During and after the furious turnpike, canal and railway booms of that expansive era great tracts of western land lay idle for years and decades while settlement passed beyond them. Pre-emption of land on this grand scale has been recorded, too, on a grand scale, earning mention in standard histories, and more intensive study in the works of Paul W. Gates, Henry George, R. A. Billington, A. M. Sakolski, Roy Robbins, David M. Ellis, and others. Although they may dispute its import, almost all agree in general on the facts. These following citations serve, therefore, not to promulgate any new doctrine, but only to exemplify the general tenor of informed opinion:

All along the frontier speculation ran ahead of settlement; in many cases it held land out of the market so long that settlement was forced to pass around or over it.³⁹

. . . those vast and beautiful prairies . . . wholly uncultivated for miles because held⁴⁰ by speculators, who keep the land for a rise.

. . . (the) best land (is) generally purchased by speculators who have money, not with a view of cultivating it themselves, but to keep it until settlement of the country enhances its value. . .⁴¹

. . . Too often the land grant railways west of the Mississippi found that after much of their land was sold and the bulk of government land along their lines had passed into private hands, their territory was but sparsely settled. Large areas of land had been held for appreciation in value, without improvement or cultivation.⁴²

As recently as 1916, an estimated two-thirds of the Canadian prairie provinces were held by absentee speculators.⁴³ And in California a 1917 survey by the wartime San Diego Food Administration brought out that 62,000 acres of "easily available farm land" were then lying idle in San Diego County. That was an area about equal to the land being used in the same County. The Los Angeles County Council of Defense discovered about 400,000 acres in the same condition.⁴⁴ More generally, the California Commission on Immigration and Housing reported of 250 large, non-railroad landholdings that in 1919 comprised half the farm area of southern California:

That a considerable part of this tillable land lies idle, and that another considerable part of it is not devoted to its most beneficial use; that though there are many thousands of persons eager to get access to this land, much of it is not for sale under any circumstances, and that such portions as are for sale are held under prices usually beyond the productive value. . . .⁴⁵

In more recent times, as a new revolution in transportation has made possible new advances, and the frontier has penetrated to lands less and less well endowed for cultivation, the same pattern persists. The frontier of cultivation still comprises a vast area, thinly settled--and that not in the sense that the farms are large and extensive, but more in the sense that there are large uncultivated holdings among which small farms are scattered.⁴⁶ As many of the lands now involved are of low present and probably also potential value for agriculture, the emphasis of observers

has shifted from the unused lands themselves to the problem of scattered and isolated settlement they impose. I say emphasis has shifted because scattered settlement was also always a serious handicap to settlers on earlier frontiers, and we would err to think the present frontier entirely different from the old. Morris Birkbeck wrote from Illinois in 1818:

One of the greatest calamities to which a young colony is liable is this investment of the property of non-residents, who speculate on their prosperity, whilst they are doing all they can to impede it. . . . This holding back from cultivation of millions of acres, tends to scatter the population of these new countries, increasing the difficulties of the settlers manifold.⁴⁷

And Ray Billington points out:

. . . the pioneer who held back land from settlement in this way separated himself from his neighbors, delayed the coming of schools and internal improvements, and hindered the development of social institutions that would have made life easier.⁴⁸

But where the frontier now lies, this once secondary and temporary problem has become primary and, to present appearances, permanent. The first wave of scattered, isolated settlers has, in many parts of the cutovers, the high plains, and elsewhere, proved the only wave. The empty spaces between settlers remain empty, and a few people are left stranded on poor land to pay dearly for roads and other indispensable public services, or do without.

That is not to say the whole enormous zone comprising the present frontier of cultivation should be cultivated. Some of the uncultivated lands are not idle, but used for

timber, grazing, recreation or watershed protection; and some of them are doubtless better thus used than cultivated. But it is to say that, as long as lack of comparable opportunities elsewhere has pushed many American citizens out to seek a living on these poor and remote lands they could do so more easily and amenably in more compact communities, on the better lands, as almost all students of the areas aver. And it is to say that a more perfect land market would not let the present situation persist, where idle holdings, as well as others used rather lightly for grazing, timber, or occasional recreation disrupt the compact pattern of settlement on lands more suited for cultivation than those to which some settlers are then forced to resort. (lands so poor that the National Resources Board in 1934 recommended retiring 20 million acres from cultivation, and resettling the farmers elsewhere;⁴⁹ and the Resettlement Administration actually did retire several million acres.) For, as Ratcliffe reminds us, "In the perfect market, natural zoning would result; land uses of similar or complementary character would naturally group themselves with maximum benefit to the property owners and to the community."⁵⁰ Even where its value is quite low, idle land thus constitutes a serious and costly problem by breaking up the natural zoning and also driving settlers on to cultivate poorer lands.

B. Frontiers of more intensive farming: irrigation as an example.

1. Private and quasi-public reclamation

The irrigation frontier has received an extraordinary amount of careful study, due to the recurrent financial troubles of the marginal projects, as well, no doubt, as to the inherent fascination of water in a thirsty land. Among the outstanding problems has ever been that of unused irrigable land under the ditch. For unused lands in irrigation projects vex and may ruin enterprises whose financial success depends on compact settlement to minimize distribution costs, and quick development to meet the inexorable interest charges. Few students have failed to note the problem:

Even where all conditions are favorable . . . the promoters of water companies aiming to supply settlers on public lands are often balked of dividends by the "sooners" who seek out each new project in advance of the constructing engineers and locate their claims as soon as the surveyor's stakes are driven. By more or less fraudulent compliance with the Homestead Act, they manage to get possession of the best land under the prospective canal. They have no intention of developing their holdings and use little or no water for irrigation, but hold their patents for a rise in value and thus retard legitimate settlement.⁵¹

. . . the development and settlement of lands not previously irrigated, but for which water has been made available, have become the outstanding problem in land reclamation.⁵²

(Sad is) the plight of the owners of a canal where the lands have been filed on by speculators instead of cultivators. . . . They can wait. The canal owner cannot . . . this . . . has wrecked many a meritorious irrigation project.⁵³

It was believed by the promoters of private enterprises that their inability to force the owner of land for which a water supply had been provided to contribute to the cost of the producers of "water rights" was the principal reason for their financial failure.⁵⁴

In their oft-cited 1927 study, Weeks and West brought out that, while California irrigation projects were ready to serve water to 6.7 million acres, a full 1.2 million acres, or 18 per cent, were unirrigated, although irrigable. Only 4.75 million acres "were making full use of the water."⁵⁵ And of the irrigated land, over one-half was not developed well enough to produce good crops.⁵⁶ In 1930, in the Sacramento Valley alone, 500,000 acres of irrigable land in organized irrigation projects were not being irrigated.⁵⁷ As late as 1940, the United States Census reported that existing irrigation works were capable of supplying water to one-third again more land than was irrigated.⁵⁸

Ray P. Teele's studies cast additional light on the matter. From the 1920 Census he tabulated the percentage of capacity utilized on the projects there enumerated, arranging the projects in order of their age. Plotting the data, and fitting a smooth curve, he read off the percent of capacity utilized at the end of each five years from inception (Table II).

TABLE II

AGE AND DEVELOPMENT OF AMERICAN IRRIGATION
PROJECTS IN 1920⁵⁹

<u>Years from Inception</u>	<u>Percent of Capacity Utilized</u>
5	36
10	45
15	52
20	56
40	65

He observed, "The curves show plainly the immediate cause for the financial failure of irrigation enterprises--the very low rate at which the land included is brought into production."

2. Federal reclamation

The general financial failures of private projects sparked a demand for Federal aid to reclamation which, beginning with the Carey Act of 1894, "was supposed to overcome the difficulties experienced by earlier enterprises in being frozen out by speculators who held the lands to be watered."⁶⁰ But the Carey Act by no means solved the problem. "There has been disappointment here, as in most irrigation projects, in the rate at which the land has been occupied and improved. . . . The speculators and the undesirable farmer can not be entirely eliminated."⁶¹

Following these disappointments, Congress essayed the Reclamation Act of 1902, by which the Federal government undertook reclamation directly, and applied a 160 acre limitation. But by 1912 the Reclamation Service ruefully reported that, "Most of the large enterprises . . . have been in this respect a disappointment, because of the slowness with which the lands have actually been utilized."⁶² Each year, as the Reclamation Service expanded its works to serve more and more land, there remained a substantial percentage of land under its ditches not taking water. By 1924 the Service was ready to serve 1,693,000 acres; but only 69 per cent of those were taking any water. 31 per cent of the land under Federal canals remained unirrigated.⁶³ As late as 1953, 16 per cent remained unirrigated.⁶⁴

Lest anyone think these lands remained idle simply because a bungling Bureau of Reclamation had built irrigation works to serve worthless land, note that "raw," unimproved land under the Bureau's ditches was being held for high prices--\$200 to \$400 per acre--when water became, or was expected to become available.⁶⁵

3. Lands outside organized projects

Another aspect of the problem is that many easily irrigable lands remain outside any irrigation project altogether, even while the outermost frontier of irrigation development has pushed on to less favorable sites, sites on which projects often prove financially unfeasible. Not

all these undeveloped irrigable blocs are, to be sure, entirely unused. Some are dry-farmed, others even irrigated by natural flooding or other primitive method. But some are unused, and almost all are underused relative to their full capacity. The National Resources Board reported in 1934 that, of about 11 million acres of undeveloped irrigable land which they investigated, 4 million could be irrigated for \$50 an acre or less; 3 million more for \$50-\$100; and another 3 million for \$100-\$200.⁶⁶ For comparison, the Merced Irrigation District in 1929 had outstanding \$16,250,000 in bonds, by dint of which expense the district irrigated 112,000 acres, and was able to serve 162,000 acres--giving a cost of \$145 per irrigated acre and \$100 per acre made irrigable.⁶⁷

C. Urban Frontiers

1. In search of the urban frontier

One finds idle land, then, along the broad fringes of agriculture, in the turbulent zones where man is first capturing and taming the wild horse of raw land, bridling it with public works, saddling it with bonds, and spurring it with ad valorem taxes. Once thus removed from frontier fever-zones of heady illusions the tamed land may settle down to serve steadfastly for generations. But the wild horse in it never dies, nor forgets its former ways. At the tantalizing distant approach of building, the seductive

murmur of traffic, or the incendiary whisper of public works, the long-faithful servant may rear up, rampaging, buck off farm and farmer and break wild, a savage once more. Even in pioneer days, "surrounding every urban center were large areas of unoccupied land, lying unproductive and held at speculative values. . . . this land would not be needed for town extension for years . . ."68 The same was true in 1933:

About the fringes of most large cities today lies a great belt of such idle land, grown up in weeds. . . . This land is usually so situated as to enable it to render valuable services. . . . Instead of receiving the benefit of such services the community must see this resource lie idle.⁶⁹

As any city-dweller can observe in a short drive, it is truer than ever in 1955.

But the word "fringe" is misleading if it implies that there is a solid central core. So diffuse is many an American city that the "fringe of growth" may have no inner margin short of the center. Homer Hoyt has neatly cinematized a city growing, quite literally, by leaps and bounds, to produce the typical disintegrated structure:

Chicago has not grown in a compact body, because new transportation lines made it possible to pass over old areas that were partly built up in favor of virgin tracts that were not marred by obsolete buildings, and because the cupidity of owners frequently caused them to raise prices of land adjoining new improvements to prohibitive figures. Rather than pay such advanced prices for land, builders tended to jump several blocks ahead into another area.⁷⁰

Chicago grows, that is, by "leapfrogging." The process resembles that of frontier days, when "speculators helped speed the western advance by withholding from cultivation great tracts east of the frontier line,"⁷¹ and of the irrigation frontier where the non-development of more easily irrigable lands drives settlers on to costlier and less desirable project areas.

And while the city's outer frontier extends back inwards toward the city center, there are also several central frontiers, frontiers of intensive high-rent downtown uses, probing outwards. Even as the chatter of mob gunfire along city streets recalls another lawless era so, in the history of land, the wild west lives again at the frontiers of commercial growth. In the van of commerce's golden tides our wild horse oft runs amok once again, unseating houses and tenants with abandon. In Chicago, from 1930 to 1940, more buildings were demolished than built--even in the downtown Loop more than 15 per cent of the land was vacant in 1941.⁷² On Manhattan's teeming lower east side, after 1923 vacant lots began to appear in appreciable numbers, and from 1933-42 over 60 per cent of all demolitions went unreplaced.⁷³ In central Los Angeles, 20 per cent of the lots were unimproved in 1932.⁷⁴ A good deal of "improved" land in central cities carries only shacks, and is little more than vacant. Four-fifths of the apartment buildings on Manhattan are over 50 years old.⁷⁵ In Flint, Michigan,

about 5,000 buildings became obsolete from 1930-37, while only 1,000 new ones were built.⁷⁶

The resulting urban structure is variously described as checker-boarded, spongy, honey-combed, vermiculated or worm-eaten--it is, at any rate, like other frontiers not solid or compact. To be sure the nearer the city center, in general, the higher is the percentage of land improved. But many peripheral blocks have filled in fuller than many central ones, and one would be hard put sharply to distinguish any "outer fringe" from a "central core." Thus the National Housing Authority reported in 1945:

The statement that there is plenty of land on the fringes of cities surprises no one. The startling fact to most is that actually there is no dearth of land in most central cities, and within the central parts of cities to provide homes for all city-dwellers without over-crowding.⁷⁷

2. Unused land in central cities

Table 3 shows the percentage of land vacant in a number of cities for which data are easily accessible. Obviously the NHA assertion has some weight behind it.

One must be circumspect of these raw data, collected under various auspices for various purposes. Different surveyors define "vacant" land differently, some counting parking lots and billboards as "improvements," others not; some counting each lot, others going by the dominant character of whole blocks; some considering unsubdivided acreage, others ignoring it; and so on. Thus we have

encountered somewhat different figures for a few cities-- Minneapolis, Berkeley, Yokers--and had to reject one. Clearly for comparing cities the figures are of limited value, and they are not presented for that purpose. They only purport to show that some high proportion of the American city lies unused.

Here are some cautions in using the figures. First, regarding some cities the figures doubtless overstate the case, since some cities have expanded their political boundaries outside the economic city. But more often the political city is the center of a metropolitan cluster, only the most solidly improved section of the complete economic city.

Second, in one way the figures as given consistently understate the case. For they show vacant land, not as a percentage of all privately allocated land, but as a percentage of all land in the city, including streets, which take up about 20-25 per cent of the city, and parks and other public land which take up 5-10 per cent or more. Subtracting those public lands from the base, vacant land becomes a much higher percentage. In a few cases we have been able to supply the latter figures, which of course are much higher, and more pertinent. Thus in Chicago in 1941, 21.4 per cent of the city area was vacant, but as streets and alleys, railroads, and other uses took up a great deal

TABLE III

PERCENTAGE OF LAND VACANT IN SEVERAL AMERICAN CITIES

City	Year		Percent Vacant	
	Data Gathered (if known)	Source Published	of All Land	of Private Land
Rochester, N.Y. ⁷⁸	--	1946	14	19
Little Rock ⁷⁹	--	1946	38.6	
Minneapolis	--	1946	19.1	
Portland, Oreg.	--	1946	39.3	
St. Louis	--	1946	15.7	
Madison ⁸⁰	--	1952	11.7	
Glendale	--	1952	35.5	
Green Bay	--	1952	47.2	
Greensboro	--	1952	--	38.8
Harrisburg	--	1952	13.6	
Kalamazoo	--	1952	19.1	
Oklahoma City	--	1952	--	36.1
Omaha	--	1952	18.7	
Washington, D.C.	--	1952	11.0	
York, Pa.	--	1952	23.0	
City of New York ⁸¹	1920	1927	44	
Greater New York ⁸²	1934	1939	19.9 (predominant usage by blocks)	
Los Angeles ⁸³	--	1941		40 (lot area. Acreage not counted)
Berkeley ⁸⁴	--	1951	7.7	12.2

TABLE III (Continued)

City	Year		Percent Vacant	
	Data Gathered (if known)	Source Published	of All Land	of Private Land
Bartholomew's 16 Self-Contained Cities ⁸⁵	---	1932	40	56
Knoxville	---	1932	47	59
Vancouver	---	1932	29	52
San Angelo	--	1932	29	52
Fort Worth ⁸⁶	--	1932	45	64
Cape Girardeau	--	1932	62	76
Sacramento	--	1932	42	59
San Jose	--	1932	39	52
Springfield, Mo.	--	1932	36	47
Cedar Rapids	--	1932	67	80
Tulsa	--	1932	39	53
Louisville	--	1932	22	34
Peoria	--	1932	25	36
Jefferson City	--	1932	57	72
San Antonio	--	1932	31	46
Troy, Ohio	--	1932	30	45
Binghamton	--	1932	36	50
Bartholomew's 6 Satellite Cities ⁸⁷	--	1932	42	
Clayton, Mo.	--	1932	39	
University City, Mo.	--	1932	64	
Maplewood, Mo.	--	1932	24	

TABLE III (Continued)

City	Year		Percent Vacant	
	Data Gathered (if known)	Source Published	of All Land	of Private Land
River Forest, Ill.	--	1932	32	
Ferguson, Mo.	--	1932	51	
Shrewsbury, Mo.	--	1932	43	
Ascher's 22 Cities Over 50,000 ⁸⁸	--	1945	44.7	
Providence ⁸⁹	--	1945	14.4	
Duluth	--	1945	59.3	
Other 20 cities not specified				
San Francisco ⁹⁰	1948	1948	14.5	
Chicago ⁹¹	1923	1933		30 of lots
Chicago	1929	1933		30 of lots
Chicago ⁹²	1941	1941	21 (by blocks 90% or more vacant)	28 (by blocks 90% or more vacant)
Buffalo ⁹³	--	1938	--	14 of lots
Flint ⁹⁴	1938	1940	--	44 of lots
Cleveland ⁹⁵	--	1939	--	47 of lots
Burbank	--	1939	--	75 platted area
Portland, Me.	--	1939	--	50 platted area
El Paso	--	1939	--	30 platted area
Grand Rapids	1931	1939	--	44 of lots
Dearborn ⁹⁶	1933	1939	---	75 of lots
Richmond, Va. ⁹⁷	1942-3	1943	about 33	about 58

of land, only 24.1 per cent was in residences, and the Plan Commission pointed out "almost as much land is still available in Chicago as is now used for homes."⁹⁸ On the other hand, these figures overstate the dereliction of the private land market, as some of the vacant land is held by the city, which takes no positive steps to clear title and return the land to private use.

Third, note that some of the figures are for percentages of lots vacant. Such figures are of course imperfect because not all lots are the same area; but, more important, they take no account of unsubdivided acreage. In some cities that is a large oversight. In Flint, Michigan, for example, not only were 44 per cent of the platted lots vacant in 1938, but in addition 26 per cent of the city's area was not yet platted or developed--no streets or utilities. That was true in spite of the fact that most new building at that time was going on beyond the city limits.⁹⁹

Fourth, note that the figures do not include lawns, yards, private parks and other lands appurtenant to some structure. If we calculated the percentage of land in cities actually physically covered by some structure it would be very small indeed. Some of these appurtenant grounds may be very little used, and represent a very lavish use of valuable land, but for the present study we count them all as "improved."

Fifth, some of the vacant land may be very steep, or poorly drained, or otherwise of low value. Vacant lots do average lower in value than improved lots, largely because of their less central location. The question of relative values we take up in a few pages.

3. Unused lands in Rurbania

So much for the relatively compact central city. Let us move outwards to Rurbania, the broad transition between city and country. Let the editor of "The American City" paint the landscape:

(East of Paterson, N. J.) the casual stroller who leaves the main highway to roam the untilled areas just to the north, will find among the underbrush the crumbling remains of concrete sidewalks thinly laid over once fertile farmland regardless of need or topography.

(Around Detroit) as far as the eye could see, the white painted posts bearing street names stretched out in all directions, a band sometimes a mile or more in width along the traffic artery.¹⁰⁰

Around Chicago in 1930 was enough platted land to house millions of people--18 millions, according to one generous estimate (probably based on an unrealistically high standard of density). Long Island, N.Y., alone had enough lots to "make suburbanites of the inhabitants of the five boroughs of New York." And Florida! "It has been estimated that the total land subdivided during the Florida boom was sufficient to house the population of the whole United States."¹⁰¹

Not all this land, to be sure, is vacant. But from the numbers of lots obviously much of it must be--there simply are not that many people. In Cook County outside Chicago, 69 per cent of the lots were vacant in 1931.¹⁰² 79 per cent of the lots in suburbs of Buffalo were vacant in the 'thirties,¹⁰³ 60 per cent in Yonkers, 63 per cent in five suburban towns in Monroe County, New York (Rochester),¹⁰⁴ 75 per cent in Dearborn, Michigan,¹⁰⁵ about 55 per cent in Bergen City, New Jersey,¹⁰⁶ 53 per cent in Los Angeles County, and 95-1/2 per cent in Redford Township (near Detroit).¹⁰⁷

Besides the vacant lots there are hundreds of thousands of acres never subdivided, despite their being better located than other lands which are so developed. For just as the builder "leapfrogs" over several overpriced lots or blocks to find land on which he can build without losing money, so the subdivider, who serves the useful function of planning and dedicating land for and sometimes financing and building streets and other basic utilities, must often leap over considerable overpriced acreage before settling on some he can develop without loss. Not until 1953, for example, was the thousand acre tract of the Mills estate between Millbrae and Burlingame, California, sold to subdividers--for over \$3500 per acre--although there are several well established bedroom suburbs beyond it.¹⁰⁸ In the shadow of Manhattan the Erie Railroad is only now

beginning to develop 1,000 acres at Secaucus, N. J., with these advertised advantages: "7 minutes to mid-Manhattan; express highway service to all points; Erie railroad sidings to sites; . . . America's largest pool of labor, clerical and engineering talent . . ." Between this site and Manhattan there lies at least an equal area still vacant.¹⁰⁹ In California, "For years the historic Moraes Ranch in Marin County, overlooking Mill Valley and the Bay . . . held out against development. . . with less desirable lands, many times the distance from San Francisco, long since filled with thousands of homes. . ."¹¹⁰ Inside the outermost urban subdivisions there remains much raw acreage, a large part of it not used even for farming. In Cook County, Illinois, some 248,000 acres, or 41 per cent of the county, were unplatted in 1929. Some of this unplatted land was inside Chicago itself. 114,000 acres, or 46 per cent of the unplatted land, were assessed as "unimproved."¹¹¹

4. The economic importance of vacant urban and suburban land

Of what account, one may ask, are a few or even many vacant lots in and around cities, when the cities themselves occupy so little land surface?

a. Market values

The land of central cities, despite its small area, is probably our most valuable natural resource. That

at least is the judgment of the market. The National Municipal Review publishes each year the assessed values of American cities over 30,000 population, together with reported ratios of assessed to market values. A glance at the figures is impressive. In 1954 the assessor valued the taxable land and improvements in New York City at \$20 billion--a figure which should doubtless be raised to correct for underassessment, which is high-universal, and for omissions of tax-exempt property. But even as is, it is almost as great as all the farm land and improvements in the sixteen southeast and south central states (\$23 billion, by the 1950 census). Los Angeles, with market value estimated at \$5 billions, about balances the value of all the farms in California. Correcting the Review's figures for underassessment according to the figures therein provided (which, from the writer's experience, seem to understate a good deal the actual degree of underassessment), and for omissions of tax-exempt property (estimated at 19 per cent), the market value of the top twenty American cities approaches \$100 billions. The value of all cities over 30,000 approximates \$250 billions. For comparison, all American farm land and buildings were worth, by the 1950 census, near the peak, \$75 billions.

As to Rurbania, its area alone is impressive. With no clear boundaries it is a nebulous region. But, give or take a few counties, it was authoritatively estimated in

the 'thirties at about the area of Pennsylvania, 28 million acres.¹¹² Since then, with commuters ranging over 50 miles, with pieces of Chicago scattering up to the Wisconsin line, with Sacramento sprinkling over the Sierra foothills, and several Mohawk Valley towns nearly coalescing, Rurbania has expanded voraciously. Recalling that the area of a circle increases with the square of its radius, it must have eaten up a great deal of territory since 1940.

It is valuable territory, too, strategically located as it is around urban centers with their markets, transportation, pools of labor and warehouses of raw materials. H. D. Simpson has observed that a few acres on the fringes of Chicago may have the productive potential of whole counties at the fringes of cultivation in northern Michigan. The average unplatted farm acre in Cook County, i.e., around Chicago, as reported in 1929 by the State Tax Commission, was worth more than 8 times the average farm acre in Illinois itself, a state of highest grade farm land--the Illinois average, incidentally, including Cook County and land in some adjacent counties that is part of Chicago's Rurbania. We have mentioned the tract of the Mills Estate by Burlingame, California, that recently brought over \$3,500 an acre. Another recent sale, from the old Gallegos grant south of Irvington, California, brought, as reported in the press, about \$3,120 an acre. The Wall Street Journal of January 25, 1955, cites prices of \$1,500 per acre seven

miles from downtown Indianapolis; \$3,500 around Minneapolis; \$4,500 around Los Angeles; and up to \$14,000 in Nassau City on Long Island.¹¹³

Simply to get the general dimensions of rural value, and without the slightest pretense to accuracy, let us suppose Rurbania now to comprise 50 million acres, about the area of Utah, and the bare land to average \$1,000 an acre. That gives \$50 billions--again, probably more than the value of bare farm land which, lumped together with all improvements, was about \$75 billions in 1950. And if we consider that much rural land is subdivided with utilities, that some is commercial, \$1,000 an acre seems rather a conservative figure. If we include the gold coast suburbs of our cities--and we have not counted them anywhere else--we might raise that average considerably.

While perhaps half the non-public area of central cities, and over half of Rurbania are unimproved, it would be premature to conclude that over half the urban productive potential is thus lost. For vacant land, although it penetrates clear into the hearts of our cities, comprises generally a lesser proportion there than at the outskirts, where values are lower. Accordingly, assessed values of vacant land, per unit area, average less than those of improved land.

Some writers, on such evidence, have gone so far as to pronounce the productive potential of vacant land

negligible. Coupled as they often are with the warning that vacant, if put on the market, would compete with and drastically devalue other urban land, such pronouncements have not been very convincing. And they do seem to go a good deal beyond what the evidence allows. Were vacant land all beyond the city's last outposts it would still compose our best farmland, and as we have seen a sizeable piece of it. But scattered as it is throughout town, it consists also of land with high urban potentialities.

Unfortunately there are no easily available reliable data on relative values of vacant and improved land. There are only assessments, whose evidence is grossly biased. The notorious fact needs no proof here that assessors usually under-value vacant land relative to improved.¹¹⁴ For example, the current practice of many assessors is to keep vacant land and old buildings at prewar values and assess new buildings at their inflated postwar construction costs.

But sometimes there is a true assessment. We have it on the authority of H. D. Simpson, then of Northwestern University, that in 1927 Chicago's quadrennial assessment was tolerably accurate, thanks to a vigorous clean-up campaign.¹¹⁵ The assessor then valued vacant lots in Cook County at an average of \$601.29, and improved lots at \$1,923.77, or a little over three times the vacant.¹¹⁶

More research on this point might turn up more true assessments to permit of more general and more accurate estimates. Obviously, Chicago in 1929 is not, say, Houston in 1955. But the present point is only that vacant land is valuable enough to represent some appreciable part of the city's productive potential, and is not to be whisked lightly aside as "negligible." Suppose half the lots in a city and its Rurbania are vacant, and the vacant lots average one-third the value of the improved. That would make one dollar's worth of vacant for every three dollar's worth of improved: 25 per cent of the city land, measuring by value, would be vacant. That is still a large part of the American heritage.

b. Aggregate vs. piecemeal valuation

But a simple comparison of aggregate values like that is only the roughest preliminary approach to an estimate of the productive potential of vacant land. For in our highly interdependent economy the use of land affects the productive potential of other land in countless ways, both direct and devious, both complementary and competitive. Let all vacant land be put to use and the whole structure of urban values is drastically changed, reconstructed from the ground up. Market values, by contrast, come from individuals' appraisals of individual lots in their actual setting. Simply to aggregate those appraisals gives little notion of the true productive potential of vacant land, were

it all put to work--in this case the whole is clearly not equal to the sum of its parts.

But is the whole greater or less than the sum of its parts? There are influences working both ways.

On the one hand, the ultimate potential of some vacant land is greater, relative to improved land, than its present value suggests. Consider a section near the heart of town, well endowed by nature and the geometry of local transportation. Often such a section, by virtue of its great expectations, is held by its original owner, or perhaps an avowed speculator, at a price too high to let anyone buy and subdivide it; or, once subdivided, the lots may be held too high to permit of much building, a remarkably self-defeating, but for all that a frequent kind of behavior. Contrast this central land with a humbler peripheral district, less favored by nature, where for that reason the lots pass quickly at low prices to ultimate consumers: resident owners. Let enough families settle here, and soon a struggling church and community center may arise. The county improves the incoming highway, and gives it a stop light, and a transit company adds it to the schedule. The local demand increases enough to support a grocery, garage, barber, and druggist: a small commercial nucleus takes birth. A small industry, seeking low cost elbow room and well-housed labor, comes to town. The residents incorporate, dedicate a park, tidy up their lawns, float their first school bonds--and before

many years that once humble district may be worth, on the market, considerably more than the undeveloped central section of greater natural potentialities.¹¹⁷ For, although an improvement little influences, as a rule, the value of the very site on which it stands, to improve a whole district will much increase land values there, as the improvement on each lot radiates benefits onto neighboring lots, doing its bit to create a neighborhood, a local market, and a community. Granted that some "improvements" radiate detriments as well as benefits onto their neighbors, clearly the net influence is generally more complementary than hurtful.

At this juncture the inquiring economist comes on the scene to compare the market values of vacant and improved land. Taking these two sections, he duly reports higher market values for the improved, peripheral lots than for the vacant central land. But clearly, in this case, the relative market values are no measure of relative ultimate productive potentials. The vacant section still has greater natural capacity: could it be subdivided, and some first "settlers" buy in to start the kind of snowballing community development that gave the peripheral section its value, the central land would eventually achieve much higher values. In fact, if many such central areas developed to their full capacity they would drain demand away from the outer areas, many of which would lose their urban value and eventually revert to farming. So if the inquiring economist inquires

deeper, he must put a high value on the vacant central land, relative to the peripheral developments, than does the market.

That is a situation where the aggregate productive value of vacant land is greater, relative to improved land, than their market values indicate. But on the other hand, there is the opposite situation. To put the best land now vacant into full use would prick the whole bubble of present rural land prices. It would draw in from the outer vastnesses of Rurbania the population and demand that now, thinly scattered over whole counties, titillate the hopes of speculators for all the empty spaces between. It would utterly deflate those anticipations, and with them the prices of rural land which, considered in the aggregate, are largely fictitious. For the demand for each lot or acre depends on others' remaining unused; and so the urban potential of some outlying vacant land, when we consider the aggregate, is exactly nothing.

Of those two situations, the second probably weighs heavier in the balance. That is because a smaller percentage of land is generally vacant in more central zones. And it seems likely that, were all urban and rural vacant lands put to full use, the value then attaching to the lands now vacant would comprise a smaller percent of the total than now. For values would fall most drastically in the outer zones, where the percent of vacant is higher. Central

values, on the other hand, might even increase, as a more compact urban population focussed its activities on fewer centers.

As far as we have come, then, the aggregate valuation seems to deflate vacant land relative to improved. However there is more to tell.

c. Offsite benefits from using vacant land

Does it follow that the productive potential of vacant land is, in the aggregate, a smaller portion of the urban total than present market values indicate? It depends on what one means by "aggregate productive potential." If this means the ability to yield income to the holders of land now vacant, then probably so. But if the "aggregate" includes increased output and reduced costs on land now already used, then certainly not. For every vacant lot put to use not only earns an income, but complements other lots in the city, and the lands of the hinterland whose products move to and through the city, and labor and capital within and without the city. Thus its use increases the economy's output a good deal more than it increases the landholder's income. A full aggregate evaluation of vacant land must certainly take account of these offsite benefits, or "external economies."

In preface, note a point that will be obvious to most, but perhaps a source of confusion if not made explicit. Vacant land, if put to use, would drain demand away from

competing urban lands and reduce their income yielding capacity. This we have already accounted for by valuing urban lands, both vacant and improved, at the resulting reduced values; and we have conceded that lands now vacant would probably fall more than lands now improved. But we have not reckoned the value decline itself as a net social loss; nor should it be so reckoned. As to lands already used, the lower income represents merely a redistribution from the landholders to others: their customers and suppliers, employees, and tenants. The land is as useful as ever; it is simply less scarce, hence commands lower rentals. This is merely a shift between groups, comparable to the shift that would occur if, for example, government stocks of butter were released to break the price. Consumers would gain in lower prices whatever sellers lost. As to land now vacant, the loss of value is merely the puncturing of what always was, from the aggregate standpoint, an illusion. (For more detailed treatment of the point, see section IV, A and B, below.)

By contrast, the offsite benefits about to be described are social gains. These offsite benefits tend to increase the net income of other lands, not by creating an artificial scarcity, but rather by better fitting the other lands to render productive services at lower costs. Let us analyze these.

The offsite benefits that would follow from putting vacant land to use derive essentially from letting the city's people achieve the many advantages of closer community. Converting the present sprawling settlements into a more compact and integrated economic organism would in many ways better fit the land to satisfy the desires of its residents and the needs of its businesses.

Most obviously, closer settlement would lower all manner of transportation costs within the city, both for the public that finances streets, walks, and lights, and the users who now waste their time, fuel and other valuable resources getting past vacant lots. Public transit would be cheaper than now, and service more frequent. Many municipal services such as police, fire protection, garbage and sewage disposal could be cheaper and/or better. And all distribution and collection services would be more economical. Rates for water, gas, power, telephone, deliveries and pickups, and so on could all be less. Considering that distribution is the major cost in these services, the savings could be very great.¹¹⁸

Most of those are generally recognized as decreasing cost services, whose unit cost decreases as the use increases. What is often forgotten is that the decreasing costs result, not from large use alone, but from large use within a given area. Expand output by expanding area, and the "fixed" costs must expand proportionately. But consolidate

population within a smaller area and unit costs will fall.

Of course it would also reduce unit costs if a given population in a given area increased its use per capita. Because of this, there is an additional benefit to reckon. If the decreasing cost service is unsubsidized, like many private utilities, and charges rates equal to unit cost, then the lower unit costs resulting from closer settlement will permit of lower rates, which in turn will permit larger use per capita, which in turn will further lower unit costs. Lower rates for basic utilities like water and power would stimulate many investments now hovering just beyond the margin of profitability, and bring new capital and population to the city. The ultimate benefits could be very great.

It is also likely that consolidating settlement would let many citizens receive decreasing cost services they cannot now in their present scattered locations receive at any plausible price.

Those benefits and others of their kind would come to a handsome total, expressed in the increased income of city lands and the people using them. As they would result from putting vacant land to use, they must certainly be counted as part of the unrealized productive potential of vacant land.

Let us interject at this point, to avoid misunderstanding, that none of this is to say that dwellings should

be planned without open spaces. We are referring to vacant fields and lots, unplanned open spaces, unintegrated with the structures scattered among them, and serving only to obstruct the integration of those structures.

But in addition to benefits from decreasing cost services would be others, less startlingly obvious, perhaps, and involving many imponderables, but nonetheless irrefutably real. These are the benefits that Adam Smith summed up in: "The division of labor is limited by the extent of the market."

"The market," of course, is no abstraction, but an area of land linked by feasible transportation and communication. The cheaper these two, the better the market, until at best "the market" is a very small central meeting place to which large numbers have access, which many habituate, and which by the same token affords each of them access to large numbers of others. A primary function of the city is to provide such centers where buyers, sellers with their wares, lawyers, financiers, and the whole complex of allied specialists who form the collective brain center of a free economy may associate freely, with minimum spatial barriers, to carry out their vastly complex and utterly interdependent functions of control, adjustment, and continual readjustment.

To improve land now vacant would, obviously, make of each city a better market. Let the present scattered population draw together and each economic unit would enjoy much

easier access to others over many avenues of contact, most particularly through the downtown center. The demand now scattered piecemeal over numerous small commercial ganglia would come to focus more on the larger central market, with its greater variety and newer stocks. The central market would thus become a wider market, allowing of finer division of labor, or specialization. This is not in any way to deny the influence of the automobile as a substitute for the central market--although we would incline to interpret the automobile revolution as the result, as much as the cause, of scattered settlement. It is only to say that, automobile or not, there are great advantages in close settlement. Let us consider some aspects of that.

For any market, however large or small, there exist in the minds of enterprising men many projects which now lie beyond the margin of economic feasibility because the market is too small. Perhaps they require great volume or, more likely, they cater to special needs or tastes and can find enough patronage to support them only where large numbers congregate. Or, again, perhaps they require large numbers of sellers, like a scrap steel foundry; or they require access to a wide variety of raw materials and specialized services such as only a large market can supply. Widen the market and some of these dreams materialize. Some out-of-town seller opens a retail outlet and service center; retail shops carry a wider selection, and faster turnover cuts

storage costs, spoilage and obsolescence, permitting lower prices and higher quality; wholesaling for the city market becomes simpler, with retail outlets concentrated in one area, letting wholesalers introduce new products, and the new opportunities attract new wholesalers whose competition lowers the mark-ups. New medical, legal and other professional specialists open offices, replacing the more general practitioners, while garages come to specialize in radiators, wheel alignment or foreign cars, affording the consumer better service in each case. Transportation lines schedule more frequent runs. Industrial sites become more desirable, offering better access to labor of varied skills, transportation terminals, warehouses, central offices and the whole downtown complex, and so a new industry comes to town. Benefits like those would follow simply from closer congregation. One must reckon them as part of the unrealized productive potential of vacant land.

Another benefit would be keener competition among sellers and buyers. A larger market can support not only new goods and services, but more buyers and sellers of the old. However large the market, it will always contain a fringe of local monopolies and oligopolies, enterprises of which the market can support only one or a few. In a larger market all will feel the spur of keener competition, with obvious benefits.

On a national level there are further benefits to count. Thus far we have dwelt on the increased specialization possible among those sellers whose market is one city, and the benefits to those who buy in the city. But if many cities filled in their vacant land to make better markets, the national market easily available to any manufacturer or grower or other producer would increase. Specialty producers who now can market their wares only in a few of the largest or nearest cities could tap a much broader market as it became feasible to establish new sales outlets, and the old outlets reached more potential customers. Increased specialization and keener competition would ensue.

And clearly there is more to tell. Within some limits, growth begets more growth. A market center attracts people who want many contacts; having come, they themselves are contacts for others. A wider market attracts sellers, the greater concentration of sellers attracts more buyers, and all attract restaurateurs, shippers, entertainers, educators, and others who widen both the market for sellers and the range of choice for buyers.

The members of a city are something like the embers of a fire. Bring these together and the glow from each smoldering ember cheers along its neighbors, who throw it back augmented until the reciprocal radiations cumulate into a lively blaze. The compact city is a great cooperative enterprise whose members, however self-seeking, radiate

benefits onto their neighbors and themselves depend entirely on benefits radiating from others.

A wider market might justify more frequent freight service. That, in conjunction with the wider market, attracts a new wholesale outlet, which in turn makes easily accessible a raw material or device with which a local manufacturer expands or improves an operation or develops a new product. Such chain reactions may proceed a long way. In general, a wider market increases the alternative raw materials, services, labor talent and equipment available to all producers. The enterprising will seize upon some of the new alternatives to improve their operations, with cumulative benefits too complex to foretell, yet confidently to be expected. As the number of new "things" available increases from n to $(n + 1)$, the number of their possible combinations increases by 2^n --i.e. it doubles--and the number of possible arrangements in productive enterprises (which are not limited by any one-dimensional ordering) increases at even higher rates. As the market widens, more and more entrepreneurs, whose function is to combine productive factors effectively, have greater and greater scope to exercise their ingenuity. The result must be to accelerate technological advance, both by inspiring new ideas and facilitating their broad application. Henri Poincare, the renowned French mathematician, has described the creative process in these words:

Figure the future elements of our combinations as something like the hooked atoms of Epicurus. During the complete repose of the mind, these atoms are motionless, they are, so to speak, hooked to the wall; so this complete rest may be indefinitely prolonged without the atoms meeting, and consequently without any combination between them.

On the other hand, during a period of apparent rest and unconscious work, certain of them are detached from the wall and put in motion. They flash in every direction through the space (I was about to say the room) where they are enclosed, as would, for example, the molecules of gas in the kinematic theory of gases. Then their mutual impacts may produce new combinations. . . .

The rules of . . . calculations are strict and complicated. They require discipline, attention, will, and therefore consciousness. In the subliminal self, on the contrary, reigns what I should call liberty, if we might give this name to the simple absence of discipline and to the disorder born of chance. Only, this disorder itself permits unexpected combinations.

In shops and offices where work proceeds under discipline we have the social analogy to Poincare's conscious thought. In public thoroughfares and meeting places, the undisciplined unconscious. "Only, this disorder itself permits unexpected combinations." Of these are born material and intellectual progress.¹¹⁹

We might add, tentatively, the inchoate thought that the full value of central location cannot be told in terms merely of the known. A central location offers access also to the unknown, or unforeseen. As a central market gathers more specialties it becomes more and more a specialized thing in itself, a collection of specialties, a place where one can "get anything," learn what is available, satisfy

unforeseen emergency needs, and, in a dynamic competitive world, gain earliest access to the latest products and ideas, whatever they may prove to be. In this respect, too, the growth of a central market makes location near it still more desirable and begets further growth.

Philadelphia, for example, advertises its attractions in these terms:

Raw materials are handier in Greater Philadelphia. . . Land of Everything! Basic raw materials for industry converge on Greater Philadelphia over its unequalled rail, truck, ship, pipeline, and air transportation facilities. Whether you are interested in manufacturing, processing, fabricating, or refining, you will find here the skills, the market, the site, and the distribution means for an efficient, economical and profitable operation.¹²⁰

In short, the labor and capital of a city, considered in the aggregate, are in the stage of increasing returns, due to the many complementary relationships facilitated as spatial barriers become less. No doubt there is some intensity at which diminishing aggregate returns would commence, due to crowding of streets, and perhaps lack of Lebensraum. But many adjustments facilitated by closer settlement would help solve these problems, and delay the coming of aggregate diminishing returns. Crowding of streets is due largely to private cars. Closer settlement would reduce their use, by permitting cheaper, more frequent and more luxurious public transportation and delivery service; by increasing the number of business and social contacts accessible to pedestrians from their homes and

from transit stops; by reducing the distances necessary to travel, hence the time that cars are on the road. In addition closer settlement would, by reducing street mileage, release funds to improve the remaining ones, widening bottle-necks, over- or underpassing intersections, improving traffic control, and so on. As to trucks, they would lose business as population drew closer around rail and shipping terminals.

Nor would it deprive many people of Lebensraum merely to improve vacant lots, most of which now provide very little usable room for anyone: even as ball-fields they hardly compete with school-grounds and parks. But most residents of the more compact city would have quicker access to open country than they do now, when an urbanite must buck miles of urban traffic to reach free wheeling.

Considering these things, it seems the American city might profitably draw in its skirts a long, long way, releasing land for agriculture in the city's hinterland, and simultaneously increasing per capita output in the city.

Summing up, to improve vacant lots would increase the net output of other lots in two general ways: distribution services would be cheaper; and the wider market would permit of more specialization and keener competition. These benefits, reinforcing one another, interacting, combining and cumulating in countless ways, would benefit the economy by a good deal more than improving vacant lots

would increase the incomes of those who now hold land vacant. It would make other land more valuable to society, not by restricting the supply on the market, but by making it more productive--actual market values might fall, due to the increased supply. Considered in this light, the aggregate productive potential of vacant urban and suburban land looms much larger even than its present value suggests. Just how large, surely no fallible human can say, but certainly large enough to warrant great weight in our calculations.

V. The social costs of unused land

Let us now sum up, in more general and systematic form, the social costs of unused land. In the main these are: A. the unrealized income of the unused land itself; B. the costs of subdividing and providing basic public works for land otherwise submarginal; C. the reduced marginal productivity of labor and capital, including reduced investment and employment; D. costs of scattered settlement; and E. costs of increased economic instability.

A. and B. The unrealized income of the unused land itself; and the costs of subdividing and providing basic public works for land otherwise submarginal.

R. U. Ratcliffe writes:

. . . The services of urban real estate . . . perish with the passage of time, whether or not they are utilized, and are not recoverable. Thus the landlord cannot build up an inventory for future sale, or hold for a higher price; he must sell his entire stock from day to day or the opportunity is forever lost.¹²¹

We certainly agree--with the usual reservation that disuse today may sometimes permit of some later use enough better, and not too much later than the feasible present use to compensate for the lost years' incomes. (For a criticism of the argument that fear of obsolescence is an adequate rationalization of unused land, see Chapter 4). In general, the unrealized produce of idle land passes away with time, beyond recapture. And this holds for farm as well as urban land. This fact is often overlooked because it is possible to farm land destructively, a practice compared to which disuse may seem like beneficial conservation. But it is also possible to maintain farm land while taking from it an income net of all costs. It is this net (speaking roughly, to avoid detail) that is lost each year by disuse.

But how evaluate the unrealized annual services of idle land? Were all used, the price of those services would be less, due to the increased supply, than today. On the other hand, to evaluate all the services at those lower prices would give too small a sum, since all but the last unit would be of greater utility to consumers than the final price struck by supply and demand. Here is a matter involving the concept of consumer surplus, a matter best analyzed by a traditional supply-demand graph.

Such a graph will serve also to indicate the second social cost of unused land: the cost of subdividing and

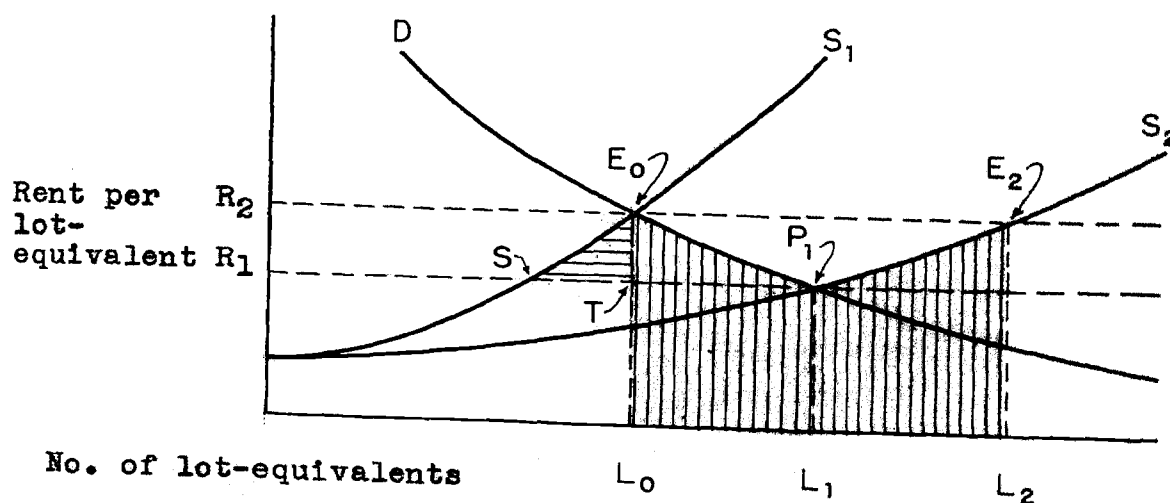
providing basic public works for land otherwise submarginal. If the reader will bear with a few simplifying assumptions we can estimate the amount of these two costs together in the small compass of one graph. We will take as an example the urban frontier--the analysis applying, with appropriate adaptations, to any frontier.

In Fig. 1, the abscissa is the number of urban lots accessible to a given urban market. These lots are measured in "lot-equivalents," based on a lot of some arbitrary standard quality. On the ordinate is the annual economic rent per lot-equivalent.

"D" is the demand schedule for the annual services of the land. There are two supply schedules, S_1 and S_2 . The meaning of these curves must be understood

FIGURE 1

URBAN LAND: DEMAND AND TWO KINDS OF SUPPLY



in the context of the market they represent, a slow-moving market of massive and long-term investments. Let these curves represent the response of supply to price over a period of some years, say arbitrarily five. Let it be understood that the curves are not reversible in so short a time.

S_1 is a supply schedule showing how much land will, at various levels of rent, be supplied, improved, to meet the demand for the services of urban land. S_2 is a supply schedule showing how much land will, at various levels of rent, be subdivided and provided with basic urban public works such as streets, water and sewers. The difference between the two is land subdivided, and provided with basic public works, but not improved. These are, in short, vacant lots, which do not help meet the demand for the services of urban land.

Because S_2 minus S_1 is held idle, the level of urban land rent rises to R_2 instead of R_1 . This high rent level, and the high land prices derived from it, stimulate subdivisions otherwise submarginal, increasing the number of urban lots from L_1 to L_2 .

The number of vacant lots is L_2 minus L_0 . What is the social cost of keeping these lots vacant? The utility of the lots from L_0 to L_1 is of course the area under the demand curve between L_0 and L_1 : price plus consumer surplus.

As to the lots L_1 to L_2 , their utility to urban users would be, in the aggregate, only the area under the urban demand curve, D , from L_1 to L_2 ; but their cost to society is greater than that. It is the area under the supply curve, S_2 , from L_1 to L_2 . The supply curve represents the cost of subdividing and providing public works for those excess lots; that is, it represents the best alternative use of the land, probably in farming, plus the cost (reduced to an annual equivalent) of the resources poured in to provide urban public works and utilities.

Adding these, we get the vertically shaded area: E_0, P_1, E_2, L_2, L_0 . This is an area still not as large as the rectangle E_0, E_2, L_2, L_0 , which represents the cost of the lots were they all valued at R_2 , the going level of rents. But it begins to approach that rectangle.

And to these costs we should add the horizontally shaded triangle E_0, T, S . The lots from S to T are improved; but their cost of subdivision exceeds what would be their rent were no land withheld from the market. Adding this to the vertically shaded area we get a total nearly approximating what we would have by evaluating all the vacant lots at R_2 , the going level of rents. So as a rough rule of thumb one may say that the aggregate unrealized direct income of unused land, plus the costs of excess subdivision, are together almost as great as the unrealized rent of land at present high levels of rent.

This leaves to consider the area R_1 , R_2 , E_0 , S . This area represents no net loss or gain to society, but merely a redistribution among groups due to lower rents. Holders of used urban land lose it; but their loss is the gain of users, customers and complements.

The social losses represented on Fig. 1 are, therefore, the shaded areas: (a) the vertically shaded areas representing unused land; and (b) the horizontally shaded triangle representing the portion of used land whose costs of subdivision exceed what its value would be were no land idle.

Our exposition will impress many readers as oversimplified. And so it is. Figure 1 is but a pale likeness, in abstract and static form, of a flesh and blood phenomenon, dynamic and complex. Yet it provides an indispensable conceptual framework for valuing idle land in the aggregate, and for estimating the cost of excess subdivision. And as the things abstracted are common to all frontiers, it serves not only for the urban but, mutatis mutandis, for any frontier. The framework also proves useful in analyzing dynamic movements in land markets, a matter we take up shortly (point E).

G. The reduced marginal productivities of capital and labor, including reduced investment and employment.

The people who might find work on (as well as consume the services and products of) unused land must crowd

onto other lands. There, assuming diminishing returns, their marginal efforts will bring smaller returns. Capital, too, will yield less at the margin. Taking the nation as a whole, the effect on wage levels and investment yields must be appreciable. Men or equipment producing and earning values of several dollars a day less than they might are clearly not using their time to best advantage.

In time of unemployment the loss is not merely an additional sum they might earn on idle lands; but their entire earnings. The land, put to use, would provide new investment and employment opportunities. Increased investment might well have multiple effects on national income. Economic stagnation was not long ago attributed to lack of new frontiers. Are there not such frontiers of unoccupied land within the very centers of our civilization?

D. Costs of scattered settlement

These costs we have already discussed at length. In a word, they are increased distribution costs and shrunken markets, limiting specialization and exchange. These costs, in the sense of wasted opportunities for technological progress, may be enormous--over several decades, simply incalculable.

Our previous discussion concerned only urban settlement. The costs of scattered rural settlement are likewise very large; power, phone, water, road, collection and

distribution costs of all kinds being very high, social life limited, schools too small, specialization hampered, and sellers generally reduced to catering to the lowest common denominators of taste.

E. Increased economic instability

It has often been remarked that the greatest fluctuations occur in those economic activities whose products are farthest from the ultimate consumer. Construction of buildings is generally considered to suffer very violent swings. But, as Lewis Maverick has observed, subdividing activity is farther yet from the consumer, and there is probably no other economic time series whose swings have such amplitude.¹²²

Refer again to Figure 1, recalling that the supply curves there purport to show how supply will increase over a period of years (arbitrarily five), and are not reversible in so short a time.

Let demand increase from some lesser amount up to the curve shown on Figure 1. Conceivably supply could adjust smoothly to demand, along S_2 ; but it rarely does. How often a huge speculative bubble dominates the transition, misleading investors applying capital to land, swelling phenomenally, and one day collapsing in a chaos whose repercussions may upset the whole economy. This evolving bubble bears analyzing.

The new demand increases the income to be realized from improving urban land, and construction proceeds apace. But many lot holders, heartened by signs of new interest, raise their holdout prices. The supply of improved land at work meeting the demand for the services of urban land increases too little to prevent a sharp rise of rents and land prices. Demand, frustrated in the center, probes outward, titillating speculative hopes for the next belt. Many holders decide to wait for a rise, or to "see how the district develops," with the result that it doesn't. Demand, naturally, pushes farther outward, where the process repeats, and so again and again in a widening circle.

High lot prices of course tend to reduce the profit margins of builders, for whom a lot is a basic raw material. Thus in some degree high lot prices inhibit improvements. At the same time, they make new investment opportunities for those who would "create" urban land by subdividing. On Figure 1, the high rents determined by the intersection of S_1 and D evoke new subdivisions out to the point E_2 , where subdividing cost per lot equivalent (reduced to an annual equivalent) becomes as high as the rent.

Moreover, moving a step closer to reality than Figure 1 can take us, it is really urban lot prices, rather than current rents, that stimulate subdivision; and these prices often rise in even greater proportion than rents, thanks to extravagant expectations of future growth. Let

land prices rise over a few years, let some handsome fortunes be turned, and many investors come to look through rose-colored glasses at any investment designed to gain from the "inevitable" rise of land prices. Money flows freely to buy vacant lots, and other money flows freely to convert farm or wasteland into subdivided lots with streets and sewers, and advertise it for sale--the flows determined not so much by any nice calculations of supply and demand as by herd instincts, mass hypnotism, and such supreme folly as only avarice seems able to engender.¹²³

What has sometimes ensued cannot be explained on an entirely rational basis. As a matter of American history, excess land subdivision has several times gone to incredible extremes. Probably in no other market can one find comparable excesses. Perhaps it is the perpetual life expectancy of land, allowing great scope for fevered imaginations to err; perhaps it is the irreproduceability of location, which makes of many lots potential bonanzas, should demand settle on their location; or perhaps it is partly because the mere processes of subdivision and construction bring payrolls and demand, so that growing districts, or even whole towns and regions, have bustled for years with the semblance of economic well-being, but actually exporting little except securities and land titles, and having little immediate raison d'etre save to build themselves.¹²⁴

Whatever the causes, there have been periods of several

years when avowed speculators have subdivided lots with utter disregard for supplies on hand. Far from dampening their ardor, the hum of subdividing activity has seemed to convince many buyers that the frontier would grow on forever. In these circumstances the subdivider, like Leacock's knight, leaps to his mount and rides madly off in all directions, quite forgetting that the area of a circle increases with the square of its radius, and that a few circles of radius 50 miles could, at urban densities, house the population of the globe. E. M. Fisher has calculated that in our last great land boom subdividers overestimated their market by some 30 years!¹²⁵

At this writing (November 1955) the current boom seems to be entering this dangerous phase. Urban lot prices have about doubled since 1946,¹²⁶ thus squeezing the profits of home builders, and diverting funds from improving lots to creating them from acreage. Acreage is high, too, diverting funds from subdividing inner acreage to building highways to bring submarginal acreage into the urban sphere. Homebuilding is off 20% this year, while capital is pouring into streets, expressways, water mains, sewers, utility distribution networks, etc.¹²⁷

But the brute facts of supply and demand cannot forever be denied, and when they finally take command of the market, the bubble collapses. Then the repercussions must be widespread. The economy has been geared to subdividing

vast numbers of lots, often with borrowed money; now it must readjust to absorb the surplus and pay the debts, while subdivision stands still, and all the incomes it created are no more.

One might expect the collapse to encourage construction, through lower lot prices, in the same measure that it discourages additional subdivision. Historically it has not, and for this there are some good reasons. One key factor is probably that builders typically work on borrowed funds, at fairly high interest rates and on fairly short terms, in contrast to lot speculators who more typically work with their own funds. Let us explore the effects of this contrast.

Builders, by the nature of their business, must speculate in the land under what they build. This, when they expect land prices to rise, is no deterrent but often a lucrative adjunct to their operations.¹²⁸ These same builders become quickly circumspect when prices falter, the more so when some of their ventures pay out too little to justify the high price of land, and some of the more extended shoe-string operators go to the wall. Working typically with funds borrowed on short or medium terms at fairly high interest, they must sell quickly, turn over their funds and get out. They are particularly skittish about being left "holding the bag" in a slow market. This is the more true when lenders, sensing greater risk at current price levels,

hike interest rates and shorten terms, and refinancing becomes a more difficult prospect. Builders in these straits must lower their bids for lots.

But lot holders are not in general so quick to lower their asking prices. More typically working with their own funds, they are not pressed to sell; more typically absentee or retired or otherwise unfamiliar with the local situation, they are not so aware of a surplus of lots hanging over the market; more typically optimistic, they are not psychologically prepared to take losses; more typically large operators, they are more concerned about "breaking the market." As a matter of history, therefore, a period of falling prices is a period of deadlock, of very few land sales, and of rapidly declining construction.¹²⁹ As to the speculative builders, they generally operate with remarkably little overhead.¹³⁰ When their profit margin is squeezed they fold their tents like the Arabs, and as silently steal away.

Another feature of this period, according to Arthur Holden, is that many prospective homeowners have sunk their equity funds into high-priced land titles on which they plan to borrow for future buildings. But when land prices waver, loanable funds dry up, frustrating these plans.¹³¹

With subdivision and construction falling off, two major investment outlets begin to close.

Total private construction of all types amounted to about 45% of total private investment during 1945-50, and the percentage was considerably higher than this in the major expansions before 1929.¹³²

The drop of investment spending may very likely induce a further drop of national income, through that process that has come to be known as "the multiplier"--or, if one prefers the older terminology, through a fall in the velocity and perhaps also the quantity of money. The drop in income may very likely induce a further drop in investment as well, since a falling income may have a remarkably sobering influence on some about to borrow to build.

Moreover, reversing the upward course of land prices must in some degree increase liquidity preference. Land, in a rising, active market, is a very liquid asset, not quite a "near-money" perhaps, but in some measure a substitute for money. That is not to say it serves as a medium of exchange, although it sometimes does; but rather than it serves as a secondary or tertiary reserve for contingencies: it is esteemed as an asset that can be converted to cash quickly and with little loss by sale or mortgage. In such a market, individuals holding land do not feel the need of keeping such large cash reserves as otherwise. But in a falling market the liquid freezes: asking prices generally lag above bidding prices and land moves very slowly. Holders of land feel the need of accumulating larger cash balances. The devastating spiral effects of that process are well known. The drive for liquidity reduces spending, which

freezes assets still harder, which in turn augments the drive for liquidity. In income terms, the rise of land prices is a species of "income" which, although it pretty well escapes official data on "national income," by no means escapes the notice of its beneficiaries. It is heady stuff, this gratuitous swelling of one's assets, and must powerfully stimulate spending, as well as banks' willingness to lend. From 1920 to 1926 urban land prices about doubled, increasing by several billions a year, no small influence in the economy of that time.¹³³ To this we might well add part of the rise of stock prices, the assets of corporations including of course vast and valuable real estate. In income terms, again, the fall of land prices is negative income, tending to depress spending. And when this and other factors inhibit new bank loans it becomes painfully evident that a great deal of income has been committed to service loans taken on during the expansion.

Then, too, a downturn, or even a levelling off, of land prices will doubtless bring a crop of bankruptcies among a few overextended speculative builders to dampen the ardor of others. Builders, we have mentioned, must unavoidably speculate in the land under what they build. Some of these will have been sailing close to the wind, depending on a further rise of land prices to balance their books. In a rising market a corrupt, starry-eyed or inefficient promoter often can use borrowed money for current operating expenses

or varieties of embezzlement, and cover himself by the rise of land prices. The inviting sunshine of a rising land market, indeed, seems to draw forth a breed of shoestring plungers and gamblers who can persuade lenders to let them work on the thinnest of equities; and this same warm sunshine lulls lenders into an easy tolerance of managerial bungling and outright embezzlement that is, in retrospect, astounding. There seem always to be some whose ability to pay their debts, feed their families and keep out of jail depends utterly on a continued rise of land prices. Let the market waver, let a panicky lender foreclose, refuse to refinance, and some of these, often among the most conspicuous symbols of the new era, face the wringer. Their affairs are exposed amid great publicity heavy with the breath of slander. Investors wonder "If these, why not others?" Lenders scrutinize borrowers closer; borrowers sensing the temper of the times hesitate at commitments that may need refinancing. The result of all this is further to reduce confidence and investment.

Then there are the bank failures. Banks, in times of booming land prices, are inclined to accept land titles as collateral for substantial loans. In crashes they have been deluged with land they cannot sell for enough to meet the bond it is supposed to secure. They can hardly sell at such prices, in quantity, as then the bank's books would show assets less than deposit liabilities; too, allied

banks and real estate interests are urging them to hang on, to avoid breaking the market. But in time depositors sense that not all is well, and many banks, their assets frozen, have been unable to meet runs. Billions in bank deposits are wiped out, and the community loses a large part of its money supply. In 1933 H. D. Simpson wrote:

Real estate interests dominated the policies of many banks, and thousands of new banks were organized and chartered for the specific purpose of providing the credit facilities for the proposed real estate promotions. . . . these banks commonly stopped short of nothing but the criminal law. . . and sometimes not short of that. . . .

. . . real estate, real estate securities, and real estate affiliations in some form have been the largest single factor in the failure of the 4,800 banks that have closed their doors during the past three years. . . . our banking collapse during the present depression has been largely a real estate collapse.¹³⁴

The cumulative effect of all these factors can be devastating, leading to the grasping for liquidity and security, the general chaos, disintegration and demoralization of interdependent economic relations that is a depression.

What we have said of the urban frontier applies with a few technological modifications, to other frontiers. The land bubbles of 1920-29 repeated, in modern dress, the fabulous canal, turnpike, and railroad bubbles of the 19th century.¹³⁵ Less widely known, especially in the east, is the irrigation frontier. There, the slow settlement of projects ready in the early 'twenties delayed the flood of irrigated crops they would ultimately produce, and lot prices

remain high enough to evoke many further projects otherwise submarginal, whose output led to ultimate collapse of prices. David Weeks warned in 1930 of a "vicious cycle of overexpansion" from this cause, of the danger "of the development of competing areas which remain in production to aggravate the situation when prices fall again."¹³⁶ The ensuing collapse, with its foreclosures and bankruptcies, strikingly paralleled and reinforced the contemporary urban debacle.

None of this is to say, of course, that the land market alone is responsible for boom and bust. But it certainly does play a large role. Builders and subdividers on a frontier of economic growth must operate and borrow and make decisions on the shaky foundation of a bubble, a large land bubble whose glossy surface is supported only by the pressure of vacant space inside. As it swells, opportunities multiply; when it bursts they disappear in chaos, and many a bankrupt with them. Little wonder that each major American land boom has closely preceded a major depression, and no major depression has come except shortly after a land boom. As there seems to be some line of causation from one to the other, we may tentatively suggest that one social cost of vacant land may be some contribution toward unstabilizing the economy.

VI. Conclusion

To sum up, a great deal of land in the United States lies unused. While we keep less of our land unused than do

many of the most retarded countries, still we keep a great deal, especially on frontiers of economic growth. There appears no prospect of the problem's curing itself. It is if anything more pronounced on modern urban frontiers than on the old frontier of cultivation.

This unused land represents a violation of the equi-marginal ideal, being located not beyond the bounds of settlement, but so thoroughly mixed among settlements that one cannot usually define the bounds of settlement. Much unused land lies amid intensively used urban land of high value and marginal productivity, yet it yields no urban services, nor any income for its holders.

In addition, this unused land obstructs economies of closer settlement, disrupts markets, denies employment and investment outlets to society, and, strategically located on margins of economic growth, by the fluctuation of its prices exerts some unstabilizing influence on the flow of investment, and thence on all economic activity.

CHAPTER II

TENANTED LAND

I. Introduction

A. Introduction to Chapters Two and Three.

The data of Chapter One attest to the wide distribution of a misuse of land almost as extreme as is possible: complete disuse. The question next arises, if there are market forces which lead in some circumstances to such a complete denial of the equimarginal ideal, may these same forces not lead in other circumstances to less glaring problems?

We have seen that "unused" land is a difficult category to bound; that there is a considerable twilight zone between the desert and the sown. For example, many buildings in blighted areas are boarded up, unused, although the land does not qualify as "vacant".¹ The Chicago Plan Commission in 1943 recommended clearing 242,000 dwelling units as "not worth keeping beyond 1965".² Many units are "so old or economically unsound that they should be destroyed and replaced with new improvements."³ Many still standing "were built when President Arthur or Grover Cleveland were in the White House."⁴ Over the whole country,⁵ about 46% of all urban dwelling units were built before 1920. It may well be that outright vacant land is only the top of the

iceberg, startling to behold but most significant as the evidence of things unseen.

We approach, obviously, a more subtle group of problems. Vacant land lies out in full view to be counted. Underused land wears a veneer of improvements to cover its defection from casual eyes. To penetrate its secrets we must decipher the cryptic codes of economic theory, accounting and census data that contain them. To that task we devote the rest of this study.

Chapters Two and Three are restricted narrowly to farm land. There are several reasons for this:

1. We lack the resources to survey all industries in this study.
2. There are available more data about farm than other lands.
3. In farming one can see elemental land market forces at work in purer simplicity and abstraction. As farming is organized simpler than other industries there is little elaborate institutional superstructure to obscure the fundamentals. As there is less corporate ownership in farming, tenure is more direct and easy to describe and classify.
4. In farming private individuals or firms have little monopoly power. If land is preempted from its most productive use there is little monopoly motive to explain it.
5. In farming there is not the risk of rapid obsolescence that may obtain in some parts of a fast-changing city. So if a farm landholder neglects, abuses or runs down his farm we need

not ordinarily take seriously the explanation that he anticipates a sudden change in its best use.

6. There is on the whole less tenancy in rural than urban areas. The percentage of city dwellers who own their dwellings is less than the percentage of farmers who own their farms -- and each farm is a business as well as a dwelling. Thus we run no danger of exaggerating the prevalence of tenancy and analogous conditions in general by focussing on measures of farm tenancy.

7. As a farm is a home and job combined, one rarely rents a farm as he might a hotel room or apartment for the convenience of being near a temporary job. Farm tenancy has no such evident utilitarian explanation.

The principles drawn from an analysis of farm land problems should have wider bearing as well, and subsequently help us thread our way through the mazes of more complex markets. Besides that, of course farm land itself represents an appreciable part of our natural resource base, even if a good deal smaller portion in terms of value than most people think, and deserves study for its own sake.

B. Introduction to Chapter Two.

In the Introduction to this study we explained that the equimarginal ideal requires that it be impossible to increase aggregate net output by shifting land between "uses", not only in the narrow sense, but between different tenures as well. The present chapter deals with this last. It concludes that it

would be possible to increase output by shifting land from tenancy to owner operation. As was also explained in the Introduction, this statement is equivalent to saying the marginal productivity of land tends to be lower on tenant than on owner-operated farms, and the marginal productivity of land on tenant farms would generally be increased if the tenant-operators bought out their landlords and became owner-operators.

Chapter Two first raises the question whether tenancy is still widespread enough to warrant any present concern, and whether it is likely to persist. Second, it compares the development of tenant lands with owner-operated lands. Finding the tenant lands generally worse conserved and less improved and developed, it offers an explanation of these findings in the frustrations of the landlord-tenant relationship. Finally it considers the function of tenancy in present land markets, and the implications of tenancy for this study.

II. The extent of farm tenancy

In reporting on farm tenancy the Census has tended to emphasize, as a proper measure, the percentage of farmers who are pure tenants. In 1950 that was 27 per cent, a marked decline from earlier years. Others have followed this lead, and the figure 27 per cent has circulated widely.⁶ It has been widely heralded as presaging the end of farm tenancy in America. But it is for our purposes quite inadequate, and we will see that a more careful analysis of the data lends little support to the hope that tenancy is on the wane.

We are interested in tenancy as a land problem, as an index of how well we are using our natural resources. Hence we want to know, not what per cent of farmers are pure tenants; but what per cent of land tenants operate. The two are quite different, for there are many "part-owners" who are also part tenants and lease some of the land they operate. The percentage of land which is leased is appreciably higher than the percentage of farmers who are pure tenants.

In 1950, pure tenants farmed only 18 per cent of the farm land area. But part-tenants leased almost as much again, so that 35.4 per cent of the farm land area was under lease.⁷ Thirty five and four tenths per cent is the more significant measure of tenancy.

That by no means implies that all other land is owner-operated under ideal tenure conditions. Another 9 per cent of the farm area is operated by hired managers. If we include them with the tenants, the two groups operate 44.4 per cent of the farm area. Besides that, a good many owner-operators carry on under enervating financial conditions. But we treat of those lands in Chapter III. Now we will concentrate on tenancy, narrowly defined. In 1950, as we said, 35.4 per cent of the farm area was under lease to tenants.

A. Relative values of leased and owner-operated land--
leased land on the average more valuable.

Of course we cannot rest with an area figure as a measure of farm tenancy. Land values vary enormously from place to

place, and 35.4 per cent of the farm area might contain 10 per cent or 90 per cent of the land value, depending on where it lies. The next step is to find the relative values of leased and owner-operated lands.

Land economists seem generally to believe that tenancy is higher on better land. T. W. Schultz writes:

. . . they [owners] tend to buy farms on the less productive soil, again, of course, because it takes less capital. 8

Ely and Wehrwein agree:

High land values are generally, though not always, associated with a high proportion of rented farms. 9

Max Tharp writes:

Full owners are most prevalent in the hilly sections and on the poor soils where dairy, general and self-sufficing farming do not lend themselves readily to tenant operation. Part owners are concentrated in the wheat-growing and cattle-grazing areas. Tenant operation is common on the level, fertile lands where production of the major cash crops predominates. 10

The 1945 Census states:

The highest proportions of tenancy were recorded in areas with the most productive farm lands, such as the cash grain areas in Illinois and Iowa. 11

and the 1950 Census echoes it.¹²

The 1950 Census gives some supporting evidence. It reports that pure tenants operated 18 per cent of the farm area, but that area contained 30 per cent of the cropland harvested. The 1920 Census, remarking a similar contrast, explained that it was because "many tenants hire simply that area of cropland which they expect to cultivate".¹³ The 1920 Census reported the percentages of "improved" land in each farm. "Improved"

meant all land except woodland, very poor brushland, rough or stony land, et cetera: in short, "improved" land meant better land (and not, as the word implies, land on which improvements stand). The percentages were as follows:

Owners and part owners -- 49 per cent

Pure tenants -- 66 per cent

Evidently tenant farms contain an unusually high percentage of good land.¹⁴

When we look for more direct data on farm land values, we find the Census no longer provides it. Recent Censi do not report land values separately, but lump them together with the value of buildings in one inscrutable figure. But tenant farms¹⁵ have fewer and cheaper buildings than owner-operated farms. To include building values with land values, therefore, tends to counteract and obscure the very trend we are testing for.

To see how building values might distort the picture, contrast New England with the West North Central states (Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, North Dakota). Ask a Vermonter what land is worth "per acre" and he hardly recognizes the concept. He will tell you the value of a farm depends mostly on how it is kept up. The 1930 Census reported that in New England land values were only 44 per cent of the total value of land plus buildings; in the West North Central states land values were 77 per cent.¹⁶ And of course tenancy is very low in New England, but very high in the West North Central region.

In 1930, pure tenants operated 6 per cent of the New

England farm area and 38 per cent of the West North Central farm area.¹⁷ As between the two regions, tenancy increased with land value, but not with the value of land plus buildings. On the contrary, with the latter it decreased. The average value per acre of New England farm land was \$28, compared with \$45 for West North Central land. But when we add buildings, New England farms were worth \$64¹⁸ per acre, compared to \$58 for West North Central farms. The relationship was reversed. That should make it clear why we cannot use data on the value of land plus buildings to test whether leased land, alone, is more valuable than owner-operated land.

For a second example of how building values may obscure the relation of tenancy to land values, consider the figures on Table 1 (see page 126).

Note that in 1910-20, when land values were high relative to building values (and thus comprised a higher percentage of land and building value), the value per acre of land plus buildings on tenant farms was greater than on owner-operator farms. But by 1930, when land values were low relative to building values, owner-operator farms were worth more per acre than tenant farms.

That strongly suggests that tenant farms are more land intensive, while owner farms have more valuable buildings per acre; and, thus, again, shows that data on values of land plus buildings are no reliable index to values of land alone.

For a third example, consider the fact that when a farmer owns part and leases part of the land he operates, the value

TABLE 1

Acre Values of Tenant and Owner Farms; and
Land Values Compared to Building Values on all U. S. Farms
1900 - 1950 (19)

<u>Year</u>	<u>Per Acre Values of Land and Buildings Together</u>		<u>Land Values and Building Values Shown Separately, All Farms (Billion \$)</u>		
	<u>Pure Tenant</u>	<u>Full Owners</u>	<u>Land Values</u>	<u>Building Values</u>	<u>Land as Per Cent of Land and Buildings</u>
1900	\$ 24	\$ 21	\$ 13.1	\$ 3.6	78.6
1910	48	37	28.5	6.3	81.8
1920	90	67	54.8	11.5	82.7
1925	64	58	37.7	11.7	76.3
1930	53	57	34.9	12.9	73.0
1935	33	38	....	....	....
1940	35	40	23.3	10.4	69.1
1945	51	51	....	....	....
1950	88	79	....	....	....

of his farmstead, which he owns, will be included with the value of the owned portion as recorded by the Census, while the value of the leased portion will normally include few or no buildings -- naturally he will put his buildings on the owned portion. Thus the Census records that the owned portion of part-owner farms is, on balance, worth somewhat more per acre than the leased portion.²⁰ But it does not follow that the leased land alone is worth less. Again, in comparing the value of the leased portions of part-owner farms with pure-owner farms, one is comparing almost bare land with land plus improvements.

For a conclusive test, therefore, we must go back to the years when the Census reported land values separately. For 1920 the Census provides not only separate data on land value, but a specific study of how tenancy varies with land values.²¹ The land value data, even then, are far from perfect. The Census merely subtracts building value from total farm value and calls the residue "land value". Thus it includes fences, terraces, tiles, ditches, fertilizer, orchards, vines, and other improvements as part of "land".²² This has the same effect as lumping buildings with land -- improvements comprise a larger portion of farm value in New England than in the West North Central states. But despite this negative bias in the data, they still show that tenancy is higher where the value of "land", so defined, is higher.

E. A. Goldenweiser and Leon Truesdell analyzed the 1920 data to test whether tenancy increased with land value.²³

Unfortunately, they chose to measure "tenancy" by the per cent of farmers who were pure tenants, rather than as the per cent of land that tenants operate.²⁴ Hence not even their figures exactly test the case. But in 1920 there were many fewer part-owners than now to complicate the picture, so the one measure of tenancy would approximate the other well enough for rough purposes.

Goldenweiser and Truesdell treated each of the nine Census regions separately. They arranged the counties of each region in descending order according to the per cent of tenancy in each county -- that is, the top county had the most tenancy, and the bottom county the least. They divided this array of counties into quarters. Thus the first quarter contained counties with the highest tenancy, and the last quarter contained counties with the lowest. Then they compared land values per acre in the different quarters.

With one exception²⁵ the values declined regularly from group to group. Table 2 presents the average values per acre of land in groups one and four, for each region.

For the whole nation, the average value per acre of land leased by pure tenants was \$77.88, compared to \$52.16²⁷ for full owners.

If we had 1950 data on land values separate from buildings, we could doubtless repeat Goldenweiser and Truesdell's results for recent times. If we had data on bare land values, separate from all improvements, the results would probably be

TABLE 2

Values Per Acre of Land in Counties With
High and Low Tenancy. By Regions
1920 (26)

<u>Region</u>	<u>Group One</u> <u>(Counties with</u> <u>high tenancy)</u>	<u>Group Four</u> <u>(Counties with</u> <u>low tenancy)</u>
New England	\$ 29	\$ 23
Mid-Atlantic	63	29
East North Central	180	47
West North Central	142	36
South Atlantic	50	38
East South Central	43	28
West South Central	58	13
Mountain	37	13
Pacific	89	60

even more emphatic. Lacking these data we can still approximate them by taking data on the value of land plus buildings in regions where improvement values are small relative to land values. There the value of "land plus buildings" is more dominated by land value, and may represent land value fairly well. Let us examine 1950 data on the West North Central region, where land values are generally high relative to buildings and other improvements; where the total value of many farms consists largely of their rich natural endowment of deep fertile soil. This region contains more leased land than any other.

The 1950 Census gives values of land plus buildings by "subregions".²⁸ It also provides a map showing roughly the per cent of leased land in each county.²⁹ Using these two maps, I have divided the West North Central subregions into two groups: those with over 40 per cent leased land; and those with 40 per cent or less leased land.³⁰

The average value per acre is about twice as high in the subregions with higher tenancy.³¹ The precise figures are not significant, being the result of rough calculations. The overall trend is important, and that is quite clear. Tenancy is lower in the "back country" of Northeast Minnesota, the high western plains, and the Ozarks; and high on the rich prairies of Iowa and the wheat lands of Kansas.

To be sure, one must recognize that high land value is by no means the only condition correlated with tenancy. There

are several other factors at work. One would expect tenancy to be higher where land is less erosive (because such land can stand more abuse); where the optimum operating unit is very costly; where the ratio of land value to improvement value is high (for reasons to be detailed in chapters IV, V, and VI); where wealth is less equally distributed; where credit markets are poor; where rainfall is uncertain and the future is risky; where living conditions are unpleasant; and where investors expect rents to increase. With all these influences at work, naturally the pattern of tenancy does not follow the pattern of land values exactly. The high western plains, notably, have had considerable tenancy -- at least in certain years -- although values per acre were low. But on balance, from the evidence presented, it seems clear that acres under lease to tenants are significantly more valuable than those which owners operate.

It lends more certainty to this conclusion to note that tenancy coincides with high land values also in many other countries. In Lebanon, according to Charles Malik, owner-operators farm poor soil in the mountains while tenants work the richer plains and interior valley.³² In South Korea tenants farm 78 per cent of the rich Cholla Pukto region, but only 24 per cent of the poor North Hamgyong Province.³³ In China, "the richer the area, the higher the proportion of tenancy", according to Shu-ching Lee. In 1948, about 32 per cent of the farmers in the richer Pearl and Yangtze River areas were owners, compared to 69 per cent in the poorer Yellow River Valley.³⁴ And in Belgium:

According to the 1930 Census . . . Generally it is the small farms of under 50 acres that are cultivated by owner-occupiers who represent the majority only in the poorer regions (the Campine and the Ardennes), whereas on the very rich plateau of Herve two-thirds of the farmers are tenant farmers. 35

De Souza writes "the bulk of tenancy is to be found in the most highly valued lands of Brazil."³⁶ In Canada, tenancy is lowest in the Maritime provinces, and high in Ontario where land values are higher.³⁷ In lower Burma, where the land is rich and close to ocean transportation, and rainfall is ample, probably over half the "best and most fertile rice lands" are absentee-held; while in upper Burma, with a poorer natural endowment, only about one seventh the area is so held.³⁸ In the Philippines, tenancy is especially high in Pampanga and other rich sugar areas, and low in marginal areas like Palawan.³⁹ In Sweden tenancy is higher in Skane and eastern Sweden, where land values are higher.⁴⁰

With more data, we might find this a nigh-universal rule. As it is, we can certainly conclude the rule holds sway in many areas around the world.

To sum up: leased land is on the whole more valuable than other farm land. Census data do not let us measure exactly how much more valuable. Therefore we cannot know precisely how much to change our measure of tenancy. But we do know which way to change it.

Thirty five and four tenths per cent of the United States farm area, as we said, was under lease in 1950. That area contained the best farm lands of the country. The percent-

age of farm land value under lease must be a good deal higher than 35.4 per cent. Just how high, there is no way to know from existing data. I would suggest 45 per cent as a conservative working estimate. And I would add there are good theoretical reasons, which will appear as this study unfolds to suspect that, had we data on bare land values, separate from not only buildings but all improvements, they would boost the figure even above 50 per cent.

If our purpose is to minimize the importance of tenancy in the United States, then it is well to take 27 per cent, the percentage of farmers who are pure tenants, as the measure of tenancy. No doubt to many it appears more politic to emphasize that low figure, especially in this age when the American economy is on trial before the world. But if our purpose is to measure tenancy accurately, then we must conclude that it is still a dominant feature of the farm landscape.

B. Recent trend of farm tenancy

We have measured tenancy three ways. The per cent of farmers who are pure tenants was 27 per cent in 1950. Next we added the part-owners, and measured all land under lease by them and pure tenants: it was 35 per cent. Next we measured land by value instead of area, and settled on 45 per cent as a rough estimate of the per cent of land value under lease.

Finally, to round out the picture, we will add the time dimension. This is more important than further improving the accuracy of our 1950 estimate, even if that were possible, for

tenancy changes throughout history, and history moves swiftly. When the 1950 Census came off the presses its story was already over three years old, and tenancy in fact had evolved to some new figure. Let us try to anticipate what changes time will soon bring; whether the tide of tenancy is rising or ebbing.

The long term trend of farm tenancy in America has clearly been upwards. No United States Census recorded tenancy before 1880, but it was surely much lower then than now. Early observers of the American scene, like Crèvecoeur, remarked the contrast to Europe. As late as 1840 de Tocqueville wrote: "In America there are, properly speaking, no farming tenants; every man owns the ground he tills Land is cheap, and anyone may easily become a landowner."⁴¹

But by 1880 tenancy had reached large proportions, and public opinion demanded a count of it. The Census then duly recorded that 25 per cent of American farmers were tenants. The figure grew to a high of 42 per cent in 1935.⁴²

But against this long-run trend, with its implied prophecy, runs a contrary one: during and since the Second World War, tenancy has declined.

How much it has declined depends on how one measures it. Most writers still quote primarily data on the percentage of farmers who are pure tenants. Thus measured, "tenancy" has declined dramatically: from 42 per cent in 1935 to 27 per cent in 1950.

The measure that interests us -- the percentage of

farm land which is under lease -- has fallen considerably less: from 45 per cent in 1935 to 35 per cent in 1950. Why has this measure fallen less than the other? Because there are now more "part-owners" who are also part tenants, but whom the Census does not count as tenants. Too, the average tenant farm has grown in the period, much more so than the average owner-operated farm. As in the Civil War, high wages speeded mechanization. As tenants left for war, or war work, other tenants (as well as some owners) mechanized and expanded their operations to replace them. Thus tenancy lost many men, but not so many acres.

TABLE 3

Average Farm Sizes for Different Tenure Groups 1925-1950⁴³
(Acres)

	<u>1925</u>	<u>1935</u>	<u>1945</u>	<u>1950</u>
Pure tenants	108	118	135	147
Pure owners	127	122	125	136
Acreage leased by operator (pure tenants and leased portions of part owners)	120	132	171	181
Acreage owned by operator (pure owners and owned portions of part owners)	134	134	153	170

Even at that, the decline appears impressive. But there is another element to consider: the lost acres were probably the less valuable ones.

The highest proportions of tenancy were recorded in areas with the most productive farm lands, such as the cash grain areas in Illinois and Iowa. In these particular areas there were no significant changes in either the proportion of tenancy or in the proportion of land rented. 44

That conclusion emerges clearly from a careful inspection of the series of maps on page 15 of part 5, Volume V, 1950 Census of Agriculture. Tenancy has declined most markedly in eastern Montana, eastern Colorado, western North Dakota and western South Dakota, and also in parts of Georgia and Alabama. According to the map of farm real estate values on page 10, values in these areas are generally lower than values in areas where tenancy has persisted: notably northwestern Iowa, central Illinois, northeastern North Carolina, the upper delta of the Mississippi River, central Kansas, and southeastern Washington.

Evidently there is a hard core of tenancy in areas of high land values. In recent years advancing owner-operators have only nibbled at its fringes.

Accordingly since 1935 acre values have increased much more for tenant than owner farms. The cheaper acres shifted out of the tenancy column, letting the average rise. Since 1935 the acre value of pure tenant farms has risen 167%; of owner farms, only 108%.⁴⁵ From these figures it might even seem that tenancy has made up in value per acre as much as it lost in acres; and that the percentage of land value in tenant

farms is as great now as in 1935. We do not so conclude (for reasons detailed in Appendix 2). But we do definitely conclude that the percentage of land value in tenant farms has declined much less than the percentage of land area.

C. Probable future trend of farm tenancy

After all these qualifications, the fact remains that tenancy, however measured, has somewhat declined since 1935.⁴⁶ The question now arises whether this brief reversal of a long trend gives hope of persisting. Is it only an ebbing wave on a rising tide? Or is the tide itself turning? Let us look to the forces that move this tide.

We have seen that tenancy tends to be high where land values are high. From that it seems plausible that tenancy will also be high when land values are high -- the rule that holds as many different points in space may also hold among different points in time. For it is high land values as such, more than any condition incident to them in space, that produces tenancy. Just why that is, we examine in detail in chapters IV-VI. For the present we may briefly anticipate what we there develop at length.

Advocates and critics of tenancy agree it is the income from land that attracts the absentee landlord to buy title, and it is the high price of land titles, capitalized from this income at lower interest rates than tenants enjoy, that inhibits tenants from buying the land they operate. Or, as Shu-ching Lee puts it:

These regional differences in proportion of tenancy are entirely due to economic causes. In the northern provinces . . . the yield of a farm is too low to be shared by both a landlord and a tenant . . . (but) In the rice regions, irrigation makes production of land fairly fruitful and certain. It is the surplus in agriculture which invites investments from urban capitalists or bureaucrats 47

"The surplus in agriculture invites investments" from absentee landlords. So when time brings higher prices for the produce of land, and/or lower costs of production, it brings a new surplus in agriculture to invite investments from absentee landlords, and thus increase tenancy.

And so it seems plausible the major cause of the long term rise of farm tenancy in the United States has been the long term rise of farm land values. And to predict the future long term course of tenancy one need mainly predict the future long term course of land values -- barring, of course, special government action against tenancy. 48

If one lifts his eyes beyond the immediate farm recession, this basic cause for tenancy seems likely to persist. Land values have extreme cyclical ups and downs, but in the perspective of generations have moved consistently upwards. Now wealth and population in the United States are again growing apace, while the land supply, as always, remains constant. Despite current vicissitudes, eventually a new surge of demand should carry land prices to new highs.

On the other hand, the recent decline of tenancy, such as it was, followed from an unusual conjunction of circumstances; pessimistic long term anticipations combined with extraordinarily

favorable immediate realities. The forces interplayed somewhat as follows.

By 1940, farmers had suffered 20 years of falling prices, and known drought, pestilence and foreclosure. They remembered, too, how farm prices had soared in the previous war, engendering a land boom that ended in tragic fiasco when they tumbled. Therefore when weather, war and the farm bloc conspired to skyrocket farm incomes in the second war, pessimism kept land values a respectful distance behind. Strange as it may seem now, most people seriously feared a postwar deflation.

Meantime the wage component of farmers' incomes rose immensely -- more, percentagewise, than the wages of any other group. With this, and high land yields, debtors discharged their mortgages easily. Many tenants, too, accumulated enough to buy land. As the present yields of land were high, but anticipated yields remained low, land ceased to be an investment only for those who could speculate in hopes of distant future gains. Banks, insurance companies and other unwilling absentees disgorged great areas of foreclosed land, a heritage from the 'thirties, with great relief at this opportunity to close their books. Operators took it up. As Timmons puts it:

Many tenants and laborers have become farm owners relatively easily as land values have lagged behind increased farm income All of us have heard of instances where tenants have bought and paid for farms out of two or three years' earnings. 49

That rare mixture of long term pessimism with booming prosperity is obviously most unstable, and not likely to endure

nor recur. There is no reason to believe that another war, or continued war, will reproduce the same lucky combination. In World War I, for example, popular psychology was just the opposite. Buyers looked back on 20 years of rising rents, listened to a spate of Malthusian forecasts predicting 100 years more, and boomed land prices far ahead of rents. Those who bought then suffered the consequences through 20 hard years of attrition, bankruptcy, and growing tenancy.

That can happen again. The peculiar virtue of the 'forties was pessimism that weighed down land prices. But that incorruptible strain of pessimism, that inhibits every temptation to capitalize current prosperity into land prices, is a costly plant to nurture in the popular mind. It only flourishes after a downpour of adversity. In the summer sunshine of prosperity it withers like droughted grain; and without its protective cover land prices, like bare topsoil, are free to sail skyward with the first fair breeze.

Just when we shall see another 1920 is beyond my science to say, for who presumes to foretell the temper of the market? Perhaps we will never see another. But if history is any guide we will continue to experience alternating periods when the market overestimates, then underestimates the future. When, in this shifting pattern, operator income is high relative to land value, we may yet see tenancy fall a bit, as from 1940-50. But when operator income is low relative to land value, or relative to heavy mortgage debts incurred in

times of high land value, as for many years before 1935, we may confidently expect to see tenancy continue its secular increase. At present writing (November, 1955) we are seeing farm income fall while land prices hold firm.⁵⁰ Thus the market is returning to that high ratio of land prices to land income that spawns tenancy. The results should begin to show in the Census of 1960.

Some might contrast the extraordinary financial prudence of American farmers in World War II with their excesses in World War I, and conclude that Americans have come of age and are now too mature for another orgy. But, to judge from the past, one display of caution does not guarantee another. In the early 20th century, for example, for over a decade after reviving prices had taken the steam out of Populism, farmers remembered their past misfortune and prudently avoided much expanding their mortgage debt, despite rising land values,⁵¹ just as in the 1940s. But a few years later they began to borrow without restraint, and finally succumbed to the tragic land boom of 1920.

Again, some might protest that farm price supports now protect farm landholders from another 1920. That is doubtful. The political determinants of price supports are almost as fickle a base of expectations as free market forces. And however high they go, land values can follow and overtake them. Buyers and sellers will capitalize anticipated political victories of the farm bloc into land values. One day they

may be disappointed. Or, even if not, even if change does not come in a dramatic crisis, still it will come. Permanently high price supports mean permanent high land values; and those will lead to permanently high tenancy.

To sum up: in the perspective of decades, the recent decline of tenancy appears as the product of unusual and transitory clauses. On the other hand, the secular advance of tenancy has followed from the persistent rise of land values, which will probably continue as population and capital and demand increase, the land supply remaining constant. Therefore it seems likely that tenancy will still increase.

In venturing this prediction we are leaving out of account many factors that may belie it, most notably the impact of income taxation, and the wartime equalizing of income distribution. It is the writer's opinion, however, for reasons too lengthy to detail here, that the factors discussed are the more important ones and their influence will prevail.

III. The cost of tenancy relationships

A. The evidence

Thus far we have only measured land under lease, and not shown it to be underused. Many will need no persuasion on that point. But others may take tenancy for granted as an integral and entirely healthy part of a free market system; or at least doubt that leased land is so badly kept as to warrant calling it misused. And so we will now give the reasons why we do so.

The first reason is neglect of conservation practices. In the introduction we stated that soil depletion was to be deducted from output in the year incurred, while the value of positive conservation practices was to be added to output in the year undertaken. Thus the failure to engage in both positive and negative conservation practices itself means lower output; while of course the results of these failures mean lesser output of cash crops in the future. So any class of lands showing consistently worse conservation practices are deeply suspect of adding less to output than they would in some other enterprise or tenure where they were better husbanded.

Many careful studies have established beyond much question that, as the President's Committee on Farm Tenancy wrote: "The correlation between soil erosion and tenant occupancy is very striking."⁵² That is generally accepted, enough so that Ely and Wehrwein's "Land Economics", the pioneer text in the field, mentions it as an established fact.⁵³ Some basic primary studies are those by J. A. Baker,⁵⁴ Hoyle Southern,⁵⁵ Peter Nelson,⁵⁶ and Rainer Schikele.⁵⁷

Schikele in 1935 studied the practices of many tenants and owners in the corn belt and gave them erosivity ratings. Of operators who had been in residence 1 to 2 years, 79 per cent were tenants, and the groups' erosivity rating was 4.3. Of operators in residence 11 to 20 years only 24 per cent were tenants. The group's erosivity rating was much lower, 2.7.

Tenants tended to favor corn and hogs, while owner-operators⁵⁸ raised more soil-building crops.

J. A. Baker's 1939 studies in the corn belt showed ". . . the system of land use on tenant operated farms is much more conducive to soil erosion than that observed on owner operated farms."⁵⁹ He continued:

The size of the differences noted and the consistency with which they are observed indicates that the results of this analysis are applicable to a much larger region than that actually covered by the areas studied.⁶⁰

Peter Nelson summed up his observations this way: ". . . the tenants occupy the less sloping land, but show an⁶¹ equally higher degree of erosion."

Besides being worse conserved, tenant farms tend also⁶² to be less improved. According to a very familiar economic reasoning, which is little more than common sense, an additional acre joined to a farm with little spare labor and equipment to complement it will increase output less than if added to a more intensive farm.⁶³ The 1940 Census, last to give this information, reported that on full owner farms, buildings made up 40% of the combined value of land and buildings, on tenant farms only 27%.⁶⁴ In the corn belt in 1940 owner farms had 30 to 50 per cent more buildings per acre than tenant farms, according to Rainer Schikele.⁶⁵ Again, Adon Poli found resident held land in the Imperial Valley to have many more improvements per acre than tenant land.⁶⁶ As to machines, the 1950 Census states that tenant farms are much less mechanized than others.⁶⁷

Here are the percentages of pure tenant farms and owner farms having electricity, tractors, and trucks:

TABLE 4

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Certain Improvements on Tenant and Owner Farms

<u>Per Cent of Farmers Having:</u>	<u>Tenants</u>	<u>Owner-Operator (Commercial)</u>
Electricity	66	85
Tractor	40	57
Truck	25	40

Nor are tenant farms more labor-intensive. One study in the corn belt showed about the same use of labor per acre on tenant and owner farms.⁶⁹ If the tenant farms were on better land, as tenant farms in that area generally are, that means the tenant farms used less labor per dollar of land value. And if we compare corn belt farms with owner farms in marginal areas like the Appalachians, we find the corn belt farms fantastically underpopulated relative to, say, eastern Kentucky. Carter Goodrich selected 20 counties of eastern Kentucky (on the basis of their having few part time farms to distort the averages) to compare with Iowa, and found that in eastern Kentucky there were two and one-half times as many farm inhabitants per farm acre as in Iowa. And, if one excludes the pasture, woodland and waste, there were 7.9 times as many farm inhabitants per acre of crop land in eastern Kentucky.

Measuring by value, there were 14.9 times as many people per⁷⁰ dollar of farm real estate value in eastern Kentucky.

The 1950 Census (published in 1953) cites a 1952 joint survey by the Departments of Agriculture and the land grant colleges. It concerned potential farm output. The Census sums it up as follows:

With the use of 3 per cent more cropland (which was idle in 1951) and 2 per cent more man-hours of labor, the total farm output in 1955 could be 21 per cent more than in 1950. . . . The larger part of the increase in farm output, as shown by the survey, would come from the regions with the highest percentages of tenancy. 71

Because of studies like those above, we include tenanted lands among underused lands. That does not mean that every tenant farm is abused. We will see more and more, as the study unfolds, that land use is very much a matter of the individual holder. But it does mean that most of the tenanted lands are not contributing as much to human well being, nor to the income of the holder, as they might if owner-operated. Thus it casts a doubt on whether the present land market succeeds in allocating land to the holder in whose possession it would add the most to output, inasmuch as these lands would quickly become owner-operated if the market transferred title from absentee landlords to operating tenants.

B. The landlord-tenant relationship

Now we will consider the reasons why tenanted land is more eroded and less improved -- and in the process we will note some less visible losses due to tenancy.

Some attribute the condition of tenant farms to tenants' being an oppressed class, who never had a chance; others to tenants' being "thriftless and shiftless."⁷²

No doubt there is some truth in both observations, but neither carries very far. For some tenants are relatives and even heirs of their landlords; and many hold title to some acres at the same time they lease others. And in 1937 the President's Committee on Farm Tenancy observed: "The average annual net income of tenants in the North and West apparently is not strikingly different from that of owner farmers . . ."⁷³ Those facts hardly admit of either explanation.

It is more plausible that the institution of tenancy itself is at fault. In the following pages we will examine its workings in some detail, and especially its effects on incentives to produce, conserve, and invest. This is necessary to determine whether we are justified in referring to tenanted lands as "misused", and interpreting the persistence of tenancy as a standing violation of the equimarginal principle. In general, the considerations of the following pages indicate that the landlord-tenant relationship entails considerable costs, material and psychic losses, involving both destructive acts and the frustration of constructive ones, all of which detract greatly from the net income that finally accrues to the landlord and may be called the income imputable to the land; and therefore that tenanted lands tend to yield less income to their holders, and to society, than they would if each tenant were his own landlord.

1. The basic conflict of interest

The extra losses of tenancy spring basically from one person's holding title to what another manages. That intrudes into farm management an extra human relationship and conflict of interest that is costly, and thus detracts from the net produce of the land. Some economic analysis proceeds as though human relations were costless to arrange. But in fact the highest priced administrators and lawyers deal with little else. It is not a cost that economic theory can ignore.

A simple example is the cost of merely collecting rent. Where owner and operator are one, this cost is zero. But collecting from tenants costs money. Hurd once estimated that in central cities, with high rents, collection costs were 2.5 - 3 per cent of rent; in smaller ones, with lower rents, 5 per cent, and more for cheaper places.⁷⁴ Probably on farms the percentage is higher. Indeed, the sharecrop system exists primarily to facilitate rent collection, and all its wastes in a sense are collection costs. From Persia we read that "watchmen are stationed in the fields at night to guard the grain against theft", and the peasant cannot move his grain until the landlord has claimed his share.⁷⁵ American landlords do not usually go so far; but they or their agents must certainly keep a sharp eye to see that the tenant does not conceal part of the crop he is supposed to share. That costs something. Too, the system weakens the tenants' incentive, as only some fraction of his marginal efforts accrue to his benefit. Like a man subject to high marginal income taxes, he will work only

to the point where the marginal product that accrues to him equals his marginal cost in producing it. If he takes 50 per cent of the crop, he will not, as Banks observed long ago, expend more than 50 cents worth of his time and trouble to add \$1.00 to the crop value.⁷⁶ When we consider that over 70 per cent of the land tenants operate in the United States is under some kind of share arrangement,⁷⁷ it is clear those costs are something to reckon with.⁷⁸

Moving and contracting costs also mount up. Most American farm leases run only for one year, and tenants shift from farm to farm quite often. In many areas, too, the boundaries of scattered absentee holdings do not coincide with the functional outlines of optimal operating units. In some areas, like Imperial Valley, a tenant must often dicker with many absentee title-holders, or their agents, to assemble an operating unit, and perhaps repeat the process every year or so.⁷⁹

These are simple examples of excess costs in the tenancy relationship, "excess" meaning costs that do not arise where owner and operator are one. But they are the least important ones. The greatest wastes result rather from this: the tenant has no interest in the future of the assets he manages. He has no personal motive to conserve and improve the land. Understandably, his attitude is: "Let the farm do the work; the only thing here of value to me is my time". Such reasons urge him to wring as much as he can of the extractable values of soil and improvements into his own pail; and to spend as little effort as he can putting anything back. An oft-told

example is tenants' preference for particular kinds of "fertilizer" that act primarily as catalysts, making the soil yield more of its fertility into the present crop at the expense of future crops. But a hundred little choices between present and future present themselves to the tenant every day. In each, he tends to favor his income and his leisure over the land's condition -- to sacrifice any future value, however great, for any present value, however small.

The title-holder, to be sure, values the land's future. Why, then, does he not arrange to compensate tenants for improvements, and penalize them for wastes? He may try; but such a contract would cost dear to administer. As we said, the tenant chooses between present and future values many times a day, to some extent in every move he makes. Maintenance consists in an endless series of petty attentions. Little about a farm or building is standardized. It takes time and hard work to survey the tenant's improvements, and assess the results of his neglect. It takes a long walk and a good memory to know that he stopped to straighten a post, tighten a fence, check a gully, or touch up the barn door. The mere cost of examining and describing all this work may exceed the cost of doing it. Indeed, unless tenant and landlord trust each other uncommonly well, and have uncommonly accurate and concurrent memories of how things were when the tenant arrived, they will never agree on the description. And after that they must put a money value on it. The holder may think the tenant misdirected his efforts and refuse to buy; the tenant

has no other market for capital he attaches to the holder's land. As to penalties, few tenants would contract to let another assess penalties against them, and few holders would hope to collect them.

One cannot, therefore, make a tenant give land an owner's care by compensating and penalizing him. Human relations are expensive at best, and the tenant-landlord relation is far from the best. The cost of tenant-landlord relations prohibits much care that an owner would automatically give in the course of his work; and even where compensation is feasible, administrative costs eat up much of the benefit.

Good will is a lubricant that would considerably reduce the friction of landlord and tenant. But good will is a hard feeling to foster between those two. Few tenants love a landlord. A good many hate them. Rightly or wrongly, the tenant may consider the landlord as an exploiter more than a co-equal partner and fellow citizen -- the long tradition of landlords as aristocrats and tenants as unhappy subjects still lives in some of the attitudes of both groups, whatever one may think about its relevancy to modern conditions.⁸¹ Or, as the cynic would have it, tenants may be vindictively jealous of the landlord's affluence and power. Again, the tenant may simply despise the landlord as an idler.⁸² The landlord, in turn, may despise the tenant because he does have to work. Whatever the reasons, there seems to be extraordinarily little love lost between tenants and landlords.

Social attitudes may degenerate until, as Buck wrote of tenants and landlords in China, "it is quite universal for each party to suspect the other and (for them) to take advantage of each other in any way possible."⁸³ Or, as Clyde Mitchell wrote of Korea: "Maximum exploitation of the land fertility was necessarily the goal of nearly all farm tenants."⁸⁴ No doubt in our own country there are many landlords and tenants who feel a mutual respect that eases the thousand petty problems of maintenance that they share, and admits of some arrangement for compensating and penalizing. But as a general rule the feelings between them are such as to discourage it.

There ensues a battle of wits between title-holder and tenant, maneuvering for their individual gain. Each can expropriate part of any capital the other commits to the land: the landlord by raising the rent; the tenant by depredation or neglect. Prudence restrains each from committing any capital that would be a hostage vulnerable to the other, and thus precludes to tenant or landlord investments as owner-operator would never be without. And so many opportunities to conserve, maintain and improve tenant-operated land languish unheeded, even while we deplore the general dearth of investment outlets.

2. The landlord's defense

First we will consider how the landlord defends himself from the tenant.

One way is to oversee and supervise the tenant closely. But then the landlord is an owner-manager, and the tenant a

hired man. We are now concerned rather with the many holders who, preoccupied with business or pleasure elsewhere, let tenants manage the land. In the extreme, such landlords know nothing of farm technique -- and in 1946 about 25 per cent of all United States farm land was held by those neither farmers nor retired farmers. ⁸⁵ Heiresses, insurance companies and other absentees hold lands they are in no position to supervise at all, and may not see once a year. If they cannot supervise, neither can they check the tenant's behavior very closely to know that he is guarding their interests. To be sure, those landlords who live nearby, and know farming, can keep a better eye on the tenant. They can, if they will spend the time, prescribe and enforce broad minimum standards. But further than that they cannot go without losing the advantages of having a tenant instead of a hired man. And so many landlords must resort to other defenses.

The landlord may resign himself to the tenant's depredations, and charge high rent to compensate for them. This probably explains in some part the oft-deplored cash-crop bias of tenancy. The landlord prefers cash that he can count in a minute to conservation practices and improvements he must study and haggle over for weeks. "The tenant may abuse the place anyway", reasons the landlord. "It would not pay me to snoop after him all year. Why not include probable damages in the rent?" And so he does, thus forcing even careful tenants to abuse the land to make their tenancy pay. ⁸⁶

The holder's second defense is to minimize improvements. The older, plainer and shabbier they are, the less the tenant can injure them. A few nails that would devastate plaster will never show on rough boards, and a little more mud will only make a dirty place dirtier. When the holder does improve he modifies the work to meet abuse. He battens down the hatches, as a sailor for a storm. He omits the fragile, the expropriable, the unwashable, and consigns only hard, smooth or battered surfaces for the tenant to mistreat. It costs something thus to tie down capital. It costs more, in benefits lost, to forego all those vulnerable features, for they are half the good and useful things of life. So in defending himself the landlord tends to keep the land underimproved.

A third defense is to rent only the least destructable land. This is doubtless one reason why tenancy claims the flattest and most valuable land. A rainy hillside, whose unguarded soil could wash away in a few seasons, is no land to trust to a tenant. Those who are buying land 'for income'⁸⁷ avoid hilly country, and buy bottom and flatlands.

The holder's fourth defense is his power to evict. The holder preserves this power by giving only short-term leases. Most American farm tenants are legally vulnerable to eviction⁸⁸ once each year. With this threat, rather than more positive incentives, landholders hope to deter tenants from the most destructive practices.

3. The tenant's reaction

And how does the tenant react to all that? For one, a shabby place will not inspire him to keep it scrupulously. Too, if his rent is premised on some destruction, he will doubtless be somewhat destructive. He may be anyway.

On the other hand, the threat of eviction inhibits his destructiveness. If his rent is low enough so he wants to remain, he will probably try to impress the landlord favorably by keeping the place up, or at least appearing to. He may even hit it off very well with his landlord and enter into joint projects. But the threat of eviction is a two-edged sword. Perhaps it restrains the tenant from destroying; but it certainly restrains him from creating. It confines his plans to a narrow time-span within which it would not pay to conserve or improve on his own account. It confines his long term enterprise to projects his landlord approves and will pay for. Although a small operator, enjoying no benefits of large-scale organization, the tenant is inhibited much like a minor bureaucrat.

Many students of the subject recognize that the results fall short of anything that might be called "full use". Here are some of their comments.

Leon Truesdell:

The tenant must always work without the stimulus of land-ownership, and the tenant farm usually suffers to some extent from the lack of an owner's care. Every tenant farmer is likely to feel that he is subject in some measure to the will of the landlord and that the products of his own enterprise accrue in part to the benefit of the landlord. 89

Rainer Schikele:

The tenant's initiative for providing needed facilities is hampered by his insecurity to stay and the fact that he cannot put any improvements on the farm without losing all of their unexhausted value the moment his lease expires. 90

T. W. Schultz:

We have not as yet learned how to harmonize a one-year lease with a five-year investment. 91

R. T. Ely and G. S. Wehrwein:

If the American farm owner's 'conservation relationship' to his farm is weak, it is practically non-existent in the case of the tenants. 92

J. Ackerman and M. Harris:

Under tenancy the operator's opportunities for investment in the farm enterprise tend to be rather restricted. . . . The result of this dualism of control over capital application is that the majority of tenant farms are underimproved and operated at less than optimum intensity and efficiency. 93

They also mention ". . . the tenant's fear of losing the farm if he improves it and makes it attractive. He also fears that any improvement might make it necessary for him to pay a higher annual rental."⁹⁴

Why, in the world, many have asked, do not landlords grant long term leases? That would free their tenants from the insecurity that inhibits their enterprise. A prime reason, which we have already mentioned, is quite simple and quite conclusive. The landlord would thus relinquish his power to evict, and leave himself at the tenant's mercy. Toward the lease end the tenant could mine the soil and abuse the improvements without any restraint. Even in cities, where there

is no soil to erode, long leases are not very popular. "Due to the fact that buildings on leaseholds revert to the landlord, tenants often refuse to make improvements toward the end of a term. As a consequence, buildings and neighborhoods are neglected and become dilapidated. . . ." ⁹⁵ Buildings, too, may "erode" away.

Another drawback is that the original lease contract must stipulate the cash rent far into the future, when no man can predict what the economic rent of the land will be. If the economic rent rises above the contract rent, the landlord gets no part of the excess. If it falls below, the tenant may very likely fail to pay.

Long leases are risky for the tenant, too. He risks losing his improvements in any bad year when he cannot meet the contract rent. In bad times, many buildings revert to landholders that way. Of course that deters conservative financial institutions from lending to tenants on the security of their improvements, and deters the tenant from improving as fully as if he held title.

And so the long lease is rare, the short lease nigh universal. As Baker says, "The majority of corn belt tenants do not know from one year to the next whether they can remain on the farm they occupy for a longer period than the immediate year." ⁹⁶ Neither, one should add, do most farm tenants in the United States, or for that matter the world.

Now let us further consider how tenants react to short leases. As the tenant cannot invest for the future,

neither can he plan for the future. Yet:

It is well established that the most desirable systems of farming require that farming operations are planned several years in advance. 97

Good irrigated land is built up; it is not produced in one season. 98

Livestock production and proper crop rotations require long term planning and a long-time outlook which cannot exist under the probability of moving is as great as under present leasing methods. The length of time a farmer expects to stay on the same farm influences every decision he makes as to land use . . . " 99

Economies in land use extend over scores of years, but tenants plan only from lease to lease.

A title-holder, though seemingly inert, may come to life and exercise his prerogatives at any lease-end. Indeed, he will often not forewarn a tenant to be evicted, as then the tenant could ravish the land unrestrained until his lease expires. Hence the tenant must anticipate eviction each year, and will rarely look much farther ahead than that. 100

The loss from this is not just the tenant's not planning for the future according to principles tried and true. Another problem is that tenants lack much incentive to explore new possibilities to use the land more effectively when, in result, their rent will rise. As Clyde Mitchell observed in Korea and Ireland ". . . tenants . . . endeavored to keep production down to an average figure lest the landlords increase the rent. 101 Again, H. Rider Haggard observed in England that "tenant farmers will not co-operate because, cooperative accounts being open to inspection, they fear their landlords might raise the rents if

it were found that they were prospering."¹⁰² William O.

Jones has given us an intimate study of how the Spreckels Sugar Company, as tenant, for years kept in sugar the rich lands of the Moro Cojo ranch, although artichokes would have yielded a much greater net income per acre. Not until a new landlord took an active interest in managing the lands for greater income was the change-over effected. The tenant, well content with his lease, had no wish to rock the boat, and stir the landlord into re-appraising the situation.¹⁰³ The operator is generally in closer contact with actual technical and marketing conditions, more aware of and better able to appraise new possibilities than an absentee landlord; but he may not do anything about it.

Those, then are some of the reasons why the tenancy relationship, as it exists today, involves considerable material losses, losses which one can see, and roughly count and evaluate. But those material losses are only part of the losses -- to some minds the smaller part. Along with them go important psychic ones.

As the exchange value of even material things springs only from judgments of the human mind, conditions that produce pleasure in the human mind directly create values as genuinely "economic" as those stored up in matter. And the conditions of tenancy themselves produce pain in the minds of tenants, while the conditions of ownership produce pleasure. To deal with his surroundings as he pleases, in his own wisdom, time,

and fancy, is many a man's deep yearning; to submit to another's whim, an ordeal. Again, to deal openly and unafraid, to display the fruits of his labor proudly rather than dissemble them and feign poverty, to earn the respect of his associates: those are important values to the social human animal. It is hardly plausible that most tenants enjoy being insecure, evasive, socially inferior, and without creative outlets on the land, nor yet that most landlords enjoy being petty, officious and importunate, where recalcitrant tenants require it.

Accordingly, each year, thousands of intrepid adventurers brave bankruptcy for the sheer pleasure of captaining their own enterprises, or possessing their own homes. Others avoid tenancy for its low social status, and would own and control for prestige, power or security. Whatever the reasons, it is safe to say that the unpleasantness of landlord-tenant relations creates considerable unhappiness, which is a very real cost to those who experience it, and which to avoid they will undertake considerable material burdens.

To sum up, then, it is not by chance that tenant farms are generally worse tended than owner farms. The tenancy relationship itself definitely discourages the best farming. Were each tenant his own landlord, he would almost certainly use to much better effect the same lands he now abuses and neglects. The same man, on the same land, can produce much more under better tenure conditions.

And yet not each tenant has become his own landlord,

and tenancy is still with us after millenia of human experience. Indeed, if the unamended land market had its way, we would have much more tenancy than we do. For society subsidizes the resident-owner with occasional debt moratoria, homestead tax exemptions, residence requirements, acreage limitations, subsidized loans, and the like, and socially-minded individuals often help young entrepreneurs get started "on their own". Yet with some inexorable force tenancy wells up in the land despite all the social pressure on it. As tenancy persists, despite all its wastes, it is clear that the land market, at least as presently constituted, does not always tend to allocate land to its most productive use -- the "use" being inseparable from the user and the conditions of his tenure. The highest bidder is not necessarily the one in whose ownership the land will add most to output. If he were, most tenants would long ago have bought out their landlords and freed their hands to increase output.

Some Americans hope and expect we may one day legislate better landlord-tenant relations -- perhaps on the English model -- and thus alleviate the worst abuses of tenancy. Now that may or may not be possible -- for the present study it matters little. The fact is we have not done so. The tenancy which the land market establishes in preference to owner-operation is as it is, with all its faults, and not as we may hope it might be. So the present point remains: the highest bidder for land is not necessarily the best user.

IV. The function of tenancy

Our purpose, in the foregoing analysis, has not been to pass final judgment against the desirability of tenancy in the present land market. Far from it -- we readily agree with H. C. Taylor that "a flourishing tenantry, under a liberal and wealthy owner, are far more productive than owners whose means are too straightened to allow of the proper application of capital."¹⁰⁴ Rather, our purpose has been to establish beyond a reasonable doubt that tenancy, whatever its compensating virtues, does definitely entail losses and wastes, and that these are substantial and never to be lightly overlooked.

But now, what of the other side? The question arises, if tenancy involves such wastes, why does it persist in an economy where men are free to pursue their own best interests, and competition weeds out the inefficient? What are the benefits of tenancy?

Various economists have explained the need for tenancy in these terms. Tenancy is a cooperative effort, a division of function. The landlord relieves the operator of the risk and interest burden of holding title, which the operator is ill suited to bear. The operator can then invest his limited funds in equipment, rather than sink them in a land title. If he tries to borrow to buy, he will be limited by credit rationing and high interest rates, and will secure a unit too small or too poor for most efficient operation. A young farmer without means can rent more assets than he can borrow,

and so he is often better off to rent. Thus, as Schultz puts it: "farm tenancy may be . . . a device through which a highly competent farmer with limited capital is enabled to put into operation the most efficient methods of farming."¹⁰⁵

There is no doubt but what that is an accurate description of the choice facing the young entrepreneur without means. From his viewpoint, those are persuasive reasons for renting. The landlord serves the tenant a useful turn by relieving him of the risk and interest burden of holding title. That, probably more than any other reason, is why tenancy, with all its wastes, persists and grows.

But does that contradict the idea that tenanted lands are not in their most productive use? On the contrary, it supports it. It is simply another way of observing that landlord investors can outbid their tenants for land titles even when the land then yields the landlord less net income than it would have yielded the tenant as an owner-operator. For if a landlord can finance land more easily than can an operator, that means he could pay a higher price for land yielding a given income, and therefore pay a slightly higher price even for land yielding him considerably less income than it would yield the operator as an owner.

Of course in the market as it is, the ability to finance land titles is an important consideration to the individual. Were the question under study "Is tenancy advantageous to individuals under present land policies?" the answer would

often be "yes", since the cost of transferring funds from borrower to lender, expressed in interest differentials, is often greater than the cost of the landlord-tenant relationship. But the present study asks, rather, "Is a land market that leads men into tenancy thereby allocating land to the holder in whose possession it will add the most to net output?" To that question the answer is more often "no".

These few words do not exhaust the issue, nor are they meant to. They serve only to acknowledge the popular Schultz-Taylor rationale for tenancy and place it in perspective with the rest of this study. Grant its assumption that high land prices and other features of present land policy are part of the fixed order of things, and it competently demonstrates the advantages of tenancy. But question the assumption and the argument does not demonstrate that tenancy is economical; it merely demonstrates that present land policies produce tenancy. And as present land policies are the very thing under scrutiny here, that is more a mark against them than it is one for tenancy.

It would be premature, at this point in the study, fully to explore the implications of these remarks. Chapters IV-VI explore them at length. But, to place tenancy more definitely in perspective from the viewpoint of this inquiry, as well as to assure the reader that that viewpoint is not futile, let us anticipate the analysis of these later chapters with a simple, and admittedly imperfect analogy.

The market for land titles is something like a "tie-in

sale", a sale at which, to buy "A", one must take "B" along with it, and vice versa. In the land market, "A" is the present use of the land, and "B" is a claim to future incomes extending into perpetuity. While one can buy a very small slice of land measured spatially, one cannot buy a small amount measured temporally. In that legal instrument known as a land title, present and future are bonded together, making land indivisible in time.

It is a commonplace of economic theory that markets can achieve ideal allocation of resources only if the units are perfectly divisible. If "A" is indivisible from "B", then those wanting "A" and not "B" will buy less of "A", and more of "B", than they would have were they divisible; and vice versa. In the land market there are absentee investors who particularly value the future income from land; and there are dirt farmers and active managers who particularly want the present use of it. The market for land titles leaves both groups far from satisfied. Many investors accumulate more land than they can manage very effectively, an embarrassment of riches; many active managers are starved for land, cramped in a space too small to complement their managerial capacity.

Tenancy is a means, a very imperfect means, by which the two groups mutually solve their problems. The more embarrassed investors lease their surplus holdings to the more pinched managers. If the tenant-landlord relationship were costless and frictionless, it would in fact solve the problem

completely, making land perfectly divisible in time. The tenant receives a year's access to land without having to buy the claim to infinite future values, the title. But being what it is, tenancy falls far short of solving the problem, leaving a wide gap between the marginal products of land on the farms of embarrassed investors and pinched owner-operators -- a matter discussed in the next chapter. And besides that, of course, it constitutes a problem in itself.

Within the framework of present land policy, a policy that makes land indivisible in time, tenancy doubtless is often the lesser of two evils. But the fact that this lesser evil is still so evil leads one to wonder if it might not be possible somehow to modify land policy, to make land more divisible in time by some means other than tenancy, and spare tenants and landlords from such a hard choice. There are, after all, many alternative land policies from which to choose, and many feasible modifications which might ease the problem. The purpose of the present study is not to evaluate these alternatives -- that we leave to a sequel. The purpose of the present study is to consider whether it might be desirable to entertain some of those possibilities. The evidence of this chapter indicates that it would be.

V. Summary

In summary, the evidence of this chapter indicates that tenancy is a widespread form of land tenure which shows little genuine signs of abating. It also indicates that a shift of

land titles from absentee landlords to owner-operators would tend to increase the net output of the lands shifted -- that is, that their marginal productivities would be higher under owner-operation. This seems to reveal that the present allocation violates the equimarginal ideal, which requires that it be impossible further to increase net output by reallocating land. Tenancy is shown to serve a useful function to individuals within the framework of present land prices, the function of making land divisible in time. But this by no means rules out the possibility that the function might be better served by some other land policy.

APPENDIX 1 TO CHAPTER II

TABLE 5

VALUES OF LAND PLUS BUILDINGS IN THE
WEST NORTH CENTRAL REGION, BY SUBREGIONS
WITH HIGH AND LOW TENANCY (see pp. 130-31)

Over 40 Per Cent Leased Land		40 Per Cent or Less Leased Land	
<u>Subregion</u>	<u>Value Per Acre</u>	<u>Subregion</u>	<u>Value Per Acre</u>
69	\$132	66	\$ 44
70	176	68	87
83	54	71	86
85	140	72	81
86	182	73	34
87	78	82	58
91	31	84	54
92	55	88	51
93	67	89	52
94	94	90	26
		103	50
		104	13

Simple Average \$101

Simple Average \$53

Subregion 86, (Northwest Iowa) with the highest value per acre, also appears from the map to have the highest per cent of leased land.

Appendix #2 to Chapter II. (See p. 137)

If we were to assume that Census figures on land and building values are a good index to represent land values alone; and the figures on land operated by pure tenants and pure owner-operators are a good index to represent all leased land and all owner-operated land; then it would follow that the per cent of land value under lease is still about the same as in 1935. For leased lands would have about made up in value per acre what they lost in area. As a matter of fact, however, those assumptions are dubious.

First, it is not sure that the leased and owned lands of part-owners have the same relative values as the leased lands of pure tenants and the owned lands of full owners.

Second, changes in the value of "land plus buildings" are no index to changes in the value of land alone, especially when one is comparing leased land to owner-operated land. For land value comprises a higher per cent of the total value of leased farms than owner-operated farms; and the ratio of land values to building values changes markedly from phase to phase of the land value cycle. An example will show the influence of that.

(Refer to Table 1, p. 126.) In 1920, at the height of the farm land boom, land value comprised 83 per cent of the total value of land plus buildings.¹⁰⁶ By 1925, land prices had fallen, while the values of farm buildings held constant. Land value was then only 76 per cent of the total. Accordingly, the average

value per acre of land plus buildings on tenant farms fell from \$90 to \$64; owner-operated farm values fell only from \$67 to \$58.¹⁰⁷ To repeat, that was because owner-operated farm values consisted more largely of building values than did tenant farm values.

In all probability, the recent recovery of tenant farm values relative to owner-operated farm values springs in some large part from a general rise of land values relative to building values. Hence we cannot attribute the recovery entirely to a rise of tenant land values relative to owner-operated land values. It is partly a higher ratio of land values to building values that now makes tenant farms more valuable relative to owner-operated farms than they were in 1935.

The weight of evidence, then is that the per cent of land value under lease has also declined since 1935, although probably not so much as the per cent of land area under lease. And so, although the more significant measures of tenancy have fallen much less than the best publicized one, still there is no denying that farm tenancy, however we measure it, has indeed receded from its depression high.

CHAPTER III

Large Holdings and Small

I. Introduction

In Chapter II, for want of a better standard, we measured tenant farms up against owner-operated farms and found evidence suggesting that the marginal productivity of land tends to be lower on tenant farms. But that by no means implies that land is allocated among owner-operated farms according to the equimarginal ideal. These have measured up well only in the aggregate, and by invidious comparison with tenant farms. In this chapter we pursue further our evaluation of how the land market performs, by inquiring how economically it allots land titles as among different owner-operators.

As a standard of good economy we take, as before, the traditional equimarginal principle. According to the equimarginal principle the market allocates land ideally among different farms if the marginal product of an acre of land (of given quality) would be the same, to whichever farm it was added, or from whichever subtracted. Thus there would be no possible gain in shifting land from one farm to another. The land market is working well insofar as it approaches this ideal condition.

In practice, the market does not seem to approach very

near this ideal. The marginal product of an acre of land seems to vary greatly from farm to farm.

That is what one would expect from our analysis of the conditions that lead farm operators to become tenants. We have characterized the land market as a "tie-in sale". Some buy land primarily because they have funds seeking an investment in a claim to remote future incomes; others buy primarily for present use, and find it onerous to finance the title. Naturally these latter must economize on land very closely and limit their holdings to what will justify the high cost by adding a great deal to output. By contrast the former, the investors, are land-surfeited. Buying land chiefly as an investment for the remote future, they may lay field to field without much thought for the present. For them, the marginal product may be much lower.

Tenancy, you will recall, is a device that lets the land-surfeited investor transfer present use of land to land-starved operators. Thus in some degree it tends to equalize marginal products as between the groups. Indeed, if tenancy were a costless, frictionless relationship it could be the vehicle for creating a near-perfect land market. The land-surfeited would lease enough of their holdings to the land-starved to equalize the marginal products of land on their different operations. But, being what it is, tenancy only begins to solve the problem (as well as constituting a problem in itself); and so the market still leaves the marginal product

of land much higher on some owner-operations than on others.

This tie-in sale analogy not only suggests that the marginal product of land will be lower on some farms than others; it also suggests, in a general way, which farms those will be. The analogy implies that farms will come to differ markedly in size; and that land's marginal product will vary inversely with farm size, being generally higher on smaller holdings than on larger. For if an investor has more land than he can manage well the most frequent cause is probably that he has a great deal of land to manage. To be sure it may also be because he is incompetent, or pre-occupied with another profession, or with rest, recreation or revelry. But these are failings to which in general large holders are subject as much as, perhaps more than small holders. So in general, after due allowance for individual differences, the analogy clearly implies that the marginal product of land will tend to be higher on smaller holdings.

No one will care to deny, certainly, that the first implication is a fact. In 1950, the largest 2.3% of farm operations--measuring "size" by acreage--had 42.6% of the acreage, an average of 4,085 acres; while the smallest 36.5% had only 3.8% of the acreage, an average of 21.3 acres. Or, measuring size by gross sales, the largest 1.9% sold 26.0% of the total, an average of \$56,000; while the smallest 31.0% sold only 2.6%, an average of \$432.²

Some idea of the great concentration is afforded by

comparing it with income concentration. Rather than present all the figures, we have computed "Lorenz concentration ratios" (henceforward "LCR") for income and for farm size. LCR is a measure of concentration which ranges from zero, when the distribution is completely equal, to one, when one farmer or one income recipient has all the land or all the income. It is explained in detail on page 179, below. Farm operations prove much more concentrated than income.

TABLE 1
Lorenz Concentration Ratios³

U.S. farm acreage (1950).....	.70	U.S. National Income (1952) .....	.40
U.S. farm gross sales (1950) .....	.68	Income of farm opera- tor families (1946)	.42

But the contrast in farm sizes, great as it is, does not prove our contention that the marginal product of land tends to be higher on smaller farms than large. It is consistent with our tie-in sale explanation of how such a difference might come about, but does not prove it actually has come about. Possibly farm sizes differ for perfectly sound economic reasons, such as differences in land types, in managers' capacities, and so on. It is even conceivable that the marginal product of land is higher on larger farms, due to their greater capital and to economies of scale -- that is certainly a common opinion which deserves some acknowledgement.

There are, however, at least five basic indications that the marginal product of an acre of land tends to be higher on smaller farms. Taken separately, each of these five is very hard to reconcile with the idea of a perfect land market. Taken together they blend into a fuller portrait of a market in which the things traded--land titles--are indivisible in time, in which large investors tend to add land to their farms until the last acre increases output much less than it would on some smaller farm.

The five indications are these:

A. The range of farm sizes is very great, whether we measure size by area, land value or gross sales. While there are marked regional contrasts of farm size, it is not always the poorer lands that have the larger farms. The fact that some farmers have such an abundance of land in contrast to others who have so little suggests that an additional acre would be worth more to the smaller farmers.

B. The intensity of land use varies strikingly from farm to farm, and that not at random, but inversely with size, whether size be measured by acreage, land value, real estate value or gross sales. According to the principle of diminishing returns, that implies that the marginal product of land is higher on the smaller farms where it is more scarce relative to its complements.

C. Analysis of economies of large-scale operation suggests that the marginal product of an acre is higher when it attaches

to a small farm, with too little land to achieve those economies, than when it attaches to a larger one that has already achieved them.

D. Operating units, when divorced from ownership units, tend toward medium sizes. Ownership units, when divorced from operating units, tend toward extremes of large and small.

These facts suggest that when operating and ownership units are joined, as in an owner-operated farm, economies in financing ownership tend to pull owner-operations away from optimal operating scales, making some larger and others smaller; and hence that the marginal product of land is higher on smaller owner-operations, which are below optimum scale, than on larger ones, which are above it.

E. Finally, there is considerable direct evidence that the marginal product of an acre is lower on larger than on smaller owner-operations.

These five evidences, considered together, I believe are nearly impossible to reconcile with the idea that the market allocates land according to the equimarginal ideal. The contrast of size between the large and small farms is truly great, in terms of value as well as area. The larger owner-operations are much less intensively manned and equipped than smaller ones, and they are larger than what most analysts, as well as most tenant farm operators, consider optimum operating scales, in contrast to many small farms which are definitely

below the optimum.

These facts all mesh into one simple and consistent pattern, a pattern we describe formally in Chapter IV but which we have already foreshadowed by comparing the land market to a "tie-in sale". Facts and analogy both imply that the marginal product of land is generally higher on smaller than on larger farms.

But before presuming too much of the skeptical reader, let us establish that these five evidences are indeed true. We will consider them in order. In the following pages, we do not present out data in the form of experimental notes, nor take the reader up all the blind alleys we have blundered into, as in some realms of science is perhaps proper. We can only hope the reader will trust our word that we have stumbled, groped, doubted, tried and erred, reversed ideas, experimented, disproved our own preconceptions, sought contradictions, withheld judgment and generally suffered the mental anguish that becomes the true scientist.

The present chapter is designed to present the reader only the fruits of our labors, without all the agony -- he will doubtless say it is sufficiently tedious as is.

Being such, the style is frankly expository. Having come after long study to conclude that the land market is disturbed, in such wise that the marginal product of land is higher generally on small farms, the author has set out to demonstrate that to the reader as expeditiously and conclusively

as he can, not as the lawyer who is pledged to serve his client first, and serve truth only as truth may serve him; but rather as the geometer, who apprehends that a thing may be so, then sets out to demonstrate it as conclusively as he can.

II. Five indications that the marginal productivity of land tends to be lower on larger farms.

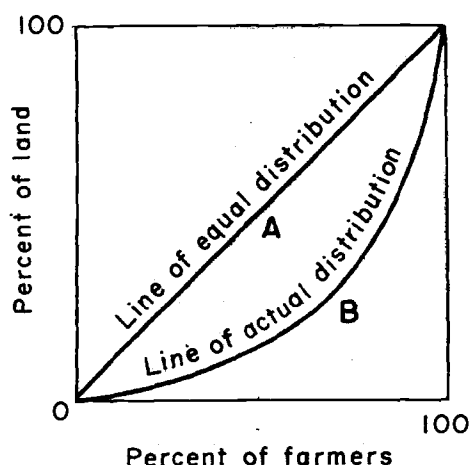
A. The range of farm sizes is immense, whether "size" be measured in acres or value.

1. Farm landholdings have become as concentrated in the United States as in many "backward nations".

Students of international affairs have long been aware, and in recent times more acutely so, that farm land in many foreign countries is inordinately concentrated, that the contrast between the few large and the many small farms is prodigious, and has proceeded far beyond anything that productive operating economies might dictate. And in this impression they are doubtless correct. But the idea is also current that in the United States, this last best hope of earth, conditions are entirely different, and vastly superior, so that one never mentions American land problems and foreign ones in the same breath.

If we go by Census data, however, the difference is not so great. Indeed, it is no longer always in favor of the United States, so concentrated has American farm land become in the last few decades.

As a convenient, unitary measure of concentration I propose to use the Lorenz Concentration Ratio (henceforward LCR).⁴ That is, in figure 1, the ratio of area A to the area (A plus B).



"A" is known as the area of concentration. It is the area between the line of equal distribution and the Lorenz curve which shows the actual distribution. A plus B is the area of maximum possible concentration. LCR can conceivably vary between a lower limit of zero, when every farm has the same amount of land, to an upper limit of almost one, when one farm has almost all the land and all the other almost none.

According to the 1950 census, for U.S. farms grouped by acreage, LCR equals .70. Of a number of foreign countries for which data are readily accessible, Egypt, Brazil, Venezuela, and Chile are more concentrated, while Denmark, Sweden, Germany,

and Rumania are less concentrated. Table 2 gives the concentration ratios in ascending order.

TABLE 2

Lorenz Concentration Ratios
for Distribution of Farm Acreage⁵

Denmark, 1951 .....	.47
Sweden, 1919 .....	.54
Germany, "pre-1914" .....	.55
Rumania, 1941 .....	.56
United States, 1950 .....	.70
Egypt, 1940 (ownership units, Nile Valley only) .....	.75
Brazil, 1940 .....	.80
Venezuela, 1936 .....	.85
Chile, 1951 .....	.93

As to Egypt, the data are for land holdings, not farm operations, and as we will see the concentration of farm operations is often less than that of farm land holdings by something like five points, the concentration of farm operations in the United States is quite comparable to that in the Nile Valley, at least numerically, and insofar as one may compare two such different areas. And of course concentration in the United States is evidently much greater than in Denmark, Sweden, Germany and Rumania.

To some extent, perhaps, the high concentration shown in the United States data relative to foreign data is due to our country's great size and consequent diversity, with Nevada ranches and eastern suburban truck farms in the same set of

figures. Taking the state of Iowa, an extraordinarily uniform area, LCR equals only .35.⁶ But on the other hand, California, which resembles Chile very closely in the kind and diversity of its natural endowment, has an LCR of .86,⁷ more than for the entire diverse United States, and too close for comfort to Chile, whose lands are reputed to be as concentrated as any in Latin America. We should not be hasty to conclude, therefore, that the high concentration of farm acreage in the United States is due solely to the unusual size and diversity of the country. From the lowest to the highest, average land values per acre in major United States regions in 1940 ranged only from \$7.45 in the Mountain region to \$41 in the Pacific region.⁸ There was far greater diversity within each major region than among them.

As it is not our present purpose to settle that matter, we leave it moot. The present point is this. It is certain that American farm land has now become so concentrated as compared with foreign countries that the difference, if any, in favor of the United States is only one of degree. The concentration of American farm land has become of the same order as that in some of the backward nations where so many of our travelling economists and State Department representatives have named land concentration as a chief obstacle to economic, not to mention political, development.

2. Farm land holdings are probably at least as concentrated by value as by area.

We have seen that the concentration of farm land, where "land" is measured by acreage, is very high. It is natural to believe, and many people do believe that this concentration is only specious, due to the very different values of different lands, and would disappear if land were measured by value rather than acreage. And it is true that the average value of land per acre falls with size of farm, for the United States as a whole. But it does not follow from that that if we measured concentration by value rather than acreage it would be less. For of course not all those farms which appear among the largest, say, one per cent when farms are ranked by acreage, will be there when they are ranked by value. But many farms in lower acreage groups will move into the top value groups. So it is still quite possible that concentration is as great by value as by acreage.

That, of course is simply an obvious and elementary statistical possibility. But is it a fact? Unfortunately the U.S. Census does not now, nor has it to my knowledge ever published data on U.S. farms grouped by value of land, or by any combination of assets including land (although it does collect data which it could group that way). We must therefore proceed by indirection. Of the many questions we might ask to test the case, there are data available to answer at least five:

a. Does land value per farm rise appreciably with acreage per farm?

b. Are there many regions within which acreage values are higher on larger than on smaller farms?

c. Are there many poor-land regions where farms are smaller than in many rich-land regions?

d. Are there any data comparing concentration of land value and land acreage over substantial areas? Do they show value more concentrated than acreage?

e. Are there data on the concentration of farm output? Is that at all as concentrated as acreage?

To all these questions the answer is "yes". Taken as a whole, the following data seem to warrant concluding that United States farm land is at least nearly as concentrated by value as by acreage.

a. Does land value per farm rise appreciably with acreage per farm?

Between the most and the least valuable farm land there is a vast range, from thousands of dollars an acre down to marginal land worth nothing. But between the smallest and the largest groups of farms there is no such range. For 1940 (last year for which the census separates land from building values), acreage values of land and improvements (other than buildings) ranged from \$155.90 for 3-9 acre farms down to \$4.79 for farms of 10,000 acres and over.⁹ As the 3-9 acre group contained many rural and even suburban places, and others where improvements other than buildings (e.g. fruit trees) made up a high percentage of the total value, it is

probably more accurate to begin the comparison with the 20-49 acre group, for which the average acreage value was \$41.56. But in either case the range of values is much less than from the best to the worst land. Clearly the vast range of farm acreages results from more than the familiar fact that it takes more acres of sagebrush than of celery bottoms to support a family.

The value of land per farm increased greatly with acreage. The 27,235 acres in the average farm over 10,000 acres were worth \$130,000, or 150 times more than the \$868 in the average 3-9 acre farm, and $3\frac{1}{4}$ times more than the \$3,811 in the average American farm.¹⁰

Now let us grant that many of the farms over 10,000 acres are on the poorest land and are, in terms of value, only small farms. It then follows that some of the other farms over 10,000 acres must be very valuable, to raise the group average $3\frac{1}{4}$ times over the national average; and some of them must contain good land, to bring the group's value per acre up to \$4.79, well above the vanishing point, and 22% as high as the national average acreage value of \$21.90.

b. Are there many regions within which acreage values are higher on larger than on smaller farms?

1. Data by states

There were in 1940 at least nine states in which the acre values of land and improvements (other than buildings) were higher for all farms over 1,000 acres than for all farms, as follows in table 3:

TABLE 3

Average Values Per Acre,
Land and Improvements¹¹
(other than buildings), 1940.

<u>State</u>	<u>All Farms</u>	<u>All over 1,000 acres</u>
Massachusetts	\$47	\$49
New York	24	34
New Jersey	58	74
Pennsylvania	25	51
Ohio	37	58
Delaware	30	70
Kentucky	26	37
Mississippi	18	21
Arkansas	19	26

In addition there were several states where farms over 1,000 acres had average acreage values almost as high as all farms. Indeed, the only states where it was markedly otherwise were Florida and states west of the 100th meridian. In the eastern and central states value per acre did not generally¹² fall much or at all with acres per farm.

Now of course, in a state where average values per acre are about the same for different size groups, concentration of land value is not merely as great as concentration of land area; it is surely somewhat greater. For it is at least as great, even when the farms are grouped by acreage, by which groupings some low value farms on cheap land find their way

into the top groups, and some high value farms on smaller acreages of dear land find their way into lower groups. When they are regrouped by value instead of acreage the concentration of value will be notably greater.

By the same reasoning, even in states where average acre values are considerably lower in the larger acreage groups, concentration may be greater by value than by acreage. Of course there is no knowing without actually regrouping the original data, farm by farm, by value instead of acreage. That feat lies only within the power of the Census directors, or Congress. But from the data available it is plausible that within most of the eastern states concentration is greater by value than by acreage.

11. A possible amendment to Census data on southern plantations.

In some areas, notably the southeast, the Census enumerates as separate farms small areas assigned to tenants on large plantations. These are generally on valuable land. There is some dispute as to whether these small tracts are really independent "farms" or parts of larger integrated operating units (there is no dispute but what they are parts of very large title-holding units). The truth probably is they are a little of both. At any rate, it is of passing interest to note that if one takes, as the Census does, the small cropper acreage as the "farm", the resulting data show lower acreage values in larger "farms". For the title-holder generally leases

out the better lands in small units, and keeps a large acreage of somewhat less valuable land for his own demesne, or "home farm". In 1910, the year when the Census gave data on southern plantations, acre values were \$16.27 for the landlord's demesne and \$22.71 for his tenant farms. But if the Census were to take the "plantation", the title-holding unit, as the "farm", the resulting data would show higher acre values in larger farms (table 4):

TABLE 4

All Tenant Plantations,
325 Selected Counties in
11 Southern States, 1910.¹³

No. of Tenants	5-9	10-19	20-49	50 & over
Average Acres per Plantation	495	953	1,688	3,535
Average Value per Acre (of both tenant and landlord operations)	\$18.84	\$19.64	\$21.13	\$24.33

From these data it follows that if the Census chiefs regrouped data on farm size with the plantation, rather than the cropper's 40 acres or 50 as the "farm" unit, they would find: (a) A higher per cent of the acreage in the few largest "farms"; and (b) A higher average acre value in the larger "farms", and a lower one in smaller "farms", than present

data show.

That is not to say the Census should take the plantation as the operating unit, without qualification. It is a complex situation. We simply conclude that present Census data, taking the cropper unit as the "farm", should be taken with a certain qualification in light of the fact that the cropper units are not completely independent "farms" in the usual sense of the word; and such qualification would increase concentration by acreage, and also increase acre values of larger farms relative to smaller farms.

iii. Data on different types of corn belt farms.

When corn belt farms are grouped by type, the following contrasts appear (Table 5):

TABLE 5
Averages for all Commercial
Family-Operated Farms, 1944¹⁴

<u>Type of Farm</u>	<u>Average Acreage Per Farm</u>	<u>Average Value Per Acre (Land and Buildings)</u>
Cash grain	230	\$152
Hog-beef fattening	210	104
Hog-beef raising	177	63
Hog-dairy	140	100

The cash-grain farms are larger in acres and have a higher value per acre. The contrast in land values alone is doubtless greater than the data, which are on land and buildings, show. For cash grain farms, without livestock, need fewer buildings per acre than the others.

These data are by no means comprehensive or conclusive. They show only that, for a large number of farms in the most productive farm region, higher acre values go with larger acreages. They are typical of a great deal of similar fragmentary data that one might accumulate.

iv. England in 1895

Data for England in 1895 happen to be easily accessible in Levy's "Large and Small Holdings".¹⁵ Judging land value by the percentage of arable to total area, it increased vastly with size of holding, as follows in Table 6: (The English "holding" is the ownership rather than the operating unit. Hence these figures are not strictly comparable to American data.)

TABLE 6
Per Cent of Arable to Total Area in Farms in
Various Size Holdings, England, 1895.¹⁶

<u>Acres</u>	<u>Per Cent of Arable to Total Land in Farms</u>
1-5	26.9%
5-20	24.7
20-50	33.3
50-100	42.5
100-300	47.9
300-500	53.1
500-1,000	58.1
1,000- & over	53.9

In sum, then, there are indeed substantial areas over which acre values increase with farm acreage.

c. Are there many poor-land regions where farms are smaller than in many rich-land regions?

There are many such regions, and many scholars have directed attention to them. Ackerman and Harris, in their "Family Farm Policy," write:

In many areas, however, particularly in the hill sections of this country and in other poor agricultural land areas, untold thousands of farm families seek to derive a meager subsistence from inadequate units. This situation is appalling even when the number of part time farms is discounted. 17

They list three such poor-land areas as most outstanding:
18

"the intermountain region centering in Utah and southeastern Idaho";

"the Ozark highlands of Missouri and Arkansas";

"the southern Appalachian area and adjoining areas".

As to the first of these areas, Lowry Nelson has gathered much socio-economic data from it. Of Ephraim, Utah, which he takes to typify many poor-land areas in the Mormon country, he writes:

Even when large areas of grazing land are included in the total acreage, the average holding was less than 150 acres, which is not high enough for optimum results. In fact, it is difficult to see how Ephraim farms could operate economically with these small average holdings. 60% of the farms had less than 50 acres of irrigated land. Nearly 80% had less than 75 acres. This would

not be serious if the farmers had an intensive system of agriculture, but the fact is that they had a very extensive system. Except for a relatively small acreage of canning peas, the farmers grew alfalfa, wild hay, wheat and oats as the main crops. 19

As to the second area, the Ozarks, in 1935 Hammar and Muntzell computed the number of acres per male worker over ten years old for areas of Missouri ranging from the best to the worst lands. On the best, they found 88 acres per worker; on the worst, only 51.²⁰

As to the third, the southern Appalachian region, the pattern of large plantations in the lowlands and smaller diversified farms in the Piedmont and uplands is basic to southern life and culture, and rarely escapes mention in any history.

W. J. Cash writes:

The weaker elements which, having failed in the competition of the cotton frontier, or having perhaps never entered it, were driven back inexorably by the plantation's tendency to hog the good cotton lands into a limited number of large units, to the lands that had been adjudged as of little or no value for the growing of the staple. 21

Of ante-bellum Virginia and Maryland the historian Craven said:

The small diversified farmer differed from the great owner only in the size of his undertakings and in the size of capital invested. He was, as a rule, on poorer land and his task of improvement was heavier. 22

And in 1936, A. F. Raper concluded from his studies of Greene and Macon Counties in Georgia:

With occasional exceptions, the large holdings have always been found on the most fertile soil. 23

Other interesting southern regional contrasts were brought out in T. J. Woofter's well known 1936 study of large southern cotton plantations.²⁴ Several regions, such as the Upper Piedmont and the Muscle Shoals, had smaller plantations and also lower acre values than several other regions, such as the Arkansas and the Red River bottom lands. The greatest contrast was between the Upper Piedmont and the Red River (Table 7):

TABLE 7
Acre Values and Plantation Sizes
for a Sample of Large Plantations, 1936.²⁵

<u>Region</u>	<u>Average Plantation Acreage</u>	<u>Average Acre Value in Plantations</u>
Upper Piedmont	437	\$21
Red River	901	54

Probably the most telling contrast of all is that which Carter Goodrich has pointed up between twenty rural, non-mining counties of eastern Kentucky and the state of Iowa. In the Kentucky counties, in 1930, the average farm contained 76.7 acres, while the average Iowa farm contained 158.3 acres. Yet the Iowa land and buildings were worth \$124²⁶ an acre, compared to a mere \$21 in the twenty Kentucky counties.

Aside from these outstanding areas there are many others between which the contrast is more subtle, but nonetheless, substantial. Southern Illinois and Indiana, for example, are

well known locally as areas of smaller farms and poorer soils than the central parts of those states, a fact which evoked some comment in the Census of 1910.²⁷ Stanley Hamilton and Daryl Parker of the Rural Life Association have focussed attention, too, on the contrast between Benton and Elkhart counties, Indiana. In Benton, on the Illinois border, land and buildings in 1950 were worth on the average \$209 an acre, and the farms averaged 22 $\frac{1}{4}$ acres. In Elkhart, on the Michigan line, values averaged \$160 an acre, and farms averaged 87²⁸ acres.

It lends some generality to these observations to note similar contrasts between similarly contrasting regions in foreign countries.

In Rumania, according to Roberts,

Agricultural population was densest in the poor mountainous areas; the land is poor and much of it unsuitable for cultivation; the pressure of population has forced the multiplication of dwarf holdings;²⁹

Table 8 gives data on the regions of Rumania, listed in order of the percentage of agricultural surface which is arable. (See page 194.)

The contrast of farm sizes is even greater than the contrast of population densities, because in the better areas like Dobrogea much of the agricultural population are hired workers.

Raymond Crist often writes of a similar pattern in Venezuela.³⁰ Leslie Gay, having digested many such studies

TABLE 8
Population and Quality of Land,
by Regions, Rumania, 1941. 31

Province	Agricultural Population Per 100 Hectares of Agricultural Surface	Per Cent of Agricultural Surface Which is Arable
Moldavian Carpathians	113	74%
Muntenian and Oltenian Carpathians	121	76
Bucovina	108	86
Plain of Siret and Pruth	88	89
Transylvanian Plateau	98	91
Danube Plain	90	92
Western Transylvania	84	94
Dobrogea	49	97

of particular South American countries, ventures to generalize the pattern for the whole continent. He writes "...the best lands are concentrated in the hands of a few owners. From this it follows that the majority of properties are extremely small and located on marginal or sub-marginal land."³² Only the "areas of Latin America which had no mineral wealth, no large Indian population and little arable land were ignored by the Spaniards, and the small native owner or communal Indian farms continued."³³

Another such contrast, of which Doreen Warriner has appraised the Anglo-Saxon world, is that between the teeming hills of Lebanon and the rich but fruitless plains of Syria.³⁴

In the Philippines one area especially noted for poor land and dwarf farms is Ilocos Province (Norte and Sur), in northwest Luzon.³⁵ The rural population in 1948 was about 4.67 persons per hectare of farm area, with most persons on independent farms. Near Manila, by contrast, in flat, fertile Bulacan province, there were 3.89 persons per hectare of farm area,³⁶ many of them hired workers on large farms.

In Sweden, according to Rudolf Freund,

Assuming that the relative amount of tillable land indicates the quality of all land contained in a farm, we have to infer that the smaller Swedish farms are more likely to be found on poor land than on good; conversely, the full-fledged family farms and the estates seem to operate on better quality soils.

All this suggests that Sweden's agriculture is burdened with an oversupply of labor crowded into too many farming units of insufficient size; this seems particularly true for the poorer sections of

the country.this phenomenon is quite familiar to students of agriculture on both sides of the Atlantic Ocean...." 37

(Note that his statement applies to tillable land only. Poor pasture and woodland was often held in large units.)

In sum, there are hill people in humid and even some arid regions in the United States, and around the world, as to whose plight Al Capp's famous caricature of Dogpatch, Kentucky is not entirely misleading. Their farms are small, their land is poor, and their numbers legion.

d. Are there any data comparing concentration of land value with concentration of acreage, over substantial areas? Do they show value more concentrated than acreage?

The only such data I find for the United States concern the ownership of rented farms in 1900 -- and there is also a rather unsatisfactory sample study of the same subject for 1920. Both studies show higher concentration by land value than land area (Table 9):

TABLE 9

Lorenz Concentration Ratios,
Distribution of Ownership of Rented Farms,
United States, 1900 and 1920. 38

	<u>1900</u>	<u>1920</u>
By acreage .....	.53	.47
By land value .....	.62	.58

(Caution: The data do not indicate that concentration decreased from 1900 to 1920. The 1920 sample was collected in such a way as to understate concentration by (a), excluding lands held outside certain sample counties and, (b), failing to attribute separate tracts of one owner to just the one owner. The 1900 data had neither of these defects, and therefore show more concentration. As a matter of fact, it is likely that concentration increased from 1900 to 1920. Cf. Section III, below.)

Note that these data are for title-holding units, and not, like other Census data, for operating units. They do not therefore prove beyond a doubt that farm operations were or are more concentrated by value than by acreage. They merely establish a presumption that that is so, in the absence of contrary or qualifying evidence.

In fact, however, we must qualify the evidence, before inferring anything from it about the value-concentration of operating units. For very large title-holding units are more apt than very large operating units to be on good land.

We have already seen that was true of southern plantations in 1910 (~~above~~, pp. 187-188 in this chapter). As to the 1900 data just presented, it is also true that acreage values fell less from small to large rented farm holdings than from small to large operating units (Table 10):

TABLE 10
Average Land Values Per Acre,
By Acreage of Farm, 1900.³⁹
(Computed from Census of 1900)

<u>Acreage in Unit</u>	<u>Rented Farms, Title-Holding Units</u>	<u>Per Cent of \$32.36</u>	<u>All Farms, Operating Units</u>	<u>Per Cent of \$23.25</u>
Less than 100	\$32.36	100.0%	\$23.25	100.0%
100-499	27.32	84.4	18.58	79.9
500-999	19.99	61.8	11.84	50.9
1,000 and over	11.61	35.6	4.86	20.9

In other words the value per acre of the largest title-holding units was much nearer the smallest than was true for operating units. Clearly the chances that all farms are more concentrated by value than by acreage are not as good as the chances that landlord holdings are.

We do not conclude, therefore, that concentration of farm operations is necessarily greater by value than by acreage. But we do observe that landlord holdings were more concentrated by value than by acreage in the only years they were studied, even though acre values fell markedly with farm size. We observe

that, for operating units, acre values fall more with size, but only moderately more. We conclude, therefore, that farm operations are probably at least nearly as concentrated by value as by acreage.

In addition to these fragmentary American data, to my knowledge one foreign country, Denmark, published complete data on the concentration of all farms, by both area and value. There, in 1953 concentration was definitely greater by value than by area--⁴⁰.52 as opposed to .47. On the other hand, incomplete data from Spain suggest that there it may be the opposite, but not markedly so, and perhaps not so at all if the figures were for land values free of improvements.⁴¹

e. Are there any data on concentration of farm output? Is output at all as concentrated as acreage?

There are such data, for 1950. For gross farm sales, LCR equals ⁴².68, not a great deal less than for acreage, which is .70.

Later in this chapter it is shown that the ratio of gross sales to land value tends to be much less on larger than on smaller holdings, due to the much greater ratio of men and capital to land value on smaller holdings. The difference of ratios is the more important where gross sales is the measure because the contribution of capital is not only that element of output corresponding to the interest cost, but also the generally much larger element corresponding to the depreciation

or turnover cost. None of these costs, nor any labor cost either, is deducted in computing gross sales. The gross sales measure therefore greatly magnifies small landholdings relative to large.

On the other hand, the gross sales figure takes no account of home consumed output, nor of non-pecuniary satisfactions, both of which are more characteristic of smaller farms.

On balance, however, the gross sales criterion of size would probably magnify the smaller farms, for the reasons first mentioned. And so it seems likely that an LCR of .68 for gross sales indicates a higher LCR for land values.

To sum up, we have established five points:

- a. Acre values fall much less from the smallest to the largest holdings than from the best to the worst lands;
- b. In many states acre values increase with farm size;
- c. There are many poor land areas of small farms compared to many richer land areas of larger farms;
- d. Landlords' holdings of rented farms in 1900 and 1920 were more concentrated by value than acreage, even though acre values fell with size almost as much as they fell with size for all farm operations.
- e. Gross farm sales in 1950 were almost as concentrated as acreage.

Taken together, these facts establish as reasonably certain that farm operations are about as concentrated by

land value as by acreage; that the apparent great contrast between the many dwarf and the few giant farms is not a mirage, but a true picture of American agriculture.

In concluding, one further fact is important. Owner-operations, about which we are presently most interested, are appreciably more concentrated than all farms taken together. For tenant farms, as we will see in point D, below, tend toward medium sizes, in contrast to owner-operations which tend more toward extremes of large and small. The actual contrast of the large and small owner-operations, therefore, is greater than any of our data show.

B. Larger farms tend to be much less intensively manned, improved, and equipped per dollar of land value. According to the principle of diminishing returns, that implies that the marginal product of land is higher on the smaller farms where it is more scarce relative to its complements.

1. Facts.

Our characterization of the land market as like a tie-in sale has led us to expect a lower marginal product of land in large than small holdings. The reasoning is that affluent persons, buying land titles primarily as an investment for the future, tend to accumulate more land than they can or will manage very intensively in the present; while on the other extreme, impecunious young entrepreneurs try to substitute labor and shorter lived (hence easier financed) capital for land as much as feasible. Hence the small holders generally

use smaller proportions of land to labor and capital than larger holders.

Let us emphasize this by no means implies that every larger holder uses land less intensively. There are men of extraordinary stamina and skill for whom 1,000 good acres are still too few to exercise their genius. On the other hand there are heiresses, dabblers and idlers with very small holdings that are still too much for them. Let no one suspect we are paving the way to advocate flat acreage limitations, as though everyone were or should be cast in the same mold. But in statistical aggregates exceptionally industrious large holders are offset by exceptionally slothful ones, and all swallowed up in the group average; and so for the small holders. And a clear general pattern emerges: larger holdings in general are less intensively used.

If that is indeed the pattern it should manifest itself in farm income's being less concentrated than farm land. For if the smaller farmers use more labor and capital per dollar of land value they will obviously receive a higher share of farm income than they have of farm land, and vice versa for the larger farmers.

The fact is, the income of farm operator families is much less concentrated than the land in their farms. For farm area in 1945 LCR was .70, and concentration by value was surely not much, if any less. But for farm operator income in 1946, LCR was only .42.⁴³ That means, for example,

that the smallest 36.5% of the farms by area had only 3.8% of the land area; while by contrast the lowest 39.4% of the farms by income had 16.8% of the income. On the large side, the largest 5.7% of the farms by area had 53.5% of the land area; while the highest 6.6% of the farm operator families by income had only 25% of the income.

Part of those differences, to be sure, are due to the fact that larger farmers hire more of their labor done; and so an appreciable part of the income of the larger farms is not included as part of the income of the operator families of those farms. On the other hand, smaller farmers are inclined to hire more of their machine work; but even so, we cannot take these data as conclusive in themselves, although they are presumptive, and certainly spur us to look further. Fortunately there are ample direct data to establish that the proportion of land to labor and capital increases greatly with farm size. We will consider first labor and then capital.

a. Labor per dollar of land falls as size of farm rises.

It will surprise few people to learn that smaller farms use higher proportions of labor to land than do large farms. But the degree of contrast that now obtains in American agriculture must impress the most sophisticated connoisseur of statistics. We will present data grouped, first, by acreage; second, by gross sales; and, third, by region.

1. Labor per acre falls as farm acreage increases,

even in areas where value per acre does not fall.

That labor per acre falls as farm acreage increases has meaning only if acre values do not fall, or at least not as much. We cannot be certain that values per acre did not fall with farm size in the scattered sample area which J. A. Baker used in his 1939 Corn Belt study. However, he found that, for owner-operated farms, the number of persons per 100 acres fell from 15.0 for farms under 50 acres to 1.3 for farms over 370 acres.⁴⁴ And the per cent of land in pasture fell from 47% to 35% which even suggests -- but does not prove⁴⁵ -- that the smaller farms were of less value per acre.

A 1946 study in northwest Illinois produced the following (Table 11):

TABLE 11

Labor Cost Per Acre, By Size of Farm,
For 238 Accounting Farms in Northwest Illinois, 1946⁴⁶

<u>Acres per Farm</u>	<u>Annual Labor Cost Per Crop Acre (including operator and family)</u>
Less than 121	\$25.70
121-200	19.83
201-280	17.05
281-360	14.57

Another area where acre values rise with farm acreage is England (above, p. 189). It would therefore be significant

to find there less labor per acre on larger farms. In 1908 the Land Enquiry Committee collected these figures for all English farms (Table 12):

TABLE 12
Farm Size and Labor Force, England, 1908⁴⁷

<u>Size of Holding</u>	<u>Number of Males Permanently Employed Per 100 Acres</u>
1 to 5 acres	8.0
5 to 50 acres	4.3
50 to 300 acres	2.5
Over 300 acres	2.3

ii. Labor per acre falls as gross sales rise.

To those foregoing data, grouped by acreage, some may protest. The proportion of labor to land will naturally vary moderately from farm to farm for perfectly sound economic reasons, if no others. Those wise in the ways of statistics will observe that, when we take, as the sole criterion of farm size, land alone, either by acreage or value, then of course the farms of those managers who have substituted land for labor will appear in larger size groups, and have less labor per acre. But if we had chosen labor as the criterion of farm size, those managers who had substituted labor for land would appear in the larger size groups; and they would have more labor per acre. Or, in the conventional

statistical terminology, the regression of land on labor (where correlation is positive and labor is on the ordinate) is steeper than the regression of labor on land.

Unfortunately there are no data on farms grouped by numbers of laborers. But those still wiser in the ways of statistics will reply that when the relationship is as regular as in our data the regression of land on labor would not be much steeper than the regression of labor on land. And, as the proportion of labor to land falls greatly as acreage increases, there is no chance that the proportion would rise with size if labor were the criterion of size.

However, lest any reader suspect us of proving a point by sheer statistical prestidigitation, let us look at some data grouped neither by land nor labor, but by gross sales. Gross sales is a measure of size which, with all its faults, is at least neutral as between labor and land -- both contribute to gross sales. When farms are ranked by gross sales, as in the 1950 Census, the larger ones are strikingly more land-intensive. (Table 13) See page 207.

iii. Regions of poor land and small farms have more labor per acre than many regions of richer land and larger farms.

The matter often wears a regional aspect. Generally, the previously mentioned regions of small farms on poor soil are regions of dense rural population. Many observers have marked the seeming maldistribution of people relative to

TABLE 13

PROPORTIONS OF LABOR TO ACREAGE ON FARMS RANKED BY GROSS SALES, 1950.⁴⁸

Class of Farm	I	II	III	IV	V	VI	Other
Definition	\$25,000 or more	\$10,000- 24,999	\$5,000- 9,999	\$2,500- 4,999	\$1,200- 2,499	\$250- 1,199	(Part time residential abnormal)
Per cent of land in farms	21.6	18.6	18.5	14.5	9.5	5.2	11.9
Per cent of all farm labor	7	11	17	18	16	11	21
Index of labor- land ratio, based on Class I equals 1.0	1.0	1.8	2.8	3.8	5.2	6.6	5.5

resources. T. N. Carver has dubbed it the problem of "our congested frontier". More accurately, perhaps, it is a problem of congested marginal lands in all regions, backwaters as well as frontiers.

Carter Goodrich computed that in twenty non-mining counties of eastern Kentucky, as compared to Iowa (in 1930), there were 2.5 times as many people per farm acre, and 14.9 times as many per \$1,000 of farm real estate value.⁴⁹ Of course the Kentucky farms were much smaller (above, pp. 191-192).

Stanley Hamilton's 1950 contrast of Elkhart and Benton counties shows in Benton, with its larger farms, 2.8 times as many acres per head of rural population, and 3.6 times as many dollars of real estate values.⁵⁰

In the hills of southeastern Oklahoma the soil is poor, the population dense and the farms small relative to northwestern Oklahoma, according to a 1938 study of the Oklahoma tax commission.⁵¹

In many foreign lands, too, one finds a similar pattern. To mention some examples:

Rural population per 100 acres of farmland is 48 in Greece and 42 in Yugoslavia, both mountainous countries of poor soil, compared to 24 for Hungary, with its flat and fertile plain.⁵²

In Indo-China, the recent unpleasantness has brought

for a brief moment to world attention that Cochin-China (around Saigon) is a very rich land and, relative to the Red River delta (around Hanoi), thinly peopled. And the Red River delta is an area of smaller farms than Cochin-China.⁵³

In Germany the larger Junker east Elbian estates have long supported fewer people per acre than the small farms of south and west Germany.⁵⁴

And finally, as we have seen, in Rumania small Carpathian farms support more people per acre than the plains; minifundia in the Lebanese hills support more people per acre than the latifundia on the Syrian plains; and the minute farms of Ilocos teem with Filipinos compared to the large estates near Manila. (above, pp. 193-195).

b. Capital intensity also falls as farm size rises.

1. Farms ranked by acreage, and capital intensity measured by ratio of capital to land value.

If it surprises few readers to learn that larger farms use little labor per acre and per dollar of land value, it may surprise quite a few to learn that they also use less capital: buildings, livestock, implements and machinery. To be sure, the better advised advocates of large farms know it, and commend large farms for it on the grounds that they produce more per dollar of capital -- an argument we consider presently. But many otherwise well-informed persons feel differently. It is probably the fact that larger farms use more capital per farm, and are owned and operated by men with greater total

means and better credit ratings -- men often loosely called "capitalists" -- that leads these persons to believe larger farms are capital intensive. Whatever the reason, the error dies hard. In 1952, for example, the Commonwealth Club of San Francisco, a group of business and professional men who meet to study vital public issues, polled themselves on the question "Does high capital requirement per acre encourage large or small farms?" They voted 48-24 for large.⁵⁵

But nothing is so easy to demonstrate as that larger farms use less capital per acre and per dollar of land value than smaller ones. From 1900 to 1940 the United States Census published data on land and building values by size of farm. In 1940, for farms under 3 acres, farm buildings were 222.2 per cent of land value. The percentage fell steadily to 13.6 per cent for farms of 1,000 acres and over -- a phenomenal contrast, which would doubtless be even greater were the "land" value data for bare land without improvements other than buildings. Implements and machinery fell, not so steadily nor so much, from 26.4 per cent to 7.7 per cent of land value. (They would probably fall more were full account taken of custom work, but it is not clear just how the Census deals with this problem.) See Table 14, p. 211.

The same fact manifests itself in a contrast between the capital intensity of different tenure groups. The larger the average acreage for the tenure group, the less capital intensive its operations (Table 15):

TABLE 14

Land, Buildings, and Implements and Machinery;

Average Values Per Acre; by Size of Farm, 1940.⁵⁶

<u>Size Group</u>	<u>Land</u>	<u>Buildings</u>	<u>I & M</u>	<u>As %s of Land Bldgs</u>	<u>Value I & M</u>
Total, U.S.	\$ 21.90	\$ 9.81	\$ 2.88	44.8%	13.1%
Under 3	728.00	1,618.00	192.00	222.2	26.4
3-9	156.00	225.00	22.00	144.2	14.1
10-19	79.00	69.00	8.85	87.3	11.2
20-49	41.00	28.00	5.00	68.3	12.2
50-99	30.00	19.00	4.59	63.3	15.3
100-174	29.00	15.00	4.54	51.7	15.7
175-259	30.00	13.00	4.36	43.3	14.5
260-499	26.66	8.34	3.44	31.3	12.9
500-999	18.50	4.50	2.28	24.3	12.3
1,000 & over	8.29	1.13	0.64	13.6	7.7

TABLE 15

Capital Intensity and Average Acreage
per Farm for Different Tenure Groups, 1940.⁵⁷

Tenure Group	Average Farm size (acres)	Values Per Acre (\$)			Values Per Acre, Ratios to Land Value	
		Land	Bldgs.	Impl. and Mach.	Bldgs. + Land	Impl. & Mach. + Land
Full Owners	124	\$24.08	\$15.95	\$4.52	66.2%	18.8%
Tenants	132	25.39	9.20	3.78	36.2	14.9
Part Owners	488	15.60	4.75	2.21	30.4	14.2
Managers	1830	16.55	5.13	1.49	31.0	9.0

In the specific area that concerned the Commonwealth Club voters, the Southern San Joaquin Valley, Karl Lee concluded from AAA data on intensity:

The intensity of land use for the various types of farms generally decreased as the size of farm increased.

The variation in intensity is not explained by variations in quality of land because there was considerable variation in intensity of land use on farms of the same type and on the same land class but of varying size. 58

Another outstanding slip was that ^{of} Hermann Levy, who wrote of "Large and Small Holdings" in England in 1911. Said Levy: "In a word, it was the intensive application of capital which made the large farm the pattern of arable farming"⁵⁹ Levy also provides his own refutation, in these data (Table 16):

TABLE 16
 Horses Kept per 100 Acres,
 And Per Cent of Arable Land,
 By Acres in Farms, England, 1885.⁶⁰

<u>Size of Holding (Acres)</u>	<u>Horses Kept Per 1,000 Acres</u>	<u>Per Cent of Land in Holdings Which is Arable</u>
1-5	7.4	26.9%
5-20	5.6	24.7
20-50	5.3	33.3
50-100	4.9	42.5
100-300	4.3	47.9
300-500	3.8	53.1
500-1,000	2.3	58.1
1,000 & over	2.6	53.9

In that age, of course, horses were a very important component of the farmer's capital, and surely in rough proportion to the implements they drew and the structures that sheltered them. As to farm buildings, the English Land Enquiry Committee of 1913-1914 reported: "A small holding of twenty to thirty acres entails an expenditure of two, three or even four times as much per acre for improvements in the way of buildings, as a large farm"⁶¹

ii. Farms ranked by gross sales.

Lest any reader suspect that the conclusions might differ if something other than land were the criterion of size, let us look at 1950 Census tabulations which take gross sales as the criterion (Table 17):

TABLE 17

Per Cent of Acreage, and of Various Capital Items,
In Farms Ranked By Gross Sales.⁶²

Class of Farm ¹	I [*]	II	III	IV	V	VI	Other ^{**}
% of land	21.6	18.6	18.5	14.5	9.5	5.2	12
% of tractors	7.7	18.4	25.4	20.9	12.4	4.4	10.8
% of autos	4.8	11.6	18.4	18.6	14.5	7.3	24.7
% of motor trucks	8.9	16.1	19.8	17.2	13.2	6.7	17.9
% of cattle and calves	17.1	20.3	23.2	17.5	10.3	4.6	7.1
% of hogs and pigs	8.0	24.3	24.4	17.8	9.9	4.7	6.9
% of chickens over 4 months	6.0	16.0	23.3	19.8	13.5	7.5	13.8

¹For definitions of classes, see Table 13, above.

^{*}Largest class.

^{**}Smallest class. For class definition, see Table 13, above, p. 207.

It is altogether remarkable that these data should show the larger class farms so much more land intensive than smaller class farms; for gross sales, as a criterion of size, is strongly biased against such a result. That is because gross sales, as opposed to net value added on site, deducts nothing for turnover or depreciation. And capital turns over and depreciates, while land does not.⁶³ The more capital-intensive the farm, therefore, the greater the ratio of gross sales to net value added on site. While on the other extreme a farm with no capital, but only land and labor, would have gross sales only as great as net value added on site. Thus gross sales, as a criterion of farm size, shifts capital-intensive farms into larger size groups than land-intensive farms of the same, or even considerably greater net output.

iii. Farms ranked by value of real estate.

Another measure of farm size that is neutral, at least as between land and buildings, is of course land and buildings taken together, or "real estate" value. I have discovered only one such study, although there are doubtless others. It is for 333 sample farms in the Willamette Valley of Oregon in 1938. The study shows the larger farms to be considerably more land intensive (Table 18).

TABLE 18

Capital Intensity of 333 Willamette Valley Farms,
Ranked by Value of Real Estate, 1938.⁶⁴

<u>Investment in Real Estate</u>	<u>Per Cent of All Assets That Is:</u>		
	<u>Land</u>	<u>Buildings</u>	<u>Other</u>
Under \$5,000	57%	25%	18%
5,000-7,500	60	24	16
7,500-10,000	60	24	16
10,000-15,000	64	20	16
15,000-20,000	69	15	16
over 20,000	69	17	14

As we have mentioned several times before, if the data were for bare land without any improvements at all, the smaller farms would prove to be even less land intensive relative to larger ones.

iv. Regional contrasts.

If it is the southern Appalachians which have the most people per dollar of land value, it is the northern Appalachians, the lands of thrift, which have the most capital.

We will simply repeat the figures already cited comparing New England and the West North Central states in 1930. In New England, land values were 44% of the total value of land and buildings; in the West North Central states, 77%.⁶⁵

As to implements and machinery, Bachman and Jones have

presented data to make a parallel contrast between the North Eastern States and the Corn Belt States (Table 19):

TABLE 19
Implements and Machinery Per Farm
And Per Acre By Region.⁶⁶

<u>Region</u>	<u>Acres Per Farm</u>	<u>I & M Per Farm</u>	<u>I & M Per Acre</u>	<u>Operator Income</u>	
				<u>Per Farm</u>	<u>Per Acre</u>
North East	129	\$1,874	\$14.53	\$2,495	\$19.34
Corn Belt	163	1,443	8.85	3,410	20.92

The corn belt farmers, with much less implements and machinery per acre, managed to get slightly more income per acre -- due, of course, to their better land.

We take it as a fact, then, that the proportions of labor and capital to land vary enormously from farm to farm, and the larger landholdings are in general less intensively equipped and improved.

In conclusion, one further remark is pertinent. Great as is the contrast of intensity among farms ranked by size, still greater would be the contrast if the Census would rank them by intensity itself. For some large farms are used intensively, and some small farms are not, which of course reduces the contrast of intensity when the data are grouped by size. But between the most and the least intensive, say, tenths of all farms, the contrast must be awesome.

2. Implications of the facts.

Now we have established that larger farms are much less intensively manned and improved, and somewhat less intensively equipped than smaller ones, the question is, what does that prove about the marginal productivity of land on different farms? "Prove" is perhaps too strong a word. But the facts are at least prima facie evidence that the marginal product of land tends to be higher on smaller farms than on larger.

That is simply one of the most basic principles of economics. Resources tend to be more valuable where they are scarce relative to their complements. Call it the principle of diminishing returns, or the law of variable proportions, or observe that land rent is higher where labor and capital are cheaper and more abundant, as you will, the same answer emerges: laying field to field is carrying coals to Newcastle, seeming to violate the great Economists as much as the Hebrew⁶⁷ Prophets.

Let us put it in terms of the law of variable proportions. Where there are many acres per man, there one additional man can add as much to output as many additional acres, and men are cherished while acres are lavished. By contrast, where there are few acres per man, additional men add little to output while additional acres add a great deal. Or, in the briefer modern phrasing, isoquants are convex to the origin, and the marginal rate at which land substitutes

for labor is higher where land is abundant relative to labor.

Thus, could an acre of Iowa be wafted to Japan, it would shortly be swarming with Japanese, preparing, cultivating, hoeing, spading, grafting and pruning in the meticulous Japanese way, while the bereft Iowan need only shrug his shoulders and apply himself imperceptibly more intensively to 339 acres than he did to 340. He might even find, as so many Iowans did in the era of AAA acreage allotments, that he had been overextended and could produce more from the smaller acreage (below, Point E). At any rate, Japanese output would rise more than Iowan output fell.

But to effect this more perfect union of man and nature there is no need to waft any land about, nor to invoke the Japanese; but only to transfer land titles from land-surfeited to land-starved American farmers. And that the market does not do. Instead, it gathers much of the best land into large holdings, and keeps it there, where it languishes without the attention of nearly as much labor and capital per acre as the many very small farmers lavish on the few acres in their care.

That is why we say there is a prima facie presumption that the marginal product of land is generally lower on larger farms, on the basis of a most basic economic principle. This is all so very obvious and elementary, that I would apologize to waste words on it, were it not that so few modern

writers acknowledge it at all.

To this presumption of elementary economics Conrad Hammar has addressed an interesting rebuttal.⁶⁸ Noting how much higher was the man-land ratio on marginal lands than better lands over much of the Mississippi Valley, he suggested that the marginal lands may have greater "capacity" than the better lands to absorb labor; that nature in central Illinois has done the work that man must do in the Ozarks, and so there is less need of man in Illinois.

The first man added to 160 acres in Illinois, he reasoned, would certainly produce far more than the first man in the Ozarks. But the fifth man added in Illinois might be superfluous and add little, while in the Ozarks the fifth man might still add something to output, enough to justify his efforts.

Hammar advanced this idea modestly and tentatively. As a qualification to the more general presumption that ideal man-land proportions would be roughly equivalent it clearly has an element of truth, in regard to particular lands -- although one may adduce equally plausible reasons for expecting better lands to have greater capacity. But without getting into that, to suggest seriously that congested marginal lands in fact have an absorptive capacity proportional to their dense populations is to ignore some notorious facts.

In the first place, the history of migration of rural population suggests quite other reasons for the present

distribution. Saloutos and Hicks mention high land prices:

It was because of these prices that so many farmers sold out to their neighbors or to speculators and invested in farms located in newer areas where the prices were not so high. This movement of population did not lessen the nation's total farm population, but it did lessen the number of farmers in regions where land prices were excessively high. 69

From another point of vantage, Goodrich, Allin and Hayes observed that rural population moved into poor, already crowded areas because ".... it was here that they were most likely to find cheap land or abandoned shacks available for 'squatting'." 70

Gale Johnson has put the case exactly (if I may take the liberty of replacing his word "capital" with "land", in a context where he clearly uses "capital" to refer primarily to land.. This rather confusing usage seems to have evolved by metonymy, "capital" referring to "total assets", hence to "ability to buy land titles", and hence to land itself.)

The substitution of labor for (land) in the (land) poor areas has apparently reached the point at which it takes a very large amount of labor to replace a small amount of (land). Thus addition of more labor in the (land) poor areas would increase output only slightly, while large deductions from the labor force will not markedly reduce output even if (land) remains constant. 71

Documenting this assertion, the 1951 Joint Committee Report on Underemployment of Rural Families estimates that "as many as two million of our six million farm families may have been seriously underemployed in the period 1945-1950" 72 -- a period, recall, of high farm prosperity. The cause was lack of land to complement their labor. The Joint Committee

Report cites this description of the Quicksand area of eastern Kentucky to exemplify the problem:

In 1940, the average worker was unemployed about 100 working days on which the weather was suitable for outdoor labor. This large under-employment on farms results from the very unequal spread of farm labor requirements over the year and from the fact that the worker continues to apply his labor to the land only up to that point where his marginal product has a value to him at least as great as the value of leisure. On land of such poor quality, this point is reached long before the worker has used all his available time. As a consequence, much time is spent in leisure. Front porches are frequently occupied at hours of the day when in other regions they would be deserted for the fields. This does not mean that the people of the area are lazy or uncommonly leisure-loving. On the contrary, they continue their work upon resources far beyond the point which most workers would regard as too unrewarding for the effort.

The returns to labor they estimated at five cents to ten cents
73
an hour!

In farming, units are limited to small size by the existence of high peaks of labor demand, so that the family is able to produce only a small acreage of crops and a few livestock, principally for home needs. Labor peaks are heightened by the necessity for using poor land and by the high labor-intensity of the practices followed; nor is it usually economical to hire additional labor, even at the low wage rates that prevail locally, to lighten the family's work burden at the peaks, so poor is the quality of the additional land that would be brought into use under such a system. 74

Another manifestation of how little capacity the populous marginal lands have to absorb their labor is the fact that their residents generally spend a fair proportion of their time eking out a living off the farm. The rural population of Iowa, with a very large complement of land per man, is

the most stable in the country, despite high tenancy.⁷⁵ In contrast, it is well known that small American farmers from poor lands often descend on to the plains to work for their larger-landed cousins, or in the mill or the war plant or domestic service.⁷⁶ The Economist's description of the "crofters" of northwest Scotland typifies many land-starved small farmers around the world.

The crofter is a man of many skills, who traditionally has earned his living by combining farming with fishing or some rural craft such as weaving. Many crofters leave their homes for long periods to serve in the merchant marine; relatively few are able to live by farming alone.⁷⁷

In short, there subsist on these small farms, preserved half-dormant in a kind of ambulatory hibernation, vast reserves of underemployed workers, sallying forth when opportunity beckons, and homing when evil days betide. With time on their hands, these people stand ready to put an additional acre to much better use than do those already preoccupied managing hundreds of others as well as enjoying the rich fruits thereof in manner becoming great landholders. For obviously few very affluent large owner-operators will apply their entrepreneurial talents to such low margins, and thus raise the productivity of land to such high margins, as these underemployed.

Of course the small holder can hire himself out to the large holder, as indeed many of them do. But the relationship of master and man, like that of landlord and tenant, is a costly one for both parties, most especially when the

master has many men and supervises them only through hired overseers. Of course few men perform under such conditions with the same zeal, not to mention intelligence, reliability, enterprise, conscience and pleasure as on their own paternal acres -- and then there is still the overseer to pay, and watch. For the worker there are high transportation costs, insecurity, wretched housing and schooling for his family, and often enough exclusion from community and even his own family life, and relegation to a second class citizenship that self-respecting men find hard to endure. To compensate for these tribulations the hired worker must be paid in money per hour of actual labor a good deal more than the value of what he can scratch from under his own vine and fig tree.

And so the practice of hiring labor from small farms to work on large ones does not solve the maldistribution of labor relative to land any more than tenancy does, and great variations in intensity persist as we have seen. Wilcox and Cochrane observe:

Rather than run the risks of being without hired help when they are needed, many farmers prefer to adjust their size of business to the amount they can handle with their own labor and that of other members of the family.

Also:

Farm women increasingly object to opening their homes to hired farm workers. 78

Those are certainly familiar facts. And what can they mean but that on larger farms, whose owner-operators need to hire help, labor is pressing, not so much against

the limits of land, as against the limits of management and human relations? Doreen Warriner, in her contrast of Lebanon and Syria, makes the point quite explicit:

In Lebanon, however, with its steep hillsides under intensive cultivation, there is a definite pressure on land resources. The limits of intensification appear to have been reached, and a large part of the village population supplements its income by work in the towns, and by remittances from abroad. If the land tenure system in Syria were less oppressive, room might be found on the land for settlers from the Lebanon, but as things are, the standard of living and status of the Lebanese peasant is higher; compared with the Syrian peasant he is a free man, and there is no inducement to leave the Mountain for the underpopulated plains of central or Northern Syria. 79

To sum it up, there are at least three reasons why large landholders do not apply labor to such low margins as small:

- a. They have more land over which to spread their own labor, and more spending money to seduce them from labor of any kind.
- b. They must pay more money per hour of hired labor than the hired man will require to keep him on his own land.
- c. They wish to minimize risks and unpleasantness and managerial costs involved in hiring labor.

There is no reason to say, therefore, that the lands on which small holdings persist have much greater absorptive capacity than lands in larger holdings. As to capital, we might adduce parallel observations as for labor. The critics of small holdings have already done this for us, for they are

the first to point out that much of the small-holder's equipment stands idle a good part of the time, and not for lack of labor, but of land to complement it.

Finally, the conclusion is buttressed by the fact that there are areas where large holdings, sparsely manned, equipped and improved, lie intermingled with small intensive farms on similar land.⁸⁰

We can conclude quite firmly, then, that small holdings are generally more intensive, not only absolutely, but also relative to their absorptive capacity. And the presumption remains that the marginal product of an acre added to a small-holding, supersaturated with labor and capital, would be higher than it is in a large holding, undermanned, under-improved and underequipped. Let us repeat, from the introduction, this does not imply that the smaller farms are more efficient overall. Such a conclusion would have no bearing on the present study. The conclusion is simply this: an acre transferred from an extensive large farm to an intensive small farm would increase output more on the intensive farm than it reduced it by leaving the extensive one.

C. The smaller the farm, as a rule the more economies of scale it has to gain by adding land.

1. Smaller farms tend to gain economies of scale at a faster rate per additional acre.

There is also a second presumption from elementary economics which suggests that the marginal product of land

is higher on smaller farms. When a firm is below the optimum scale, and average output per unit of input is rising, the marginal output per unit of input is higher than the average; while for a firm that has passed the maximum average, the marginal is below the average.

Breaking down "inputs" into component factors of production, it is clear that this reasoning applies with particular force to the land factor. We have seen, in fact, that the marginal products of labor and capital on small farms are very low, because they are inadequately complemented with land. Land, therefore, is clearly the limiting factor whose lack prevents small farms from realizing the savings of larger scale operation. More land on smaller farms will not only complement the land-starved labor and capital already there; it will also enable small farmers to use larger scale equipment, and specialize their labor more, and thus realize new savings.

Surprisingly, this rather obvious inference from elementary economics is little heeded by modern agricultural economists. It will be well, therefore, to lay it out carefully.

The advantage of larger operations over smaller ones is often expressed this way: that some inputs are imperfectly divisible below certain sizes. On ten acres a tractor designed for 100 is largely wasted, while a tractor designed for 10 will cost more than 1/10 as much -- and hence more per acre -- than the larger tractor spread over 100 acres. By more intensive

application the smaller farmer produces more per acre, but not enough more, below some acreage, to compensate for his higher costs per acre. Thus on very small acreages these imperfectly divisible items like tractors are insufficiently complemented with land, while the land is burdened with more costs than its output can requite. The diseconomies of small-scale operation, then, are closely akin to the diseconomies of unbalanced proportions.

Generally the least divisible inputs are the farmer and his family themselves, and particular items of capital such as tractors, barns, the home, fences, farm roads, special machinery and so on. Land, by contrast, comes in no minimum bundle.⁸¹ An acre is the same acre, its natural forces unaltered,⁸² whether a complete farm or a thousandth of one.

Impecunious farmers, we have seen, generally adjust to their circumstances by cutting down on land especially -- which one can understand, since they cannot cut down so far on the less divisible items, nor, as we will see, are the others so arduous for the small farmer to finance. Thus they find themselves with high fixed costs of labor and capital per acre, a position in which additional acres will do them a great deal of good.

Additional acres help the small farmer by giving him more land (and hence more output) over which to spread the cost of his labor and equipment. That is a commonplace. And yet the obvious corollary is rarely emphasized: as David Weeks

wrote, "... the effect upon gross income of an additional acre is much greater on a small farm than on a large one."⁸³ Add one acre to a ten-acre place and you increase the land complement by ten per cent, thus appreciably increasing the use of underused men and machines, as well as the farmer's ability to avail himself of the savings of larger scale inputs. But add that same acre to a one hundred-acre place, and you increase the land complement by only one per cent -- and that at an acreage where imperfectly divisible inputs are already more fully utilized, are already nearer their optimum sizes, where the new acre is probably much more distant from the farmstead, and where various other dis-economies of large scale operation are beginning to make themselves felt. So at that acreage not even a ten-acre, or ten per cent increase of the land complement would permit new savings per acre as great as ten per cent will bring for the ten-acre farm.

It has seemed natural to many people that economies of large scale operation explained the growth of giant farms. After all, as they are the large ones, is it not their growth that spells the triumph of doing things in a big way? But a little careful thought seems to point the other way. It is exactly the smallest farmers who have the most economies of scale to win by growing, and the large with the least to lose by shrinking.

Let us lay this matter out graphically, using the analytical technique which was developed in the introduction for the purpose of marshalling available data to reveal as much as

they have to tell about the marginal productivity of land. The technique involved the concept of marginal NET productivity, and a schedule of its variation over a range of acreage, the schedule being developed from available data on complementary costs and gross output per acre.

The marginal NET product of an acre, recall, is the increased gross product minus the increased complementary costs that result from adding it to ^{an} enterprise. And a schedule of marginal NET productivity depicts the variation of this quantity as land and complements are both added continuously over a range of acres -- each consecutive acre being added to a base augmented not only by the preceding acre, but also its complements. As demonstrated in the introduction, any point on a schedule of marginal net productivity represents also the marginal productivity at that point. And either concept may be used in conjunction with the equimarginal criterion to judge the performance of the land market.

Figure 2a shows typical schedules of gross output per acre and complementary costs per acre over a range of farm acreages. The characteristic shapes of these schedules represent the findings of many studies of farm costs. They may be taken as indicating conditions on actual existing farms of the various acreages or, alternately, a typical range of alternatives facing an entrepreneur planning a farm enterprise. As expounded in the Introduction, complementary costs per acre tend to be very high on very small acreages, due to the

imperfect divisibility of many complementary inputs. Costs per acre fall rapidly at first, but ever less rapidly, as the farmer acquires more and more land over which to spread the cost of these imperfectly divisible inputs. Ultimately complementary costs per acre may even rise, as he exploits economies of large scale operation to the full and encounters more and more diseconomies.

Gross output per acre may rise moderately at first, as additional acres permit of vital equipment that a microscopic gardener would have to forego entirely. But it soon begins to fall as the farmer spreads himself and his capital and enterprise thinner over more and more acres.

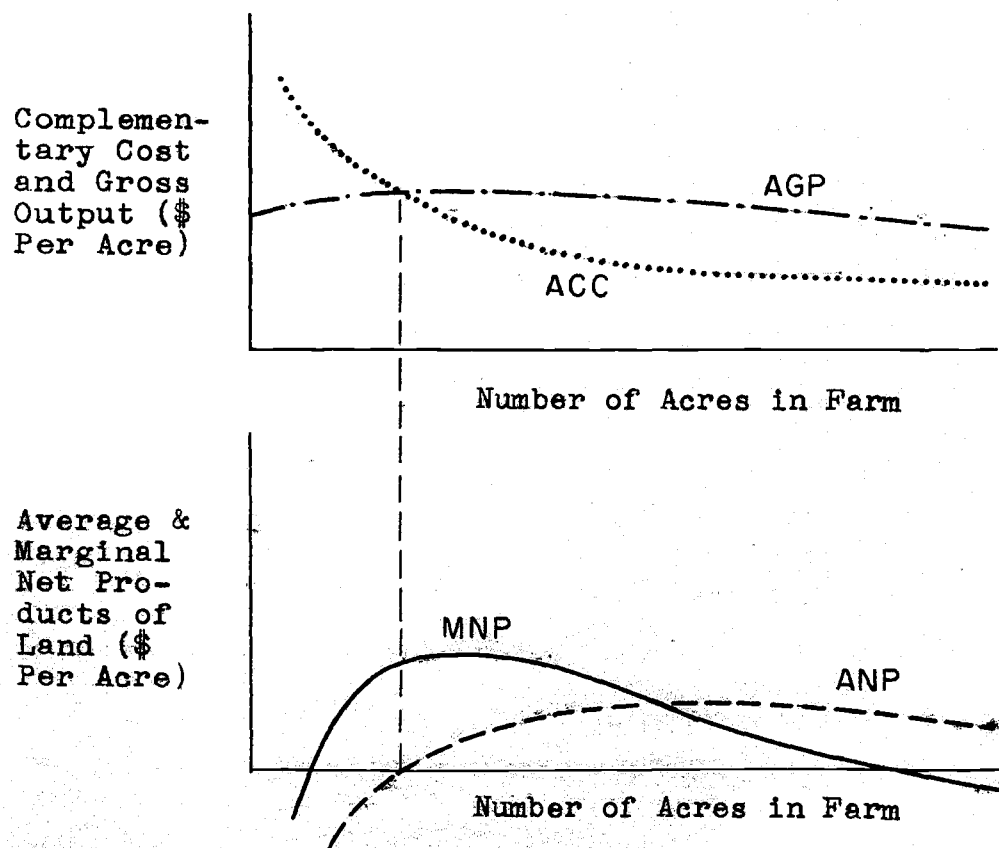


Figure 2: Marginal and average net products of land, as related to cost and output per acre.

The schedules of average and marginal net productivity of land, in Figure 2b derive directly from the two curves of Figure 2a -- they are, in fact, simply alternative ways of expressing the same information. The derivation is a simple matter. The average net product (ANP) is simply average gross product (AGP) minus average complementary costs (ACC). The marginal net product (MNP) is then drawn in according to the well-known relationship of marginal to average curves: while the average is rising, the marginal is above it; and while the average is falling, the marginal is below it. An algebraic derivation is in the notes.⁸⁴ Alternatively, the marginal net product (MNP) may be derived, as in the Introduction (Figures 1 to 3), as the difference of marginal gross product (MGP) and marginal complementary costs (MCC), which in turn derive from average gross product (AGP) and average complementary costs (ACC). In some ways this latter method affords a clearer insight into the essential reasoning involved, and at this point I would urge the reader who feels any doubts to review the relevant pages of the Introduction.

For the convenience of having a point of reference let us define the acreage at which average net product is a maximum as the "ultimate optimal acreage". This is sufficiently analogous to the usual concept of a "long run optimal scale" so as to need no special explanation here -- and we have explained in the Introduction our reasons for eschewing the phrase "long run". Now note the crucial point: for

farms somewhat less than the optimal acreage, the MARGINAL net product of land is very high, because an additional acre will lower costs per acre a good deal while it will reduce output per acre little if at all. Or, in terms of marginals, because the marginal complementary costs are very low, while the marginal gross product is still fairly high. By contrast, for farms larger than the optimum the marginal net product of land sinks down below the average net product (or land rent), even reaching zero while average net product is still quite a respectable figure. This is because output per acre falls while costs per acre cease to fall so rapidly. Or, in terms of marginals, it is because marginal gross product falls substantially while marginal complementary costs rise substantially.

Let us emphasize, once again, there is no implication here that smaller farms tend to be more efficient than larger ones. They may or may not be -- that is not the present question. Nor is there any denial that the marginal productivities of other inputs tend to vary inversely with the marginal productivity of land. On the contrary: this analysis points to that as a corollary. As shown in the Introduction, the marginal productivity of land depends inversely on the marginal productivities of complementary inputs. The present point is simply that aggregate output would rise if some land were transferred from large, lightly used farms to small, intensive farms.

Thus when we introduce the question of economies of

large-scale operation, it does not overturn the presumption from the law of diminishing returns that the marginal product of land tends to be higher on smaller farms. We bring the marginal product concept into the analysis of economies to scale simply by refining it slightly, as in Figure 2 into marginal NET product: the increased gross output from an additional acre minus the increased complementary costs. Then it is clear that the scale effects reinforce the proportion effects. Economies of large scale operation, in the first place, are in large measure simply economies of better proportioning, which large scale allows. And they are something else besides. Adding land to a small, land-starved farm not only puts the small farmer's under-employed labor and capital to fuller use; it also lets him buy larger and more specialized equipment. The smaller the farm, the greater are both these advantages, hence the higher the marginal net product of land.

2. A critical discussion of divergent viewpoints.

Elementary as that interpretation may seem, many of those who write on this subject pay it no heed, and we cannot take it as accepted doctrine. Prudence dictates that we consider why many other students are not moved to emphasize this same conclusion.

a. The proclivity to treat land as of no value.

Occasional visiting Europeans and Asiatics have remarked how in their countries farmers strive for the most

output per acre, while Americans strive for the most per man. No doubt these itinerant epigrammatists sacrifice something of the whole truth for the bon mot, for in fact the difference is of degree, not kind. But something akin to what they describe as the American farmer's absolute prodigality of land seems indeed to grip many American farm economists.

It recurrently astonishes me to discover, and then rediscover how many otherwise competent American economists, in writing of farm size, will suffer a brief amnesia of elementary principles and write as though maximum output per man (or per machine, or per man-plus-machine), or, what is something of the same idea, minimum costs per acre, were the necessary and sufficient criteria of efficient farming, and vouchsafe never a word about output per acre, or how well the farms economize on land.

Bachman and Jones, for example, speak of "significant gains in efficiency" from enlarging farms, and they measure "efficiency" solely in "output per hour of man labor."⁸⁵

E. O. Heady, if I divine him rightly, purports that land of itself has no value. He writes:

...the greatest cost economies associated with units of different sizes are to be found in crop production where power units and machine combinations of high capacities can be substituted for labor and fixed costs can be spread over a large acreage. The relative advantage of the large unit depends, of course, on the cost of labor as compared to the cost of capital in the form of high-capacity machinery.⁸⁶

Evidently he means that the cost of land has nothing to do with

the relative advantage of land-intensive farming. He seems to assume, in that and other passages, (pp. 364, 372, and 376) either that output per acre remains constant as costs per acre fall, or else is of no consequence. Perhaps it is the latter, for he later asserts:

While it is true that aggregate efficiency is directly concerned only with labor and capital productivity and only indirectly to (sic) land productivity, determination of the return of land becomes of interest not because we are concerned with land or the return to land for any particular reason but because the imputational process requires that all factors be considered together. 87

Again, Roland Renne has written:

... the economic unit will be of that size which utilizes most efficiently the entire family labor available for work. Such a size of unit would enable the farm family to produce the largest possible amount of goods which it will need for its living. 88

Something of the same attitude seems to blemish even the otherwise admirable writings of Th. Schultz who, in a famous article ⁸⁹ compares the desirability of small owner-operated farms and larger tenant farms entirely in terms of income per family, and seems to assume that lower income per family on the smaller farms necessarily implies lower national income, without considering that with smaller farms there can be more farms, and more income per acre. In the same article he states that farmers who own the farms they operate and are free from debt "are of no concern in whatever steps society may take to facilitate tenure reforms. Surely these operators have arrived at the desired goal." Am I

just reading into that the implication that a farmer can never have too much land, but only too little? Schultz has even written a chapter on "Gauging the Economic Efficiency of Agriculture" from this standpoint, comparing "efficiency" in different regions in these words: "The West emerges as the most efficient, having an output per man-equivalent 2.5 times as large as that of the South."⁹⁰

Wilcox and Cochrane write:

It (a family farm) may be either a highly mechanized, highly efficient unit producing a large volume of products per worker, or it may be a small, unmechanized unit utilizing one horse, or one mule tools, and large amounts of hand labor. ⁹¹

The juxtaposition of "efficient", and "large volume of products per worker" is not merely accidental, for they have concluded that "There are sound economic reasons why we should permit and encourage these trends toward larger farming units to continue at an accelerated rate."⁹² Inasmuch as that means transferring land from small to large holdings, one might expect the sound economic reasons to concern the marginal productivity of land. But their conclusion stems mainly from this, that "Labor and power costs per acre, or per unit of output, are lowered by the use of this larger scale machinery."⁹³

I sincerely hope that these authors do not mean what they appear to mean; and if so I gladly apologize. These are substantial men, on whose witness I must myself often call

in these chapters.

But, while I confess that I find few unequivocal statements of this solecism, one can hardly expect plain talk about an idea which to state clearly and wholly is to be absurd. And it does appear that the viewpoint dimly seen behind those passages is one from which they judge. For when they turn to expose "inefficiency" in American farming, it is mainly the small farmer, with high costs per acre, on whom their umbrage descends.⁹⁴

Yet what have they done but take underuse of land as the criterion of efficiency? If minimum cost per acre is the sole criterion, the most "efficient" farm is one not used at all. If maximum output per man is the criterion, the most "efficient" farm is one on which the marginal product of land is zero. To clarify that matter, let us ressurect from its limbo a venerable principle of elementary economics.⁹⁵

As one adds more and more land to a fixed complement of men, output per man rises until finally the last acre adds nothing -- i.e. the marginal product of land equals zero. Then output per man is at its maximum. Conversely, where land is very crowded, and the marginal product of labor approaches zero, the average product of land approaches its maximum, and its marginal product becomes quite high. Graphically:

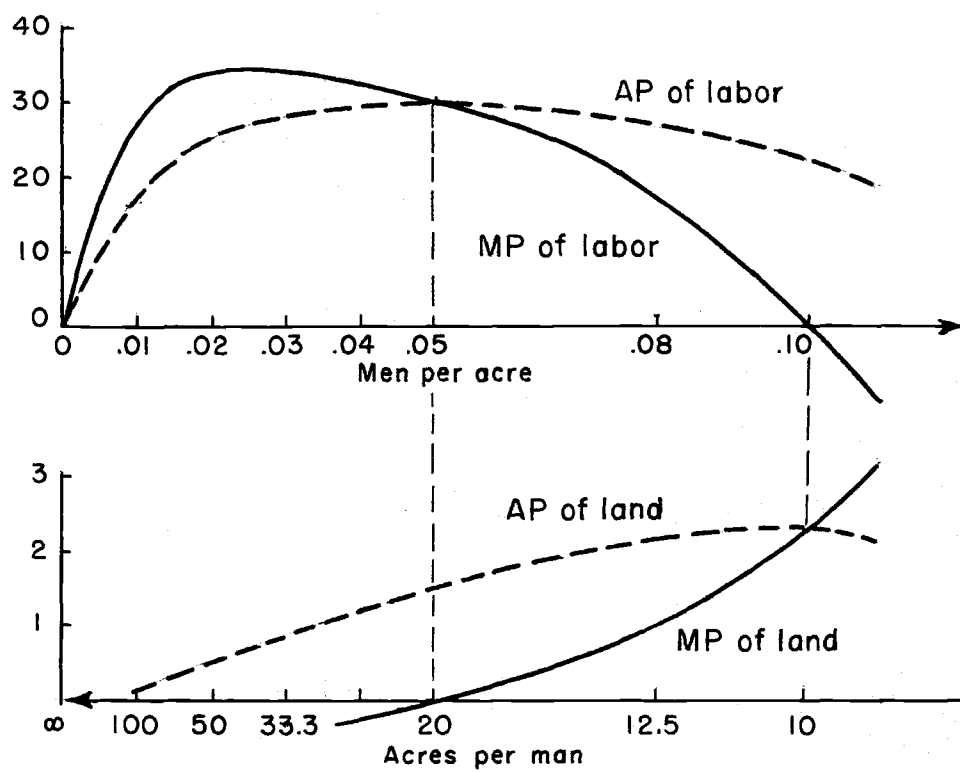


Figure 3

Necessary Relations Between Marginal
And Average Products of Labor and Land.

The points connected with dots correspond to each other, e.g. 20 acres per man to 1/20 of a man per acre.

Thus high output per man (high average product of labor) is no evidence of efficient land use, but exactly the opposite. The high output per man, which some economists adduce to show the "efficiency" of large farms, and advocate their growth, is itself the strongest argument against it.

By parallel reasoning, the same is true of high output per machine, or, what amounts to the same thing, low machine costs per acre, or per unit of output. The only situation in which maximizing output per machine is good economy would be where land was absolutely free, with no alternative use. In light of the fact that in 1940 the value of American farm land exclusive of buildings was seven and a half times the value of all farm implements and machinery,⁹⁶ the doctrine of ranging each machine to the absolute limit, and the land be damned, seems like extraordinarily poor economics.

b. Undervaluation of lands.

A variation of the treatment of land as of no value is to put a low value on it, divide this into net income and point to the high percentage returns "on the investment". Thus the managers of a corporation or the trustees of an estate may exaggerate their efficiency for the benefit of whomsoever may be interested. The practice is also of some utility in keeping down property and inheritance taxes and may have various other motivations. E. A. Stokdyk has written of how common

97
this kind of accounting is among corporate farmers, and of course it is familiar and transparent to all who have applied the opportunity cost concept to business accounts. An interesting example is the Kern County Land Company, which carries its land on the books, according to the annual stockholders' reports, at its sale price as of 1890.

It is sometimes stated that larger farms earn higher returns "on the investment". But the writer has found no study of this point in which the word "investment" was defined meaningfully, if at all, and the means of ascertaining it specified. It is obvious, however, that to say one farm earns higher returns than another on money invested in land titles is to say it puts the land to more productive use. As that is the matter we are investigating directly; and as known data on "returns on investment" are of almost no value, we will not let this matter detain us.

c. The possibility that the marginal product of land is higher on larger farms, despite their less intensity, due to prodigious economies of large scale operation.

The above reasoning is based on proportions. Now consider the possibility that the advantages of large-scale operation are so prodigious as to override all considerations of proportions, so that on larger farms the marginal product of land is higher than on smaller, despite the lesser labor-capital complement per acre. In terms of figure 2 (p. 231) that would mean the larger farms are near to the maximum average

net product of land, and the small far below it.

i. Limits to economies of scale

Such a belief receives scant support from those who have studied the elements from which economies of large scale operation derive -- and they include several of those we have just cited. According to the studies, costs per acre cease to fall appreciably before farms attain more than moderate acreages, acreages smaller than those in which much farm land is held. To be sure, none of these studies is really conclusive, as they do not specify what they assume about output per acre -- and naturally cost per acre will fall much slower if output per acre must remain constant than if it may drop. But, as most of those to be cited have shown little concern for output per acre, it is safe to assume that they are tolerating some decline. Their estimates of acreages at which economies of scale are "fully realized" are at least not likely to err on the small side.

Bachman and Jones cite an unpublished study of O. J. Scoville's about corn-livestock farms in eastern Nebraska to the effect that:

Although the rate of decline of costs is high with small acreages, a full-sized family-operated farm is large enough to permit reasonably efficient utilization of equipment. Decreases in machinery costs per acre become relatively insignificant for farms that are larger than a two-man unit. 98

They also cite the conclusion of a 1947 House Committee on Agriculture study that 200 acres are ample to complement a cotton picker, the largest input in cotton. "In other

situations the units of machinery are small relative to common sizes of farms."⁹⁹

Heady cites Iowa Agricultural Experiment Station project 1135, a study of cash grain production costs in which the investigators found that costs per acre levelled off around 80 acres, and from 80 to 280 acres fell only from \$29.47 to \$26.19 -- assuming, in each case, equipment adapted to the particular acreage.¹⁰⁰

Wilcox and Cochrane cite Wilcox and Rauchenstein's conclusion that dairy herds larger than 30 cows achieve few economies of large scale operation. Beyond 100 cows:

Extra time required in moving the feed and milk greater distances in the large barns, in taking the cows greater distances to and from pastures, and in hauling crops and manure greater distances to and from fields offset time savings at other jobs, such as washing milkers and cans and throwing down silage. ¹⁰¹

J. Karl Lee calculated that, for farms on the valley floor areas of five counties around Fresno, California, most economies of scale were realized for farm machinery at 100 acres, for tractors at 100 or slightly more, for power cost mostly at 100 and entirely at 500, for pumps and power at ¹⁰² 160-170.

There are limits, after all, to the advantages of large machinery. Some of the limiting factors are the following.

1. A larger machine gives more uniform treatment to the ground its wide swath covers. But the ground is non-uniform,

and would respond to treatment adapted to its variations.

2. Larger machines become cumbersome and ponderous.

Their large wheels require more space between crop rows, and their wide girth calls for more turning space at field ends. The strength of structural members tends to increase with their cross sections, while weight tends to increase with volume, and so machines tend to gain in weight out of proportion to strength and function. This weight packs down soil under the wheels, and may require costlier farm roadbeds, passages and bridges. On rough and sloping terrain and through narrow apertures the larger machines are harder to maneuver. When rapid changes of weather or other conditions call for quick responses, the larger machines tend to be slower to answer the call. Many odd jobs are not individually important enough to warrant activating and moving a large rig and so are neglected; odd hours, too, are not so apt to warrant its services, and so are lost.

3. A feature of larger machines is often their higher degree of specialization. This may often become disadvantageous in free markets where rapid changes in consumer tastes, technology, foreign supplies and complementary costs call for continuous flexibility and adaptation.

For reasons such as those there are limits to the advantages of large machinery. And as these limits are approached, diseconomies other than those inherent in large machinery accumulate. Some of the more important ones are these.

1. Transportation costs.

Farm operations radiate from the farmstead nucleus, the central depot for distribution of inputs and collection of output. The vaster the reaches of a farm, the costlier the movements to and fro. W. I. Myers in his classic Economic Study of Farm Layout pointed to field after field in New York that was underused because so far from the owner's farmstead -- although often near to a neighbor's. He noted in a rather broad survey that such lands tended to be kept in less intensive crops that required fewer trips to the farmstead but yielded lower incomes. Some were never manured. The loss of production varied with distance. In an example he estimated the loss at 35 to 40 per cent of net income.¹⁰³

Note that this diseconomy derives, not from the largeness of the enterprise in general, but the vastness of its lands. Were output increased by more intensive application of labor and capital to lands near the farmstead there would be no increase of distances to travel. This is a weakness, therefore, not just of large farms in general, but in particular of farms that are large in respect to their landholdings.

2. Labor problems.

Large farmers must depend of course on hired labor, whose immediate motivation is not to help the farm owner, but themselves. To convert the one urge into the other requires supervision by competent and responsible, hence expensive overseers. Where men are scattered over hundreds of acres

the problem of communication alone is formidable, and of effective supervision immense. An American critic of Russian farm organization has quipped that the Comrades need fewer self-propelled machines and more self-propelled farmers.¹⁰⁴ The same might be said of some large American farms. Some transient laborers will break down vines and trees to spare themselves trouble harvesting or pruning; load green fruit to increase their output at the weighing station;¹⁰⁵ and in a variety of ways, wherein they will not be caught, exploit the owner with a disregard as callous as he often shows for them. Another enemy of output is boredom, when crews work at dull repetitive tasks. Balchin's experiments with hoeing suggest that this is a most important factor.¹⁰⁶

The need to oversee the men creates an additional problem of inertia. To economize on overseers it is necessary that migrant workers go in crews of several. To activate such a crew requires some doing, so that many odd jobs an individual could jump to are neglected, and there is some lag in response to favorable weather conditions. The crew as a unit moves no faster than its slowest member. Crew members generally work individually, even though in a gang, so that, while the crew suffers the disadvantages of the group versus the individual it achieves thereby no particular gains of cooperative effort, save such camaraderie as may be enjoyed under the eye of the overseer.

An often remarked risk of transient labor is its undependability of supply in critical peak seasons. Many

employers quail before the risk of not finding hands during good harvest weather, with fortunes standing ripe in the

fields.¹⁰⁷ W. W. Carmean, a farm employer, wrote recently

in the San Francisco Chronicle of his problem of having

". . . a field in the process of being picked when another job came along which attracted the crew and the crop was

therefore lost."¹⁰⁸ Costs of recruiting and training this

shifting work force are also a formidable item to reckon

with. The manager of an early Red River bonanza farm, no

doubt exaggerating his troubles, complained that he generally

had three teams of labor at once: one coming, one working,

and one going.¹⁰⁹

3. Management problems.

The large farm organization entails some bureaucratic overhead costs, with an appreciable part of its staff engaged in watching and ordering the rest. There is in this bureaucracy considerable inertia, considerable development of tenuous petty vested interests in things as they are, with consequent resistance to change. The power of minor functionaries to maintain themselves against unwelcome changes becomes the greater as a farm grows and the top manager becomes harder taxed. For, as J. D. Black wrote, "as a manager brings more and more management to bear on an enterprise, he must exert himself more and more to do it. The first managerial effort comes forth easily; the last, only at great sacrifice of

comfort and leisure."¹¹⁰ This problem is the more acute when the top manager, as is not infrequently the case, has outside

interests to take up his time. A 1940 study of southern plantations disclosed that 28 per cent of the operators had a second occupation to which they devoted more than one-quarter¹¹¹ of their time. According to the English student, R. G. Stapledon, a major fault of large landowners, preoccupied with other interests, is to neglect "tiresome details connected with outlying farms, the encroachment of bracken, and the rapid¹¹² deterioration of neglected acres."

4. Trespass, vandalism and theft.

Vast, unmanned landholdings tempt the frustrated hunter, landseeker or thief into lawbreaking. The King Ranch is regularly invaded by hungry Mexicans who sup there on mesquite beans and the fruit of the prickly pear;¹¹³ and, like so many large landholdings, it must be opened to hunters to win their support in local politics. Theft of crops is a problem that grows with distance from the farmstead, and cattle rustling by no means died with the wild west. A theft of several thousand head from some large ranches near Paso Robles, California, was consummated on October 30, 1955.¹¹⁴ In England the "poacher" has become a classic figure in literature.

These, and other problems become of moment even before positive economies of large scale farming are fully realized. Before long the principle "if some is good then more is better" gives way to a principle of moderation. At some medium acreage the balance is struck, and beyond it there is no net saving in expanding.

ii. Falling gross outputs per dollar of land

But have we given full weight to all the economies, perhaps intricate and not immediately obvious to the untutored eye, that may materialize when several men work together? Is it not still possible that the marginal product of land is higher or equal on larger farms, even when they use fewer men and less capital per acre, because men and capital are so much more effective in larger teams? It is conceivable, yes. But it is not generally so in farming. That we can ascertain by testing its implications against known facts.

Let me direct your eye once again to Figure 3, p. 239. There we have abstracted from matters of scale, and focussed on matters of proportion, by plotting land per man, rather than just land (for some particular number of men) on the abscissa. But we can also represent different scales of operation on the same axes, by drawing more than one marginal productivity (and corresponding average productivity) curve, each curve on the assumption of a different complement of men, hence of a different scale of operations.

Now let us represent two different farms as they would be if the marginal product of land were the same on the larger, less intensive one. As it would be equal, even when there was more land per man on the larger farm, it must be higher when there is the same ratio. For any given land per man ratio, therefore, the marginal productivity curve for the

large farm must be above that for the small, as in Figure 4

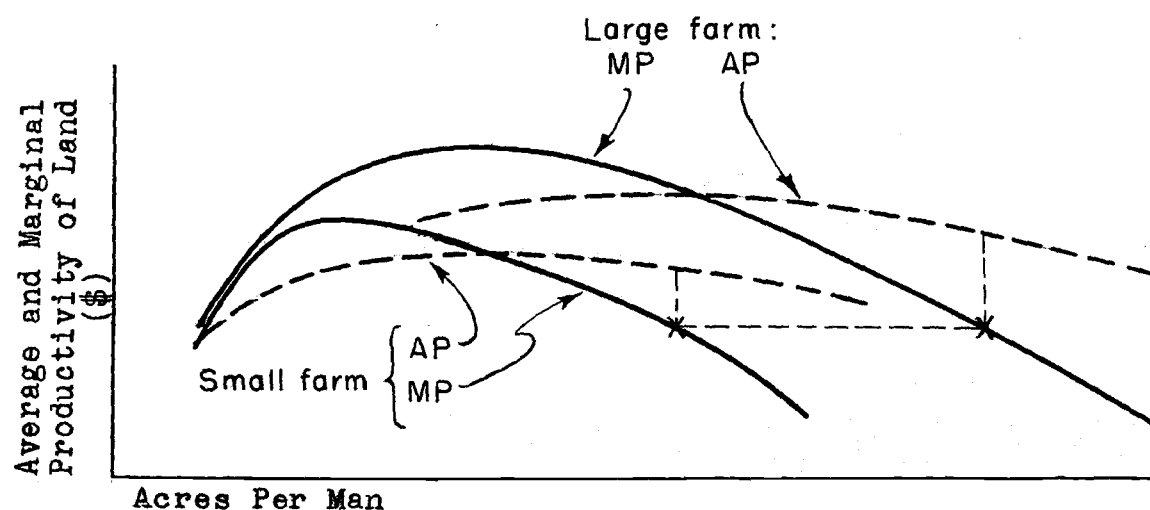


Figure 4

Hypothetical marginal productivity and corresponding average productivity of land as they would be if the marginal product of land were higher on larger, less intensive farms than on smaller, more intensive ones.

Now it is obvious from Figure 4 that if both farmers apply land to the same margin (as represented by the horizontal line), the average productivity of land, i.e. gross output per acre, must be much higher on the larger, less intensive farm.

Now here is something we can measure, gross output per acre. And one fact that few will dispute is that smaller,

more intensive farms, whatever their other demerits, do tend to produce, from a given grade of land, and often even from worse land, greater outputs per acre. In J. S. Mill's Political Economy is this citation:

It is not pretended by our agricultural writers that our large farmers,approach to the garden-like cultivation, attention to manures, drainage, and clean state of the land, or in productiveness from a small space of soil not originally rich, which distinguishes the small farmers (of Flanders). 115

Mill appealed to "the immense amount of gross produce which.... English laborers generally obtain from their little allotments; a produce beyond comparison greater than a large farmer extracts....from the same piece of land." 116 There is abundant, if scattered evidence of the same trend today. Let us glance over some of it.

Karl Lee, whose studies in the San Joaquin Valley we have seen showing the savings of large scale operation tapering off after about 100 acres, found in the same study that the greatest output per acre came from farms considerably below 100 acres, and increased steadily as farm size decreased, 117 and within this area the quality of land did not decline so rapidly with farm size. 118

Heady, McKee and Haver found in their recent studies of economies of scale of farm operations that output per acre tended to fall with size of farm, to such an extent that costs per unit of output began to rise, even while costs per acre were still falling, in result of which "the characteristic

U-shaped average total cost curve is obtained."¹¹⁹

Chester McCorkle's 1949 sample of 400 cotton-potato farms in the southern San Joaquin Valley revealed acre yields falling gently with size of farm.¹²⁰ The gentleness of the fall was no doubt due to the nature of the sample, which included only farms specializing in one crop combination. Higher acre yields from smaller farms are generally associated with more intensive types of crops.

Data on typical acre outputs and typical farm sizes for farms classed by type of crop generally show a rough correlation of small size with high output. Two such sets of data are provided in the testimony of M. C. Hermann before a sub-committee of the Senate Committee on Public Lands in 1947;¹²¹ and in G. A. Carpenter's study of "Farm Size in California".¹²²

Hamilton's contrast of Benton and Elkhart counties, Indiana, previously cited, brings out that gross sales per acre were about the same in the two counties, although the value of land and buildings per acre was \$209 in Benton, the county of large farms, compared to \$161 in Elkhart, the county of small farms.¹²³ The difference in bare land values per acre was even greater by the 1940 Census.¹²⁴

Bachman and Jones present data on all "commercial family-operated farms" in the Corn Belt, 1944, classified by type of product. Comparing cash-grain farms with various kinds of livestock farms, the cash-grain farms are larger in acres, on land of higher value per acre, and produce much less gross

output per dollar of real estate value. ¹²⁵

E. A. Stokdyk in 1928 tabulated data on income from corporate farms -- which of course average much larger than other farms -- from 1919-1926, and compared it to the income the corporations should have earned to be comparable to the individual farms. The corporations showed up very poorly in ¹²⁶ all the years but one.

Comparisons of Japanese-American farmers with their neighbors on the West Coast have uniformly indicated that their farms tended to be smaller, and to gross more per acre due to ¹²⁷ high skill and more intensive work. High gross output per acre is probably typical of immigrant farmers of most nationalities. The Japanese are singled out because their identifiability and the stresses of World War II have caused the collection of much data on their farming. Of course their individual practices also vary widely.

It is not unheard of for Japanese to gross in a year as much as or more than their land and buildings are worth. One might contrast this performance with that of southern plantations in 1940 which grossed \$29 an acre from real estate then ¹²⁸ valued at \$79 an acre; or with the King Ranch, which in 1933 -- a bad year, to be sure -- grossed \$700,000 from lands very conservatively valued at \$9,000,000 (without oil) with improvements of \$4,000,000; ¹²⁹ or with the Kern County Land Company, whose gross revenue from cattle in 1939 was around \$1,500,000, which would be a small gross from the 138,000 acres in Kern

County which company President Pigott says are suitable for farming, not to mention the other million or more acres of company land, part of which was valued in 1890 at \$10,000,000. ¹³⁰

Black, Clawson, Sayre and Wilcox in their Farm Management plot "net farm income" against "farm investment, in scatter ¹³¹ form, for accounting dairy farms in Wisconsin, 1937-1941. They point to extreme contrasts in what individuals earn on their investments. For the present discussion the significant feature is one they do not emphasize, their trend line to the scatter. This line shows net farm income failing to keep pace with farm investment. The ratio of net farm income to farm investment varies from 13% on the extreme left, representing \$7,000 investment, to 7% on the extreme right for \$40,000 investment.

These figures are not conclusive evidence that output per acre fell with farm investment, inasmuch as larger farms hiring more of their labor, must deduct a higher percentage of their labor costs than smaller ones to arrive at "net farm income", which is not net of implicit wages. But on the other hand, the larger the farm, the higher the percentage of "farm investment" is land value; the less is the difference of net and gross output; and the higher percentage of output is sold, hence counted in farm income. On balance therefore these data are probably significant.

Outside the United States the pattern of larger acre outputs on smaller farms has been observed and recorded in

Spain by Pascual Carrion;¹³² in Denmark by Harald Gronborg;¹³³
 and in France by Lucien Brasse-Brossard.¹³⁴ The first two
 present nationwide Census data.

Aside from these foreign sources, none of the above has the authoritative generality of Census reports. One would expect the voluminous United States Census, which provides considerable data on farms classed by acreage, to offer some data on the output of farms so classed. But it does not, and has not, except in the year 1900.

Lacking more recent data we have no choice but present these as the most general information available on the subject in the United States. In 1900 gross output divided by land value ranged from \$1.05 for farms under three acres to \$.26 for farms 1,000 acres and over. Between the extremes the trend was downwards, with minor exceptions.¹³⁵ For their times, at least, these figures seem quite conclusive.

These data would perhaps not be adequate to demonstrate that output per dollar of land is generally higher on smaller farms. But here the question is only, does output per unit of land tend to be much higher on larger, less intensive farms? There is hardly a shred of doubt that it does not. Summing it up, larger, less intensive farms can have higher marginal product of land only if they have appreciably larger average outputs per acre; and in general not that, but more likely the opposite is true.

d. Consolidation versus expansion.

i. Inter-regional migration.

The burden of our remarks thus far has been that a well-working land market would tend to shift land from larger, land-surfeited farms to smaller, land-starved farms where its marginal product is higher. But a large body of professional opinion, while ready to concede that the marginal product of land may be higher on smaller farms, would still not shift land to them. Emphasizing matters of scale to the exclusion of matters of proportion, many writers recommend that small farms achieve greater economies of large scale operation only by consolidating with other small farms; and presumably therefore believe that a perfect market would effect this result.

In several respects this opinion is compatible with ours. In the first place, if small farms generally are to grow by acquiring land from large farms, as we recommend, there are particular regions, where all the farms are small, within which the farms can grow only by consolidating.

We have thus far spoken for simplicity of "adding land to farms" as though the farmstead nuclei could all remain rooted, and the farmers need only move a boundary fence. And in many areas, where large and small farms intermingle, that is substantially what would happen. But where one region has all small farms, and another all large, "shifting land from large to small farms" entails moving population and capital from one

region to another. As the Baconian proverb has it, if the Mountain will not move to Mohammed, then Mohammed must move to the Mountain -- except in this case he will generally move from the mountains. And in geographical terms, transferring land from large to small farms will mean migration, with subdivision in the underpopulated regions and consolidation in the congested ones.

ii. Viability of small farm units.

Some writers doubtless have some adjustment such as the above in mind when they recommend consolidating small farms, and with that we have no quarrel. But others have yet another idea: that the large farms are at the optimum scale, and the small distinctly below it. It is well, they feel, that the larger farms maintain themselves intact. The small farms' growth has been arrested in the stage of increasing returns to scale, at a point where the marginal net product of land is higher than for the optimum farm, but the average net product of land is lower. So the high marginal net product of land on smaller farms indicates that the small ones should expand; and NOT that the large ones should shrink-- else all farms would be below the optimum scale. The small farms should grow only at the expense of other small farms. A perfect market would force up the cost of land until no one could afford to hold it without achieving the maximum average net product per acre, and that would force the small farms to consolidate.

These "consolidators", as we may call them, quite agree with us that the land market is functioning poorly. If pressed, they would probably agree, too, and at any rate they can very safely agree, that the marginal product of land is higher on smaller farms. They differ only over the small farmer's economic right to exist as an independent entrepreneurial unit. But as this is a matter of some practical moment, and as heresy is always more disturbing than outright infidelity, it behooves us to evaluate their idea carefully.

Before entertaining it very seriously, we had better look to this question: if small holders indeed earn much less net income per acre to impute to land, how do they manage to hang onto it at all in the present market?

Now we can explain the opposite. We can explain how and why larger holders hang onto lands from which they take a small net income. We have already done so, tentatively, by likening the land market to a "tie-in sale" (and we develop the same idea more formally in Chapter IV, et. seq.). The affluent investor may buy land primarily as an investment for the remote future, without much thought for its present use.

In the present context, we can put the same idea in another way, so the relation to marginal productivity is clear.¹³⁶ The annual cost of holding title to land consists of (a), The price of the title times the holder's internal interest rate, and, (b), Annual ad valorem taxes on the land. The individual adds land to his farm as long as the annual

marginal product exceeds these annual costs.

For large holders, both these costs are usually lower than for small holders. Interest rates are lower because larger holders generally have more funds of their own to play with, and can borrow much easier than small holders. Taxes are generally lower because of the nigh-universal tendency to underassess large holdings, as documented in Chapter V, Section VII, c, 3.

So it is easy to explain why large holders will keep land from which they draw little net income. The annual costs of holding title are for them very low. But how explain the small holder, against whom the banker and the tax-assessor both discriminate? How can he borrow at high interest, pay high discriminatory taxes, and still keep the land? By hook or crook, he must impute a high net product to it.

For the small farm, that means one of two things. Either, (a), it is not below optimum size; or, (b), technological factors set no very definite optimum, and the small farmer somehow compensates for any disabilities of his smallness.

As to (a), the studies we have cited required no impressively high acreages to realize economies of large operation. They all suggest that farms much smaller than the largest are optimal, and leave plenty of land in large holdings for small farmers to acquire before merging with one another.

As to (b), it is doubtless true that many of the smallest American farms are smaller than what a cold-blooded

technical computation of costs and benefits of large machinery would establish as an optimum size. But these technological optima are generally not at all critical, especially when one considers the wide range of farm machinery sizes available, the possibilities of custom work, cooperative ownership, district functions, part time farming, and so on.

That leaves wide scope for the personal qualities of the manager to determine the net products of land. His willingness to work for low imputed wages due to lack of alternatives and/or positive pleasure derived from captaining his own enterprise; his skill with equipment and men, his wife's morale, his children's age and ability: those are all important factors determining the basic economic viability of an independent farm.

Many farmers with less than enough land to complement an optimum team of men and equipment contrive to stay in business anyway, either by using their time to remarkably good effect, or, more commonly, by the simple if not always comfortable stratagem of accounting if need be very low wages for their time, paying the mortgage, so to speak, out of their hides. Thus they impute annual net products to their small acres equal or higher than larger farmers will because few if any larger farmers have any need, and certainly no desire, to work for so little.

In terms of Figure 2, page 231 that means the small farmer with too little land to achieve the maximum average

net product (ANP) of land can widen the spread between cost and output per acre by supplying his labor cheaply. Thus he raises the entire ANP curve. And, although his farm will probably remain below what is for him as an individual the optimum scale, still he imputes enough to the land to warrant his keeping it from all comers.

That is not to say the present conditions are ideal, where many small farmers waste their labor working to low margins. On the contrary, as the small farmer, by accepting a lower wage return, and working the land to lower margins, increases the average net product of land, he also increases the marginal, which, as he was already in the stage of increasing returns to land, was already higher than on optimal or larger farms. The disparity, the departure from the equimarginal ideal, increases.

But it is to say that the small farmer has established his economic raison d'etre, his right to exist as an independent entrepreneur, even in a hostile world. For he survives for a sound economic reason: he does not consider alternative employments, say as a hired farm or domestic or factory hand, as attractive as being an independent farmer with some security, stability, breathing space, and place in the community. For that he will sacrifice considerable money income; and certainly the choice is his to make. As millions have made it, even in a hostile market, I would not expect them to change it in a more perfect, hence more friendly one.

So henceforth we will accept as given the independent existence of these small units, and focus on decisions at the margins. And there, it is clear, the most economical adjustment for small farmers is not to cannibalize each other, but to nibble off parts of larger holdings.

iii. Consolidation and the "excess" farm population.

A second weakness of consolidation is that it would in itself do nothing to equalize intensities among the farms. At present, of course, the small farms are much more intensive. Are the consolidators suggesting that the small intensive farms cluster into larger units of the same high intensity? When that was accomplished, they would have as much land per farm as their neighbors, but much more labor and capital. Surely, then, good economy would call for some shift of land to them, some invasion of the larger farms.

But the consolidators generally have a different answer. They would consolidate the lands of small farmers, but not the people, nor the capital. The excess they dispose of by trundling them off to the city to the margins of some other occupation, saying "there are too many farmers already". Consolidation, thus interpreted, may be an adjunct to the philosophy of monopoly practices in agriculture.

But where are these people to go? They have already evinced their preference for agriculture over alternatives, and as they are on the whole an extremely mobile people, many of them part time farmers, it cannot be said they are unaware

of alternatives. It seems a bit premature to despair of their making a living in agriculture, when agriculture resources are still so poorly allocated. For the reason that so many farm families are poor is not so much because farm prices are low. They are, in fact, high enough now to be capitalized into almost the highest farm land values in history. It is rather because they lack enough good land to produce much of those high-priced products at any price. And that is a problem these marginal men will encounter in whatever industry they try to enter.

If that opinion appears out of temper with the times, that is, I submit, but evidence of how far from the common sense of economics the advocates of monopoly practices in agriculture have led us, and how far the goal of maximizing the value of titles to farm land has taken precedence over more legitimate ends of social organization, such as opening productive job and investment opportunities, to help produce food and conserve on natural resources in a nation and world where the four horsemen still ride. Certainly one reason why many farm economists do not share our enthusiasm for transferring land from land-surfeited to land-starved farmers is not that they doubt it would increase output, but precisely because it would. Imbued with the spirit of acreage cutbacks and marketing agreements, they naturally look with jaundiced eyes on such dangerous notions as facilitating the union of complementary resources, that they may produce more farm

products than before. To lock up vast acreages undermanned on the one hand, and on the other to keep many farm people idling along at half-throttle for want of land to complement their labor, is quite in line with the philosophy of low output and high price. To consolidate the small farmers off to the city, where they must buy the food they now grow, is better yet.

Our philosophy, as outlined in the introduction, is rather one of facilitating output and income payments in all industries, whereby no industry need suffer lower relative prices, and all can benefit from greater volume. As to aggregate demand, we pointed out that perfecting the land market would be tantamount to opening a new frontier, increasing investment opportunities to balance any increased savings, and raising wages to increase consumption demand. Those who always oppose new frontiers, of course, may oppose this idea; but many even of them will concur, more or less in the measure that they see their interest lies in teaming with a healthy American economy, rather than strangling a sick one. As to farmers in particular, they have everything to gain by increasing the purchasing power of wage earners, whose elastic appetites in World War II so convincingly shattered the fallacy that farmers necessarily receive a smaller share of a higher national income.

From this point of view there will be little talk of "getting surplus labor out of agriculture" -- except as other

industries can offer better opportunities, but then the talk will be not the negative "get them out", but the positive "let them in". From this view, consolidation will be judged on its merits in putting limited resources to the best use, rather than in raising food prices and forcing down wages. Thus judged, consolidation has little to commend it.

3. A last word, to preclude an inevitable misinterpretation.

In concluding, let us have it very clear, we do not say a perfect market would completely equalize farm sizes, even in terms of value, nor would it equalize intensities on all farms. No market is perfect that does not allow for the individuality of different men and different lands. We only say a perfect market would tend to make farm sizes and use intensities more equal than now. And we base this conclusion not on equal size or intensity as a norm, but solely on equal marginal productivity as a norm. This last we do insist on quite strictly. But other kinds of equality we only favor insofar as the equimarginal principle leads toward them.

D. Economies in financing ownership, at odds with operating economies, draw some owner-operations above and others below optimal operating sizes.

1. Tenant operations, their size little influenced by title-financing economies, tend toward medium sizes.

There is yet another reason for believing that the largest owner operations are above optimum operating scales, and the smallest below them -- and hence that the marginal

product of land is higher on smaller owner-operated farms. The reason is that tenant operations, whose scale is uninfluenced by the entrepreneur's greater or lesser ability to finance land titles, tend toward medium sizes, in contrast to owner-operations, which tend more toward extremes of large and small (Table 20):

TABLE 20
Per Cent of Farms in Different Size Groups
137
Which are Tenant Farms.

<u>Size Group (Acres)</u>	<u>Percentage of Group Which Are Pure Tenant Farms</u>
0-3	24.0
3-9	24.6
10-29	42.7
30-49	35.3
50-69	29.1
70-99	25.6
100-139	27.4
140-179	34.6
180-219	32.3
220-259	34.9
260-379	33.8
380-499	29.8
500-699	26.3
700-999	21.3
1,000-4,999	14.5
5,000-9,999	10.5
10,000 and over	9.2

(These figures are only intended to be suggestive. They are not a full picture, as they do not cover part-owners, nor part-landlords.)

Why, again, does that indicate that owner-operations tend to extremes larger and smaller than medium optimal operating scales? The reasoning is sufficiently roundabout to warrant some elaboration.

An owner-operation, as the name implies, has a kind of dual personality, being at once an operating unit and a title-holding unit, the two lying congruent, bonded together in an uneasy union by the compelling fact that the alternative to owner-operation is tenancy, with all its disadvantages for both owner and operator. Since tenant operations -- which are operating units only, and not ownership units at all-- since tenant operations tend toward medium sizes, it is plausible that operating economies, by themselves, prescribe medium farm sizes; and what pulls owner-operations away from medium sizes is the title-holding unit, or shall we say the factors that influence the size of the title-holding unit? Thus some owner-operations are dwarfed below optimal operating scales by the owners' poverty; others are distended beyond any optimum by the owners' positive desire to invest superfluous funds in land titles. To preserve the advantages of owner-operation, entrepreneurs may conform their operations to the Procrustean beds of their finances over an immense range, rather than consign themselves (if they are small) or their

lands (if they are large) to the perils and frustrations of
¹³⁸
 tenancy.

2. Title-holding units tend toward extremes of large and small.

That plausible interpretation would be more plausible if we had some facts on how ownership units behave independently from operating units. And those we have. For the bond that joins ownership to operation, strong as it is, has its breaking point. Let the two units pull hard enough against each other and the bond snaps, ownership and management parting company to go their separate ways. We need only observe the separate ways they take to know how they must influence one another when joined. And it is quite apparent from available data -- imperfect though they are -- that ownership units, freed from operating units, tend toward extremes of large and small, particularly of large; while tenant operating units, as we have already observed, tend toward medium sizes.

a. Splitting of large holdings into smaller operations.

1. Southern Plantations.

Some notion of how the title holding unit may stretch the owner-operating unit is afforded by some special data, which we have already met: the 1910 special Census enumeration of southern plantations (above, pp. 186-188). It shows that the more tenants a landlord had, the more acres also he kept in his home-farm to operate himself (Table 21). Nor was that due to lower acreage values, for these increased with number of tenants per plantation, as we have seen.

TABLE 21
Size of Landlord's "Home Farm"
By Number of Tenants per Plantation,
139
11 Southern States, 1910.

<u>Average Acres in:</u>	<u>Number of Tenants</u>			<u>50 and over</u>
	5-9	10-19	20-49	
Plantation	495 acres	953	1,688	3,535
Landlord Farm	227	438	785	1,375
Tenant Farms	42	40	32	30
Average value of Land Per Acre (\$)	18.84	19.64	21.13	24.33

Even the smaller landlords had more land than they wished to operate themselves. But the larger ones, on better land, and with smaller tenant operations, still kept almost half their holdings in the "home farm". Much of this home farm, according to the Census' author, was used only very casually. Much of the "unimproved" land on the home farms was "capable of cultivation". "The opportunity for future agricultural development on many of these plantations is large." So casual, indeed, was the attitude that the Census reported:

It is possible that in some cases the landlords failed to report their entire holdings, some of the unimproved tracts perhaps not being looked upon as constituting farms at all. 140

T. J. Woofter, analyzing the same plantation area a generation later, reported there were only about half as many men per 100 acres on the home farms as on the tenant farms of the plantations. ¹⁴¹ Woofter wrote:

Each plantation has a reserve of idle land which can be brought into cultivation or left idle according to price prospects. After the landlord has determined the number of families he can finance and the acreage which he can conveniently and economically plant to cotton, he allows the balance of his land to grow up to woods and so-called pasture if it is not too severely eroded. A considerable part of the idle land and some of the woods and pasture could, if necessary, be converted to additional crop acreage. ¹⁴²

Evidently it must have been the title-holding unit -- i.e., the landlord's ability and desire to agglomerate land titles as investments -- and not operating economies that stretched those home farm operating units out to such sizes.

As there is some doubt whether these particular tenant units, or "cropper" farms, were entirely independent farms in the usual sense of the word, the data are not so overwhelming as they would otherwise appear. They are conclusive only in the measure that the cropper units are in fact independent operating units -- a measure we do not here try to take. There is no doubt, however, but what the cropper units were to some degree independent operating units, hence that there was some sort of tendency to split the larger holdings into many operating units; and the larger the holding, the more the splitting. It also seems clear that the great size of the "home farm" must be due to something other than a pressing

need for land, inasmuch as the home farms are so lightly used.

ii. Holdings of rented farms in the United States.

For the United States, as a whole, alas, there are no comprehensive data on title-holding units separate from operating units more recent than 1900. The United States Census provides admirable detail on our peanut crop, plumbing facilities, and other minutiae, cross-classified by regions and color. But as to who holds title to the basic natural resources of the country, and in what quantities, it has long been silent. Even the 1900 data leave much to be desired. They are, however, well worth a look.

The 1900 Census ranks holdings of rented farms according to value; according to acreage; and according to the number of rented farms in the holding. For each size group of holdings so ranked it shows the per cent of title-holders whose holdings fall in that group, and the per cent of rented farms which they hold, with these results: (Table 22). See page 272.

Evidently, from (i) and (ii), as the value and acreage of holdings increase, the number of separate operating units into which they are split increases mightily, since the per cent of holders falls off so much faster than the per cent of rented farms. From (iii) we see that 50% of all rented farms were held by those with more than one rented farm; 12% by those with 10 or more. Clearly some of these title-holding units tended to great extremes on the large side. To be operated, these clumsy colossi had to be split among

TABLE 22

Rented Farms, Number of Holders and Number of Rented Farms,
By Size Groups Variouslly Defined, 1900.¹⁴³

(1) <u>By Land Value of Holding</u>	<u>Per Cent of Owners of Rented Farms</u>	<u>Per Cent of Rented Farms</u>
Under \$1,000	38.8%	30.9%
1,000-1,999	15.8	15.6
2,000-4,999	24.1	23.8
5,000-9,999	13.2	14.5
10,000-24,999	6.9	10.3
25,000 and over	1.2	4.9

(11) <u>By Acreage of Holding</u>	<u>Per Cent of Owners of Rented Farms</u>	<u>Per Cent of Rented Farms</u>
Under 100 acres	55.4	41.9
100-199	26.4	23.7
200-499	14.8	20.2
500-999	2.5	7.6
1,000-2,499	0.7	4.6
2,500 and over	0.2	2.0

(111) <u>By Number of Rented Farms in Holding</u>	<u>Per Cent of Owners of Rented Farms</u>	<u>Per Cent of Rented Farms</u>
1	80.0	50.0
2	11.4	14.8
3 and under 5	5.4	11.6
5 and under 10	2.3	9.7
10 and under 20	0.7	6.0
20 and over	0.2	5.9

many smaller tenant units.

iii. Splitting of large holdings around Fresno.

A more recent study, one that has the advantage over the 1900 study of including the owner-operated portions of landlord holdings as well as the leased portions, is that of Wilson and Clawson in the valley floor areas of Kern, Madera and Tulare Counties, California. They give data from which one can compute what per cent of holdings of various sizes are split into two or more operating units. Splitting increases rapidly with size of holding (Table 23). While the holdings are ranked by acreage, rather than value, the area is one within which the quality of land in larger holdings is on the average not of much worse quality than that in smaller holdings, if we judge it by the per cent which is cropland.¹⁴⁴

TABLE 23

Splitting of Title-Holding Units Ranked by Acreage,
Valley Floor of Kern, Madera, and Tulare Counties,
California. 145

<u>Acres of all Land per Own- ership Unit</u>	<u>No. of such Ownership Units</u>	<u>No. split into 2 or More Operating Units</u>	<u>Per Cent So Split</u>
80 or less	9,559	177	1.9%
80-160	1,708	135	7.9
160-320	928	125	13.5
320-480	271	60	22.1
480-640	146	30	20.5
640-1280	208	69	33.2
1280-1920	51	23	45.1
1920-2560	22	12	54.5
2560-5120	23	10	43.5
5120-& over	25	16	64.0

iv. Diseconomies of administering chains of rented farms.

In some instances, particularly in some of the southern plantations, with their peculiar sociological structure, these large title-holding units may be more than mere financial operations, and contribute something to management. But as a general matter one may say that the large holdings are agglomerated as investments, and not to achieve operating economies.

And often they are agglomerated in the face of great diseconomies, that arise from the more complete separation of ownership from management that occurs when one landlord owns more than he can count. For close and friendly personal contacts between landlord and tenant are a magic that often prevents the tenancy relationship from wreaking its worst havoc. But as a landlord acquires more tenants, the gulf between them widens. The unfortunate results can be seen and counted. H. A. Turner computed the number of tenant farms in the North Central States which were "decreasing in fertility", and tabulated them by the number of tenant farms per landlord, with these results (Table 24):

TABLE 24

Per Cent of Rented Farms Decreasing in Fertility, By
Number of Rented Farms Owned, North Central States, 1920. ¹⁴⁶

<u>Rented Farms per Landlord</u>	<u>Per Cent Decreasing In Fertility</u>
1	15%
2-4	20%
5 and over	37%

Turner also reported a similar pattern for the whole country, noting that it held for the south more than the north. This opinion was based on the replies of landlords to a census questionnaire. ¹⁴⁷

It is safe to say, then, that it is not usually operating economies that bring many tenant farms under one hand. Often enough the different tenant farms are scattered in small pieces over a wide area, and have no conceivable operating relation-
¹⁴⁸ship; and, as Doreen Warriner wrote of Syria and Iraq; ¹⁴⁹
"land ownership is a credit operation, nothing more."

b. Lorenz data on concentration of ownership and operation.

The foregoing data create quite a strong presumption that title-holdings tend toward extremes of large and small, while operating units tend toward medium sizes. Still they leave elements of doubt. For one thing, they do not include, as we mentioned, the owned portions of part-owner operations --

i.e. of those operators who rent in some of their land and own the rest. More important, the criterion of size has been the title-holding unit alone. The fact that the largest title-holding units are split into many operating units does not preclude the possibility that the largest tenant farms are just as large, and are composed of just as many title-holding units.

To be sure, it should be obvious to anyone at all familiar with the facts that there are no such tenant farms. Where is the integrated tenant operation that covers 1,900,000 acres, the holding of the Kern County Land Company? Or where is, or ever was the tenant who numbered his landlords in the thousands, as the Bank of America, and California Lands did their tenants not so long ago? In 1934, AAA data relative to the corn-hog programs showed 25 multiple holders who had 1,000 or more tenant farms. Among them these 25 had 70,400¹⁵⁰ tenants and about 14 million acres. Probably it was partly the troubles of the times that swelled those figures so high; but when were tenant operations ever so swollen? There is little doubt in fact that tenants with more than one landlord are generally medium-sized, relative to the largest title-holdings; and the fact that they have more than one landlord merely corroborates the thesis that title-holding units tend to extremes of small as well as large, and operating units to medium sizes.

However, formally, it would be reassuring to have some comprehensive data to prove the point, rather than depend on

the infinite mass of fragmentary fact and opinion that one might present. Ideal to test the question would be data on the concentration of all title-holding units, ranked by size of holding, to compare with data on the concentration of all operating units, ranked by size of operating unit. But such data are hard to come by. Most countries, like us, enumerate only operating units; a few, like England and Egypt, only title-holding units; and some, like Iran, nothing at all. It is, therefore, indeed a red-letter day for the student of land tenure when he finds parallel data on the concentration of title-holding units and operating units.

This student has, in fact, found only two such parallel series, one for Sweden in 1919, the other for Rumania in 1941. Both of them show that title-holding units tended to extremes, appreciably more so than operating units, as manifested in the Lorenz Concentration Ratios (LCR) being higher for the title-holding units.¹⁵¹ (Table 25)

TABLE 25

Lorenz Concentration Ratios (LCR) for Title-Holding
Units Compared to Operating Units.¹⁵²

<u>LCR</u>	<u>Title-Holding Units</u>	<u>Operating Units</u>
Sweden, 1919	.60	.55
Rumania, 1941	.59	.56

These concentration ratios are based on acreage, not value of land. Were they based on value, the contrast would without doubt be considerably greater. For value per acre tends to fall with acreage per unit much more for operating units than for title-holding units. That we have already seen for the United States (above, p. 198). And rationally it must be so. For where investment is the primary motive behind land purchase, the individual with the funds to buy more acreage also has the funds to buy better land. But where operation is the primary motive, of course optimal operating scales tend to be larger on poorer land.

Lacking data on other countries, we can still be sure that the pattern of Sweden and Rumania is oft repeated. This, that Antonin Basch wrote of Czechoslovakia, has a very familiar ring:

In general it might be said that there existed vast estates on one side and very small farms on the other. This situation of land-ownership led to a growing number of tenancies, both large and small. 153

In other words tenancy is, as is obvious on the face of it, a device for transferring the use of land from those who have too much to operate to those who have too little; in general, from large landholders to small. Thus it naturally develops that land operations tend more to medium sizes than do title-holdings.

For the United States, the best we can offer are some data from a sample study of farm landholdings in 1946. 154

There is ample cause to believe that the sample does not represent the whole universe to a high degree of accuracy. Nevertheless it shows a rough trend that is quite significant. Cross classifying landholders by size of holding and by occupation, the sample shows that the holdings of active farmers tend toward medium and small sizes compared to those of retired farmers, which tend toward large sizes. The holdings of business and professional men particularly tended toward extremes, of both large and small.

In other words, the more likely was the holder to be an investor first and a farmer second, the more likely was his holding to be very large (or, to a lesser extent, very small). (Table 26):

TABLE 26

Per Cent of Male Farm Landholders by Occupations,
And by Size of Holding (Whether Operated or Leased).
155
Based on a Sample.

<u>Acres</u>	<u>Farmer</u>	<u>Retired Farmer</u>	<u>Business- Professional</u>	<u>Clerical- Laborer</u>
10	3%	2%	10%	23%
10-29	9	5	12	24
30-69	19	14	15	21
70-139	29	30	19	18
140-219	18	20	14	7
220-499	14	19	17	4
500-999	5	6	7	2
1,000-1,499	1	2	2	0.5
1,500 or over	2	2	4	1
Total	100%	100%	100%	100%

Now may we consider it proven that title-holding units tend toward extremes, and operating units toward medium sizes? "Proof" is of course always a matter of degrees of certainty. Our first conclusion must regretfully be that the data necessary to establish the highest degree of certainty are lacking. We hope the United States Census will begin to gather the necessary data as soon as possible. (It could even collect such data for years past, from county assessors' and title company records.) Secondly, as far as the author is concerned, in a wide and continuing search for relevant data he has found a good deal more fragmentary evidence than presented here to support the idea that title-holding units are more concentrated than operating units; he has good theoretical reasons, which appear in Chapter VI, to believe that it would be so; and he has found little specious evidence, and no substantial evidence to the contrary. He is therefore quite certain of his conclusion. The reader, of course, will draw his own, from the data here presented and such other facts as are known to him.

c. The more a holding partakes the character of a pure investment, with the holder divorced from operations, the larger it is apt to be.

In concluding, one important matter of emphasis should be brought out. We have spoken of title-holding units tending toward extremes of large and small, as though there were a perfect symmetry of the two. Actually, title-holding units, divorced from operations, tend to extremes on the large side

more than the small. For the reason that many owner-operations are so small is not that the owner has any strong motive to invest in land for its own sake. He wants the land to complement his enterprise. When he gives up the struggle and becomes a tenant, the small title-holding unit is not so likely to survive.

Accordingly, the average title-holding unit is generally larger than the average operating unit. Estimates vary, and there are no complete American data on title-holding units. But there seem to be somewhere between one and a half to two operators of rented farms for every landlord.¹⁵⁶

One can safely generalize that the more a holding partakes of the character of pure investment, and the farther removed is the title-holder from any contact with actual operations, the larger it tends to be.

One evidence of that is the general tendency for absentee holdings of rented farms to be larger than resident landlords' holdings. For example, Turner found in 1920 that North Central state landlords residing in the same county with their tenanted holdings averaged 167 acres; out of state landlords, 239 acres.¹⁵⁷ Turner's data were from samples. The 1900 Census, with its complete enumeration of landlords of rented farms, is more accurate. It showed, for the whole United States, that in-county landlords averaged 85 acres; out-of-county but in-state landlords averaged 126 acres; and out of state landlords averaged 159 acres (clearly the average holding was much smaller

in 1900 than 1920).¹⁵⁸ Finally, foreign resident landlords had the largest holdings of all. Here is how their size distribution compared with American landlords (Table 27):

TABLE 27
Percentages of American and Foreign-Resident
Landlords Having Holdings of Different Sizes, 1900..¹⁵⁹

<u>Per Cent of Landlords Having</u>	<u>United States Residents</u>	<u>Foreign Residents</u>
Less than 100 acres	16.6	6.8
100-199	25.2	15.0
200-499	29.0	23.0
500-999	11.3	12.4
1,000-2,499	7.4	14.7
2,500 and over	10.5	28.1
Total	100.0	100.0

The foreign residents' land was also of greater value per acre, and the value per acre decreased less with size of holding. Add to that the fact that the foreign residents undoubtedly had other holdings in their own and other countries, and the picture is complete.

Other evidence that pure financial holdings tend to be larger than those with operating attributes is in the

colossal holdings of financial institutions. These institutions of course acquire farms entirely for financial reasons, and with no desire to operate them. In the 'thirties, due to the many foreclosures, and relaxation of laws requiring financial institutions to dispose of foreclosed real estate quickly, banks and insurance companies acquired vast empires of tenant farms. AAA data relative to the corn-hog program showed that 111 insurance companies in 1935 held 67,302

tenant farms -- and that was in only one branch of agriculture.¹⁶⁰ It is often said that this was forced on them, that they wanted to dispose of these "frozen assets" but simply could not. It is true they did not aggressively move out to buy up these farms. But it is also true that there is always a market at a price; and they consciously chose to retain those farms rather than sell them for what they would bring at the time, because they thought they could do better later. In short they held them, once acquired, as speculative investments, which they could afford to do because of their greater financial strength. All of which serves to corroborate the point that where lands are held primarily as investments, holdings tend to be very large.

E. A. Stokdyk observed of corporate farms in general that many served best to hold land for the increase of value, or to liquidate foreclosed lands, and that when it came time to earn income from actual operation of the land, smaller units¹⁶¹ became more economical.

Finally, there is a group of landholders who concern themselves even less over operating economies than foreign landlords or financial institutions. Those are the holders who do not use their lands at all, but hold them idle for future resale. As there are no operations, there is no concern with operating economies. And there are the largest holdings. Their vastness is legendary.

The legend is well documented. The works of Shaw Livermore and of Paul W. Gates, to name only two of the most outstanding scholars in the field, leave little doubt of the matter. Where other men dealt in hundreds of acres, the western speculators dealt in the hundreds of thousands, from the first frontier to the last. Where land was only to be held, and not operated, the great bankers, the richest men of Europe and the eastern cities had no rivals in bidding for title. They generally pooled their assets, attracted hordes of smaller investors to join them, and put together the most gigantic holdings the country has ever known. And there should be nothing surprising about that. For when a thing needs only to be financed or otherwise acquired, and not operated, or even supervised, there is hardly an upper limit to the advantages of raising money and influencing legislators on a large scale.

To sum up: when the bond snaps which has joined title-holding units to operating units, and they go their separate ways, it becomes evident how they must each separately influence

the size of owner-operations, which they determine jointly. Title-holding units, alone, tend to extremes of large and, to a lesser degree, small. Operating units, by contrast, tend toward medium sizes. From that it follows that difficulties of title-financing restrict some owner-operations within acreages too small to realize optimal economies of large-scale operation; and the desire to invest in land titles distends others beyond any optimum. Thus it comes about that the marginal product of land is higher on smaller than on larger owner-operated farms.

E. Direct evidence of contrasting marginal productivities.

1. Some marked Contrasts.

Where a landholder has so much more land than he can operate effectively that the marginal product of land approaches zero before he has expanded his operation to his outer boundaries, it is to be expected that he will put only part of the land to an intensive use, and keep the rest in pasture or fallow. Evidently that is what many of our larger landholders do, according to these 1940 Census data (Table 28): (see p. 286)

Myers, in a 1920 sample study of 53 New York farms found a great deal of rich, tillable land being used for pasture or woodlots -- low income yielding uses -- while many poor, barren hillsides were cleared and plowed. "On the smaller farms," he wrote, "land is generally too scarce to be used for forestry purposes".¹⁶⁴

TABLE 28

Land Available for Crops and Land Used for Crops,
 163
 By Acreage in Holding, 1940.

<u>Acreage In Farm</u>	<u>Land Used For Crops (Million Acres)</u>	<u>Land Avail- able For Crops (Million Acres)</u>	<u>Per Cent of Land Available for Crops Which is Used For Crops (Computed)</u>
Under 3	.021,573	.024,695	87.4%
3-9	1.353	1.891	71.4
10-29	11.21	14.19	79.0
30-49	14.95	20.53	72.8
50-69	13.44	19.61	68.5
70-99	28.3	41.59	68.0
100-139	33.9	50.59	67.0
140-179	45.8	65.00	70.5
180-219	23.8	34.86	68.3
220-259	23.0	32.60	70.6
260-379	45.1	65.57	68.8
380-499	25.1	37.51	66.8
500-699	22.0	35.26	62.4
700-999	17.2	29.59	58.1
1,000- 4,999	30.6	63.15	48.5
5,000- 9,999	3.160	8.790	35.9
10,000 & over	2.775	9.343	29.7

TABLE 28 (continued)

Definition of Terms:

"Land used for crops" -- cropland harvested and crop failure.

"Land available for crops" -- cropland harvested and crop failure plus idle or fallow cropland plus plowable pasture.

(Of these last two, by far the larger item is plowable pasture. "Fallow cropland," the smaller item, is not necessarily "underused," but may be part of a dry-farming rotation.)

We have already cited the 1936 Woofter and 1910 Census studies of southern plantations, with their free use of good land for low- or non-yielding pasture and woodland (pp. 268-271 above). Contrasting these uses with the plowing of steep hillsides by mountaineers in the southern Appalachians, one can hardly avoid concluding that the marginal productivity of the unused plantation lands would have been higher in the hands of those under greater constraint to economize on land. Black, Clawson, Sayre and Wilcox, in their Farm Management, have pointed to many "farmers who are operating farms too small for their capacity; . . ." For many such a farmer, they write,

. . . the chances are that he will do well to increase the size of his undertaking. Thousands of farmers, younger farmers, especially, can be found fitting this description in the sections with crowded populations on poor land, as in the southern Appalachians, or even on good lands as in the Black Prairie of Texas. 165

One of the farms over 10,000 acres that must have figured in the Census data is the Kern County Land Company. This company, controls most of the water from the Kern River and has thousands upon thousands of acres of good irrigable land around Bakersfield, in California's productive San Joaquin Valley. But up to 1941 it had barely begun to develop these resources. 166 President Pigott of the big land company himself estimated the company's holdings of land "reasonably suitable for farming" at 138,000 acres in Kern County alone -- Bureau of Reclamation land classification staff men put the figure

somewhat higher -- and claimed to have available plenty of water, at costs "very much" lower than those charged by a heavily subsidized Federal project.¹⁶⁷

Fortune's 1933 article on Texas' vast King Ranch brought out that it contained, among its 1,250,000 acres, 90,000 acres of choice black land, the richest in Texas. Of these 90,000 acres, 80,000 were in 1933 unimproved, ungrubbed and uncultivated. The ruler of this empire, considered a man of Napoleonic ambition and energy, had recently found in a pasture the ruins of an entire village whose presence on the ranch no one had previously even suspected. In eight years preceding 1933 he had invested \$1.60 an acre in improvements. This was considered a vigorous improvement campaign compared with what had preceded it. By virtue of the improvements the ranch's carrying capacity had been doubled, suggesting that the application of capital to this land had by no means been carried to the point where additional improvements brought small increases. Gross receipts were about 56¢ an acre, net receipts about half that.¹⁶⁸

Another Fortune report, on the large El Solyo Ranch near Patterson, California, pictured a management overwhelmed with the problems of handling many acres of intensive crops. The problem was "solved" by such methods as bulldozing over a peach orchard that grossed \$500 an acre to plant barley grossing \$50, and firing a large part of the work force.¹⁶⁹

A glance through Walker's Manual of Pacific Coast

Securities at accounts of large corporate farms such as the Sutter Basin Corporation, River Farms Company of California, Tejon Ranch, and the Sutter Buttes Land Company, reveals a marked emphasis on non-intensive crops, low outputs per acre, and high ratios of net to gross output. An outstanding exception evidently is the 22,000 acre Di Giorgio Farms, with thousands of acres in vines and tree fruits, high gross output per acre, and a low ratio of net to gross output. This much publicized operation attests to the vigor and genius of Joseph Di Giorgio, but hardly to the typical development of large land holdings.

The California commission of Immigration and Housing in 1919 summed up an extensive survey of large land holdings in southern California in these words:

It further appears that a considerable part of the land in these large holdings lies idle, that another considerable part of it is not devoted to its best use, and that much of that part of it which is for sale is priced far above its productive value and offered under conditions which make its purchase by the average landseeker hazardous and by the poor man impossible. 170

Many of the holdings referred to remain intact, and it would be interesting to know what a similar survey today would disclose. Lacking that we can at least infer from this oft-cited study that, as of 1919, the land market was not approaching the equimarginal ideal.

171

Some foreign parallels are described in the notes.

Now contrast the need for additional land on these giant holdings with the need on the tiny farms that Theodore Schultz had in mind when he wrote:

We take it to be a fact that in the United States there are many farms, probably fully a third of them, which are far below the optimum in the quantity of inputs committed to farming and which employ too few capital inputs relative to the labor that is used. The scale effects in the case of these farms indicates strongly the possibility of achieving increasing returns from farm enlargement. The existing combination of factors means that the returns to labor are relatively low while those to capital are relatively high. 172

(Like Johnson, previously cited, Schultz evidently uses "capital" metonymically to mean or include "land".)

2. AAA acreage cutbacks.

Another evidence of the remarkably low marginal productivity of land in large segments of American agriculture was provided by the AAA experience with acreage cutbacks. It is not often that we find in practice perfect examples of the theoretical concept of subtracting a few acres from a farm. But the AAA program did just that. It subtracted acreage, pure land alone, and not labor nor capital (for of course no farmer subtracted the land on which his buildings stood, nor did he cut back on his rolling stock). And it did this mainly on the larger, land-intensive farms, inasmuch as the AAA program supported mainly the crops which larger, land-intensive farmers produce. The result of these acreage cutbacks, as is well known, was to reduce output little or none. The farmers simply adopted more intensive techniques,

applied more labor and capital per acre to a smaller acreage, and produced as much as ever. Schultz writes:

The over-all conclusion is: in most types of farming there has been sufficient flexibility because of substitution to offset the anticipated reduction in production of any moderate cut in acreage. As a consequence the crop production features of the AAA have been quite ineffective. It is only when drastic cuts in acres were enforced that any substantial change in production has occurred.

. . . .

The economist might well ask at this point whether or not the AAA has forced uneconomic use of resources upon farmers in spite of the substitution which they found possible. The answer is an unexpected one. It did quite the opposite. The cotton, corn and wheat farmers were not using farm practices which gave them optimum results. There was much lag in adoption of the best-known farming techniques which had been developed, and since the AAA programs had the effect of hastening the adoption of precisely these better techniques, they have actually occasioned, on a good majority of the farms, what is in essence increasing returns by forcing a recombination of the factors and an introduction of newer and better farming practises. 173

Increasing returns from restricting acreage! That is not what one usually has in mind when he speaks of "increasing returns". It is, in fact, the exact opposite. Taken literally, it would mean that the marginal product of land on many farms is negative. At any rate it suggests that the marginal product of land on many American farms is very low.

We lack the present resources to pursue this matter further, and will merely refer the reader to Schultz' statistics and interpretation.¹⁷⁴ There is there some hint that acreage cutbacks restricted output the least in regions

of large, land-intensive farms, such as the central corn belt, and the delta cotton area. We venture to predict that a thorough study of the question would show that acreage cut-backs restricted output much more on small, intensive farms, where land is a limiting factor, than on the large spreads where valuable land is treated somewhat like a free good.

3. Outlying Fields.

We have mentioned Myers' Economic Study of Farm Layout, and the importance of transportation costs between the farmstead and outlying fields. Myers was quite struck with the number of outlying fields, forced into low producing uses by their distance from the owner's farmstead, which were nearer to some other farmstead. "Frequently such fields too distant to be farmed economically by their owner, are directly across the road from a neighbor's house."¹⁷⁵ He commented that many such fields in his observation -- and his was an empirical study including many individual instances -- would be worth a good deal more to the nearer farmer than to the present owner. He recommended that many of them be transferred.

F. Summary of Section II.

To sum up the chapter thus far, we have established five points:

- A. The range of farm sizes is immense, whether "size" be measured in value or acreage;
- B. larger farms tend to be less intensively manned, improved and equipped per dollar of land value;

C. the marginal product of land must be high, as a rule, on a farm with too little land to achieve economies of large-scale operation than on a farm with more than enough;

D. operating units, where divorced ownership units, tend toward medium sizes, in contrast to ownership units, which tend toward extremes;

E. there is some direct evidence of contrasting marginal productivities among different sized farms.

These facts do not prove absolutely that the marginal product of land tends to be lower on larger farms. Absolute proof is rarely possible in economic discussions other than purely theoretical, and often not there. But taken singly these are all consistent with the hypothesis that the marginal productivity of land tends to be lower on larger farms. Taken together they are hard to reconcile with any other conclusion.

III. The trend of concentration of farm land in the United States.

A. The increase of concentration after 1910.

Many there are who regard the matters we are discussing as of historical interest only. It is true, they concede, that the cattle barons, the railroad and Spanish land grants, bonanza farming, the great land office frauds and so on created great latifundia: but that day is passing. Decades of subdivision, improvement and intensification create a modern pattern greatly improved over the inequitable heritage of the past. After all, are not even the heirs of Henry Miller, the

million-acre cattle king, down to their last 20,000 acres? Before checking with Census figures, the writer was inclined to accept ideas like those.

Now let us look at the facts.

The concentration of American farm acreage, as indicated by the Lorenz Concentration Ratio (LCR), increased from .58 in 1900 to .70 in 1950:

TABLE 29

LCR for Acreage in Farm Operations,
United States, 1900-1950.¹⁷⁶

1900	.58
1910	.57
1920	.60
1925	.62
1930	.63
1935	.65
1940	.67
1945	.70
1950	.70

That means, for example, that in 1900 the largest 2.6% of the farms had 31.7% of the land; in 1950, the largest 2.3% had 42.6% of the land.

Preliminary releases from the Census of Agriculture taken in 1954 indicate, as we go to the typist, that LCR¹⁷⁷ increased at an accelerated rate from 1950 to 1954.

If we measure farm size by gross sales, LCR increased from ¹⁷⁸.50 in 1900 to .68 in 1950.

Some idea of how great a change that is can be determined by comparing it to a more familiar change; the recent decline of national income concentration. In 1935-1936, ¹⁷⁹United States National Income LCR was .43; in 1953, .40. That decline of 3 points has been often referred to as "the revolution in income distribution". If that is a revolution, the 12 point increase in concentration of farm land represents a major overturn.

Nor do those LCR figures reveal the entire extent of the change. There are several other factors to consider.

1. The average farm size has increased.

That is a matter the LCR does not take into account, for it is based entirely on percentages, and might in fact rise when new farms were created, if the new farms were all very small. But it is also important to note that in 1900, when United States population was 76 million, the average farm was 146.2 acres. In 1950, when population was 151 million, or twice as much, size of farm had not fallen to permit of ¹⁸⁰more intensive farming; rather it had risen to 215.6 acres.

2. Concentration by value must have increased a good deal more than concentration by acreage. Because the value per acre of larger farms increased a good deal faster than the value per acre of smaller ones. In Table 30 we compare acre values of all farms to acre values of farms over 1,000

acres, from 1900 to 1950. Up to 1940 the Census gives land values free of building values. After that we must depend on the values of land and buildings combined. To preserve the continuity we present the land plus buildings data also from 1900.

TABLE 30

Acre Values of All Farms, and All Farms
Over 1,000 Acres, and Their Ratio, 1900-1950. 181

<u>(a) Land Alone</u>	<u>1900</u>	<u>1910</u>	<u>1920</u>	<u>1930</u>	<u>1940</u>	<u>1945</u>	<u>1950</u>
1. Farms over 1,000 acres	4.86	12.92	18.95	12.76	8.29	n.d.	n.d.
2. All farms	15.59	32.40	57.36	35.39	21.90	n.d.	n.d.
Ratio, $\frac{\#1}{\#2}$	.31	.40	.33	.36	.38	--	--
<u>(b) Land and Buildings</u>							
1. Farms over 1,000 acres	5.18	13.92	20.53	14.30	9.42	12.46	24.23
2. All farms	19.81	39.60	69.38	48.51	31.71	40.63	66.75
Ratio $\frac{\#1}{\#2}$	.26	.35	.30	.29	.30	.31	.36

Except for 1910, which departed erratically from trend, the acre values of farms over 1,000 acres have gained steadily on all farms.

3. Finally, in this period land under lease probably increased, although one cannot be certain from Census data,

which do not separate the owned and leased portions of "part-owner" farms in earlier years. Tenant farms, as we have seen, tend toward medium sizes, and thus tend to lower LCR, which measures the extent to which farms tend to extremes of large and small. Owner-operated farms, exclusive of tenant farms -- the subject of this chapter -- probably therefore have increased their LCR by more than the increase in the figures cited, which include tenant farms.

B. The drift away from medium sizes.

Many economists explain these trends largely in terms of mechanization and consequent consolidation. And no one can deny that mechanization has proceeded rapidly, and influenced the trend enormously. That is obvious from, if nothing else, the rapid increase of LCR in two great wars, when mechanization made its most rapid strides.

But to take mechanization as the sole, or even the primary cause of increasing concentration seems to me a great error. That hypothesis does not fit all the facts.

Let us recall what "concentration", as measured by LCR, means. A high LCR means that a small per cent of the farms have a large per cent of the land. When LCR rises that can mean the largest farms are growing in area; but it can also mean that the smallest farms are growing in number. In the United States, since 1900, both have happened.

If mechanization were the prime mover of the trend, one would naturally expect LCR to decline, as the very smallest

farms become fewer, being consolidated into medium farms; and the very largest farms were subdivided for more intensive use which mechanization makes possible; or at any rate remained the same.

But what has happened, rather, is that farms have been drifting away from medium sizes toward the extremes, of small as well as large. From Census data it seems most plausible that the farms which are growing larger are not the small ones, but the ones that were already large. The small ones seem to be getting smaller.

Let us compare 1950 with an earlier year, and mark the changes in each size group. 1910 was the year of lowest concentration (LCR having declined slightly from 1900 to 1910 due mainly to a pronounced subdivision of farms over 1,000 acres that occurred in that remarkable decade). Ideally we would compare 1950 to 1910, after which year the drift from medium sizes begins. But alas, Census data for 1910 are not broken down into such small acreage groups as later years. Hence we choose 1920 instead (Table 31); (see page 299).

Since 1920, the number of farms has declined in the medium size brackets, but increased in both the very large and the very small. Under 10 acres, the number has increased, and the lower the acreage bracket, the greater the percentage increase. Over 260 acres they have increased, and the higher the average bracket, the greater the percentage increase. In the medium sizes, the 50-99 acre group has lost the most,

TABLE 31

Number of Farms, Acres, and Acres per Farm, by
182
Size Brackets, 1920 and 1950.

Number of Acres in Farm	Number of Farms (thousands)		Acres (thousands)		Acres Per Farm		
	1920	1950	1920	1950	1920	1950	1950 ÷1920
Under 3	20	77*	34	n.d.**	1.7	n.d.***	.82
3-9	268	408*	1,567	n.d.**	5.8	n.d.***	.93
(all under 10)	(289)	(485)	(1,600)	(2,430)	(5.5)	(5.1)	(.93)
10-49	2,011	1,478	55,553	39,336	27.6	26.6	.96
50-99	1,475	1,048	105,631	75,628	71.6	72.3	1.01
100-179 (100- 174 for 1920)	1,450	1,103	194,681	149,942	134.3	135.9	1.01
180-259 (175- 259 for 1920)	531	487	112,563	105,388	212.1	215.0	1.01
260-499	476	478	164,244	166,584	345.3	348.8	1.01
500-999	150	182	100,976	125,981	674.0	685.0	1.02
1,000 and over	67	121	220,636	494,501	3,273.3	4,084.7	1.25
Total	6,448	5,400	955,884	1,159,789	148.2	215.6	1.45

*
1945 - 99
1945 - 496

**
1945 - 141
1945 - 2,664

1945 - 1.4
1945 - 5.4

(1950 data on the acreage of farms under 10 acres were not broken down at the 3-acre division, and so 1945 data were substituted in computing the final ratio.)

percentagewise. It is the dead center -- below and above it all decreases become progressively less and then increases progressively greater.

It might be thought that, as the number of the larger farms increased, their average acreage fell. The opposite is true. In the middle brackets the average acreage in each bracket remained the same. In the upper brackets, most notably over 1,000 acres, the average acres per farm increased. In the lowest brackets, the average decreased: and the lower the bracket, the greater the percentage decrease. ¹⁸³ Thus within the lowest brackets the average farm is becoming smaller, is moving toward the bottom of the bracket. Within the largest, they are moving toward the top of the brackets.

Here, then, is a picture, not of consolidation alone, although that is an element; but also of the largest farms growing, and largely at the expense of medium farms, whence came much of the 300 million acres or so increase in the acreage of farms over 500 acres. It is a picture of some medium farms growing larger, and some growing smaller, and some going out of business. But it is not a picture, such as the mechanization hypothesis requires, of the smallest farms being consolidated into optimal medium sized farms. It is a picture of the decline of the American yeoman, the 160 acre homestead farmer, and the growth of a widening gulf between large and small farmers. It is more consistent with the hypothesis that title-holding units, tending toward extremes of large and small, are

gradually drawing American agriculture away from the pattern of medium operating sizes established in the 19th and early 20th centuries by the Homestead Act, the low value of farm land, and relatively high taxes on land holdings. (That brief explanation we here only suggest, without trying to prove.)

The upshot is this. If it is true, as the data of this study indicate, that the marginal product of land is generally higher on smaller farms, then most certainly the progress of the market in recent decades has not been to shift land toward its highest and best use, according to the equimarginal principle, but the opposite. There is no tendency for the market, over time, to work out its imperfections -- they are not due to mere friction. The longer the market forces have had to work, the farther they have taken farm operations from the equimarginal ideal.

What the facts establish, at least in the mind of the author, is some pervasive disturbance in the land market, which now manifests itself spectacularly in great idle holdings, now morbidly in cropper tenancy, but quite beyond those problems, pervades every land transaction, and may keep most American acres from their most productive uses. To measure the losses would be superhuman. But if the disturbance is indeed all-pervading, they must be immense.

IV. Conclusion to Part I.

Now we reach the end of a survey of three major land problems: unused land, tenanted land, and land operated in non-optimal holdings. These were presented in order of their obviousness, this being also the order in which they came originally to the author's attention. Each at time of discovery seemed to be a distinct problem. But there is a basic unity to them. Each represents a failure of the market to allocate land equimarginally.

This unity is a matter not just of exposition, but of the nature of things. In the ensuing chapters we undertake to explain these three problems as common effects of a single basic cause, or set of causes. And in Chapter VI we revert to the marginal analysis to explain all three within the compass of a single graph.

Meantime, let us assess the results of Part I. Have we "proven" that the market fails to allocate land equimarginally? Probably in actual affairs there is no proof that is absolute in the sense of logic or mathematics. And certainly regarding the matters here treated, with data drawn from sources of varying reliability and often subject to alternative interpretations, it would be presumptuous to claim anything approaching rigorous, irrefutable proof. That we leave for the theoretical reasoning of Part II, which does involve "proof" in the sense of logical necessity. As to Part I, all we would conclude from it is this: the facts

seem consistent with, and would not contradict a hypothesis that the market fails to allocate land equimarginally among different enterprises. Holders of unused land outbid others who would put the land to productive use. Absentee landlords outbid tenant operators for land the latter operate, thus injecting into land management the many ~~unrequited~~ costs and frustrations of the landlord-tenant relationship. And large landholders outbid small ones for lands at the margins between them, even though it seems these lands would add more to net output on the smaller, more intensive farms.

CHAPTER IV
Land Speculation as an Obstacle
to Ideal Land Allocation

I. Preliminary approach to hypothesis

Part I depicts the problem this study seeks to explain, the problem that much land is put to uses less productive than feasible alternatives. In Part I we surveyed unused land, tenant-occupied land, and land operated in non-optimal holdings. Not all readers will approve each detail of the picture there drawn. Some will think it too lenient, others too critical. But most will allow that the real landscape, which the drawing represents but imperfectly, is enough like it to warrant pursuing the question: "Does the land market tend to assign land to its best use?"

The facts we surveyed suggest that it often does not. Thus the facts seem to conflict with "the theory of free trade in land." As R. T. Ely put it:

The theory is that through free purchases and sale, land and other economic goods get into the hands of those who can best use them; and these are normally the ones who can buy and hold at higher prices. 1

We have seen that the highest bidder for land often uses it but indifferently. We have seen land reserved by its high price from any use at all. To be sure, there may be

subtle intertemporal relationships that escape the naked eye, and that explain away the whole problem. We will keep that in mind as we now test the theory of free trade in land by analyzing the economic forces that set land prices and allocate land.

Let me emphasize that the land market alone is under scrutiny in this study. Excises, subsidies, quotas, licenses, monopolies and other barriers to the free play of economic forces may distort the entire price structure from the ideal, but these, for the present study, we accept as given. We are presently concerned only with the response of landholders to the price and cost stimuli that impinge on them, and not with how the stimuli are determined. We are concerned with the apparent fact that the response is often sluggish or contrary -- that some landholders withhold land from its best use, or any use, foregoing part or all of the income it might bring them, even though nothing but their own free will stands between them and that income. We are concerned with the implication that even if markets were perfectly free, they would still not assign land to its best use. That is the problem we now seek to analyze.

After looking to the recorded wisdom of the past for guidance, I am disposed to agree with Thomas Adams:

Notwithstanding the high quality of many of the theoretical studies of land valuation and the principles underlying the creation of urban values, there is probably no economic problem of equal importance that has received less study by economists. 2

Most writers on resource allocation and the price system evidently assume that land prices play the same role as other prices, for they give land pricing no separate treatment. Pigou, in his classic Economics of Welfare, lays down the rule that men free to follow their own self interest will thereby allocate resources so as to maximize the "social dividend."³ Throughout the rest of that encyclopedic study he considers exceptions to the rule, and qualifies it in meticulous detail, yet he never mentions idle or underused land (save for brief reference to tenancy contracts). Many other works follow the same pattern: they submit that prices set by supply and demand in free markets will guide all resources to their best use, and allow a few exceptions to the rule due to influences that come under such headings as "external economies," "imperfect knowledge," and "monopoly". I find few that deal seriously with the exceptions to the rule we described in Part I, and none that tries to reconcile them with the rationale of the price system.

That is not to say no one ever considers the problem of land use. Countless observers have remarked on how "land speculators" sometimes withhold land from its best use, and there are many solid studies of land prices, land ownership, and "land speculation." We will have occasion to cite some excellent works by C. R. Chambers, L. C. Gray, W. I. King, Leon Truesdell, E. A. Goldenweiser, Th. Schultz, E. O. Heady and others. But these are sealed off in a compartment

separate from general price theory. Neither these authors, nor any price theorist known to me, have explicitly raised, much less settled, the question of whether land prices are effective allocating agents.

Yet the question must be raised. Land price is derived by reducing an endless series of future values to a present value. We cannot assume outright that the invisible hands of supply and demand will guide resources to the best use when they work through prices so derived, for we cannot assume that such prices are accurate indices of alternatives. First we must examine the discounting process which makes, or is alleged to make, future values commensurable with present values and with each other.

Philip Cornick, in a neglected exploratory article, "Land Prices in a Commodity Price System," has tried to qualify the generalizations of price theory in the light of his own experience with land markets. Cornick there suggests that speculation in future rents and resale values of land distorts the price structure so that it keeps land from its best use. The suggestion is worth pursuing, as it seems to fit the subject matter. For a distinctive feature of land is its infinite life expectancy; and a distinctive feature of land markets is that one must buy title to the infinite future of land in order to buy it at all. The relation of present to future values is clearly a key to our problem. If a titleholder puts a high price on land he does not use, it must be

the land's future that he values -- he obviously has no reason to value the present. We will follow Cornick's lead and try to see how speculating in the future of land may disrupt its present allocation.

This chapter presents the hypothesis that some land purchasers, due to superior access to credit, find it to their advantage to pre-empt land from other enterprises in which it would add more to output, but whose owners have inferior access to credit. These pre-emptive purchasers we will tentatively designate "land speculators". But before proceeding from here we must establish just what that term means to others and how we shall use it.

II. The meaning of "land speculation".

When we start to formulate the idea of "land speculation" more precisely some interesting questions immediately arise. Why should anyone want to withhold his own land from present use, passing by and wasting the income he might enjoy from it, just because it will yield future incomes too? Why does he not take both? Or, if he is presently too preoccupied to use the land, why is he not outbid by someone else who values the present as well as the future of the land? It seems reasonable to expect, as many price theorists have evidently assumed, that he to whom as owner the land would yield the most income over time, best distributed in time⁴ would outbid all rivals and take the title. That is, land would gravitate to him who

would use it best. What obstructs this fruitful union?

"Land speculation," according to many observers. But what is "land speculation," that it motivates anyone to pass up annual values that are his for the taking? Let us look for a precise definition.

In one sense the term, "land speculation" is analogous to speculation in any commodity, such as grain. Grain speculators withhold grain from consumption when its price is low to conserve it for future sale and use when it is more valuable. "Speculators" in exhaustible natural resources may have the same motive, and serve the same useful function. But the motive is only clear when present use would preclude future use -- when "use" means destruction or depletion. Not all natural resources are exhaustible, and the problem we are dealing with is the disuse and misuse of sites, a kind of land that use does not destroy and disuse does not improve.⁵ To be sure, we also dealt with farm land, which has a destructible component. But it is quite feasible to farm land without destroying it, and the problem we described was one of failure to conserve and improve farm land for future use. We did not call it a problem that farm land was being preserved from destruction. This conservationist concept of "land speculation," therefore, is not one that helps analyze our problem.

Having disqualified that definition, it is not as simple as it might seem to find another. The entire value of land is "speculative" in the sense that it derives from

unsure anticipations of future rents and resale values. As a manner of speaking one may roughly distinguish "sound" values based on present realities from "speculative" values based on future possibilities, but strictly all values are "speculative" in this sense because the future begins immediately and lasts forever. There are only the near future and the remote future, with no sharp line between them. From this it would follow that "land speculation" is only an unsympathetic variant of "land purchase," "land holding," or "investment in land."

That is certainly one usage. "Land speculator" is often an epithet used to blame outsiders or other scapegoats for unpopular or flagrant aspects of a price movement in which the whole community participates. One witness testified at Senate Hearings on land speculation in the Columbia Basin -- concerning an area of hundreds of thousands of acres -- "....the only speculative work that was done, and the work that really caused all this trouble, was by the T. L. Stern interests of Seattle..."⁶ R. A. Billington remarked on the same human weakness in an earlier era:

...the frontier never realized that the pioneer who held back land from settlement in this way separated himself from his neighbors, delayed the coming of schools and internal improvements, and hindered the development of social institutions that would have made life easier. Instead the westerners concentrated their attacks on the professional speculators, most of whom were absentee owners.⁷

The usage is worth noting because it bids us be wary in presuming that those who talk of "land speculation" have a valid distinction in mind.

But there are other usages. "Land speculation" means many things to many people, a confusing number of things, a fact which leads to absurd disputes like this one in California:

....it has been contended that land speculation will not exist in the Central Valley because much of the land is already fully developed. Others have contended that speculation in land is already under way. 8

Before concluding that "land speculation" is only a vague and prejudicial word, let us survey some other usages. For people have written of it for years as a definite force to reckon with, and some of them purport to define it on more substantial and objective bases.

We will consider four definitions:

A. Land speculation is selling land for more than the original purchase price.

B. Land speculation is buying or holding land with the intent of reselling for more than the original purchase price.

C. Land speculation is buying, holding or selling land at prices premised on future rents greater than the present ones.

D. Land speculation is holding land one does not use personally.

We will put the definitions to a test of clarity, and a test of usefulness. The test of usefulness is this: is there any reason to believe that speculation so defined affects

land prices and allocation differently than other influences the definition excludes?

A. To many people "land speculation" means realizing an "unearned increment" by reselling land for more than the original price. The Bureau of Reclamation's "Anti-speculation" law, for example, is directed against taking such increments. Again, E. C. Johnson in the March 1944 Federal Reserve Bulletin proposed an increment tax on such sales of all farm lands, "to stop land speculation." The tax rate he proposed would decline with each year the land is held, reaching zero after six years. Here, the implied definition is that "land speculation" is reselling shortly after buying, and the farther removed the time of sale from the time of purchase the less the transaction partakes the quality of "speculation." The Bureau of Reclamation's law, on the other hand, provides for land price control into the indefinite future -- implying that selling land for a gain, at whatever time, is "speculation."⁹

The definitions are clear enough, but not very useful. By either of them it is not "speculation" to buy or hold land, but only to sell it. The holder does not become a "speculator" until such time, if it ever comes, as he actually sells, and only then if he gains by it. Legally the definition is nearly useless because holders evade the purpose and penalty of the law by simply not selling, and taking their gains in other ways. Analytically it is useless for the same reason. It excludes all those who do not sell, and only includes those who do

sell when they leave the market and cease to influence it. But we are only interested in their behavior while they are in the market, not in their departure. They can only withhold land from use before they sell it.

B. A second, and related definition seeks to overcome the defect of the first by calling a "speculator" one who buys land "with the intent or purpose" of selling for a gain, or "in contemplation of" public works or other developments that would raise its resale value. E.g., the Senate Fact Finders Committee of 1926 enumerated five supposedly distinct types of land buyers, of which this was type 5:

Those who made use of the opportunity offered by the government to secure land and water on most easy terms, and with the intention to hold them until the unearned increment would enable them to sell out at a large profit. Such men are seldom farmers. They are always seeking for an opportunity to sell the lands at a good profit to themselves. These are the speculators. 10

Under this definition one may sell for 500% gain and not be, nor have been a "speculator" as long as he did not originally buy "with that intention." Again, the definitional loophole is a legal loophole. Senator McCarran of Nevada brings out both in this interesting declamation against the Columbia Basin Anti-Speculation Act:

I know of territories in the west where the pioneers went in there and took up lands not looking for any reclamation project to be started... ...and if they could sell their land at an enhanced value I think it would be fair to say: 'You have lived on all these lands without expecting this, but now the Government has put this in, and you are entitled to the enhanced value.' I think they are entitled to the benefit of it. 11

We might plug this loophole by extending the definition so that one becomes a "speculator" whenever he develops the intention of reselling for a gain, regardless of his original intentions. But neither this, nor the original version, nor any definition based on "intent," will ever pass the test of clarity. We readily see the unreality of the black-and-white concept of human motivation underlying the definitions by reflecting on the problems of administering a law based on any of them. The Senate Fact Finders Committee's concept led to their proposing a policy of discrimination among citizens, of "selecting" the project settlers on the basis of their intentions.¹² Anyone charged with this duty would soon find that no man can enter another's mind and know what he intends to do. Often the buyer does not know himself, or indulges in rose-colored dreams that never materialize. The Canadian Pacific Railway, in the nineteen-tens, wrote to hundreds of small absentee title-holders in their Bow River area, inquiring why they had not arrived to settle the land they had bought. As J. B. Hedges reported it:

Many replied frankly that they had bought the land for speculative purposes and were holding it for the appreciation in value... (But) large numbershad bought....in good faith, with every intention of settling on the land... they had not found it possible to carry out their original plan. 2

Even supposing all these people told the truth, there is no clear line between the groups. What distinction there is is largely between hypocrisy or self-delusion on the one hand and

frank egoism on the other. The two groups behaved exactly the same.

Another difficulty of these definitions is that, as land lasts forever, no one buys land without giving some thought to its eventual resale value, for himself or his heirs. So even if everyone were honest with himself and with us, we could still not distinguish those who intend to resell from those who do not. An ultimate consumer can often buy goods other than land without speculating in their resale values because these goods die natural deaths in consumption. But land lives on forever, and often grows dearer with the years. If anyone seeks to buy it without considering potential resale values, others who do consider them will crowd him out of the market.

In spite of these unsurmountable problems of formulating a definition of "speculation" based on intent to resell, many who write seriously of "land speculation" define it just that way. It is not surprising to find some of them conceding they do not know just what their subject is. Ernest M. Fisher wrote:

...(land) speculation is difficult to identify with certainty; ...the intent of the purchaser is probably the basis of distinction between speculation and investment....(but) the same individual, in the same transaction, may be at one time a speculator, and at another an investor. 14

L. C. Gray, writing on "Land Speculation" in the Encyclopedia of Social Sciences, also found his subject hard to define:

The investor in land acquires it primarily with a view to employing it as a factor of production; the speculator primarily in the hope of profiting by an expected increment in value... Frequently the purchase is motivated by both objectives. 15

I do not hold these men up to criticism, but to praise. They realized and warned their readers they could not define their central term. Where they have failed, we will not try to succeed. Probably no definition based on "intent to resell" can ever pass the test of clarity.

Even if the definitions were clear, they would not be useful. For "speculation," so defined, excludes intentions that actuate the same behavior as those it includes. C. R. Chambers wrote of the 1920 farm land boom:

It is often stated that the high land values of the war period were the result of speculation in land. If by speculation it is meant that the purchasers of land in these years bought with the idea of selling again at a higher price, it is only to a very limited extent that land values were forced upward because of it.... (Cites two studies) ... These studies showed that a large per cent of purchasers bought without any thought of reselling. 16

On the basis of "intent to resell," if it were made precise, the buyers who boomed up farm land in 1920 were not "speculating." Neither are corporations that hold valuable resources idle "for future expansion," nor are Chicago brokers who buy corn belt tenant farms "for income" and "a hedge against inflation." Only those are "speculating" who plan to take their gains by reselling. But the effect on the present land market is the same in either case. So, at root, are the motives. Land

value derives, as we said, from future values. Buyers may intend to take them as a permanent annuity, by holding the land, or as a lump sum, by selling. There is no reason to suspect that, if the one motive would upset the land price system, the other, its twin, would not have the same effect.

C. Chambers used another concept of "speculation,"¹⁷ one originated by W. I. King and L. C. Gray, and later used by Cornick, in which future increments to rent are the subject of "speculation". They derived it from the formula:

$$V = \frac{a}{i} + \frac{\Delta a}{i^2}$$

Here "V" is land value; "a", the current annual rent; "i", the interest rate; and " Δa ", an assumed constant annual increment to rent. The first term, $\frac{a}{i}$, (the present rent capitalized), is the "normal" value of land; $\frac{\Delta a}{i^2}$ is the "speculative" component of land value. "Land speculation" is buying, holding or selling land at prices that include the "speculative" component.

The idea that land value consists of a "normal" and a "speculative" component appears, too, in less formal guise, in statements like the following:

....the confident expectation of the future enhancement of land values, which arises in all progressive countries from the steady increase of rent leads to speculation, or the holding of land for a higher price than it would otherwise bring. 18

....there are two primary elements in the value of real estate, its annual or use value and its speculative value. 19

The speculative element (in land values) will persist, in all probability, so long as land values are increasing. 20

....the intensity of the urge to cut up income producing farms into non-income producing vacant lots varies directly as the spread between land prices and land values.... 21

The concept also finds its way into the courts, as when an Iowa judge rejected a land appraisal because it included²² "speculative value."

Those definitions are all clear enough. They mean that projecting present rents into the future is "non-speculative," while expecting increases is "speculative." Nothing is said about resale values, but the implication is clear that resale values are "speculative" if derived from anything but constant anticipations. Nothing is said about changes in interest rate, but again it is clear that anticipations of changes are "speculative."

Such definitions, although clear, are not very useful. They distinguish two components of anticipated rents: an amount equal to the present rent; and the excess of the future over the present rent. The second is the "speculative" component of rent, from which the "speculative" component of land value derives. The definitions are not useful because there is no cause to believe that the incremental component of anticipated rents will influence present land value in any

special way different from the other component. Let us consider this in more detail.

The formula

$$V = \frac{a}{1} + \frac{\Delta a}{1^2}$$

is only a contraction of the longhand formula

$$V = \frac{a_1}{(1+i)} + \frac{a_2}{(1+i)^2} + \dots + \frac{a_n}{(1+i)^n} + \dots + \frac{a_{\infty}}{(1+i)^{\infty}}$$

(for the special case where $a_1, a_2, a_3, \dots, a_n, \dots, a_{\infty}$ increase annually by a constant increment Δa). In the longhand formula it is quite clear that both components of the anticipated rent of any year, (a_n), affect present value, V , through the same discount mechanism. That is, both components of a_n are multiplied by $\frac{1}{(1+i)^n}$ and thus discounted to a present value.

From this it appears that if expectations of increments to rent, (Δa), tend to distort land prices, then expectations of constant or even falling rents will do the same. Neither component has unique effects on value.

And why should it be "speculative" to think rent will rise, and "normal" to think it will maintain in the future the same level it happens to have reached in the present? Why, for example, was it "speculative" to buy a city lot in 1940, correctly expecting rents to rise, but not "speculative" to buy in 1929, erroneously expecting them to stay at their peak levels? Intellectually, the distinction seems

to be based on little more substantial than the medieval doctrine that constant prices are right and beneficent, while changing ones necessarily work mischief. But of course in our dynamic world, where nothing is so constant as change, prices are only useful if they adjust constantly to new situations. There is no apparent cause to impute especial damage to change or the anticipation of it.

We will temper this criticism with three qualifications.

First, the formula $V = \frac{a}{i} + \frac{\Delta a}{i^2}$ is useful for some purposes. It is a handy compact summary of how anticipated rising rents affect land value. Chambers and Cornick have used it with intelligent restraint and to good effect, and we will have occasion to use it ourselves in a few pages. Strictly, it only holds when the interest rate, "i", and the annual increment to rent, "a", are to be constant for all time to come; but one can readily deduce the effect of various changes in the assumption. We only criticize the formula as a vehicle for defining "land speculation."

Second, there is in fact evidence that land is worse allocated when the market expects rents and values to rise. The most obvious misuse of land -- disuse -- is most common where land is growing eligible for more lucrative uses, and tenancy is more common where rents are expected to rise. To

be sure, there is no evidence that that is the only distorting influence. Vacancy, tenancy and other misuses also appear where no one expects rents and values to rise. But any hypothesis we construct must account for such correlation as there is between bad land use and rising rents. We will use that formula to help do it.

Third, if "speculative" connotes "based on future expectations," then the component of land value that derives from future increments to rent is more speculative than the other component. This other component is also "speculative" in the sense that it is derived from future rents. But if the degree of "speculation" increases with futurity, then rising rents which increase with time are more "speculative" than constant ones, which are evenly distributed in time. That, too, is of some import for our future analysis.

D. In yet another usage, "land speculation" means absentee holding, as opposed to resident ownership. Those who buy farm land "for income," for example, are often called "speculators." According to Mr. Margold of the Bureau of Reclamation, the Columbia Basin Anti-Speculation Act "is not intended.... to prevent him (anybody who is there operating and who is developing land) from doing anything. He is specifically exempted...."²² The residence requirements of our Homestead Act, and other land settlement laws here and abroad, reflect the same concept.

But the concept is not strictly definable. There is no clear line between the resident and the absentee. As a small resident owner expands his holdings, when does he become an absentee? Over how many hundreds or thousands of acres may one family "reside"? How many hours per day or days per year must they be on each acre of "residence"? Any distinction is purely arbitrary.

Now we might tolerate this intellectual defect if there were in the real world a clear distinction of the types. There is, after all, good cause to think absentee title-holding discourages the best land use. But in fact the twilight zone between absentee and resident is broad. That was the subject of Chapter III. It comprises a substantial part of our problem.

Of course there are some title-holders who never set foot on the land they hold. They are clearly absentees. But if one wishes to set them apart for special study, "absentee," and not "speculator," seems the appropriate term. For the land is just as much an investment or "speculation" to the resident-owner as the absentee. Just as the manufacturer, in the ordinary course of production, unavoidably "speculates" in his inventories, so the owner-operator of land takes the same price risks as those who merely hold title without using. The resident landholder, in fact, resembles the absentee holder more than the manufacturer resembles the professional commodity speculator. For the smallest resident operator holds title to something he will

never use: the infinite future of the land. He is an absentee in time, if not in space. He "speculates" in those future values, willy-nilly, as much as any absentee. He can only avoid it by becoming a tenant. Then, as Goldenweiser and Truesdell wrote, "Under this plan (tenancy) the young farmer would be a farmer pure and simple, instead of partly a farmer and partly a speculator in land."²³ But among those who hold title there is no unequivocal rule to separate the "speculators" from the others.

We have surveyed four usages of "land speculation." None of them passes both the tests of clarity and usefulness. We could always make or accept some purely arbitrary definition, but it would not help with our inquiry. We are left with this conclusion: to hold title is to speculate. Any distinction is only one of emphasis, and it is not usually clear what the emphasis is. It was said of virgin timber that:

...the whole value of stumpage may be said, in a sense, to have a speculative origin; that is, it depends upon the opinion which owners and buyers have of the probable value in the future. ²⁴

The same is true of all land value. It harks back to no cost of production; there is no gauge of competitive reproduction. It all derives from the future, and it derives from the entire future. There is no buying land without gambling on eternity. "Speculation" is an apt word for that.

Now we have not gone over those definitions in such detail just for the pleasure of picking on fine points. What was the purpose of that long discussion, and what is the meaning of the conclusion? Is it that "land speculation" is a myth? On the contrary, the myth is that anyone can hold land title without speculating. All who hold title are ipso facto speculating. So land speculation is not just an occasional aberration, the product of special conditions. It affects every land market, at all times and places.

To be sure, land speculation does more conspicuous damage in some circumstances than others. Frontiers, especially both urban and rural, are not subtle: the ravages of speculation there lie bare for every eye to see. But similar economic forces work on all land, even where it lies under a veneer of improvements in the centers of society. Land speculation, for better or worse, is an unavoidable incident to the entire process of land allocation.

That does not necessarily mean that all land is misused. It is entirely possible to put land to full use while also speculating in its remote future, and many holders do. Everyone is free to speculate in land, and if one plans to use land well that should only increase the price he is willing to pay for it. Other things being equal, the better land users will generally outbid the worse ones.

But other things are not generally equal. The recurrent protests against land speculation, although they issue

in a baffling babble of tongues, adumbrate a genuine grievance that only wants precise formulation. While there is no sharp line between speculators and other title-holders, there is still an important distinction to make. There are many kinds of speculators. On one extreme the very best land users are speculators, for to use land best one must hold title to avoid the unrequited costs of tenancy. On the other extreme are those who speculate and nothing else, who keep land completely idle.²⁵ Between the extremes are speculators who do use the land, but not as well as would some other who only lacks the power to buy it. These last comprise most of our problem. We will label anyone who thus withholds land from contributing its utmost to production a "problem speculator."²⁶ Something prompts him to thwart the free market from directing land to uses with the highest marginal productivity. We will now present a hypothesis to explain why problem speculators can sometimes out-speculate and thus outbid other speculators who would put the land to better use.

III. Differences among speculators.

With the terminology clear we can strike to the heart of the problem by posing this question: as all landholders are speculators, how can the problem speculator ever enter the market against a more productive speculator? Why, for example, would a speculator who plans to sell a vacant lot after holding it unused for ten years outbid another speculator who plans to resell it after taking income from the

land for ten years? If an acre of land is to yield \$100.00 per year in perpetuity, the sum of these future values, discounted to the present at 5%, is \$2,000. \$780.00, or almost two-fifths of that \$2,000, derives from the first ten years. At 5% the user-speculator could bid up to \$2,000; the problem speculator would go no higher than \$1,220. The question is, what is wrong with our example that it fails to explain what we know to be true? Why do problem speculators sometimes withhold land from use?

If the land has an exhaustible component, the motive may be to conserve it. That is often, though not always, why ores are untapped and virgin timber uncut. But, as we said, we want instead to understand the misuse and disuse of perennial resources: why city lots are vacant and farm lands abused by tenants. That calls for an explanation of its own.

To be sure, R. T. Ely once advanced a "Theory of Ripening Costs" in which the vacant city lot was held to conserve it from lower uses while it "ripened" into higher ones. Said Ely:

If I buy land and hold it for appropriate use, I perform social service. A lot suitable for a fine downtown office building may otherwise be improved with a very different, inferior building and hinder permanent improvement due to the fact that A, who sold it to me, could not hold for the best social use. 27

and:

It would be in the end a waste to put upon this land inferior buildings which would have to be torn down. 28

There is some truth in the idea. The quality of vacancy is itself a kind of exhaustible resource, valuable because a lot once improved for one use can only shift to other uses after some alterations. But there are many reasons to doubt that Ely's theory adequately explains all or even much of the problem of unused land.

A. Unused land appears on all frontiers, not just the urban frontier. And on the frontiers of cultivation and of irrigation there is little such fear of rapid obsolescence to explain it.

B. Few urban structures are demolished, while still new and valuable, due to obsolescence. The contrary problem is much, much more typical of our cities: ancient skeletons of buildings remain standing -- or leaning -- long after their useful life is done.

C. Where many landholders settle back to wait for each other to take the first constructive action and stamp a pattern on a community, it often happens that nothing happens. As one speculator put it, "We have no plans. We're waiting for other people's plans." It is hard to avoid the inference in such cases that the holders are unusually indifferent to maximizing their income from these lands, even over time, else such things could not come about. It is also likely that the first to develop will be able to influence the general course of development in his own favor, and if all

holders were fully awake to their advantage they would hardly continue this Alphonse and Gaston performance very long. Simpson and Burton expressed their feelings about the inadequacy of the theory in some rather memorable language:

...thousands of acres of the finest agricultural land all over the country are taken out of agricultural production and consigned to idleness for decades to come. We speak of land 'ripening' into higher uses; this is putting land into cold storage -- and loading the community with the 'frozen assets' that result. 29

D. Vacant lots are often checkerboarded in among improved lots. There is no sudden avalanche of development once the fear of obsolescence is removed.

E. If land is not yet "ripe" for a higher use it should never have been taken from its previous use. ³⁰

F. Finally, of course, this argument only even purports to rationalize vacant urban land, and does not help in our general problem.

This is not to say that the concept of "ripening costs," judiciously used, has no place in economic analysis. It is only to say that the concept is not adequate to explain why so much land is vacant and otherwise underused.

If there were no other explanation of the facts, we might spend more time with this fear-of-obsolescence argument. But there is a more convincing and general reason why problem speculators can outbid user-speculators for land: it is their greater power to speculate. To buy land, as we said, one must speculate, willy-nilly, in remote future values. If everyone

could assume this extra burden with the same ease it would not affect how the market dispenses land titles. But ability and inclination to speculate, like other human traits, vary among persons. A strong and sanguine absentee speculator may value land he has no use for higher than can the fittest potential owner-operator. The stronger speculator may bid land away from the weaker even when both parties know the weaker would gain more net income from it in both present and future.

"The power to speculate" means the power to buy future values. It is measurable in terms of the rates at which individuals discount future values: the lower the rate, the greater the power to speculate. One hears that "it takes a difference of opinion to make the market." It is only part of the truth. In land and security markets, as in the grocery store, one's mere opinion counts for no more than he is ready to spend on it. There is a far more telling and persistent difference among individuals in the market than their opinions, and that is the rate at which they discount future values.

A small difference in the rate makes a big difference in what one can bid for a land title, whose entire value derives from future values discounted to the present. In the simplest capitalization formula, $V = \frac{a}{i}$, the value (V) that one can place on a land title equals the annual income of the land, (a), divided by an interest rate (i), (both assumed constant in perpetuity). The individual's power to speculate,

as measured by the interest rate he uses to discount future values, influences his bid for land title just as much as does his ability to use the land. "a" and "i", the reciprocal determinants of "V", have equivalent weight. The best user -- he who would produce the highest annual income from the land -- will only take the title if he can discount future values at a low enough interest rate to outbid less productive rivals with more power to speculate.

IV. Why differences persist.

Several men have asked why interest rates should vary from person to person when there are capital markets in which those with low rates may lend to those with high rates. There are such markets, of course, but they never arrive at one "market interest rate" at which everyone can discount future values. That is not just because the markets are "imperfect" or "monopolistic," although they may be. It is simply because it costs something to transfer money from lender to borrower. Between those who deposit money in a bank for 2% and those who borrow from it at 6%, there is an ineradicable barrier. Financial institutions do not transfer funds for nothing, but partly insulate lenders from borrowers. They are like resistors in an electric circuit: some "juice" flows through, but along the way it loses much of its potential.

It is a nice question whether individual interest rates would still differ under various assumed conditions of "perfect competition."³¹ My own opinion is that they

would, under any reasonable assumptions. To assume costless capital markets would be to assume away the incomes of several million hard-working citizens, and with them all the economic theory that deals with banking. Harry Scherman has stated that handling long-term loan contracts is "the chief business of the legal profession,"³² and of course bank clerks and presidents, bond salesmen and bill brokers also earn their bread as financial middlemen. If economic theory is to deal with financial matters at all, it must certainly allow their existence. I would style the assumption of uniform interest rates an assumption of "pluperfect" competition, interesting as a curiosity, perhaps, but of no help in understanding or evaluating the real economy.³³

If the reader sticks at that opinion, I do not insist on it. We may leave to those whom it interests the question of whether individual interest rates would differ in the world of purest theory. In the one we live in, they differ immensely. They will continue to differ until the day when lenders stand ready to loan any sum for any period to anyone at one universal interest rate. Meanwhile, there is not one, but a whole array of interest rates, decisively separated by the costs of transferring funds. Let us now inspect those persistent barriers to transfer that prevent the array's converging into one "market interest rate."

The transfer costs are something like transportation costs. Loanable funds move from the saturated watersheds

of supply to the thirsty fields of demand through such conduits as banks, mortgage houses, insurance companies, savings and loan associations, and the like. It costs something to move funds through those conduits, just as it costs something to ship, say, lumber from Portland to Chicago, or deliver water from Shasta Dam to Mendota Pool. Uniform nationwide lumber or water prices would only result from free transportation; uniform interest rates would only result from free financial service.

But the transfer costs differ from transportation costs in an important respect. The cost of moving lumber or water is mainly physical, so that their prices vary only from region to region. The cost of moving funds is mainly legal, administrative, and clerical, so that interest rates vary from person to person within the same region. Interest rate differentials may be greater between more distant points, but extremely different rates persist within the same city block.

This characteristic of the interest rate structure is what makes it so important for our study. Neighbors -- rival bidders for land -- pay about the same prices for their lumber, but pay or account very different prices for their capital funds. The differences manifest themselves in different powers to hold land. The following remarks from Homer Hoyt's "One Hundred Years of Chicago Land Values" show the forces at work:

In 1876 Chicago land values were in a chaotic state, the prices in the same block varying according to the financial condition of the owner.

Those who were not forced to sell their holdings did not offer them on the market....

One cannot point to a business block, lot or residence sold at a sacrifice in Chicago that was not so heavily encumbered as to make it necessary to dispose of it.

....The landholders kept their land until attrition brought foreclosure. ³⁴

In 1952 it was reported that "...consolidations begin as the financially sound farmers buy the farms of those who can hang on no longer." More generally, two leading farm economists have bemoaned that "all too often the family makes its decision on the size of the debt involved, rather than on the basis of the price of the farm in relation to its earning capacity."³⁵

Here neither opinions nor management ability appear to be of much account in determining who keeps title. Financial strength, varying with individuals, is the determining factor. Neighbors pay the same prices for most goods, but as concerns capital funds, and hence land, they live in separate economies. One is precious of land, as of treasure imported at great cost; another, at the other extreme, is prodigal of land, as of culls from a local mill. As the various economies exist side by side, it is little wonder that the excellence of land use varies haphazardly from holding to holding.

The barriers to transferring funds that separate these economies rise largely from risk. They are likely never to disappear, for they are not so much technological as they are barriers of mistrust between people. As Keynes has pointed out, they are distinct from, and in addition to, the borrower's risk that his investment will not prove as productive as he hopes.³⁶ They are risks of human or social failure. If price levels were stable, if society were highly ethical, its members firmly united in mutual satisfaction with the terms of their association; if there were no fear of inflation, depression, moratoria, repudiation, or revolution, the barriers would be much lower, although, still appreciable. But as it is they are quite high, and not likely to decline.

A lender risks being cheated of repayment, as well as that he may need his money back before it is due. He must charge insurance to compensate for the inevitable losses, and also charge for the considerable effort of guarding against loss. The high cost of all this is manifest in the spread between what financial institutions pay their depositors and what they charge their customers.

Of course the risk varies with the individual borrower, hence so do the rates and other conditions of the loan. If the "risk" that lenders shun were just the risk that the borrower would not use land as well as he hopes, the results would not be so bad. Then credit would be most abundant for

those most likely to make land productive. But in fact lenders ration credit largely on another basis. Generally the rule is "To him that hath shall be given." As Rainer Schikele puts it:

The principle of allocation is collateral security, not marginal productivity These two principles tend to work at cross purposes: with increasing collateral security, the marginal productivity of capital tends to decline, and vice versa. Instead of allocating capital to where it is scarce, our credit system allocates it to places where it is ample. 37

Thus borrowers best able to speculate in land are those already possessing other land and assets, so the system tends to concentrate landholding beyond the requirements of efficient production, as the data of Chapter III suggest is the fact. Of concentration per se we will have more to say in Chapter VI, and still more in a sequel. The present point is that risk premia are not necessarily lower for those more likely to make the land productive.

There is abundant evidence that marginal borrowers like pioneer farmers and innovating and interloping entrepreneurs generally suffer the worst credit terms, while entrenched firms with vast holdings, and perhaps monopoly power and influence in government, enjoy the best. Especially as lending becomes more institutionalized and collateral requirements more stereotyped, the borrower's individual character counts for less, and capital tends to agglomerate about existing nuclei. We need not labor what is obvious and

notorious, but we will expand on some aspects of the market that especially bear on our subject.

Law and custom now prevent most institutions from charging the high risk premia once so common. (History records rates of 10%, 15%, 18%....there is no fixed ceiling.)³⁸ Of course this does not mean they accomodate all customers at the lower rates. Rather, they ration credit, refusing some loans altogether and limiting most to some fraction of the collateral. Those who cannot borrow what they need from the conventional, regulated sources may try others who charge higher rates -- higher probably than the regulated sources would charge if free of restrictive social controls. But with these high rates and hard terms they are virtually out of the land market.

When credit is rationed to some percentage of the collateral, a small difference in the percentage allowed may make a considerable difference in the credit allowed, since the land or other asset bought with the loan may itself be part of the collateral. Thus a man to whom a bank would lend up to 50% of his collateral could borrow as much as he put up himself; while a man to whom a bank would lend up to 75% of his collateral could borrow three times what he put up himself. If wealthier borrowers are allowed a higher percentage on their collateral, as seems generally to be true, then the ability to raise money must increase very rapidly with the wealth of the individual.

In buying land it matters also for how long one can borrow. One who borrows at 5% for 5 years and can count on renewing it is a much stronger speculator than another who borrows at 5% without such assurance. The latter, after five years, may fall from grace and be sealed off from the easier economy into which the loan admits him. Then he returns to the hard world of 10% or more. In buying land, most of what one buys are values further than five years future.

For example, the first five years of a permanent annuity of \$1.00, discounted to the present at 5%, are worth \$4.30. The succeeding years are worth \$15.70 -- at 5%. But if one must discount later years at more than 5%, he will not consider the later years worth that much. His ability to bid for land is crippled. To be sure, he could plan to sell the land after five years if his credit runs out. But a forced sale is generally at a loss.

This is important to our subject because discrimination among borrowers is more pronounced in respect to long than to short term loans. A negro sharecropper can borrow on short term for his planting, but could he float a 100 year bond issue such as the Santa Fe Railroad recently retired? In buying future incomes, not only does the importance of a given difference of interest rates increase with futurity, but the difference of rates itself increases, so much so that we often find it most convenient to say of some poor

credit risks that they simply cannot borrow long term funds on any terms.

Efforts of the Federal Government to subsidize the capital markets to help people buy land have not always tended to equalize interest rates. We do not here judge the whole legion of federal agencies that lend or insure loans, or have done so. But it is instructive to consider Gray and Turner's summary of the work of the Land Bank System, perhaps the earliest Federal creation in this field.

Gray and Turner found the Land Banks to ease credit only for those who already had some equity in land.³⁹ That is, federal intervention increased, rather than lessened, the disparity of individuals' powers to speculate.

It is doubtful if other agencies have done much better. To be sure when a government lends or subsidizes loans to some persons it tends to bring them closer in speculative strength to those who were already stronger. But it takes them farther away from those who were weaker. And if they are already among the stronger, the net effect is to disperse the array of interest rates still farther.

We have been discussing differences among borrowers. But these are less extreme than the differences between borrowers, on the one hand, and those on the other who do not have to borrow. In the 'thirties, for example, while many persons could not get loans at any price, others were hoarding money -- taking zero interest -- and bewailing the

dearth of investment outlets.

These, with more assets than outlets for them, are the strongest speculators. Discounting future values little or none, they stand out in a period of attrition for their power to hang on to land. Of timberland speculators, David Mason wrote:

Computed interest on the original investment in the case of properties not burdened by debt has been mildly effective in convincing owners that their investment is not as good as they expected it to be, but after all the optimism of the average owner has encouraged him to continue the ownership; on the other hand, in the case of properties burdened by debt, interest actually payable has proven a tremendous burden, and has quite frequently caused properties to change hands... 40

One might conclude from that only that explicit payments impress the speculator psychologically and dampen his irrational ardor more than mere implicit interest. That is part of the truth. But the more important fact is that explicit interest is higher than implicit, because explicit interest includes the costs of transferring funds from lender to borrower.

As we have said, to speculate strongly in land it is especially important to be sure of having financial power in the future, as so much of the value of land derives from the remote future. Here the self-financed speculator has his greatest advantage. He is surer than any borrower that his sources will not dry up.

Of course there are such things as long term loans,

but they are hard to come by. Lender's risks increase with the time a loan runs. Aside from outright repudiation, a lender risks that inflation may confiscate his funds, or that interest rates will rise and he will miss better opportunities. These risks are not offset by the corresponding chances of deflation and falling interest rates. For the latter often bring depression and with it varieties of repudiation like bankruptcy, delinquency, moratoria, shotgun auctions, composition of creditors, Municipal Bankruptcy Acts, and the like. Beyond them rise the spectres of revolution and foreign invasion which, however remote, are ever present in the minds of many people. For these reasons the long term land purchase loans are not widely available on easy terms to close the gap between the high and low interest rate economies.

Too, it is often harder to borrow to buy land than other assets. That does not mean land is bad security for a loan -- on the contrary, a pre-existent equity in land is in highest favor as collateral. But lenders care not only what a borrower can pledge, but also what he plans to use the loan for. The ideal loan is "self-liquidating," and loans to buy land are farthest from this ideal.

The completely self-liquidating loan is one used to carry a temporary inventory, like a harvest. The borrower pays out as he sells out. Permanent inventories are less ideal, but their constant turnover assures the lender he

can quickly liquidate his loan in an emergency. Even "fixed" capital turns over in a few years. A truck, as it wears and obsolesces, is being sold to the trucker's customers in the prices they pay as surely as if he dissected and sold it to them piece by piece. If the lender insists, the trucker can use the proceeds to retire the loan rather than buy a new truck -- he can often make do with the old one if need be.

Land, by contrast, is a permanent asset, the only really "durable good." One never sells it out in the normal course of production. To amortize a land purchase loan the buyer must save it from his income (not from the income imputable to the land, for that goes to pay the interest on the loan, at least until the principle is reduced). That is a long, hard ordeal, many steps removed from merely turning over an inventory. This is the harder because land price is generally a higher multiple of its present income than are prices of other assets. Interest on the loan may even exceed the land income -- it is sure to when land price is inflated by high hopes for the future -- adding to the buyer's burden.

So loans used to buy land "for keeps" are in every sense opposite from the ideal self-liquidating loan. Therefore, it takes high interest and/or good collateral to lure lenders into the perilous field of real estate. The marginal borrower is indeed lucky if he can borrow enough speculative power to bid for land against an affluent rival.

To be sure there are times when the situation seems reversed. In periods of madness like the late 'twenties the gates of credit may open wide to any project based on the then supposedly inevitable increase of land values. But even then the most favored borrower is likely to be the land merchant who treats subdivided lots like an inventory and convinces his bank he will sell out quickly. He is not the best land user. And the catastrophe that follows such episodes is such as triply to confirm traditional strictures against real estate loans, and make lending institutions shrink from them for years to come.

In summary: everyone has his personal interest rate. Markets, and especially capital markets, are never so perfect as to level all the barriers that divide each person's economy from his neighbor's. Rival bidders for land discount future values at various rates per year that range from near zero upward without limit. And the further future the values lie, the farther do the different rates diverge, for the greater are the risks and risk premia in lending that insulate the economic worlds of borrowers and lenders. Probably even in hypothetical perfect competition, and certainly in fact, different persons have very different powers to speculate in land.

It is worth pausing here briefly to orient ourselves by the landmarks of economic theory. This is no new discovery, that it costs to transfer funds to borrowers, nor a forgotten

one. We are in the mainstream of modern theory. Keynes made transfer costs the floor under interest rates in the "deadlock" of his General Theory, and others, like Hart, have emphasized direct credit rationing as a restraint on lending. They considered the effects on employment through aggregate spending. We, by contrast, consider the effects on resource allocation.

The contrast is not so great. The two subjects are really one. "Employment" is not just random motion, but useful activity. Employment will not be "full" until the economic incentives that direct resources to produce are perfected to allocate them ideally, or at least tolerably. So, if you please, our study concerns one aspect of the employment problem. It concerns the effect of interest rate differentials on the full employment of land. And as land complements labor and capital with employment and investment opportunities, it is basic to the whole tortured question of "full employment."

V. The Mechanics of Mal-allocation.

In Section II we showed that all land title-holders are ipso facto speculators. In Section III we showed land speculation is a "problem" because different people speculate with different interest rates. In Section IV we showed why the differences exist and persist. Now we will go into the mechanical details of capitalization -- the relation between land income and land value -- to show precisely how

and why interest rate differentials distort land allocation.

A man's personal interest rate is the spy-glass through which he scans the future. As he stands on the brief eminence of today and peers wonderingly ahead, he raises the glass to his eye to help assess the shape of things to come. If he carries a powerful 1% glass, objects twenty years hence look almost life size -- 82% life size, to be exact -- and he appraises them accordingly. Another traveler through time, with a flimsy 10% glass, can hardly make the objects out, for to him they have but 15% of their true dimensions.

It is sometimes hard to see how a few percentage points difference in interest rates can much affect economic decisions. It depends on what decisions. Borrowing for one year -- say to buy goods one will sell for \$100 at year's end -- the difference between borrowing at 2% and 4% is trifling: discounting future values at 2%, the present value of the goods is \$98.00; at 4%, \$96.00. A superior manager, borrowing at 4% will easily overcome this handicap.

But when he is competing to buy values anticipated 10, 20, or 50 years in the future, it is quite another matter. Effects of differences in discount rates cumulate over the years, and loom up to dominate the bidding. Table 1 shows that the 4% discount rate can bid 98% as much as the 2% discount rate for values due at the end of one year; but only 38% as much for values expected in 50 years, and 7% as much for values due in 100 years.

TABLE 1

Present Value of \$100 Due at the End of Selected Years

	<u>1 yr.</u>	<u>10 yrs</u>	<u>20 yrs</u>	<u>35 yrs</u>	<u>50 yrs</u>	<u>100 yrs</u>
At 2%	\$98	\$82	\$67	\$50	\$37	\$14
At 4%	\$96	\$68	\$46	\$25	\$14	\$ 1
Lower bid as % of higher	98%	83%	69%	50%	38%	7%

In this case the discount rates used by two rival bidders differ by only two percentage points. But in result of this difference the stronger speculator can bid fourteen times as much as the weaker for values due in 100 years. Where the rates differ even more, gross disparities in bidding power develop earlier, and their effects are absolutely overwhelming. At 8%, e.g., \$100 due in 50 years is worth \$2.10; at 2%, it is worth \$37.20, eighteen times as much. When two rival bidders with such different powers to speculate face each other in the market for futures, there is little question of which will prevail.

All this greatly affects the disposition of land titles. In a land title, present and future are tightly bound up in one package. There is no taking one without the other. If just one year's use were at issue between rival bidders for land, he who could realize the most from the land's present potentialities would outbid all comers. But when title to a

remote future must pass along with title to the present, title becomes an object of speculation, and gravitates to him with greatest power to speculate. Best present use becomes only a partial influence on allocation. And when future values are expected to be much greater than present ones, present use drops to a tertiary influence, or is entirely subordinated.

Take an extreme example: farm land with oil prospects. Mineral rights are sometimes sold separately from surface rights. But where they are not, the composite title goes to him who bids most for the whole bundle of future values. He who can only farm stands no chance against him who can speculate in oil, even when the latter only plans to do the surface once over lightly now and then, or neglect it altogether. Then strong speculators bid land up and away from mere farmers⁴² as easily as a giant electromagnet would snatch iron from a pocket horseshoe.

That serves to illustrate the point. The situation of most lands is less extreme. Power to speculate influences allocation, but does not wholly determine it. Ability to produce from land also weighs in the balance. Both near and remote future contribute to the final sum called "land value." The interesting questions are: "How much?"; and "In what circumstances?" These call for an overall analysis of the discounting and summation processes by which the components that determine land value are fitted together.

Strictly, as we said earlier, the "future" begins immediately, and present land value derives entirely from future values. The value of land to any person is the sum of the present values of future incomes he expects from it (counting resale value as income in the year it is to be realized). He will buy it for less if he can, of course, but he will bid up to this maximum. Algebraically, (where "V" is land value and "a" is annual net income):

$$V = \frac{a_1}{(1+i)} + \frac{a_2}{(1+i)^2} \cdots + \frac{a_n}{(1+i)^n} \cdots + \left(\frac{a_{\infty}}{(1+i)} \right)_{\infty}$$

Figure 1 illustrates this graphically. The horizontal line at \$3.00 represents a constant annual rent expected from a given acre by both of two parties. The dotted line dropping down from it represents the present value of \$3.00 discounted from each future year at 4%. For example, the present value of \$3.00 due at the end of the seventh year is \$2.28. The value of the acre to the 4% discounter is the sum of the present values shown by the dotted line. That is the area under the dotted line.

The dash line represents the present values at 6%. The value of the acre to a 6% discounter is the area under the dash line.

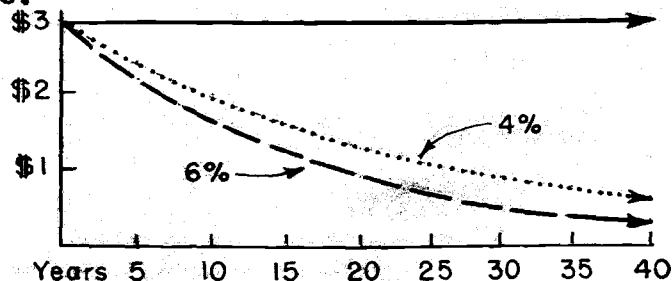


Figure 1: Present Values of \$3, at 4% and 6%.

Obviously the stronger speculator, discounting future values at 4%, will considerably outbid the weaker, even when both anticipate making the land equally productive. And he will still outbid the weaker even if the weaker expects to earn slightly more net income from the land.

Where "a" and "i" are assumed constant over the years, as in our example -- and there is no present need to assume anything more complex -- the longhand capitalization formula given above reduces simply to:

$$V = \frac{a}{i}$$

This shows at a glance the overall influence of interest rate on land value over the whole span of time. It shows that interest rate has equal influence with net income in determining land value. (Farther along we will see that interest rate has more influence than rent when bidders expect rents to rise.) Interest rate and net income are simple reciprocals. Doubling the interest rate has the same effect as halving the rent: it halves land value.

Regarding interest rate again as a lens, this formula is like a lantern projector. It uses the interest rate lens to magnify annual rent into a larger image, land value. Each man uses his own interest rate to project rent -- the measure of his ability to make land productive -- into his bid for land title. Rival bidders for the same site will anticipate getting different rents from it. With each bidder

using a different interest rate lens, each man's bid is a different multiple of the rent from which it derives. For example, a strong 2% lens magnifies 50 times, a weaker 5% lens, 20 times. Hence the various bids for title are not proportional to their respective rents. The enlarged images do not faithfully reproduce the true relative proportions between the original rents. Thus the rivals' ranking as bidders for title is a garbled rearrangement of their ranking as productive managers of the land, and the highest bidder for title is not necessarily the best user. He may be an indifferent land user with an especially strong discount rate lens.

Others have also recognized this problem, although with very different emphasis. E. O. Heady wrote:

...the beginning farmer who is extremely limited in capital may rationally put a lower 'use value' on land than an established and wealthy operator. 43

T. W. Schultz, too, has flirted very near our hypothesis. 44
S. V. Wantrup deals with effects of interest rate differentials on conservation of exhaustible resources. 45 And many of those whose empirical studies we cite certainly must have apprehended our problem in their own ways. But no one, to my knowledge, has followed through the implication that land prices are bad indices of alternatives and agents of allocation. No one has conclusively evaluated the performance of land markets in general.

Those who do venture the more sweeping generalizations in economics have generally avoided this problem, so far as I can discover. Ely and Wehrwein, for example, assert simply that "the use which can pay the highest rent at a particular place occupies the land," and again, "rent acts as the 'sorter' and 'arranger' of this pattern (of land use)".⁴⁶ Theorists have, to be sure, recognized in a formal way that it is capitalized value, rather than the rent of land, that allocates land titles among different holders. But they have been distressingly coy about committing themselves any farther. Stigler, whose work in general we regard highly, puts the matter off as follows:

Our problem is to explain rent per year... and not the value of an acre of land. The valuation of productive resources which yield an income over a considerable period of time requires an interest rate because future services must be discounted. The theory of the interest rate, and the consequent valuation of productive resources is taken up at a later point.⁴⁷

The promised discussion never appears. Nor have I found others to carry the matter any further. The assumption generally is that everyone uses the same interest rate to discount future values. The assumption is sometimes made explicit in statements like the following:

The marginal rate of substitution between resource control at any pair of moments.... must be the same for every pair of individuals or firms.⁴⁸

The current long-term mortgage rate of interest may be used in capitalizing net rental, for it is assumed that the farmer as a rule has the alternative of selling his farm and investing the proceeds in such mortgage securities. 49

Given this simplified model (perfect competition among landowners and perfect knowledge of markets and techniques) it is possible to examine the 'technological' coefficients of production, and thus to determine the use to which each piece of land will be put. This can be done without examining the motivations of owners of land or of entrepreneurs who may purchase the use of the land. 50

More often, the assumption is expressed only by silence.

As it stands, many authoritative studies of price theory tell us that land is generally most productive in his hands who gets the most annual rent from it, or, more generally, in his hands who will give it the highest marginal productivity, which is certainly correct. But there they drop the matter, and there we pick it up. They leave an impression that the best user will outbid all rivals for title. That, as we have seen, is not always true, because each rival magnifies rent or marginal productivity into land value through a different interest rate lens.

Since we find no one who has come to grips with the matter, it is worth our while to lay it out most explicitly, even at the risk of redundancy.

Figure 2 illustrates the idea. It concerns two rival bidders for the same acre: "B" (for "Better user") and "P" (for "Problem speculator"). "B" discounts future values at 6%. "P", with his greater power to speculate, discounts them at 4%. The top horizontal line represents annual rent of

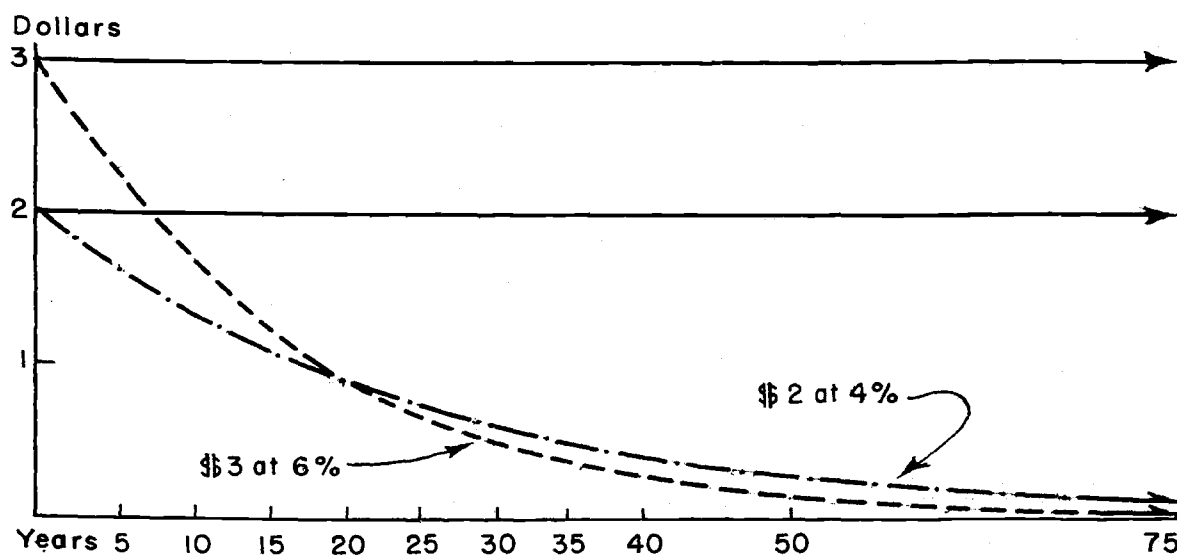


Figure 2

Present Values of \$3 at 6%, and of \$2 at 4%.

\$3.00 which "B" expects to realize if he acquires title. The lower one represents annual rent of \$2.00 which "P" expects if he acquires title.

The dotted line dropping off from the top horizontal line represents the present value of \$3.00 in each future year, discounted to the present at 6%. It is what "B" sees as he looks to the future through his interest rate spy glass. The sum of these present values -- the area under the dotted line -- is the most that "B" will bid for the title.

The dotted line dropping off from the lower horizontal line is what "P" sees through his stronger 4% spy glass. It represents the present value of \$2.00 in each future year, discounted at 4%. The area under it represents what "P" will bid for the title.

You will note that "B", who anticipates higher rents, puts a higher present value on the early years than does his rival. But as they look, through their respective glasses, farther and farther into the future, the present values of their different anticipations come closer and closer until, at about the twentieth year they cross. For all values more remote than twenty years, "P" will bid more than "B". So the mere fact that "B" can use the land better, and bid more for its early years does not necessarily mean he will outbid "P" for the title. "P" will bid more for the later years. The long tail of the curve showing "P"'s present valuation of \$2.00 contains a heavy weight of values that may swing the balance in his favor. This is the tail that wags the dog.

In the illustration, the rivals' bids are equal at \$50.00 ($\frac{\$3}{.06} = \50 ; $\frac{\$2}{.04} = \50). But let "P" discount futures at any less than 4%, or "B" at any more than 6%, and "P" takes the title. Then 1/3 of the land's potential is wasted.

So "P" may win the title and treat land like something worth \$2.00 a year, when its true social opportunity cost -- the best alternative use -- is \$3.00 a year, 50% more. Summing it up in one sentence: The highest bidder for a land title is not necessarily he who will use the land best, in present or future, because the power to speculate in remote future values influences bids for titles, and different persons have this power which varies inversely with interest rates in very different degrees. That, in bare outline, is our hypothesis to explain why the land market does not tend to allocate land to its most productive use.

In former times men have accused the "dead hand of the past" of keeping lands from full use, and with cause. But it may be the unborn hand of the future that is more to blame. Coming events cast their shadows before them, to become substance in the prices of land titles. These anachronisms from the future measure ill the needs of the present.

VI. The Especial Importance of Anticipated Rising Rents.

This hypothesis does not depend on expectations that land rents or values will rise. Buyers can speculate in

constant rents as well as rising or falling ones. The hypothesis only depends on the buyers' expecting rents to persist through the remote future.

The hypothesis is stronger, though, when buyers expect rents to rise, as in the example of farm land with oil prospects (page 346). When buyers anticipate constant rents, differences in interest rates affect land value only proportionately -- that is, halving interest rate doubles land value. But when remote future values weigh more heavily, power to speculate also counts for more, because more of the land value derives from more remote future years. As we have seen, the farther future values are, the more difference in present valuation results from given interest rate differentials. The importance of speculative power relative to management ability increases with futurity, until management ability counts virtually for nothing.

The neat King-Gray formula previously cited (page 317) serves admirably to measure the effects of interest rate differentials on land value when rent is rising. It involves too specific assumptions to be very general, but it shows the basic forces at work, and the direction and dimensions of their influence. The formula is:

$$V = \frac{a}{i} + \frac{\Delta a}{i^2}$$

Where Δa is an assumed annual increment to rent, and of course "V" is land value and "a" is the original

annual rent. Here, halving the interest rate more than doubles land value. E.g., if "a" is \$20, and Δ_a \$1, halving interest rate from 4% to 2% increases land value from \$1,125 to \$6,000. In such cases, individual differences in power to speculate far outweigh differences in ability to use the land. Those, like Cornick, who emphasize $\frac{\Delta a}{i^2}$ as the troublesome "speculative" element in land value are a good deal more than half right. In $\frac{\Delta a}{i^2}$ the distorting influence of interest differentials is raised to the second power.

Hans Brems has pointed out that if a geometric rate of growth (g) is anticipated, the capitalization formula becomes $v = \frac{a}{i-g}$. An anticipated growth rate equal to the interest rate gives an infinite land price -- in practice, the holdout who "will not sell at any price." Brems, in conversation, has pointed out that, as various studies have shown land prices in certain areas rising at rates comparable to the growth of a sum at compound interest, this formula may have many practical applications. In it, obviously, small changes in "i" make for very great changes in "v".

In concluding these observations on the influence of future values on present allocation of land, let us contrast our hypothesis with Ely's idea about fear of obsolescence (p. 326). Ely's idea only applies when present use precludes future use (and only then if the present value of the future

income is greater than the present income that precludes it.) Our hypothesis concerns lands whose present and future uses are compatible and even complementary. Obviously it has interesting implications, too, where present and future use are competitive. But we will not now pursue this aspect. The remote future values our problem speculator bids for are not values he is creating or conserving by present forbearance. Neither are they necessarily higher values than those anticipated by rival bidders -- they may be lower, as in our example, Figure 2. They are simply values on which the individual problem speculator puts a high enough present value to preempt the title from other bidders.

VII. Concluding

Our hypothesis links many seemingly diverse problems of land use. The problem speculator's essential quality is his low personal interest rate, coupled with a desire to buy land. Other than that he may be rich or poor, large or small, absentee or resident -- although more likely in each case to be the former. He may waste land by disuse, tenancy, over-extensive use, incompetent or laggard management, or any other default. Our hypothesis concerns them all. In Chapter VI we will apply it to explain these particular aspects of the problem. But first, in Chapter V, we will consider various objections to the hypothesis in its general form.

CHAPTER V

Objections to the Hypothesis Considered

In this chapter we treat of several objections that critics have raised or could raise against the hypothesis. We cannot hope to anticipate all the comments the hypothesis will evoke from people of various backgrounds, but we have discussed it with enough people to be sure we are answering a good portion of them. Some of the objections we treat are misconceptions; others have merit. In either case, they offer a chance to set the hypothesis in perspective, and relate it to other ideas in economics.

Objection I: "Differences in the production from land under different operators are not differences in land rent, but different imputed wages of management to the operators. Rent is the same in any case. It is therefore impossible to conceive of underused land, and the hypothesis concerns a nonesuch."

This objection is simply wrong. It reduces to an absurdity when land is utterly unused -- then, as there is no produce, there is obviously no rent. Proceeding from disuse upward through the whole scale of use intensity, there is clearly a whole scale of different rents. It is a familiar fact that different tenants will bid different rents

for the same site. Likewise different owner-operators will impute different implicit rents. Let us consider some of the basic forces that make different users impute different rents to the same land.

Japanese farmers made their place in California agriculture by offering higher rents. They could do so by accounting less wages for their labor. As one writer put it:

Their willingness and ability to pay high rents does not come so much from better methods of farming, though as a rule they are good farmers, but because they live more frugally than the American or the immigrant from northern Europe. 1

Figure 1 illustrates the point:

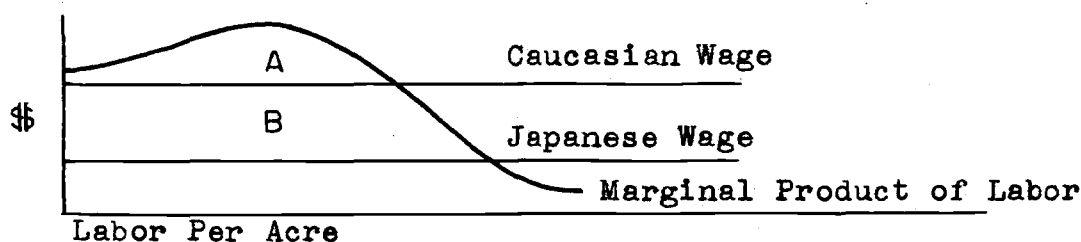


Figure 1
Rent Imputed by Japanese and by Caucasian Farmers

The Japanese accounted a lower price for their labor, and hence also applied more labor per acre, working out to a lower margin. Thus they produced a greater surplus over their labor cost, to count as rent. In the figure the area "A" represents what rent the Caucasians could pay. The area "A" plus "B" represents what the Japanese could pay.

The Japanese accounted less cost for their labor because of perfectly sound economic reasons. They had fewer

alternatives for their time, both in other job opportunities and in leisure. They probably, too, accomplished more per hour, because of their great industry, but that is not the essential matter. They worked the land at less cost in benefits foregone, hence the free play of economic forces led them to outbid other tenants. The principle of comparative advantage, or specialization, selected them as the operators.

To a degree it was race prejudice that closed other doors to them, to a degree their lack of education, or of American education. One might call these non-economic factors. But we are not here concerned with all the historical reasons why individuals differ from one another. We only select the Japanese -- who of course also differ among each other -- to illustrate an economic principle: individuals differ, and some are better suited for certain jobs, and worse suited for others.

The same principle -- comparative advantage -- also selects a best user for every piece of land. I know a young man who has lived on the same farm all his life. He knows and loves it from river to hilltop; he knows the crops, the weather, the rocks in the meadow, the stock and equipment, and the neighbors. He knows very little else, and I would not give 40¢ an hour for his time as a news commentator, a soda-jerk, or a Fuller Brush man, and not so much more for his time as a hand on a neighbor's farm. For all that, he

works hard and well on his home grounds, and his barns bulge with prosperity. He probably imputes more rent to that land than would any other living person.

For each piece of land there is one person whose individual background, tastes, abilities, friendships, disposition, health and other qualities fit him above all men to use the land. He charges the least in foregone gain for each unit of work on it. It is he who can impute the highest rent to it.

There is also a whole scale of different rents that different persons would impute to the same site. They range from a maximum for those who are especially productive and happy on the site, and unproductive and unhappy elsewhere; to a minimum for those who bungle and dislike work on the site, and whose time is very valuable elsewhere. These differences will persist, until each of us is cast in the same mold. For as long as we are all individuals, we all live to some degree in our individual economies which no market, however perfect can ever completely merge.

There is, one sense in which it is true that land rent is the same to all users. The highest rent that anyone can impute the land is the social opportunity cost of the land. If one wished to call that the "true rent," and conceive of it as existing regardless of actual conditions, then he would express our problem by saying the problem speculator

holds land although he imputes to it less than its true rent, its social opportunity cost. That would be saying what we have said in different words.

Objection II: "There are many bidders for any site, not just two as in your example. Some of the good users will also be strong speculators. All of them will bid higher than a pure speculator who will misuse the land, and one of them will bid in the title."

Certainly it is true there are many persons both strong speculators and good users. Where they exist, they will clearly outbid others who lack one or both of those virtues. But, clearly too, there are not enough of them to hold all the land. Otherwise there would be little separation of ownership and management as there is in fact, nor much vacancy or other misuses. Owner-operators would hold most of the land.

If speculative power and the qualities of a good land user generally went together in the same individuals, most land would be in good hands. Now there is one reason to hope that they might: a strong speculator has the assets to improve the land. He can use more capital in production, and account a lower price for what he does use, just as our Japanese farmer used more and cheaper labor, leaving more surplus for rent. But on closer scrutiny this parallel proves untrue. For he who can supply money at low interest

rates has the attractive alternative of using it to buy more land, instead of improving what he already holds. Morris Birkbeck traced a familiar pattern when he wrote from Illinois in 1817:

The farmer, instead of completing the improvement of his present possessions, lays out all he can save in entering more land. In a district which is settling, this speculation is said to pay on the average, when managed with judgement, 15%. Who then will submit to the toils of agriculture, further than bare necessity requires, for 15%? 2

What tends to increase rent is not the capital used per owner, but per acre. It is true that strong speculators can, if they wish, apply more capital per acre. But they will probably not do so. We have already seen in Section II, B, 1, of Chapter III that larger landholdings, of a given quality, tend to be less, not more intensely covered with capital. This suggests that the tendency Birkbeck described in 1817 still prevails; that strong speculators incline more to widen their holdings than improve them. Then, holding more land than they can manage efficiently, they find the marginal productivity of capital sinking toward zero before it is as intense, and the imputed rent per acre as high, as it would be under some less extended owner-operator.

This interpretation fits well with what we know about how interest rates affect the present valuation of future sums. The interest discount cumulates from year to year, and so the relative weight of interest rate in determining present value increases rapidly with the futurity of the

sum being discounted. The more remote the future values, the greater the advantage of low interest rates over high ones. Hence the stronger the speculator, the more of his assets we should expect to find in claims to the remote future, for there is where his greatest bidding advantage lies; there is the market where weak speculators cannot compete. We should expect to find a larger portion of his assets in land, with its endless life; and a smaller portion in ephemeral human products, whose values lie nearer the present where weaker speculators can reach them with less handicap. As Frank Knight said:

Land will be in demand especially by persons disposed to store up wealth for future use; i.e. to discount the present. 3

Thus comes about a paradox and a problem: the more assets one has, and might use to develop his lands, the more lands he can buy, and the less capital he tends to apply per acre. So we cannot conclude that a strong speculator's access to money will make him improve his land well. On the contrary: the stronger the speculator, the higher portion of his assets are probably in land, and the less in improvements.

It is still true that stronger speculators can account a lower annual charge for such capital as they do use per acre. We do not belittle that. To supply capital cheaply is to leave more of the total produce to impute as rent.

If that were the only determinant of rent, the strongest speculator would generally be the best user. But other influences counteract it. We have just seen one: stronger speculators tend to use less capital per acre. Now we will consider another: stronger speculators tend to charge more for their labor; so if their land is to have an owner's care and supervision, the work will be costly, and stop at a high margin. The reason is that the very affluence that makes one a strong speculator frees him from the economic constraints that make people supply good work for low wages.

The strongest speculators, as we said earlier, are self-financed. That means, among other things, that they are fairly well-to-do. It is affluence, more than anything, that makes a strong speculator. Now affluence does not dispose one to put a low price on his services, but the contrary. We have already marked the contrast of immigrant Japanese farmers with the wealthier, softer Caucasians in California. The Caucasians could afford pleasures and comforts inaccessible to the Japanese, and so would not supply such cheap and efficient entrepreneurial labor. The same contrast obtains among individuals of all races, being due to contrasting economic circumstances, and not to any occult mysteries of the inscrutable oriental.

Especially when one has income or assets from sources other than his own labor, he is inclined to avoid what he

considers the less pleasant or prestigious aspects of life like grubbing in grease or muck, bearing heat, cold, dust and mud, or concentrating on details of supervision and accounting to pinch pennies. The mere responsibility of holding a job grows irksome. Miami and Santa Barbara beckon, with the beach, the club and the bar. Travel, society, culture and cocktails on the veranda all compete against hard work for his time, and as he has what it takes to enjoy them, he values his time more than otherwise. This is perhaps as it should be, that the abstinence of past years or generations should have its reward. But however that may be, it creates a problem: affluence tends to make a strong speculator, but a poor working manager.

Thus it was that land settlement specialists in the west when handpicking settlers, often chose men without capital and rejected men with it, in spite of its obvious advantages. The Holland Land Company, for example, famous in California for its success in land settlement, followed the policy, "Pick your man, then back him to~~the~~ limit." The Canadian Pacific Railroad followed a similar policy to get certain districts well settled.⁴ For as Elwood Mead often emphasized,

.... Few who had sufficient capital were willing to incur the hardships inseparable from the creation of irrigation in new areas. 5

There are outstanding exceptions to the rule that affluence brings ease, but over the generations it seems an

incontrovertible lesson of history and common observation, too familiar to need documenting. Enterprise or politics bring riches, riches bring luxury, leisure and ostentation, and these absorb the energies and mould the character of later generations so they have neither the wish, the training nor the need to follow their fortunes into the toils of production. That is an oft-told tale. Heiresses, particularly, are disinclined to sail with their own ships, and heiresses today hold a substantial part of the nation's assets as inheritance has become probably the heaviest travelled road to farm ownership.⁶

Thus, as land values rise, there evolves a peculiar kind of specialization whereby one person holds title to land while another manages and works it, and the very circumstances that fit persons for one function tend to unfit them for the other. The higher are land values, the sharper the contrast of the types, for the richer one must be to hold title to land. Few who can afford the investment will want all the dirty work that goes with it; and few who bear the heat of the day will have the price of the land.

The principle involved is, of course, a venerable pillar of economic theory: the diminishing marginal utility of assets.⁷ The more one has, other things equal, the less will he sacrifice to get more. Practical observers, too, often remark this principle. Goldenweiser and Truesdell wrote:

After a man has once or twice made by speculation a sum greater than he would be able to make by a year's diligent labor, he is no longer as willing to devote himself to the actual work of farming.... 8

And two California state commissions had this to say:

Any man with a forty acre ranch can rent to Japanese and make from \$1,200 to \$2,000 a year without ever going near it. 9

(In the oven-like Imperial Valley) the marvelous productivity of (the) soil brings high rentals from the cultivators, thus enabling the owner to live comfortably in some less torrid locality. 10

We have already seen evidence of this principle of diminishing marginal utility. We have seen in Chapter II that the more valuable farm land is, the more likely is the holder to lease it to a tenant rather than operate it himself. Owner-operators are generally on poorer land. Indeed, one study showed that owner-operators in the north and west made little more income than tenants.¹¹ That implies that the only holders who stick to the work of farming are those whose land is almost worthless. Doubtless that would overstate the case considerably, but it does suggest a tendency. Those who can afford to hold valuable land are not so likely to operate it.

But we cannot rest with the overly simple formula that poor men labor while rich men idle. More accurately, it is not riches per se that make a strong speculator, but riches in excess of what the individual can or will manage effectively. Many a rich man makes business his hobby and goes right on

working hard, his powers augmented by the training his riches can buy him. But when we examine the matter more closely, it remains true that stronger speculators tend to be worse land users.

The strongest of all speculators is an idle rich person. "Strong speculator" is a misleading term insofar as "strong" connotes "active," "vigorous," "enterprising" or "growing". A strong speculator is one with a low interest rate, which means he lacks lucrative investment outlets for his money. Now the further one divorces himself from productive work, the lower grows the rate of interest he can earn, since to earn high returns one must generally invest himself along with his money.¹² The sidelines investor lives in a world of low interest rates, and naturally turns to buying land, in whose purchase his low interest rate gives him the greatest differential advantage.

By the same token, those rich persons who still actively manage all their assets in production are less likely to buy land they will not use, as they have better uses for their money. It earns good returns when prudently disbursed into inventories, equipment, payrolls and even land under their active management. Their speculative power drains out through the outlets of their own enterprise. Thus the industrious rich man, by virtue of his industry, is a weaker speculator than the idler.

That at least is true as long as the industrious rich

man is industrious enough, and not too rich, to manage all his assets efficiently. But even an industrious rich man will be a strong problem speculator when he accumulates more assets than he can manage effectively. Having riches in excess of what he can manage, he has a fairly low interest rate, and hence buys land. At the same time he puts a very high price on his labor because he has so many assets to manage, assets to which he alone can give an owner's care. (Managing-assets-with-an-owner's-care is a very high-paying labor opportunity that opens up only to those who have assets to manage.) The more he has, the thinner he spreads his attentions, the more valuable becomes his time, and the less he gives each acre. Thus each acre gets but little management, and that at a high price. It therefore yields little rent.

Thus when we take account of the fact that many rich persons work hard and well, it is still true that the very quality that makes a strong speculator tends to make a poor manager. That quality is possession of assets beyond one's capacity to manage.

Now let us take account of the fact that some strong speculators are not very rich. To repeat, what makes a strong speculator is not just riches, but riches in excess of what the individual can or will manage effectively. What he can manage depends entirely on the individual and his

circumstances, and therefore of course varies enormously. Some persons with only \$5,000 are very strong speculators, in a small way, because they do not know how better to use the funds. Sometimes that is because they are incompetent, or lazy, but often it is just because their professions offer no investment outlets.

When an employee or professional man has his house and car he is ready to expand outside his domain. The successful doctor, sales manager, pugilist or matinee idol is like as not to join the tycoon and heiress dabbling in vacant lots and income property, or gentleman farming with the "mink and manure set" on weekends.¹³ They may be productive citizens in the fields of their own competence, but they do not generally pick up these lands because they can make them especially productive, or manage them with an especially low charge for their labor. On the contrary, their labor is valuable in their specialties, and their specialties are not land management. It is their speculative power that lets them bid the land away from others who would like to use it.

Summing it up, strong speculators tend to be mediocre land users because the very thing that makes one a strong speculator is possessing assets beyond his capacity to manage them. The strong speculator puts a low interest rate on funds because he has more than he can contrive to invest at high interest rates. He puts a high price on his labor because he has the money to buy leisure at a high price,

and to make it especially enjoyable; because he has vast holdings to manage; or because another profession preoccupies him. On the other hand, the best land users are those who have no excess of assets to soften or debauch them, and over which to dissipate their management. Their assets earn high yields complementing their own enterprise, so they live in a high interest-rate economy and are weak land speculators.

Now obviously there is room in our characterization of types of speculators for those who are at once strong speculators and good users. Many persons refuse to conform to the social and economic pressures that make "types". We do not say that no competent manager ever acquires land title. We only offer an explanation of why there are not enough strong user-speculators to keep all the land in or near its best use, and there are so many problem speculators to keep land prices high and out of reach of many good managers.

In concluding, this point, another type of problem speculator deserves mention. That is the corporation. With its bureaucracy, its high administrative overhead, its division of ownership from management, its leeway for manipulation and speculation by insiders, its handicap of special taxation, and other drawbacks, the corporation has hardly reached its present commanding position by being the most efficient organization conceivable for supervising productive operations. Rather, it is an especially potent device for

raising funds at low interest rates. It is first and foremost a financial institution. That means corporations are strong speculators. That, and not management efficiency, being their greatest virtue and raison d'etre, it follows that corporations will often annex territories beyond their capacity to manage them most efficiently. We will consider that matter further in a sequel.

Objection III: "The strong speculator can keep title, but let the land to the best user. Thus it will be put to the same use as if the best user held title."

As we elaborated in Chapter II, there are costs in the relation between landlord and tenant. The net produce of the land is less when the user is a tenant than when the same user holds title. The same man, in worse circumstances, puts the land to worse use. Therefore one cannot say the land is put to "the same use" just because the same man manages it.

One may object that tenancy is an economical division of function; that, while it might be more ideal for tenants to hold title, the fact is they cannot afford the interest burden, and the free market makes the best possible adjustment. We will consider that question in answering the next objection.

Objection IV: "Refer to Figure 2, page 352, Chapter IV. You allege there that "B", who would earn \$3.00 annual rent from a given site, is a better user than "P", who would earn \$2.00, because \$3.00 is greater than \$2.00. But there is more risk involved with "B" -- that is why his interest rate is higher than "P"s. It is risky to lend to him. Hence "B's" anticipated \$3.00 earning must be discounted more heavily for risk, as shown by the dotted lines on the graph. The market's decision is therefore correct even if "P" gets the land."

There are two kinds of risk to distinguish. First is the risk that the land user will not earn as high rents as he anticipates. The market would be quite correct in discounting more heavily for such a risk. Now in originally presenting Figure 2, we assumed for simplicity that there was no such risk. We might also assume that that risk was the same for each party. In either event, such risk is not the issue between "B" and "P". Insofar as risk is involved, it is a second kind: the risk that a lender runs in transferring assets to another person. That is the risk that keeps "B's" interest rate higher than "P's". It is not a risk of social loss, not a risk of anticipated production failure. It is the lender's risk that inflation, interest rate changes, moratoria, repudiation, etcetera during the course of the loan will redistribute his assets to the borrower. As Keynes

remarked, "it would not exist if the borrower and lender¹⁴ were the same person."

Let us be clear, then, what Figure 2 means. "B" is just as likely to earn \$3.00 rent as "P" is to earn \$2.00. Each may be absolutely certain, and it would not change our conclusion. "B" discounts future values at higher interest rates only because he has better uses for his marginal funds than "P"; and for several reasons, one of which is risk of lending, "P" cannot equalize his interest rate with "B's" by lending to him.

It remains true that, because of barriers to lending, such as risk, it costs "B" more each year to carry the land title -- the present claim to the future values -- than it costs "P". In this sense there is greater risk in "B's" holding title. The excess interest burden of having "B" carry the title offsets the increased production that would result from transferring land to "B". Thus, although "B" will earn more from the land, it will cost more for him to get into a position to do so. I believe this is the heart of the objection.

Let us rephrase it to make this more clear.

Objection IV; rephrased: "Someone must bear the interest burden of holding title. "P" can do it at less social cost, as his marginal funds have lower alternative uses than "B's". Hence "B's" apparently superior land use is really not better when all things are considered."

To answer that, we need first refresh our minds on the purpose of this study. This is an economic evaluation of an institution, the land market. We do not here question that individuals economize as best they can within the institutional framework the market sets for them. We question the framework of the market itself.

Now the objection merely observes that, granting one must buy a claim to the infinite future incomes of land in order to have title at all, individuals economize accordingly. We certainly agree. But the very question we raised is whether the land policies that make that necessary are economical. Analyzing the economic effect of tariffs, we note that people adjust to the price structure the tariffs create. But that does not justify tariffs. We do not take for granted the policy we question. We do not now take present land policy for granted. Our purpose is to look beneath the policy to ultimate economic realities.

Now in ultimate economic reality, what is the social cost of one man's holding land? Clearly it is the foregone gain, or opportunity cost: the rent it would yield to the best other user. But what is the cost to the individual in the present system? It is the annual interest charge on the price of the title. This may be greater or less than the opportunity cost of the land, depending on the individual's interest rate. For those with low interest rates -- strong speculators -- the interest charge is likely to be less than

the opportunity cost of the land. Thus the individual, economizing by his own standards, does not necessarily economize by social standards. The strong speculator holds the land for less cost than its annual value to society.

This contradiction comes about as follows. What the land market really allocates from year to year is of course just the present year's use of the land. But to buy that, as title-holder, one must buy a claim to rents from now to doomsday. The cost to the individual who holds land is the interest burden on the price of the claim to the future rents. The true social cost -- the opportunity cost -- he does not pay directly at all. He only need pay it indirectly in explicit or implicit interest charges if the land price and his interest rate are both quite high, so that price times interest rate equals or exceeds the opportunity cost. If one or both is low, nothing in the market mechanism makes the landholder economize on land according to its actual worth.

Thus the land market is something like a tie-in sale, and has the same faults. If one could never buy a car without buying a truck too, nor buy a truck without a car, many more people would walk, while truckers would hold fleets of cars in mothballs. In the land market it is the infinite future that is tied to the present. One cannot buy a few years' ownership without buying a claim to rents in perpetuity. So some who want land now cannot have it, while some others,

who only want claims to future values, keep vacant lots in mothballs.

Putting it that way, our problem is an old one in economic theory, the problem of indivisibility. Present land policies may make land fairly divisible in space, but they leave it very poorly divisible in time. There is no time-divider except the costly and wasteful institution of tenancy. Aside from tenancy itself, this makes two other problems. Some landholders are well equipped to carry the interest burden of title, but poorly equipped to use the land. They hold it idle, or underuse it. Other holders are well equipped to use land, but poorly equipped to bear interest burdens. They use the land well, but take capital from very productive uses to pour it into a sterile land title. Those are the costs of indivisibility. The last, incidentally, is a waste of resources we have not hitherto made part of our problem, as it is a waste of capital, not land. But we may fairly attribute the waste of capital to land policies, as it results from land's being indivisible in time. It is a very real waste, especially noticeable where impecunious entrepreneurs are struggling to clear their titles of heavy mortgages.

Because of indivisibility in time, then, the present land market cannot measure up to the standard of perfection. If it is the best conceivable system, it is only as the best that human ingenuity can contrive, the least faulty of

several faulty plans. It is not ideal in any absolute sense. Theoretically society could improve it by freeing the present from the burden of the future, and allocating land by its rent rather than its value. Given the possibility, there is always a hope of effecting it in practice.

There is the more reason to hope this feasible because, again looking beneath the veil of present policies to basic economic necessities, there is no obvious reason why anyone at all need bear the interest burden of holding claims to the future of land. The objection we are discussing states that "Someone must bear the interest burden of holding title," but the necessity is not evident. Land, after all, is a free gift of nature. It is no burden to accept the gift. Individuals invest funds in land not to create it, but only to claim it for themselves. The value of capital, by contrast, is the incentive that makes men create capital. But land value serves no such purpose. Its only useful function is to allocate land. If rent allocates land better, and we can devise a way to let it do the job without incurring the wastes of tenancy, we need not fear to take liberties with land values. Society might conceivably lower or abolish them without endangering any useful institution.

Simply to keep in mind how many alternatives there are, and with no pretense at evaluating them, or even fully describing them, let us put before the house several alternative land policies.

One very effective policy, albeit somewhat indirect, would be to increase investment opportunities and thereby the general level of interest rates. At first glance it probably seems that this would not lower the interest burden of holding title, but closer analysis shows that it would increase the bidding power of weaker speculators relative to strong ones. For the higher are interest rates in general, transfer costs remaining constant, the nearer do low interest rates approach to being 100% of higher ones. For example if it costs \$2.00 to arrange a loan of \$100 from "P" to "B", and "P's" interest rate is 2%, then "B's" is 4% -- that is 100% more. But if "P's" rate is 10%, "B's" is 12% -- and that is only 20% more. Their powers to speculate are much nearer equal when interest rates are generally high. Therefore, in the framework of the present land market, land is allocated nearer the equimarginal ideal when interest rates are higher. High interest rates pare down the influence of speculative power on land allocation, and give more weight to present rent. Creating lucrative investment outlets is an effective kind of land reform. J. L. Buck has given an example on a small scale from a district of China (Buck 26).

There are also more direct methods. There are, first of all, the various communist systems of direct political control of land -- and everything else. We do not present them here as alternative land policies because they involve government control of so much more than land alone. But it

is well to keep in mind that discontent with the outcome of land policy has given and gives communism much of its support; that hundreds of millions have chosen its unknown terrors in direct preference to the known discomforts of land systems in many ways like our own; that in many areas communism is politically the most feasible alternative to present land policies. And so those who believe in free institutions would do well to consider some alternative land policies, and modifications of present policies compatible with -- even necessary to -- a free economy. There are several already used in the United States today. In the long run, the very life of freedom may depend on our intelligent choice among such policies.

A. Contingent tenures.

1. Usufruct.

The sovereign may grant a usufruct subject to specified conditions. Such, for example, are water rights under the appropriative doctrine which are established by use, and lost by disuse. As Oregon Chief Justice McBride put it in a controlling decision, "...it does not seem to me that it (water use) ever arose in this country above the dignity of a mere privilege, over which the legislature had complete control."¹⁵ Such was Brigham Young's policy toward land in Deseret: "No man can ever buy land here for no one has any land to sell. But every man shall have his land measured out to him, which he must cultivate, in

order to keep it." The Puritans had a similar policy. Such are franchises granted private companies to use, subject to various requirements, valuable water power sites on Federal lands and navigable streams. Such, again, are the timber rights granted to loggers on National Forest and the reverted Oregon and California railroad grant lands. Such, too theoretically, are radio and television frequency assignments dispensed by the Federal Communications Commission, and grazing rights on the public domain. And such are various trucking or shipping route assignments of the Interstate Commerce Commission, natural gas pipeline certifications of the Federal Power Commission, and transportation franchises of many kinds.

2. Land grants.

The sovereign may grant title subject to specified conditions, for example to build and operate a railroad, or to build a farm house and reside in it. Of course railroad and homestead grants from the public domain contained such stipulations.

3. Leases.

The sovereign may lease subject to specified conditions. Here are some examples. The Forest Service grants 99 year leases for summer homes in National Forests, contingent on prescribed improvements. Boulder City, Nevada, a thoroughly planned city, is built on leased Federal land. Waters developed by Federal money are in effect leased to

water users' associations under the "9-e" utility-type contract the Bureau of Reclamation is introducing and the use is subject to acreage limitation, land price control, and other provisions of Reclamation Law. And various Federal agencies lease minerals and prospecting rights on public lands subject to certain Federal controls.¹⁷

B. Eminent domain.

The sovereign may use its power of eminent domain to condemn lands for what it considers the best use. In recent times this power has grown, and the courts have established that cities and states may condemn land to clear slums, or clean up derelict subdivisions, and even delegate that power to housing corporations.¹⁸

C. Periodic redistribution.

The sovereign may buy or appropriate land from one class of unwanted holders to transfer it to another at less than a market price. That was the program of Tiberius and Caius Gracchus, and Flaminius and Licinius who preceded them.¹⁹ It was the effort of many Byzantine emperors. Many western European kings, too, struggled recurrently against the nobility to foster peasant holdings. William Howard Taft pushed through the Friar Lands Act in the Philippines to buy church lands and transfer them to peasants below cost. In the Irish, and again the Mexican land reforms, the state bought out landlords and transferred lands to peasants below cost. In the eastern European land reforms in the early

1920's, too, the sovereign bought out the landlords and sold to entrepreneurs -- peasants in this case. Such, too, are the current land reforms in Burma, India (Uttar Pradesh), Italy, Guatemala, eastern Europe again, Bolivia, China, Japan, South Korea, Taiwan, Egypt and Iran. Such, too, is the work of the Jewish National Fund (although in part that is privately financed).

In many cultures, for example in pre-French Indo-China,
²⁰
 land has been redistributed periodically. Indeed, such a redistribution is a firm part of the Judaeo-Christian tradition. Moses was quite explicit:

And ye shall hallow the fiftieth year, and proclaim liberty throughout the land unto all the inhabitants thereof: it shall be a jubilee unto you; and ye shall return every man unto his possession, and ye shall return every man unto his family. 21

And the land shall not be sold in perpetuity; for the land is mine: and ye are strangers and sojourners with us. 22

In the year of jubilee the field shall return unto him of whom it was bought, even to him to whom the possession of the land belongeth. 23

Thou shalt not remove thy neighbor's landmark, which they of old time have set, in thine inheritance which thou shalt inherit, in the land that Jehovah thy God giveth thee to possess it. 24

In the United States, "The Federal Government has been engaged in land use adjustment programs for several years."²⁵

By 1940 the Resettlement Administration had bought 9 million acres of marginal land to transfer it to other uses. In urban areas, Federal funds finance slum land acquisition at

high prices for resale at low prices to builders. Any many an ambitious young American city has bought up industrial sites and offered them free or below cost to those who would build on them. In Europe, many cities buy land in their outskirts to resell at reasonable prices to those who will build on it.

D. Credit subsidies.

The sovereign may intervene in the credit market to encourage particular kinds of land use. Moses proclaimed²⁶ that every seventh year all debts were to be forgiven, and debt moratoria and repudiation are time-honored in every land and clime, including our own.²⁷ Solon forbade his subjects to pledge their land for debts, and many sovereigns have struggled to keep lands inalienable. Long term low interest land purchase loans to working farmers, jointly and severally secured by the holdings of cooperative groups, were one leg of the extraordinarily successful Danish²⁸ land settlement program, and almost the only leg of the less successful French (Credit Foncier) and German (Raiffeisenbanken) and English (Rural Credits Act) programs. We adopted a similar plan with our Land Banks, FSA (now FHA) loans under the Bankhead-Jones Act, and so on, and expanded it into nonfarm lands with FHA, VA, FNMA, RFC, defense production loans, accelerated amortization, etc.

E. Taxation.

The sovereign may exercise its tax power and levy an

annual ad valorem land tax, for one reason to discourage withholding land from use. A small land tax, as one component of the general property tax, is nigh-universal in the United States (except where vacant lands have achieved virtual tax exemption through protracted delinquency, legislative indulgences, endless rights of redemption, low assessments, etc.). More specifically, certain taxing bodies, notably irrigation districts, tax land alone. One reason for doing so is to encourage land use, as I believe the following citations will establish:

Under district laws all lands susceptible of irrigation from the works of any district may be included in the district and taxed for district purposes. This tends to force development, since landowners cannot long afford to pay district taxes on unimproved land. 29

Many big farms have been broken up into small farms when the original owners found the taxes on their extensive holdings had become burdensome. The owners drew their own conclusions that they might well dispose of their holdings to persons who would improve them. 30

The advantage of taxation is material ... where it (land) is held by speculators... 31

The owner should improve the land at once or sell it, for to hold will require the payment of district taxes from which no added revenue will result. 32

Bare land is taxed also in many foreign countries, such as Denmark, Australia and New Zealand. There the purpose is much the same, according to Colin Clark: "It is a commonplace of economic theory that this form of taxation (and

indeed this alone) is no deterrent to production, and indeed encourages farmers and landowners to make fuller use of their land, to subdivide it where possible and employ more labor"³³

To what these men have said, I would add that the policy will be most effective only if it is firmly expected to continue (for it is in future expectations that speculators deal). As a practical matter, that expectation has usually resulted from a districts' having large bonded debt outstanding, and poor prospects of revenue from other sources.

F. Tenant rights.

The sovereign may force landlords to allow tenants below-market rents, secure tenure, and other advantages; and in turn supervise tenants' practices and evict them, or let the landlord evict them if they are proven to have used forbidden practices. Such a system is common in English agriculture. Urban rent control is very common in many countries, including of course our own.

G. Manorialism.

Lands may be held and even in part operated in common by small village groups, as in the atavistic Kibbuz of Israel and Ejido of Mexico, as well of course as in the manorial villages of western Europe before the enclosures.

H. Municipal police power.

Municipalities may use their police power, to control land use. Of course they own and control that one-quarter

of municipal land which is in streets, and through traffic control and improvement policies considerably influence the use of other land. Some municipalities even plan their own streets, rather than accepting whatever the subdivider dedicates.

Cities also try to improve on the land market by tenement laws and building codes, which outlaw improvements below certain standards and thus (if the law is enforced) free the land for higher uses; and by zoning, to group complementary uses and separate conflicting ones. Rural zoning, too, has its advocates, and is practiced in some areas.

J. Municipal ownership.

Municipalities may use their power to hold real estate to control land use. Some cities, retain title to lands around municipal airports, and lease out concessions rather than sell, to keep speculators from disrupting the compact, integrated plan of business.

It has been often proposed that cities, irrigation districts and other municipalities take title to tax delinquent lands, either permanently or long enough to reassemble them into more economical units, to bring some order from the chaos that the land market has created.³⁴ Some municipalities have taken halting steps in that direction.

K. Direct controls.

The sovereign may directly prescribe the land use,

and remove operators who do not comply. Some European countries have "shoot-or-give-up-the musket" laws. In England, for example, County Agricultural Committees can designate farmers as "inefficient" and evict them.

L. Alien Land Laws.

The sovereign may forbid aliens to buy land, thus preventing absentee holding, at least by foreigners. That was the Dutch policy in Java, and is the British policy in the Gold Coast. California's unconstitutional Alien Land Act was technically the same, although its object was more to discourage than promote owner-operation.

M. Inalienability.

The sovereign may distribute lands as it sees fit and then declare them inalienable. Hitler tried by this means to create a class of permanent yeomen to support his party and man his armies. William the Conqueror had used the same device in the eleventh century to perpetuate his feudal levies.

That list by no means exhausts the possibilities, but it serves to make the point: we live in a world, and a country, where many different land policies are practiced, and even more proposed. We do not here undertake fully to describe, much less evaluate all these plans. We merely remind the reader that there are alternative land policies to choose from. Whenever we discuss present land policy,

they stand in the background, silently inviting comparison. We can never assume, therefore, that the interest burden of holding title is an inescapable hard fact of economic life.

If we confine ourselves to thinking within the framework of present land policy, then Objection IV has substance. It warns that reforms within that framework will probably cost more than they benefit. For example, it is a devastating criticism of public subsidy of capital markets to equalize individual's powers to speculate in land. Subsidized low-interest loans, even if they succeed in bringing individual interest rates closer together, are just as wasteful as any other kind of subsidy. Increased production thus facilitated would be less than the subsidy. The subsidy merely induces private parties to do what is not economical under present land policies. But that is no objection to our hypothesis, for the hypothesis holds the land market up against an ideal standard and, by implication, against the standards of alternative land policies.

Objection V: "Interest rate differentials tend to distort the allocation of capital goods, as well as land. Why limit your conclusions to the land market?"

It is true of course that stronger speculators have some advantage in buying capital goods. Especially where the benefits are long deferred, as with timber culture, that is quite important. We focus our conclusions on the

land market because the effect of interest rates is generally so much stronger there. The value of land generally derives from much farther in the future than the value of capital goods, so different persons' abilities to buy it vary much more with their different interest rates.

An auto, for example, wears out. It renders less service in each successive year of its life. The first year it looks best, rides best, needs the least gas and upkeep, is most reliable for emergencies, and so on. With the years, costs mount while performance falters, and the asset's net value drops quickly. In five years it is worth perhaps half a new model; in ten years worth less than the owner has put into it since purchase -- the original car is entirely consumed. The value of a new car, therefore, derives mainly from the first few years of its life. And the same is true, in varying degrees, of furniture, houses, stamping mills, shoes, and almost all human products, transitory arrangements of matter and energy, whose decomposition commences before even they are fully produced.

Land, on the other hand, is a permanent and non-reproduceable asset. The auto market would be like the land market only if some magic made all existing cars immortal, exempt from the ravages of time; and new car production ceased absolutely and forever. Then prices would rocket, but not because the annual use of a car was worth any more. An auto ownership certificate would entitle

one to hundreds of years of future values, and become an investment for the ages. Expecting population and income and demand for autos to grow, buyers would value the certificates more for their remote than their near futures. Certificates would gravitate to strong speculators -- others would rent. For the farther in the future values lie, the greater the weak speculator's handicap in buying them.

Another important distinction of land and capital is in respect to their resale values. Human products tend to be somewhat individualized, hence usually will not resell for nearly their cost of production. This is even true of standardized products like automobiles, and ever so much more so for articles of individual taste such as wallpaper, furniture, or clothing. Land, by contrast, is not custom tailored to the present holder, and, as future buyers have no recourse but to the second-hand market, land offers the continual prospect of resale at some remote future time.³⁵ For this reason, too, speculative power counts for more in buying land than human products.

We have mentioned two reasons for the weak speculator's handicap,³⁶ and will now repeat them together. First, the effect of any given interest rate differential increases with the futurity of the values being discounted. The present values of money due in the near future are nearly the same whether discounted at 2% or 4%, but the present values of money due in fifty or one hundred years are very different.

Second, interest rate differentials themselves tend to increase with the futurity of the values being discounted. The longer a loan is to run, the wider is the risk barrier that separates borrowers from lenders. The farther future a marginal borrower looks, the more per annum he must discount future values, as he can borrow only for limited terms. The self-financed speculator has no such worry. His interest rate may even be lower for more remote future years, since the alternative investment of lending at long term is less attractive to him with each additional year a loan is to run. Due to risks of lending that increase with length of loans, the certain equivalent of the long term interest rate he can earn may be quite low, even when the nominal rate is high. Thus the array of short term interest rates converges much nearer a single value than the array of long term rates.

Therefore interest rate differentials distort land allocation far from the equimarginal ideal, while they distort capital goods allocation much less. Thus Wilcox and Cochrane observe:

The inability to obtain sufficient credit probably does not play as important a role in the pricing of different grades of livestock as it does in the pricing of different grades of farm land. 37

The contrast is especially strong when people expect land rents to rise, as they usually do. But this calls up another objection.

Objection VA: "Land may also depreciate. Sometimes it is exhausted completely."

True, rents have their downs as well as their ups. In modern history the ups have predominated, and the expectation of them even more so. Our hypothesis is stronger in such conditions, but they are not essential to it. The crux is that income from land will string out over a long, long time.

True, too, some qualities of some lands are exhaustible. Their life span is finite. We have not claimed that our hypothesis applied to them with full force. But it is probably true as a practical matter that exhaustible resources usually have more in common with the permanent qualities of land than with human products.

A mine would be financially like an auto if, immediately on discovery, it disgorged its lode quickly and completely and then was sure to remain a worthless shell for the rest of time. But few if any mines ever play out quite that way.

In the first place the buried treasure is usually suspected long before it is struck. The suspicion has a value: it titillates speculators and raises prices over some area. The hunt may outlast the life-span of several autos. Then when the first dirt proves out it may yet be years before markets and transportation come close enough to warrant extensive survey and use. Meantime all anyone really knows

is that somewhere in the future looms some nebulous sum of easy money. Title to a chance like that gravitates to those who can afford to wait and to gamble. If the land has present uses, those strong speculators are not the most likely ones to fructify them.

When operations do begin, the first years are not always the most lucrative. Extraction and exploration go hand in hand, as each layer picked off reveals what is beneath. It may be years before peak production. Then that, may last for years or decades.

Too, there usually rises a hope that similar ores will fall into few enough strong hands to monopolize the supply. The hope alone will restrict output and push use plans farther to the future; the actual monopoly, if it comes, will do so even more. It can be a long, long time before known deposits finally go to market.

After miners finally dig in and carry off the pay dirt, the end is not yet. Mines often come back; some have produced for centuries. Over the decades men return to abandoned holes in wave after wave of price increases and technological advance. They probe deeper, sift the tailings, cut old retaining pillars, and outdo their ancestors with blast and pump and science in hundreds of new ways. "Exhausted" in one generation, many old mines offer good diggings to the next.

From the viewpoint of today's speculator, therefore,

a mine has much in common with a site. It is not a warehouse neatly stacked with a fixed amount of goods. It is more likely a hillside laced with veins and strewn with pockets. Like a wild berry patch, it always yields more when you look long enough. Any stroke of the pick may discover new values. Few actually do, but the possibility excites a gambling fever in mine speculators that is notorious. You can find mines that played out in a few years, but you can find few that were sure to do so from the start, and you can find many that have come back. To hold a mine, is to hold a ticket in the sweepstakes of the next century.

Of course there are Gothic Cathedrals, the pyramids and Venus de Milo which -- with care, repair and restoration -- have survived the brief play of many marginal mines. We cannot claim to be speaking an absolute principle. But I think a reasonable observer will conclude that the mass of human products, and especially those owned privately, do not begin to match the useful life span of the average mine.

Therefore I submit that the hypothesis, although formally applying only to perennial resources like sites, applies fairly well to most extractive resources as well. With modifications one could apply it quite rigidly. That is a big subject which we do not now undertake. For the present we are content to have shown that interest rate differentials will generally affect the allocation of

natural resources more than human products.

Objection VB: "But much land, especially farm land, is a labor product. Therefore it is short-lived, like other labor products."

It is true that common parlance will often include some farm improvements as part of "land". In this study we have been more careful. We defined land exclusive of man-made improvements, we have reasoned about land so defined, and we apply our conclusions only to land so defined.

Granted, much of a "farm" is a labor product. But "farm" is not a synonym for "land": a farm is raw land plus improvements. In more favored areas the raw land is the bigger component.

Sometimes one hears a statement like this:

Raw land is of no use. Three or four crops of settlers usually go bankrupt pouring capital into the land before it finally produces a profit.

Now it is quite true that pioneers pour much money and effort into their farms, and that they often go bankrupt. But that does not prove they produced the whole farm value, that the raw land was worthless and submarginal. It is the individual's financial position that is submarginal, when he pays more for the land than it is worth. Then interest on the mortgage is more than rent from the land. Raw land is often over priced, and much of the individual's money is

poured into buying the title, not improving the land.

These quotations illustrate the point. David Weeks and Charles West wrote:

The price of raw land, though seldom considered in planning an irrigation project, is perhaps the most important of all the items entering into the cost of improved land. 38

Ely, Hibbard and Cox summed up one hundred letters and conversations with Wisconsin county agents as follows:

The chief causes of failure in their opinion are: land sharks, high-priced land, lack of credit and difficulty of land clearing. 39

The California Commission on Colonization and Rural Credits explained a slow-down of land settlement thus:

The principle reason everywhere is the high price of unimproved land we have reached a situation in western irrigation districts where a man with \$1,000 or \$3,000 capital has no better chance of becoming a farm owner than did the peasant farmer in Europe a generation ago. The acreage cost of the irrigated farm in many new sparsely settled districts is greater than the acreage cost of farms in the densely peopled sections of England and Germany. The purchase of farms has therefore become too costly for the unaided efforts of the men who most need them and who will make the best use of them. (Emphasis supplied.) 40

The Senate Fact Finders Committee, investigating delinquency on Federal reclamation projects, reported:

Two-thirds of the land now under water contract with the government were in private ownership at the time water was ready for delivery the public lands were soon exhausted, and the later settler attempted to secure his homestead by purchase from the large landholder. These private lands were

often held at a very high figure, and the settler, full of hope, frequently agreed to pay a high price for the land, in addition to the construction cost included in his water-right contract. This added greatly to the farmer's burdens. 41

Mr. Page of the Bureau of Reclamation, testifying before a congressional committee, thus explained the need for an "anti-speculation" law:

This is the result of the experience of the Bureau of Reclamation over many years of having the cost of the land set too high for the actual bona fide settler to carry, in addition to his water charges. We have had disastrous experiences, I think, in the Yakima project and the Rio Grande project and others, where land values reached as high as \$300 or \$400 an acre, without a thing on them, and many of the settlers have gone in with a small down payment and the burden of the principle and interest, plus their water charges, was more than they could pay. So there is the rather current saying on those projects, that not until the second generation of settlers comes along is it a successful project. 42

I believe we may consider it amply proven that a considerable component of farm value is raw land value, and exists independent of the holder's improvements. Some of it, to be sure, is "man made" in the sense that public works and the growth of society make it. But as far as the individual holder is concerned, public works and society are as permanent as his land title, so their being "man-made" will not much shorten or otherwise change his anticipations. The chances are he will expect them to make his land title more, not less, valuable in the future.

Therefore, we conclude that farm land values generally derive from a more remote future than the values of human products.

Objection VI: "We are using our limited resources at an alarming rate, much faster than is truly economical in the perspective of generations. 'Underuse' is in no sense a problem, but something to encourage. Overuse is the problem, and it dwarfs all others. Your hypothesis does not recognize the need to conserve natural resources for posterity."

Good land use is not synonymous with depletion and exhaustion. In fact, a good deal of what we have called misuse is the failure to conserve land properly. For example, in Chapter II we criticized tenancy for not actuating tenants to protect land from erosion and improve it for the future. We did not call it a problem that some holders take steps to stop their farms from washing out to sea. The best land use almost always involves increasing the land's power to produce in the future.

To analyze this idea more generally it is all-important to distinguish two kinds of natural resources: extractive resources, such as iron ore and petroleum; and what are now often called "flow resources," like flowing water, sites, and television channels. To use most extractive resources is to diminish them: present use destroys future values.

Flow resources, on the other hand, offer their services continually. Use does not destroy them, and what is equally important, disuse does not conserve them. On the contrary, not to use them is to waste them.

"Conservation," of course, is simply time-economics. To "conserve" natural resources is not to hoard them unused forever, but to use them at the most favorable time.

The restrictive concept of conservation, where it applies at all, applies mainly to extractive resources. It may be economical to put off using them, in certain conditions, for many years. We do not now take up that interesting problem, other than to observe that the most economical time of use may also be right now. It is not always better to delay. Time is money, and money represents real social values. Shrewd forecasting and delicate balancing of alternatives may often reveal that immediate use of extractive resources would best serve society's interest.

Too, some extractive resources like timber, or schools of fish, or farm land, will replace and maintain themselves if handled intelligently. With them it is even clearer, "conservation" means economical management and timing, but not disuse.

With flow resources like falling water and urban sites, "conservation" obviously means use, immediate and continuing. As we have said, not to use sites is to waste them. To conserve flow resources one must capture or accept

the valuable service they offer before the opportunity passes by.

The unused and underused lands we described in Part I are almost all flow resources, mostly sites. They comprise the bulk of land values, and the whole of the problem this study concerns. If unused, they simply waste, like running water, a typical flow resource. Every acre-foot of potential irrigation water that flows down the San Joaquin and out the Golden Gate is value lost forever. The unreaped harvests of idle lands, too, wash down the river and out the gates of time, where they sink beyond recall into the past. That is no mere question of timing, nor sacrifice of lesser present values to conserve greater future ones. It is total loss.

The constant bleeding of these unrealized annual values seems to me a far greater waste of natural resources, a far greater challenge to the conservationist, than the mistimed extraction of ores and fuels. When ore is mined sooner, or later, than the optimum moment, it is not its full value that wastes, but only the increment that better timing would secure. But each year that flow resources are unused, their entire annual value wastes, and is lost forever.

The waste of flow resources also imposes a greater strain on the supply of extractive resources. For all land to some extent can substitute for other land, and

withholding one kind diverts demand to the other. For example, when water power is undeveloped, power consumers turn more to coal, oil, and gas. Or, again, when land speculation scatters rural settlement over wider areas than economy demands, and makes cities explode into the surrounding countryside, consumers use cars and trains to secure the advantages of association the land market denies them. The waste of fuels and metals and timber in running trains and autos past vacant lots, in building rails and roads, laying pipe and stringing wires, is a staggering total. This waste may be described as a substitution of extractive resources for flow resources which are withheld from use.

Finally, let us consider another, and related, conservation problem: aggressive civilization is encroaching on the vanishing wilderness. Lovers of outdoor recreation, unspoiled wilderness and scenery rightly take alarm at the spoliation. But they err if they attribute the aggressor's expanding force to social policies that make him use land intensively. The vacant city lot and the half-used valley estate could support families now invading the wilderness for their living. As Simpson and Burton observed:

Four thousand acres of good soil in one township in Cook County will produce more than whole counties in northern Michigan. 43

In one agricultural industry, citrus, the voracious outgrowth of Los Angeles bids fair to destroy a major producing center.⁴⁴ The less intensively a given population uses

lands within the bounds of its settlement, the wider it must extend the bounds. Intensive land use is therefore the complement, not the enemy of wilderness conservation.

This principle is clearly seen in another, and opposite, objection that is raised against the hypothesis:

Objection VIA: "Historically speaking, land speculation has speeded and abetted land settlement. The lure of speculative profits drew men west in the nineteenth century, and the pre-emption of large tracts pushed them west all the faster."

The truth of that statement depends on whether it refers to extending boundaries or settling people on land. The outermost fringe of settlement penetrated the wilderness much faster because speculators withheld better land from full use. Thus population spread much farther and thinner than otherwise.

But at the same time, the speculative barrier to land settlement reduced the number of people who settled land. For the barrier made land settlement less attractive, and diverted people to other pursuits, working for employers on land already settled.

In one way, it is true, our forefathers did contrive to harness land speculation to help speed actual settlement. The residence requirement of the Homestead Act, combined with the lure of unearned increments, did make some pioneers

settle land in order to gain title. It caused men to settle land before it was economical to do so, the title being given as a subsidy to settlement. But at best the results were needless privation and wasteful distribution of labor. At worst, the lands disappointed their settlers and remained submarginal, creating a legion of problems that assumed dramatic proportions in the 'thirties, as in previous depressions, and persist to this day.

Objection VII: "Land is malallocated for causes other than the interest rate differentials specified in your hypothesis."

That is perfectly true. The hypothesis asserts no exclusive jurisdiction, but allows of many correlative explanations. Let us consider what some other factors might be.

A. Differences in opinions of future values.

In our hypothesis, for simplicity's sake, we spoke of the rents anticipated by different persons as certain and indubitable. But of course in fact, no one knows just what the future will bring. Everyone has his opinion, which may differ widely from his neighbors'. We must consider how this affects the disposition of land titles.

Insofar as opinions of the future determine who will bid most for title, nothing guarantees that the best informed and reasoned opinion, or the opinion of the best user will

prevail. Rather, the most extravagantly high opinion will. A friend who bids for short term concessions tells me he is sometimes outbid by novices with exaggerated notions of the profits to be had. My friend drops out; the novice loses money. When men bid for permanent concessions -- land titles -- blind optimists have rents in perpetuity to overestimate. The scope of possible error is immense, and ill-informed buyers sometimes take full advantage of it.

Their bad money tends to drive out good from the land market -- that is, they may push up prices to a point where the prudent drop out of the market. For example, the California Commission on Land Colonization and Rural Credits reported in 1916:

To promote this inflation (of land prices) nearly every device which human ingenuity could contrive was utilized as prices rose above productive values the number of experienced and intelligent buyers rapidly fell off. Colonization agents had to accept as settlers those less qualified to judge 45

"Those less qualified to judge" land are often those less qualified to use it, and so the land market may deliver land over to someone other than the best user.

It is not the error, per se, of the optimist's forecast that misallocates land. Time may prove him right, and the others wrong without redressing the harm he has done. What misallocates land is the fact that the most optimistic forecaster, whether wrong or right, is not necessarily the

best user. Error bears on the question because the greater the scope for error, the greater the differences of forecasts by different individuals, hence the greater the influence of forecasting on allocation. It is also probably true, as implied in the California Commission's statement, that it is often the ignorant and unfit who are deluded into the most extreme unwarranted optimism. Thirdly, prices inflated by overoptimism are an additional barrier to the weak speculator who may be the best potential user.

Thus differences of opinion tend to misallocate land much the same as do differences in power to speculate. A worse land user may outbid better ones for title, not alone because he can speculate strongly, but also because he holds a higher opinion of what he speculates in. To outbid all rivals for land one must be, besides a strong speculator, an optimist.

If future rents were to vary solely with the buyer's ability to use land, we would be dealing only with the problem of the person who overestimates his own management capacity. But "land values," as the New York Regional Plan authorities put it, "may be created by the mere expectancy of some new use, or may depreciate as a result of failure of expectations."⁴⁶ That is, future rents depend on countless influences outside the individual and his use plans. Most buyers are speculating in these outside influences, more than in their own capacities. Many of them are

absentees with little knowledge of costs and gains from productive operations on the land. Even the circumspect and experienced are bound to err in forecasting unsure future values determined by forces they will not create or control and can know little of. With all these possibilities and all future time to range over, the imaginations of different persons conjure up very different illusions of things to come to a piece of land.

Another reason why the land market is so subject to the notions of the ill-informed is that land has no cost of production to check its price. Dealers in other competitive goods generally look back to production cost, and around them at reproduction cost, as cues in pricing. They can hardly imagine the goods will sell for much more than those costs, and if visions of the future intoxicate them into overpricing, the market will bring them to their senses with a quick sobering shower of competition. But if a land buyer grows light-headed with his prospects there is little in objective reality to hold him down. For all anyone really knows, he may prove to be right in the end.

Still another reason why land buyers miscalculate the future is that land rents are subject to tremendous permanent changes. Not only is the total quantity of land fixed, but, as land cannot migrate, so is the amount of land in any one location fixed. When fortune showers her favors on some area, labor and capital pour in to share

them until wages and yields on capital there are brought down to a par with wages and interest elsewhere in the economy. But no land can immigrate to dilute the local blessing. The increased demand only raises land's price, not its quantity, and the possible permanent price increment is very great.

But these increments are only possible, and not at all certain. In cities there is an enormous range between the rents to be had in the downtown shopping center and in less favored locations a few blocks away. Chance, politics and the unknown may one day endow a dismal Skid Row with the golden flow of traffic, or divert the fickle crowds to new haunts.

Where there is chance, there is gambling;⁴⁷ where there is gambling, there is a surplus of enthusiasm such as the masters of Reno and Monte Carlo skim for their profit. That is, there are those who enjoy the sport for its own sake, or who believe themselves lucky, or exceptionally astute, and will play against a wheel they know is fixed to support the house. The same surplus of enthusiasm pushes up land prices so that most who gamble in them lose money, according to some serious studies of the matter.⁴⁸ Legends of spectacular gains circulate among the credulous to such effect that lands with one chance in hundreds of being chosen by fortune may be priced as though teeming avenues of commerce were already converging on them.

As a city grows, or changes, there is demand for new

high-rent commercial sites. Demand, a sort of aerial treasure fleet hovering over the city, alights now here, now there, enriching a lucky few and tantalizing their covetous neighbors beyond all reason. The British Uthwatt Report of 1942 aptly dubs this the "floating value." The gambling spirit pushed up the price of locations where the floating value might conceivably come to earth a good deal more than the statistical probability warrants, according to the Report:

When a piece of undeveloped land is compulsorily acquired the owner receives compensation for the loss of a value of a probability of the floating demand settling on his piece of land The sum of the probabilities, as estimated, greatly exceeds the actual possibilities because the 'float', limited as it is to actually occurring demands, can only settle on a portion of the whole area. 49

Many central business districts seem to be walled in by an impenetrable barrier of high land values, partly the products of over-sanguine expectations. As Homer Hoyt put it, the central district "freezes" within its limits.

The values at which much of this property is held today are based on the false hopes for the future and not on actual present net income new growth can take place, however, only if the present false structure of land values in these areas is deflated. 50

Of course land overpriced for commercial development is priced far beyond the reach of house-builders, although most of it is best suited for housing. It provides the

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community mainly with slums and blight.

Farm land prices, too, are sometimes inflated, as in 1920, by overestimations of the future. David Weeks and Charles West found new farmers in California customarily to underestimate their future costs, hence to overestimate the land's net income.⁵²

According to the California Commission on Land Colonization and Rural Credits, "The lack of prudence and business judgment shown by colonists was amazing."⁵³ Ely, Hibbard and Cox surveyed the opinions of county agents in Wisconsin, and found most of them to believe that settlers could not judge land values, and paid too much for their land.⁵⁴ So bad were their estimates that 80% of the settlers in upper Wisconsin at that time could not meet their payments as they came due.⁵⁵

An especially common error in judgment is to extrapolate past trends into the future. C. R. Chambers demonstrated this strikingly in his well-reasoned study of the relation of land value to land income in several midwestern areas in 1920. He compared actual land sales prices with values he computed by assuming rent to increase in perpetuity by the same amounts it had increased in the last few years.⁵⁶ The two corresponded closely. Of course, in a world of chance and change such as we live in, nothing could be so preposterous as to extrapolate recent trends into the remote future. Yet that is what farm land buyers at that time were doing. How wrong they were is a matter of history.

As we said, part of the harm done by blind optimism is to drive land prices so high that the well-informed and the weaker speculators drop out of the market. The results may be worse when, as sometimes happens, the well-informed stay in the market to prey on the ignorant. This is one of the conditions that generate an all-out land boom, such as flash across the pages of history from time to time. Everyday exhibitions of folly pale alongside their lurid spectacle. Mere extrapolation, perhaps, caused the rise of farm land prices that crested in 1920. But there have been other booms that admit of no such reasoned explanation. A Great American Land Boom with its colorful carnival atmosphere, its brazen boomers and drummers, its credulous, free-spending victims, its grand excursions and free barbecues, its tinsel and plaster of paris, is attuned to the most primitive avarice and ignorance, and worse: it is truly a drama of lunacy. One can hardly explain it on any more prosaic grounds. The deeds men do in those unbelievable episodes defy rational analysis.

There is an element in each of us, if I read the psychologists aright, that wants to escape from reality. It plays its role in economics. It continually knocks against hard facts as long as one confines himself to dealing with present values, whose ultimate vindication in human desire is always just at hand. But on a scrap of paper giving access to hundreds of years of anticipated values the

opium-dreamer can build his Xanadu. An experienced promotion industry stands ready to help with this kind of construction. However mean and bleary the present there are castles around the corner for him who will live on hopes. Some hold on to land for little more substantial prospect than that.

Not all speculators need be mad for all to act as if they were. Keynes wrote:

It might have been supposed that competition between expert professionals, possessing judgment and knowledge beyond that of the average private investor, would correct the vagaries of the ignorant individual left to himself. It happens, however, that the energies and skill of the professional investor and speculator are mainly occupied otherwise. For most of these persons are, in fact, largely concerned, not with making superior long-term forecasts of the probable yield in an investment over its whole life, but with foreseeing changes in the conventional basis of valuation a short time ahead of the general public. They are concerned, not with what an investment is really worth to a man who buys it "for keeps," but with what the market will value it at, under the influences of mass psychology, three months or a year hence. 57

Keynes was writing of the stock market, which is only in part a land market. But one could hardly ask for a better picture of a rampaging land market nearing the flood-crest. Let it be known that a substantial lunatic fringe can be gulled into buying overpriced land, and they may set the whole tenor of the market as the designing buy land to unload on the innocent. If enough "outside money" flows in, "all sight is lost of land values based on non-speculative

demand and reasonable use."⁵⁸ The original "victims" may turn a neat profit, and it ceases to be clear who is the hunter and who the hunted. It behooves the rational gambler to anticipate the madness of the irrational, the moves of other gamblers who stalk the same quarry, and, finally, of other gamblers anticipating the anticipations of still other gamblers and victims yet to come. Then the market with a lunatic fringe becomes lunatic to the core, and swirls up in a vortex that carries prices beyond all reason. It finally recedes only to leave land titles stranded high and dry in the possession of gamblers who never intended to use the land. For these last buyers, as Cornick said, "purchased not for occupancy but to get a still farther advance of the next customers."⁵⁹

"Lunacy" does not seem too strong a word for what transpires. Scholars who write of land booms rarely confine themselves to the sober vocabulary of mathematical finance, with its discounts and net yields, but write of "fever," "delusion," "frenzy," "mania," "madness," and "fantasy." We have already surveyed enough of excess subdivision (Chapter I) to know that these terms are not merely hyperbole. It would require a full-scale delusion to produce such bizarre results. Here are some interesting comments on land booms from conservative sources:

....it is a kind of craze. People sometimes lose control of their reasoning processes. 60

In 1836 Chicago,

So utterly reckless had the community grown that they chased every bubble that floated in the speculative atmosphere; madness increased in proportion to the foulness of its aliment; the more absurd the project, the more remote the object, the more madly were they pursued. 61

Of the same boom, Harriet Martineau wrote:

.....some prevalent mania infected the whole people rage for speculation (strangers) advising them to speculate before the price of land rose higher. 62

In the 1920's:

The fever of land speculation, of trying to sell at an artificially high price land that might at some remote future time have genuine value from the outward thrust of population, has permeated the fibre of every portion of the country. Few have paused to estimate the rate of possible future growth. It was assumed by the land peddler and his gullible purchasers that population increase was inevitable 63

"Distinguished scholars" built "castles in Spain." Professor

J. Paul Goode predicted a Chicago population of 15 millions by 1940.

At such a period the imagination of the community conjures up the picture of an endless stream of population increase concentrating about Chicago. 64

In Florida:

Lots are bought from blueprints. They look better that way. Then the buyers gets the promoter's vision, can see the splendid curving boulevards, the yacht basin, the parks lined with leaning coconut trees and flaming hibiscus And the prices! It takes days to get accustomed to hearing them without experiencing a shock. 65

Drainage ditches become Venetian canals and both sides of the ditches become 'water-front property'. 66

How far wrong land buyers may go in judging future values has some objective measure in their failure to meet mortgage payments. It is not the ordinary fate of other kinds of debts to go unpaid. From 1927 to 1933 American corporations reported bad-debt losses on their sales of only about 1%.⁶⁷ But in 1933 the Bureau of Agricultural Economics estimated that 52% of the farm mortgage debt was in arrears on principle or interest. The percentage of urban delinquency was probably even higher.⁶⁸ Tax delinquency was high, too, so that many municipal bonds -- liens on municipal real estate -- were in effect repudiated in whole or part. Evidently a high percentage of land buyers, not to mention the mortgage lenders, extended themselves on the basis of unsound forecasting.

We might pursue this matter at some length, and it makes an entertaining if not an inspiring study. But few would dispute the main point that land buyers often misjudge the future. Some might maintain, to be sure, that this is only a problem of the real world, and not of the models build under assumptions of "perfect competition." For one assumption of "perfect competition" is usually "perfect knowledge." But, as it seems to me, even when one reasons under the protective mantle of "perfect knowledge" one cannot assume all individuals correctly to prognosticate the course of land rents in perpetuity. That savors more of "omniscience," an attribute of Deity, perhaps, but

hardly of mortal. So I would say this flaw would remain to mar the most perfect human markets conceivable, and should receive consideration even in the purest abstract discourses on economic theory.

All this is more in elaboration of our main hypothesis than in contradiction to it. The main hypothesis is that persons with especial power to speculate in future values may bid land away from others who would use it better. To this we now add that persons with especially high opinions of the future values may bid land away from others who would use it better. In practice, the two distorting forces work together to keep land from its best use. The problem speculator pre-empt's land because of both his power to speculate and his fond hopes. Those he drives from the market are the weak as well as the prudent. As we have seen, there are reasons to believe that both weak and prudent speculators are often better potential land users than the others.

I will not try to measure the relative importance of the two distorting forces. It is enough to know that both are appreciable. Differences in individual's powers to speculate seems the more basic distorting force -- one's mere opinion is of little consequence until he can put some money behind it. But however that may be, it is clear that when individuals bid against each other for an infinite series of uncertain future values there are at least two

good reasons to doubt that the best user will outbid all rivals. Opinions, as well as powers, differ, and both differences distort bidding for futures.

The practical import of this will emerge whenever one treats of reform policies. The present considerations cast doubts on a policy of credit subsidy. Merely to equalize everyone's power to speculate, even were it possible, would not bring all to the same opinions. Distortions will persist, as long as one must speculate in a long series of unsure future values in order to hold title to land.

B. Problems of land assembly.

If there were a permanent optimum size and shape of landholding and land sales were merely transfers of these fixed units, there would be no special problem of land assembly. But in fact when one wishes to expand operations from a certain base, there are few adjoining acres to choose from. The expanding firm is not a disembodied spirit, picking and choosing bargains of land from wherever they exist; and the land is not on wheels, to move to the firm. The firm needs contiguous land. Any neighbor who wishes to sell has a near-monopoly position, and the buyer has a near-monopsony position. There can be years of bickering, bargaining and maneuvering as each waits for time to bring the other to terms. In such a bilateral monopoly situation the likely loser is whichever bargainer makes the error of ex-

tending himself with some constructive commitment, like starting to build, that puts him at the other's mercy. The situation does not conduce to good land use.

In American cities, e.g., the "holdout" plagues every large land assembly.⁶⁹ A buying campaign must be secret and disguised, lest one small, strategically located holder awaken to his veto power and hold up the project with an outrageous asking price. Without the power to condemn, the projectors must acquiesce or quit. This problem thwarts many projects, and the anticipation of it doubtless forestalls many, many more.

Here is another example; in areas of France and Holland it proved impossible to consolidate fragmented holdings into economical units without government supervision and finance. The market was legally fairly free, but the peasants simply could not agree on prices and exchanges fast enough to offset the subdivision that occurred with inheritance.⁷⁰

With timberland it is more often the buyer who victimizes the seller. Sometimes large holders can box in small ones so that,

....the company is practically sure of purchasing the controlled lands at its own convenience and almost at its own price. 71

Then the small holder

can sell the tract only to the one large holder or to one of a few large holders surrounding him, and if more than one they frequently have an understanding on the situation, often in the form of buying zones. 72

Those examples are merely suggestive. As each site is unique and fixed in space, each site has some monopoly and monopsony potential whenever it is a question of land assembly.

Again, it is the perpetual life of land that makes the problem especially severe. Each sale involves the agony of parting with a claim to which future developments may give a holdup value. The bilateral monopoly situation itself would not make such a sticky market if the values were shorter lived, for then their owners would have to come to terms before time destroyed all the values. But one is in no such hurry to part with a claim to the infinite future.

C. Legal barriers to free exchange.

The distorting influences we have hitherto discussed involve no government interference with market forces, but result from society's effort to allocate a perpetuity by price. They are simply incidents to the private collection of land rent, and are as universal as it is. There are also other, less general distorting influences which help create the problem sketched in Part I. Our hypothesis does not explain it all, for markets are not in fact entirely free of public intervention. For perspective, let us consider some legal barriers to or penalties on exchange that also contribute to the problem.

In the first place, of course, all the innumerable legal and other obstacles to the free flow of men, goods, capital and ideas between places and occupations help keep

land, along with other resources, from its best use. But we are not now dealing with all those obstacles. The present problem is, as we said, to explain the poor response of landholders to the price and cost stimuli that impinge on them, however those stimuli may originate. We do not ask why sugar beets command a good price in the United States. We only ask why, since they do, holders do not use land as effectively as they might to produce them.

Several present policies join the distorting forces of our hypothesis to keep holders from doing so.

1. The personal income tax.

This is a tax on income taken in the form of money. A landholder can avoid some of the income tax by taking his income from the land in the form of direct pleasures. The land can provide goods and services, too, that are tax exempt, and of course it provides an opportunity to produce tax free income with one's labor and capital as well. A holder may sink capital into improvements, deduct them as expenses and finally take the income from them in non-monetary forms. He short-circuits the process of exchange, to avoid the tax collector, and begins to build a self-contained economy. In so doing he keeps land from its most lucrative use.

Another influence is the capital gains loophole. If one is in a high income bracket, the 25% maximum tax rate

on "capital gains" -- viz. land value increments -- is an attractive alternative to income from other investments taxed at higher rates. This creates an artificial demand for titles and undoubtedly prompts some people to buy where they would not have otherwise.

We do not try to say what portion of the total problem is due to income taxes. We only observe that the problem pre-dates income taxes.-- much of our evidence having been historical -- and that severe and similar problems exist today in countries with little or no income taxes.

2. Title problems.

Our archaic system of title search, with its needless costs and delays, hinders and discourages all land transfers to some degree. A simple system of permanent title registry and state guarantee, like the Torrens system, would solve the problem neatly, but thus far inertia and selfishness have blocked it, although it has been nominally introduced here and there. We will not dwell on this matter, which is obvious and notorious.

A more serious matter -- the most serious of all artificial barriers to land use -- is the present policy of states and municipalities toward tax-abandoned lands, the so-called "dead lands".

The Boston Municipal Research Bureau warned in the 'thirties:

'Dumping' properties at low prices should be avoided. A considerable amount of marginal land should be withdrawn from private use for some time to come. 73

Walter Blucher, Director of the American Society of Planning Officials, was somewhat more forthright about the motive:

Land speculatively held for potential use.... constitutes a threat to the value of other properties within the city It would thus be to the advantage of the remaining two-thirds of the property in the community to have the one-third of the area more or less permanently removed from private ownership. 74

Following such counsel, many American local governments have for years now deliberately or by default kept dead lands dead, off the market, with an avowed monopoly motive, i.e., to hold up other rents and land values. Or, as euphemism has it:

Even now, in certain jurisdictions, it has been found necessary to make special provision for the orderly disposal of tax-reverted properties lest sudden sales demoralize the real estate market completely. 75

And from Buffalo:

It is not to be inferred that the county is disposing of its property at whatever price it can receive. On the contrary, it is very careful to observe that its activities do not undermine the real estate market. 76

Municipalities may hang on to tax reverted lands, or they may simply neglect to foreclose on delinquent and abandoned lands, leaving them "suspended in a frozen state between public and private ownership, protected by neither, and difficult to thaw so that they may be restored to

productive use."⁷⁷ Consider our two largest cities. New York City in 1940 held 35,000 liens on tax delinquent land. Its policy was to foreclose no more than 250 of them per year.⁷⁸ Cook County (containing Chicago) lets taxes on vacant land go and go, then lets the title holder's representative take the lot under a "voluntary foreclosure plan," clear the back taxes with a small "compromise" payment, then yield it back to the title holder under his right of redemption. Result, as of 1949: "... few owners of vacant land now bother to pay taxes at all ..."⁷⁹ Chicago has about 130,000 chronic tax-delinquent lots. From February 26, 1946 to June 17, 1947, the City Council approved applications to institute foreclosure against 867 of them.⁸⁰ Those are mere token actions. Urban policies, or lack of them, have effectively placed much of a valuable national resource beyond the power of individuals to make productive.

In rural areas, similar conditions produced similar policies. Long ago it was obvious,

an important factor on the depressing side of values has been the foreclosed and other distressed farms hanging over the market. 81

Local governments responded generously:

Weaknesses in collection and sale procedures (and associated factors) ... have created a tax-delinquent 'no-man's land' consisting of several million acres.

With a few exceptions, states have no record of the volume and location of tax-reverted lands, and they usually have no policy for the administration of such property. In many states reversion has been avoided in recent years by the postponement or suspension of tax sales, extension of redemption periods, and provision for the payment of back taxes in instalments. 82

There are formidable legal barriers to clearing those titles. But they are man-made barriers, not natural or inevitable. A vigorous program of legislation and administrative action, including some de-subdividing and replatting, could very quickly turn those wastes into a valuable national asset. But governments thus far have directed their efforts, if any, to the opposite end. Their concern has been to protect rents and land prices, not to open new investment and employment opportunities.

Many socially minded people seem to believe such policies are somehow in the social interest. To this writer they seem anti-social and monopolistic. The policies were originally supposed to relieve small mortgageors and taxpayers in an emergency. They have become a permanent instrument for locking up natural resources.

Protagonists cite higher rents and land values as a social gain. It is the most elementary economics that higher prices are no net gain to society, but merely redistribute income from one group to another, while the resulting idle resources represent total waste. Volumes have poured forth about monopoly practices, but none to my knowledge has labelled this restrictive policy as such. Yet landholders, organized through local governments are withholding competing lands from the market to divert demand to their own. However euphemistically rationalized, that policy is monopolistic. Hence we do not hesitate to say

that the dead lands are serving no useful purpose, and that present restrictive policies are a major obstacle to good land use.

In passing, I would add that land value maintenance seems to have become and perhaps always has been a primary obsession of local governments. This obsession influences all their land use controls: zoning and tax policy, for example, besides the dead land policy we mentioned. Every locality has some monopoly potential, and most cities are strategically located and have a great deal. We may expect them to use their land use controls to exploit it so long as the central governments which charter local governments grant them the powers to do so. Many different municipal powers may serve as land use controls. We will not discuss them in detail, but merely observe that local governments have several ways to obstruct the best use of land, where they wish to.

3. Tax discrimination.

Property tax assessments are often regressive. That is, small holdings are assessed, and therefore taxed, at higher rates than larger ones. One survey concluded:

The validity of the results is attested... by the remarkable similarity of findings. Some states show much worse records than others, but a high degree of variation and regressivity is found in all. 83

Of course such a policy discourages subdivision of large holdings.

Some vacant lands have achieved virtual tax exemptions through chronic delinquency. Often, too, assessors discriminate in favor of vacant land holders in their valuations. That is, they assess land at a higher rate when it is improved. Besides that, they sometimes assess improvements themselves at higher rates than vacant land. Such policies, of course, discourage improvement, and tend to keep land from its best use.

Indeed, from one point of view, the general property tax discriminates against improved land even when assessments are 100% accurate. The holder who improves his parcel gets a bigger tax bill than his neighbor who does not. From the viewpoint of incentives, the general property tax favors disuse, and use involving scanty improvements, while it penalizes uses that call for heavy improvements.

For these various reasons the general property tax as now administered impels landholders to keep their holdings larger and less improved than they would if productive costs and revenues alone shaped their decisions.

4. Other.

There are, and have been in various times and places, many, many other barriers to free transfer or use of land according to economic incentives. Many of the barriers represent society's efforts to palliate some objectionable condition the land market creates. Such are rent controls, land price controls, acreage limitations,

residence requirements, homestead tax exemptions and the like. We do not now judge these controls.⁸⁴ Suffice it that these, unlike those discussed earlier, are intended to solve the very problems we discussed in Part I. However poorly conceived and executed, they are not likely to be primary causes of those problems. They do keep land from the otherwise highest bidder, but, as the highest bidder is not necessarily the best user, they do not necessarily worsen land use. Some of them probably improve it.

The doctrine of riparian rights deserves passing mention. The claim to water which it gives the riparian holder varies with the size of the holding. In certain conditions a riparian holder will lose part of his water claim if he subdivides. In California, the major arid state to recognize riparian claims to limited surface waters, that has probably deterred subdivision. But only about 10% of water claims in California are riparian, so this is not a major cause of land abuse.

Restrictive deeds, by which one who conveys land tries to regulate its future use or make it inalienable, constitute a greater problem. Such restrictions can kill the free market. H. C. Taylor wrote of the large English country estates:

They are commonly kept intact by a system of entails so that once the small estates become incorporated into the larger ones, they rarely come into the market again. 85

In earlier times, medieval corporations like the church effectively removed their mortmain lands from the market for centuries. It took political revolutions to release them. As land is a fixed amount, and lasts forever, it takes but a few generations to tie up most of the land in a country that allows free reign to the "dead hand".

Fortunately, common law since the seventeenth century has evolved a Rule against Perpetuities, and modern statutes⁸⁶ have strengthened it in England and various American states. These help prevent deed restrictions from accumulating over generations to clog up the land market. But the Rule against Perpetuities leaves wide latitude for evasion and interpretation. The system of entails that dominated English farm land in the nineteenth and early twentieth centuries, for example, grew up and flourished by legal evasion in the face of the Rule against Perpetuities. In the United States, restrictive racial covenants, were long maintained in spite of it. Most American states have outlawed entails by statute, following the lead of Virginia in 1776; and the Supreme Court recently held against restrictive covenants. But in spite of these victories for the free market, a good many restrictive deeds slip by the defenses. They may do great harm.

An Associated Press dispatch of December 16, 1952, tells of an estate that was entailed in 1895 by Frederick Foote, an ex-slave:

And it took 51 years and a new law to break the illiterate's "X" on his will Thus the 33 acres at 7 Corners, Virginia, remained undeveloped while commercial buildings sprouted all around the teeming intersection just outside Washington They (the holders) were land-rich and money-poor. 87

Ordinary estates in trust cannot be restricted in perpetuity, but the courts generally let a testator suspend alienation for about two generations -- in New York, for example, for the duration of a life in being plus 21 years. 88 That can be a long time. Even then, release may have to wait for petition to and sanction from the proper court, and the court may deny it if not satisfied that the restriction is harmful. Breaking a will may take some doing and expense. Much land in trust, therefore, may be virtually inalienable for many, many years.

To be sure the trustees have some latitude in leasing it. But, by holding on to the reversionary interest, or ultimate fee, trustees often "retard important business or neighborhood developments," according to Bутtenheim, 89 and perpetuate tenancy or slums where there might be owner-operation and new development.

Some trusts create a life estate in land for one party, (usually the widow) and leave the fee to another party, the "remainderman" (usually a child) on the life holder's death. This tenure is dubious at best, as the land is inalienable until the first party dies. At worst, the two parties are antagonistic. The life holder then may loot

the land of its exhaustible values and improvements leaving the remainderman only the site squeezed dry of all values save location.⁹⁰ In some jurisdictions, too, the life holder or her (it is usually a widow) trustees cannot borrow on mortgage to improve the land, since such a mortgage would not bind the remainderman.⁹¹ It is a happy day, indeed, when a trust expires and releases its lands to commerce. But unhappily, by that time other lands will have gone into new trusts. So, though trusts may be mortal, the social problem is perpetual.

One kind of trust is generally exempt from the common law Rule against Perpetuities, and from statutes against perpetuities and mortmain. That is the charitable trust. A conveyor may tie up land forever, when he grants it for education, religion or charity. Inalienable, and often tax exempt, land in charitable trusts may lie idle for years while its administrators casually toy with plans to improve it and wait for more liquid bequests to provide the funds.

All this is a problem, of course, because as long as lands are held inalienably in trust, their holders are chosen by no economic process whatsoever. However desirable to sell to a better manager, to subdivide, or to consolidate with surrounding lands, the trustee cannot do it. Sometimes he cannot raise the money to improve the land. Sometimes he may be dishonest, or negligent, but however upright and conscientious a trustee, he is not an owner, and

will hardly give land an owner's care. Ordinarily he leases it out. And even as landlords go, trustees have a poor record. Schikele and Norman rank estates together with widows as the worst of all farm landlords.⁹² Colleges and churches, too, are known for slow development of their lands.⁹³

High inheritance taxes now seem to be stimulating more and more charitable bequests in England and the United States. The twenty-first century may face a problem of mortmain as great as that which plagued the middle ages, with a high percentage of the land held by charitable trusts and corporations which can neither use it nor sell it. However, this is more a problem of the past and future than of the present. Measuring the total of trust-frozen lands against the total of all misused lands, it does not now account for much of them, according to various indications seen by the writer. So while we may well take warning for the future, we cannot explain away much of the problem of this study as the fault of deed restrictions.

We have now considered ^{several} institutional barriers to free trade in land: personal income tax, title problems, property tax discrimination, social controls, and deed restrictions. Each barrier is quite important in its own right, and no doubt society would benefit appreciably by breaking most of them down. Title problems are especially important,

as we mentioned. Yet, taking these barriers all in all, they leave a large, unexplained residue of land whose misuse evidently has other causes.

We will not press this point in detail, trusting it is sufficiently obvious to the reader from his own experience, and what we have said, that the free land market, at least as presently conceived, is responsible for much of the misuse. We will merely cite the experience of Ireland under the Deasy Act of 1860. That act aimed to solve the Irish land problem by sweeping away all restrictions to free transfer, and establishing "free trade in land." It proved a total failure.⁹⁴ For it was not barriers to exchange that perpetuated the absentee's tenure, but their greater power to speculate in land. The freer the market, the greater was the scope for the basic principle that land titles often move to the strong hands of those with low interest rates rather than the weaker hands of working managers. This experience suggests that free trade in land, at least as conceived in Ireland, leaves a considerable unsolved problem.

Objection VIII: "If one accepts the present distribution of purchasing power, one must accept with it the fact that the very rich can pay more for resources that satisfy a whim than the very poor can pay for the meanest necessities. You are simply refusing to accept market judgments based on the existing distribution of purchasing power."

In the present study and analysis we have accepted the existing distribution of purchasing power, and the structure of demand derived from it. We have said the best use of land is that which makes it yield the most valuable produce, measuring value as the world measures it in money, and not by our private judgment. That means if a rich man can pay or impute more annual rent per acre for 25 acres of residence than 25 poorer men could pay for an acre apiece, we accept the rich man's use as the best.

Our criticism of the land market is on quite a different basis. If we were to criticize a rich man's holding 25 acres of residence, it would not be because we object to his being rich, nor spending as he sees fit. Rather, it would be on the grounds that the annual explicit and implicit income he derives from it is less, despite his great purchasing power, than its annual value to alternate users. It would be on the grounds that he holds it more because of his superior power to speculate in its future than his effective demand for its present services.

If we conceive of markets as courts which arbitrate rival claims to resources, then the final consumer market is the Supreme Court. The market for land titles is only a lower court, and its judgments only good insofar as they implement higher decisions. When the lower court obstructs the higher one, then it is our belief in ultimate market judgments that makes us criticize the land market.

It should be clear, too, that we accept "psychic income," and we accept the fact that richer men can put a higher money value on their psychic income. The annual rents we have taken as measures of good land use in our analyses include psychic along with money income. What we have shown is that stronger speculators may outbid weaker ones even when the latter would derive more total annual income from the land, including psychic income measured in a money equivalent.

Objection IX: "Your formulae are very interesting to a scholar, but most people do not think in those terms. Therefore they do not act in those terms, and your hypothesis sheds no light on actual behavior."

Every man has his own way of apprehending the facts. We have taken one straight and narrow path of accurate thinking, but there are numberless ways to come at the same conclusions. Others may think in terms of "capitalization," "unearned increments," "growth possibilities," "buying income," "making a killing in real estate," "providing for heirs," "hedging against inflation" and so on without limit. So long as Truth is one, each language, used honestly, will apprise the user of the same facts and actuate the same behavior.

For example: Appraisers sometimes account for the different life spans of land and buildings by using split

capitalization rates. That is, they account for the shorter life of buildings by using a high interest rate to capitalize income from them. Ayers J. DuBois writes in the Appraisal Journal:

.....as the ratio of building investment to land becomes greater and greater, larger and larger overall capitalization rates would fairly apply. 95

According to the thought pattern we have followed, that is a very rough and indirect way of expressing the facts. According to others' ways of thinking it may be a much better way. But it is obviously quite consistent with what we have said.

Of course, some people do not apprehend facts correctly. Especially where behavior is based entirely on forecasting, as in the land market, there is room for the wildest fantasy. But we have already incorporated that matter into our hypothesis, in treating Objection VII,A.

CHAPTER VI

CONCLUSION

Much remains to say. Before the hypothesis may aspire to the dignity of a theory it must run a long gauntlet of testing against hard and complex facts. It has, in fact, been running the gauntlet of the author's files for some years, with results which he might present in another long chapter. But he has already overtaxed his readers' patience, and will conclude here with summarily applying the hypothesis to explain and evaluate the three apparent deviations from ideal allocation described in Chapters I-III.

Briefly to restate the hypothesis: the bidder in whose possession a given unit of land will add most to net output, both currently and in the future, can not necessarily outbid rivals for the title. Power to speculate, i.e., to discount future values at low rates, also weighs in the balance. This differs extremely among individuals, and will affect the outcome.

How, specifically, does this explain the problems of Chapters I-III? Consider first the subject of Chapter III, land in oversized operations, under-manned and under-equipped, which might add more to net output if transferred

to a smaller, more intensive farm, but is not so transferred. The hypothesis explains this directly, as follows: Assume, for simplicity, that interest rates and net yields from land, although they vary among individuals, are not expected to vary with future time. Assume also that there are no taxes, of any kind. Then each buyer will increase his landholdings until the last unit yields him his interest rate. If a unit costs \$100, the 2% bidder will expand his holdings until the last unit yields him \$2 a year; the 10% bidder until the last unit yields him \$10 a year.

Figure 1 illustrates the point. MP is the annual marginal product of land added to a fixed complement of men and equipment. The horizontal dotted curves represent the annual cost per unit at 2% and at 10%. Although the different bidders pay the same price for land titles, they pay very different prices for the annual use of land, due to their different interest rates. Hence they combine land with other resources differently, low interest rate bidders using it lavishly down to low marginal returns, high bidders the opposite. (See Figure 1 on page 439.)

Figure 1 is drawn on the assumption of fixed men and equipment. In practice, of course, an entrepreneur can vary these, increasing them as he increases his land to delay the advent of diminishing returns to land. Figure 1, however, can accomodate these different complements of labor and capital. It tells us that whatever complement of men

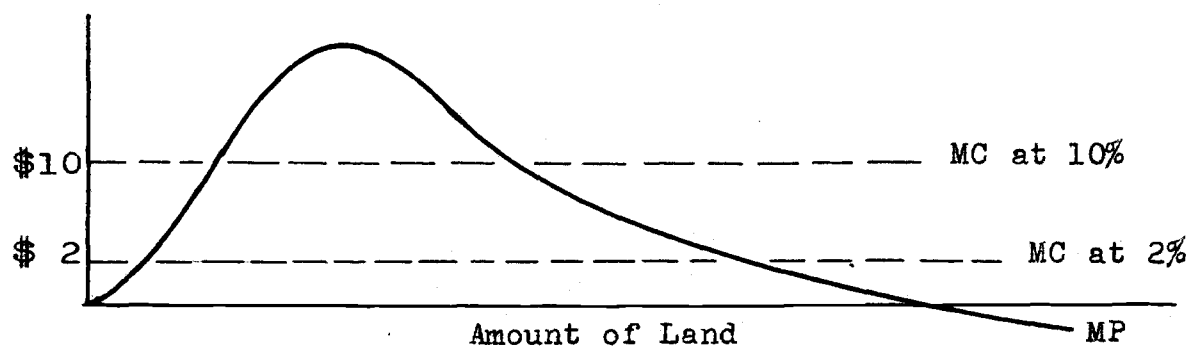


Figure 1
Annual Marginal Product of Land, and
Annual Marginal Cost at Different Interest Rates

and equipment he has, he will increase his landholdings until the last unit yields him his interest rate.

Thus the hypothesis explains why the marginal product of land varies from farm to farm. It also explains why it varies in the particular pattern it does, tending to be lower on larger farms. Because, as is well known, interest rates on borrowed funds generally vary inversely with collateral security; and, too, larger recipients of property income are more likely each year to have excess savings seeking outlets.

The same reasoning explains tenancy, the problem of Chapter II. Let interest rates of individuals diverge enough and the marginal products of land in owner-operated holdings will become different enough to warrant transferring land by lease, from where its marginal product is low to where it is high. Were the landlord-tenant relationship frictionless and costless this process would equalize the marginal products on owner-operated holdings. But as things are, it leaves them still far apart, and itself constitutes a second problem.

The hypothesis thus accounts for excessive concentration of operations, and for tenancy, even when buyers do not expect the income from land to rise in future years. Both become more acute, however, when buyers do expect future increases. This is what one would naturally expect, since the problems spring in the first place from the fact that

so much of the price of land derives from remote future expectations. When the more remote future years contribute a still higher share, due to anticipations of rising income or falling interest rates, concentration and tenancy should naturally increase. Let us relax, now, the assumption of constant expectations, and analyze the forces at work when buyers expect income to rise.

When he expects future years' incomes to rise above present ones, a low interest bidder will expand his holdings until the last unit yields him even less than his interest rate. He may even hold land that yields him nothing, just as he might hold, in anticipation of future dividends, a common stock that pays nothing currently. The same reasoning, of course, applies to a high interest bidder, but with less force. When higher future incomes loom up in prospect, all bidders will tend at first to expand their holdings. But of course not all can do so. Land prices will rise, forcing high interest bidders to cut back their holdings to let low interest bidders expand. When a new equilibrium level of land prices is reached, there will be some medium interest rate at which the higher land prices just balance the increased expectations. Bidders with that interest rate will neither expand or contract, but higher interest bidders must contract, and lower interest bidders may expand.

The question may arise why any bidder would hold land during the course of a year when it yields him less than his

interest rate? Why not wait and buy later? The answer, of course, is that he can buy cheaper now, when the anticipated future values are further future than they will be next year. Putting his calculations of cost and gain entirely on an annual basis -- which is a handy way to summarize them, both for him in practice and for us in theory -- each year he would count as part of his gain from holding land the increase of its selling price. He may figure this in the positive sense that he may realize it by selling; or the negative sense that he need not pay that advanced price to buy it. Whichever his motive, he has justified tying up his funds in a land title during a given year if, in that time, the marginal product PLUS the increase of selling price equals or exceeds his interest burden, price times interest rate.

Having thus compressed all the relevant factors to an annual basis, we can show them on Figure 1, on which marginal cost and marginal product are shown already on an annual basis. How will the curves there shown change when we relax the assumption that buyers expect constant income, and postulate increasing income? The marginal product curve remains the same, as it applies to the present year only. The horizontal marginal cost curves will change from two causes, one pushing them upwards, the other down.

The upward force is the higher price of land. As that rises, of course the annual interest charge on it

rises in the same proportion -- which means a higher absolute increase for the high interest bidder. For example, if land price doubles from \$100 to \$200 a unit, a 2% bidder's marginal cost per year doubles from \$2 to \$4, while a 10% bidder's cost doubles from \$10 to \$20 -- an absolute increase of five times as much.

The downward force is the anticipated increment to land price. This is, to the individual holder, an income from the land, quite above and beyond any income from productive operations (as measured on the marginal product curve). Being an income to him, it offsets part of the annual cost of holding the land, leaving only the remainder to balance against the marginal product. On Figure 1 this would be shown by lowering the horizontal marginal cost curves, each by the same amount.

The net result of these two changes is to lower those curves that are already lower, and raise those that are already higher. For example, continuing the above illustration where price rises from \$100 to \$200, suppose after this original rise the annual anticipated increase is \$4 a year. At 2%, marginal cost moves down to nothing, as the \$4 increment expected that year just offsets 2% on \$200. But at 10% the annual marginal cost goes up to \$16 -- that is \$20 interest minus the \$4 increment. Both relatively and absolutely the two curves have moved farther apart.

More generally, for all those bidders whose interest

rate times the original price increase is greater than this year's anticipated price increase, the annual marginal cost of holding land rises. They must contract their holdings. For all those whose interest rate times the original price increase is less than this year's anticipated price increase, the annual marginal cost of holding land falls. They will expand their holdings. Algebraically, let P_0 be the original land price, P_n the present price, and ΔP this year's anticipated increment. Those bidders for whom $i(P_n - P_0)$ exceeds ΔP must contract; those for whom it is less than ΔP may expand.

The above reasoning applies equally well when buyers anticipate lower interest rates in future years. This will likewise raise present land prices and lead to additional annual increments.

Thus in times when bidders anticipate increments to land prices, land holdings will tend to become more concentrated and tenancy more common, and of course vice versa. There is evidence that tenancy has waxed and waned under this influence. Tenancy declined during and after World War II in some part because anticipated values were low, relative to current yields, and land gravitated to owner-operators.¹ On the other hand, Goldenweiser and Truesdell, in their widely cited study of 1920 Census data, found "a close relation between the rise in the value of farm land and the percentage of tenancy." They explained their findings this way:

Wherever land increases rapidly in value the owners are inclined to hold their land in order to realize the profit; and since they depend for part of their returns on the rise in value they can afford to rent their land at a comparatively low rate. In their eagerness to make the land pay something while they hold it for a higher price the owners underbid each other in the matter of rent, but they will not sell. Thus, it becomes difficult for the tenant to buy, since the purchase price is high, and at the same time it becomes profitable for him to keep on renting, since the rent is low. 2

There is also evidence of changes in concentration of farming and other industries according to this rule -- industrial mergers, for example, occurring most swiftly in times like the present, or the 1920's, when future anticipations are high relative to current yields -- but the evidence is too complex to summarize briefly, and we will reserve it for a sequel.

It must now be quite clear to the reader who has followed thus far how the hypothesis explains unused land, the problem of Chapter I. If an individual enjoys a low interest rate, and anticipates large annual increments to the selling price of land, he may very well be willing to add it to his holdings even though it adds nothing to his current income. He might even take it under conditions such that it detracts from his current realized income, if the anticipated annual increment exceeds the annual interest burden by more than his loss. Thus in frontiers of economic development where annual increments to land prices are expected, speculators have a clear motive to hold land idle as

we have seen they do in fact.

We have applied the hypothesis to explain the three deviations from ideal land allocation described in Chapters I-III. It links them together as results of a common cause, differences in individual interest rates, which lead those with lower interest rates to combine given quantities of labor and capital with larger amounts of land.

But some readers may yet stick at the words "and capital" in the sentence above. If low interest lets one apply land to lower margins, why does it not likewise let him apply capital to equally low margins, such that the low interest firm would tend to use a great deal of both land and capital per man, rather than a great deal of land per man and per unit of capital? We have already dealt with this question in Chapter V, as best we could at that stage of the hypothesis' development. But our treatment there was necessarily less precise and less satisfying than it can be now we have developed the analytic tool used in this conclusion.

We have seen that when land prices are expected to rise, speculators can deduct the annual increment from the annual cost of holding land, thus increasing the percentage differences between the annual marginal costs of low interest and high interest bidders; and furthermore when land price becomes higher, the annual interest burden increases more for high interest bidders than low, thus increasing the absolute difference between their marginal costs. Now if bidders

expected the opposite, if they expected land price to depreciate instead of appreciate, the opposite results would ensue. Bidders would add the anticipated decrement of land price to the annual marginal cost, reducing the percentage difference of the two marginal cost lines; and the lower land price would reduce the annual interest burden more for the high interest bidder than the low, bringing the marginal cost lines absolutely closer. Thus depreciating assets tend to be better allocated than appreciating ones.

Capital, of course, customarily depreciates, while land customarily does not, and often appreciates. The annual marginal cost of holding capital includes a large depletion or depreciation (and obsolescence) charge, usually much greater than the interest charge. Being roughly the same for all bidders, regardless of interest rates, this depreciation charge reduces the percentage difference of the marginal cost lines. Furthermore, of course, the price of capital is much lower, relative to its immediate marginal product, than is the price of land, because capital yields only a decreasing series of future values over a brief finite life span. Therefore depreciation is a larger element than interest in the annual cost of all but the longest-lived forms of capital; and even with them depreciation is a larger element than with land, which normally does not depreciate. Comparing the extremes, the annual cost of a capital asset entirely consumed in production at the end of one year is almost all

depreciation or depletion. The interest component is almost negligible in theory, and often completely so in practice. By contrast, the annual cost of land is interest alone (again assuming no taxes). Therefore a firm newly gaining access to low interest funds is almost certain to expand its land holdings more than its capital. On Figure 1, the marginal cost of capital is almost the same at any reasonable interest rate, while the marginal cost of land varies directly with the interest rate.

Let us sum up the matter algebraically. Let i be interest rate; MP_L the marginal product of land; P_L the price of land; MP_C the (gross) marginal product of capital; and P_C the price of capital.

Consider the simplest contrast between a piece of land with constant future marginal products; and a capital asset entirely consumed in production at the end of a year. A firm will expand its landholdings until $\frac{MP_L}{P_L}$ equals i .

It will add the capital asset until $\frac{MP_C}{P_C}$ equals i plus i : --

"plus one" because the gross marginal product of the capital asset must not only pay interest, but also pay for its value consumed in production. Now obviously if " i " is halved, the firm can expand its landholdings until the marginal product of land is half what it was before. But it can not apply the capital asset to appreciably lower margins, even in theory; and in practice interest is such a small element in

total cost it often influences such decisions not at all.

More generally if ΔP is an annual anticipated increase of price, a firm will add either land or capital until $i - \frac{\Delta P}{P}$ equals $\frac{MP}{P}$. Where ΔP equals zero we have the case of land with constant anticipated marginal products, and $\frac{\Delta P}{P}$ drops out. Where ΔP is minus P , we have the case of the capital asset consumed at the end of one year, and $\frac{\Delta P}{P}$ equals minus one. Where ΔP is negative but its absolute value is less than P , we have the case of capital lasting longer than one year, hence depreciating less than its full value each year. Here i is of greater importance as an element in annual cost, but still not so important as with land. Where ΔP is positive, we have the case of land whose price is expected to increase. It is worth noting that in this case a lower interest bidder will apply land to a margin lower by even more than the proportion that his interest is lower. Halving i will reduce MP by more than half. "MP" may even fall below zero. It is in this situation that the individual's interest rate is of paramount importance in allowing entry to the market, and determining the margin to which he will apply the resource.

The conclusion of all this is that a lower interest bidder will tend to apply, to any fixed complement of labor and capital, much more land than would a higher interest bidder; while, to any fixed complement of labor and land,

he will apply only a little more capital. It follows that he will tend to use more land per unit of capital.

Putting it another way, at lower interest rates land becomes cheaper relative to capital, and so is substituted for it.

That that is the fact in American farming is indicated by the data of Chapter III (Section II, B, 1, b). More affluent farmers, whose greater assets would let them use more capital per acre, generally use their superabundance to buy more land, and hence use less capital per acre.³ As to the urban scene, L. C. Gray has written "It was usually the land company alone which had adequate capital. . . . The building companies, on the other hand, were generally small and lacking in adequate credit facilities."⁴ In industry generally, the proportion of net income to gross sales tends to increase with size of firm, indicating slower turnover of assets in the larger firms, and hence a higher proportion of more durable assets of which land is the extreme type.⁵ And various studies indicate such a pattern for urban real estate,⁶ and for several industries in which data are easily available: hydro-electric power; anthracite; molybdenum; lumber; publishing; aluminum; steel; and sulphur.⁷

The proof is not absolute. It is conceivable that a small percentage drop in the marginal cost of capital would increase its use as much as a large percentage drop in the marginal cost of land would increase the use of land -- i.e.,

that the marginal product of capital drops very slowly as more is added, and the marginal product of land drops very quickly.

That is conceivable. Is it likely? In its support one might observe that the marginal product of capital is a gross concept, including the body of the capital, which may even be physically embodied in the product. It might seem that capital like this would be subject to very slow diminishing returns, because most of its gross marginal product is simply the raw material itself. But on the other hand, the annual services of land are also, in an economic sense, embodied in the product, and in a physical sense are embodied in it no less than is, for example, fuel that is consumed in producing bricks. So it does not seem that land should experience drastically more rapidly diminishing returns than capital.

One may point out that the marginal product of capital could never fall below its replacement cost (except by error). That is certainly true, but not so much because capital is subject to slow diminishing returns, as because before the marginal product is reached that equals replacement costs, the firm will stop adding capital. Replacement cost sets a rigid floor under what marginal product a firm can allow; but it does not imply that returns would not diminish below that floor if more capital were added. Nor does it imply that capital is not subject to rapidly diminishing returns

above that floor.

A critic might still point out that, while lowering the interest rate lets a firm apply capital to only an insignificantly lower gross margin, still it lets it apply capital to a much lower net margin -- just as much lower as with land -- (unless the land is appreciating). That is, if a capital asset costs \$100, a 6% interest rate lets one apply it until the gross marginal product equals \$106, at which point the marginal product net of the \$100 cost is \$6. At 3%, the firm can add capital until the gross marginal product is \$103, a little less than 3% lower; but the net marginal product is \$3, or 50% less, just as with land. Is the plausibility of our conclusion merely illusory, depending on the choice of gross instead of net marginal product of capital?

Suppose we choose the net marginal product of capital as the basis of our discussion. Will it diminish more rapidly than the marginal product of land? Almost certainly it will, for an obvious reason: every increase in net output caused by additional inputs of capital requires an addition to gross output many times greater -- at 5%, 21 times greater for a one-year capital asset. An equal increase of net output caused by additional land requires only an equal increase of gross output, for with land the two are identical. Obviously to achieve a given increase of net output by adding capital one will tax the capacity of the fixed complements much more

quickly, and thus see returns diminish much more rapidly, than by adding land.

Then, too, where interest cost is such a minute fraction of total cost, and net marginal product so small a fraction of total product, one cannot take very seriously the proposition that their point of intersection "determines" the input of capital. Formally it does, but the net marginal product curve is merely a tiny residual after deducting vastly larger associated costs, and it is these, lurking unseen in the background, that really determine the curve. A small change in one of them can magnify it or wipe it out. A fall of interest might, formally, simply be the occasion for imputing a slightly higher return to some other factor, thus reducing the net marginal product of capital -- which is simply a devious way of observing that a very small element in the total cost of capital will not much affect the amount used.

Accordingly, it has become nearly a commonplace of modern economic thinking that a fall of interest rates will not much stimulate investments in short-lived capital assets. 8 Perhaps the early enthusiasts of this idea carried it too far -- their critics have successfully countered that low rates will stimulate investments in long-lived capital assets, for which interest is a larger element of cost. And of course it follows that low rates will especially stimulate investments in land, the longest-lived of all

assets, whose annual cost (other than taxes) is exclusively interest.

There, then, in skeletal outline, is the hypothesis of this study applied to explain why larger farms tend to use more land per unit of capital. In brief, it is because larger enterprises generally can reckon lower interest rates; and because lower interest rates give an especial advantage in buying land.

The argument as it stands is by no means complete, nor can we make it so in the few remaining pages. But let us mention four additional points of great importance.

a. Returns to capital will not only diminish rapidly when the proportion is increased, but also with scale of operations. The manager of a small enterprise has in himself a large under-used complement of managerial labor to combine with additional land and capital. He will tend to invest his funds more in capital than land, since the capital turns over more quickly: a given sum invested in capital adds much more to gross output, and provides a much greater outlet for his labor.⁹ An active entrepreneur can turn his stock over several times a year, a process obviously providing much more outlet for his managerial talent than freezing the same sum in a land title. On the other hand, when a business becomes large, and the central management overtaxed with decisions, it will tend to invest more funds in land, which never turns over, which for a

given net output produces the least gross output, hence taxes the management's limited powers the least. A management embarrassed with riches beyond its power to administer wants assets that are fixed, stable, and simple, that never need replacement, never spoil, burn, obsolesce, get stolen or sabotaged, that require no handling, insuring, or storing, and are immune to employee negligence -- in short that management wants land. Among its other virtues the land offers this, that should the overtaxed management take from it only half the income it expected, it could still show some gain; while if it took from capital only half the income it expected it would needs show an immediate realized loss of nearly 50%. But owners of superabundant assets can buy land and thus let their assets escape, so to speak, into the future where they will keep with a minimum of attention. Large landholdings are also desirable for harried managers who wish to appear more efficient than they are by undervaluing their assets. Land, having no production cost, and having over the decades generally appreciated over its historical cost, is often grossly undervalued on corporate books to give a false appearance of high "returns on the investment."¹⁰

b. A large firm may develop some monopoly power, and wish to invest its assets in such a way as to increase gross sales a minimum for any increase of net output. A monopolist will obviously prefer land to capital, as capital,

turning over quickly, increases gross sales by many times its net income, while additional land, ceteris paribus, adds to sales no more than its net income. And if the land is held primarily for increments to its price, it adds little or nothing to gross sales.

c. When buyers expect land prices to rise, lower interest rates give more than proportionally lower annual costs of holding land, as we have mentioned. In this circumstance, lower interest bidders would accumulate more land per dollar of capital even if the net marginal product of capital declined as slowly as the marginal product of land (which is almost unthinkable).

d. It is often harder for a small enterprise to secure long term credit, such as is needed to buy land, than short term credit; and it must generally pay a higher rate for what it gets. So not only does the small enterprise have higher interest rates in general, but especially so for land purchases.

In summary, low interest bidders tend to hold more land per dollar of capital because interest is so much more important an element in the annual marginal cost of land than it is in the annual marginal cost of capital; and because, for a number of reasons, returns to capital decrease more rapidly than returns to land.

Finally, the effect of property taxes should be considered. We have up to now reasoned as though there were

none, and hence the sole annual cost of holding land was the interest burden. In practice one must add the annual property tax that falls on land as well.

The annual property tax bill increases the annual cost of holding land by a constant amount for all bidders, whatever their interest rates. But on the other hand, it tends to reduce land prices and thus lower interest burdens. Of course it lowers interest burdens more, absolutely, for high interest bidders than for low interest bidders.

In terms of Figure 1, the property tax bill is an addition to the two marginal cost curves. The addition is the same amount for each. Thus it reduces the percentage difference between them. At the same time it reduces the high interest bidder's interest burden by more than the low interest bidder's, thus reducing the absolute difference between them. On balance, it tends to increase the total marginal cost to low interest bidders, and reduce it for high interest bidders, bringing them nearer equality. There will of course be some medium interest rate at which increased taxes will just offset reduced interest burden.

The general effect of property taxes is to replace the annual interest cost with an annual tax. In the extreme, if taxes were high enough to reduce land prices to zero, the tax would be the only cost of holding land, and it would be the same for all parties -- assuming a fair assessment.

From this it is evident that the major conclusions of this study apply in full only where property taxes are low or non-existent. Insofar as the property tax replaces the interest burden, it tends to equalize the marginal cost of land among different bidders. And of course if property taxes are discriminatory, as we have seen they often are, they introduce a new distorting variable, tending to move land to those in whose favor the discrimination is practiced.

With that, the hypothesis goes far toward explaining the major problems of the study, and the writer prepares to lay down his pen. He would leave it clear, however, that he by no means considers the hypothesis either, on the one hand, fully tested against all the at least speciously contrary evidence that might be adduced against it; nor on the other, fully exploited to clarify the most important problems to which it might be addressed. In a sequel the writer would integrate the hypothesis into business cycle theory, following the leads of Chapter I; and pursue the implications of Chapter III through a study of industrial concentration. Most important he would use the results of this study to suggest and evaluate alternative land policies.

Final evaluation of the results of the study.

We have used the hypothesis to demonstrate why things are as they are. But what, now, of evaluation? What does it imply of the market's effectiveness in directing land to its most productive use?

In terms of traditional ideals, the market evidently is far astray. Economic rent is clearly not, in practice, the "sorter and arranger" of the pattern of land use that traditional theory says it is, and should be. Or, in terms of marginal analysis, the market fails to direct land to the user in whose possession it would add the most to output. In traditional theory, the "cost" of holding land is opportunity cost, or the best alternative use of the land. In market practice, cost to the individual holder is not that, but the annual interest burden of holding title, which may be higher or lower, and leads to allocation quite out of line with traditional ideals.

This comes about, of course, because the present use of land is not available to be bought and sold by itself, except in the rental market, where users must incur all the wastes of tenancy. To gain the present use of land, with that security of ownership that is essential to best use, an operator must pay for a costly claim to anticipated incomes from the land in perpetuity. In buying land, power to speculate in future values is as important a factor as, or more important than, ability to make land productive. As long as that is so, the market can never perform as the traditional ideal requires.

That conclusion is of practical interest, of course, only if society can devise a land policy that unbinds the knot tying together present and future in a land title. Is

it possible? Can society modify institutions underlying the land market in such ways that the operator of land need bear only the small financial burden of a tenant, yet may enjoy the secure tenure of an owner?

That is a very important question. For if it is not possible, the market is likely to destroy itself by its own unhappy performance. The voters will not forever tolerate an institution that withholds basic land resources from broad ownership and most productive current use. They may institute more and more public controls, for all their evils, to correct the wayward market. Or they may prefer outright direct allocation of land by government officials. Indeed, when the distribution of landholdings must be justified more on the grounds that it minimizes the interest burden of holding title than that it maximizes the output from land, the last defense of a free market is gone. For few private holders can account such low interest rates as the Federal government.

Clearly, therefore, the present study is only a prelude to the more important study of alternative land policies. That study, however, the writer leaves to others, or to a sequel. Having described the problem, and created an analytical framework for subsequent policy discussions, the present study ends.

EXPLANATION OF SYSTEM USED FOR NOTES AND BIBLIOGRAPHY

In general the Chicago Style Manual is followed, but with such modifications as seem appropriate to the needs of the present work.

BIBLIOGRAPHY:

The bibliography is arranged alphabetically. Works are alphabetized by name of human author or, if none is identified, by title.

Capitals are used instead of underlining titles of volumes.

Periodical material is cited similarly to material in Library of Congress bibliographies, in the following order and with the punctuation noted:

Author. "Title of Article." NAME OF PERIODICAL
Volume (Number): pages (Month, Year).

Volume numbers are in Arabics even if originally in Romans. Issue Number is sometimes omitted if volumes are known to be paged consecutively. If the pages are not consecutive, as in some popular journals, the initial page is given followed by "plus". Month is omitted if not useful.

Titles beginning with "Report on" or "of" are alphabetized by the following word.

The following abbreviations are used:

AER	American Economic Review
AES	Agricultural Experiment Station
BAE	United States Bureau of Agricultural Economics
Bul	Bulletin
FTC	United States Federal Trade Commission
GPO	United States General Printing Office
HR	United States House of Representatives
JFE	Journal of Farm Economics
JLPUE	Journal of Land and Public Utility Economics
JPE	Journal of Political Economy
LE	Land Economics
NY	New York City

S United States Senate
 U University
 UN United Nations
 US United States
 USDA United States Department of Agriculture
 USN&WR United States News and World Report
 V Volume
 Wash Washington, D.C.

NOTES:

All works cited in the notes (except newspapers and particular Census volumes) are fully cited in the bibliography.

The notes of each chapter are numbered consecutively.

Citations are abbreviated in such a way as to facilitate recognition of the work or, if necessary, reference to the bibliography. If the work has an identified human author it is cited by his last name, and the page is given. If there are multiple authors, more than one is given only where that will facilitate recognition. If the bibliography has two authors of the same last name, initials or Christian names are given. If more than one work of the author is in the bibliography an abbreviated title is given.

If no human author is identified in the source the first few words of the title are given, from which the citation may be found in the bibliography.

THE UNITED STATES CENSUS OF AGRICULTURE is abbreviated "CENSUS OF AG". It is preceded by the year of the Census, but with no mention of the number of the Census, nor the year of publication. It is followed by volume, number and page, in the same style as for periodicals in the Bibliography (q.v.).

Punctuation is minimized, as in legal citations. Familiar Latin phrases are not underlined. Familiar abbreviations are not followed by a period.

NOTES FROM INTRODUCTION

1. See Chapter I, pp. 78 ff.
2. Lewis et al 21-2
3. Stigler, THEORY OF PRICE 102
4. Ibid 115
5. Carlson 15; J.B. Clark, cited in Robertson 227; Stigler, THEORY OF PRICE 117; Machlup, "Marginal Analysis" 530
6. Stigler, PRODUCTION AND DISTRIBUTION 356 and above
7. Machlup, "Meaning of the Marginal Product" 159
8. Cf. Machlup, "Marginal Analysis" 531-2
9. Heady et al "Farm Size" 431
10. Black, PRODUCTION ECONOMICS 547-8
11. Boulding 762
12. Ely and Wehrwein 139
13. Chapman, S.J., "The Remuneration of Employers," ECONOMIC JOURNAL 16:523-8 (1906), cited in Stigler, THEORY OF COMPETITIVE PRICE 178
14. Herodotus, HISTORY, VII, 10

CHAPTER I

1. Lewis et al
2. For example in Cuba (Soule et al 83-4); and in Mexico (Kepner 304-5). The information on Guatemala is from the NY TIMES May 18, 1952, p. 10; February 19, 1953, p. 5; and April 21, 1954; the San Francisco CHRONICLE, February 27, 1953; LIFE 25:169-77 (October 12, 1953); Beals; and Monroe 61.
3. NY TIMES, May 18 1952, p. 10
4. de Castro 105
5. Soule et al 75-86
6. LAND REFORM 19
7. de Castro 97. Cf Gay; de Souza; Crist; McBride; and Hill, G.W., et al
8. NY TIMES April 2 1955
9. Hardie 11; Jacoby 175
10. Jacoby 113
11. NY TIMES Magazine, November 21, 1954, p. 9
12. Ross
13. According to a far-left source the situation in Kenya is just as extreme. (Du Bois, W.E.B.) For a milder outlook, see Parliamentary Delegation . . . 13.
14. Warriner 81
15. Ibid
16. YEARBOOK 3-7
17. Fisher, W.B. 179
18. San Francisco CHRONICLE Magazine, December 4 1949, p. 16
19. McClelland
20. San Francisco CHRONICLE Magazine, December 4, 1949, p. 17.
See also Meissner.
21. NY TIMES passim October-December 1949.
22. Similar peasant invasions in 1919-20 were repulsed by the Fascists. (Schmidt 30-1)
23. NY TIMES July 2 1952 p. 1
24. Tennyson
25. Roth 290
26. Geary 139
27. NY TIMES September 10 1948 p. 6
28. Stamp et al 448
29. NEA dispatch, August 1954; Kinross 103
30. Stamp et al 438; Duckham 1078
31. NY TIMES May 21 1952 p. 26
32. Duckham 1082. See also Stamp et al 448-9
33. "World's Biggest Ranch"
34. "Kern County Land Company" in WALKER'S MANUAL; Packard 55; INTERSTATE MIGRATION 3278; EXEMPTION OF CERTAIN PROJECTS 942-3 and 972-3; VIOLATIONS OF FREE SPEECH 22796-8; and REPORT ON LARGE LANDHOLDINGS 30 et passim; for a sympathetic view of the company and its operations see Downey Chap. 3, "The Irrelevant Cow Company."

35. Southern Pacific still holds four million acres in California, not counting land used in railroad operations. In 1949 it withdrew much of this from sale (RAILROADS DISCOVER OIL; VIOLATIONS OF FREE SPEECH 22796-9.) In some areas Southern Pacific is actively acquiring new lands "for future development" (Eugene REGISTER-GUARD, August 17 1954)
36. ECONOMIC ATLAS 21; Highsmith 33
37. Breisky
38. Humphries
39. Gray, "Land Speculation" 55
40. Hibbard 222
41. Ibid 213
42. Hedges 347-8
43. Ibid., 346-9
44. REPORT ON LARGE LANDHOLDINGS 28
45. Ibid
46. For a summary of many studies of such areas and conditions see Salter, Chap. 5.
47. LETTERS FROM ILLINOIS, cited in Sakolski 81-2
48. Billington, "Origin . . ." 205
49. REPORT 181. This condition has inspired the growing movement toward rural zoning. See, for example, Weeks et al 41-2
50. Ratcliffe 385
51. Coman 10
52. Adams, Frank, 36
53. Mead, Elwood, IRRIGATION ... 21
54. Teele, LAND RECLAMATION 15. See also Huffman 61-2 and 81; Ely and Wehrwein 263 and 266-7; Mead, Elwood, REPORT ... 1; Hedges 218; Thomas 217 and 233-4; Teele, "Financing ..." 430; Teele ECONOMICS ... 99-100.
55. Weeks and West 3
56. Ibid 21-2
57. Weeks, PERMISSIBLE ... 167
58. 1940 Census of Ag, IRRIGATION OF AGRICULTURAL LANDS, pp. 2, 144. See also Huffman 64
59. Teele, LAND RECLAMATION 33
60. Teele, "Financing ..." p. 432
61. Grunsky 11
62. ELEVENTH ANNUAL REPORT 3
63. Teele, ECONOMICS ... 185
64. ANNUAL REPORT 162
65. TO PREVENT SPECULATION ..., Senate, 23; House, 10
66. Cited in Ely and Wehrwein 256. Cf also "Acreage limitation..." 13
67. Adams, Frank, Tables I and V. The per acre cost of some Federal Projects now existing or contemplated runs considerably higher (Moley).
68. Hedges 347

69. Fisher, E.M. 155
70. Hoyt 294. See also 443 for examples of the process
71. Billington, "Origin ..." 208
72. Chicago HERALD-AMERICAN, June 1 1941
73. Grebler 30
74. Fisher and Smith 457
75. MacDonald
76. Bacon 77. Maps of urban land use, showing the location of vacant land, portray this structure graphically. See for example MASTER PLAN, Los Angeles 69; MASTER PLAN, Chicago passim; Bутtenheim, map of Portland, Oregon.
77. Ascher 6
78. Wenzlick 56
79. Ibid 59
80. MADISON'S LAND 10
81. Lewis et al 22
82. Bутtenheim 225
83. MASTER PLAN Los Angeles 68-71. In addition the area in the county having urban potentialities was surveyed, and 21% was unused.
84. THE USES OF LAND
85. Bartholomew 136-7
86. Ibid
87. Ibid
88. Ascher 6
89. Providence and Duluth also given in Wenzlick 59
90. San Francisco City Planning Commission, 1948
91. Hoyt 290-4
92. MASTER PLAN Chicago
93. Cornick, PREMATURE SUBDIVISION...
94. Bacon 74
95. Bутtenheim 217
96. Ibid 250
97. Richmond TIMES-DISPATCH, March 14 1943
98. "Land Use in Chicago" xv
99. Bacon 74, 81-3
100. Bутtenheim 217-9
101. Ibid 218 et passim. The estimates include some land subdivided on paper only, much of which was sold in that condition and remained so.
102. Simpson and Burton 14
103. Cornick, PREMATURE SUBDIVISION 90
104. Ibid
105. Bутtenheim 250
106. "Urban Lands" 2
107. Ibid
108. San Francisco CHRONICLE April 12 1953 p. 1

109. "Your New Plant..."
110. Advertisement, San Francisco CHRONICLE, August 21, 1955,
Section 3, p. 3
111. 1929 REPORT 269-71
112. PROGRESS REPORT 10
113. Cf "Price of Land ..."
114. See, for example, Simpson, Herbert D., TAX RACKET 38, 54;
and NINTH BIENNIAL REPORT 124
115. Simpson, Herbert D., TAX RACKET ... 71-3
116. 1929 REPORT 272-4
117. Olcott, "Chicago's Amazing Growth"
118. Cf Bittenheim 263; "Councilmen"; and Boitouzet
119. Poincare
120. Advertisement in author's files
121. Ratcliffe 347
122. Maverick 191
123. Cf Chap. V, Section VII, A, below, for a fuller descrip-
tion of this psychology
124. For the example of prairie Canada see Hedges
125. Fisher, E.M. "Speculation ..." 157-8
126. "Price of Land ..."
127. "Construction -- a Re-appraisal" and "The Building Boom..."
128. Cf Cornick, "Land Prices ..."
129. Hoyt 265 et passim; Pribram 71, 77; Long, BUILDING CYCLES;
and Long, "Long Cycles ..." 398 et seq
130. Long, "Long Cycles ..." 398; Zeckendorf
131. Holden
132. Gordon, BUSINESS FLUCTUATIONS 286
133. Hoyt 234
134. Simpson, Herbert D., "Real Estate..." 164-5. Cf also
Hoyt 236, 401, 445 et passim; Vanderblue 130, 266;
Gray, "Land Speculation" 66-7; Scherman 109, 128-31,
436-7; Fisher, E.M., "Speculation ..." 161
135. Sakolski. For an antique example see Billington,
WESTWARD ... 94
136. Weeks, PERMISSIBLE ... 172; Cf also Mead, Elwood,
REPORT ... 6; and Teele, LAND RECLAMATION ... 28

CHAPTER II

1. Grebler 42
2. MASTER PLAN Chicago, cited in Blossat
3. For pictorial evidence see REPORT TO CHICAGOANS
4. REAL ESTATE MAGAZINE, November 2, 1940
5. GOVERNMENT HOUSING 277 (suppl. bib.)
6. In 1950 about 49% of all urban dwelling units were rented (GOVERNMENT HOUSING 277, suppl. bib.) Today the percentage is somewhat lower.
7. 1950 Census of Ag 5 (5):13
8. Schultz, "Capital Rationing ..." 316
9. Ely and Wehrwein 200
10. In Ackerman and Harris 62
11. 1945 Census of Ag 2:136
12. 1950 Census of Ag 5(6):45
13. 1920 Census of Ag 6(3):19
14. "The average annual net income of tenants in the North and West apparently is not strikingly different from that of owner-farmers..." (FARM TENANCY 55). That suggests that owner farmers tend to be located on marginal lands which contribute to their income little beyond the returns to the labor and capital applied to them.
15. For evidence see latter part of chapter.
16. 1930 Census of Ag 3(3):18
17. Ibid 3(2):32
18. Ibid 3(3):18
19. 1940 Census of Ag 3:35; 1950 Census of Ag 2(Chap. 11):929
20. 1945 Census of Ag 2:158
21. Goldenweiser and Truesdell
22. Warren and Pearson 254-5
23. Goldenweiser and Truesdell
24. Ibid 32
25. Between groups one and two in the New England region.
26. Goldenweiser and Truesdell 55
27. Ibid 44
28. 1950 Census of Ag 5(10)
29. Ibid 5(5):13
30. This was a very rough classification by visual inspection. The data lend themselves to nothing more precise.
31. See Appendix 1, below.
32. Malik 249. Cf also Douglas 188
33. Mitchell 6
34. Lee, Shu-ching, 260
35. Borremans, M.L., in EUROPEAN AGRICULTURE 135
36. de Souza 268
37. Ackerman and Harris 154
38. Jacoby 73, 84
39. Ibid 181-2

40. Freund 240-1
41. DEMOCRACY IN AMERICA 2:198. Later, J.S. Mill wrote of
 "... North America, where, as is well known, the land,
 except in the former slave states, is almost univer-
 sally owned by the same person who holds the plow."
 (Mill 258)
42. I give these historical data only on the percentage of
 farmers who were tenants because early Census' give
 no other data.
43. 1945 Census of Ag 2:158; 1950 Census of Ag 2:922 and 934
44. 1945 Census of Ag 2:136
45. Table 4, above
46. In passing, note that some of this decline is offset
 by an increase of land under hired managers. In 1935
 hired managers operated 6% of the farm area; in 1950,
 9%. Thus the owner-operated acreage has increased less
 than the leased acreage has declined. In 1935, 49% of
 the farm acreage was owner-operated; in 1950, 55%.
47. Lee, Shu-ching, 261
48. This applies to the long term trend. Cyclically the
 relation is often obscured, as from 1920 to 1935 when
 land values fell while tenancy rose, or 1940 to 1950
 when tenancy fell while land prices rose. Those
 contradictions resulted from time lags in the relation
 of land income to land value, a matter discussed in
 the next few paragraphs.
49. Timmons, "Farm Ownership ..." 85. For a most incisive
 analysis, see Salter, "Farm Property" 17
50. "Recent Development ..." and "Why it Costs More ..."
 This means that once again the market is optimistic,
 and to the young entrepreneur without low interest
 funds the purchase of land more onerous. The most
 significant statistical clue to the current state of
 the farm land market is, I believe, the growing value
 per acre of tenant farms relative to owner farms (Ap-
 pendix 2, this chapter). This reveals that land
 values are rising relative to improvement values and,
 in this respect at least, the market is beginning to
 return to its condition as of 1920.
51. Eliot 33
52. FARM TENANCY 6
53. Ely and Wehrwein 218
54. Baker
55. Southern, especially 216-7
56. Nelson, Peter
57. Schikele, "Economic Phases ..." and "Economic Implica-
 tions ..."
58. Schikele, "Economic Phases ..." 212-3; and "Economic
 Implications ..." 442, Table e; and 440-4.
59. Baker 60
60. Ibid

61. Nelson, Peter 29. Additional materials are in Renne, "Significance ..." 428; and Eke
62. Tenanted urban lands are also generally less improved. Tenancy tends to coincide with slums and blight.
SLUM LAND ACQUISITION 2
63. Cf Stigler, THEORY OF PRICE 115; and Chapter III, this study, Section II, c, 2 a.
64. 1940 Census of Ag III, 148.
65. Schikele, "Obstacles ..." 450. See also Ackerman and Harris 416
66. Poli 3
67. 1950 Census of Ag 5(6):46
68. Ibid 44, 46
69. Baker 57
70. Goodrich 72. Figures are for 1930. After 1930 the disparity became greater as depression migrants moved back to the very areas already most crowded (Ibid. 514-6)
71. 1950 Census of Ag 5(5):44-5
72. Ely and Wehrwein 206
73. FARM TENANCY 55
74. Hurd 128
75. LAND REFORM 16
76. Banks 105
77. 1950 Census of Ag 5(6):47
78. It is remarkable, and significant for future chapters, how very high these costs may rise without actuating the market to obviate them by transferring title from landlord to operator. A business and investor's journal states: "The return to the efficient farm operator who owns and works his land can be much higher, of course, than that received by the absentee landlord." ("Why it Costs More ..." 94.) Yet the absentee landlords hang on. In Quinsan, Soochow, and Wukiang provinces of China, according to J.L. Buck, the "compradore" system is common. Among big landholders it is the fashion to know nothing of practical affairs, but let the compradore or rental manager collect and transmit payments. The compradore customarily cheats the landholder of a great deal of the rent. (Buck 32). Yet the income that trickles through to the title holder is somehow enough to make him keep title, although if either tenant or compradore were title-holder he would receive a higher net rent after deductions. In future chapters we consider how this anomaly comes about.
79. Poli 25
80. To some degree perhaps tenants waste because they are by nature "thriftless and shiftless", as Ely and Wehrwein suggest (206). But whatever their nature, providence and prudence bid them waste when their waste is suffered

by another and their prudence benefits them not at all. Casual observers often remark the contrast between tenants' shabby dwellings and their ostentatious clothes and cars. Many draw from this uncomplicated conclusions about their character and heredity. But is it not a rational adjustment to their environment? The Gypsy values only what he can carry with him.

81. For an interesting discussion of the cultural background of such attitudes see Scherman Chap 6
82. James Burnham wrote: "From the point of view of the manager group, especially as economic conditions progressively decay, the reward allotted to the finance-capitalists seems inordinate and unjustified, all the more so because, as the managers see it more and more clearly, the finance-capitalists are not performing any function necessary to the process of production." (Burnham 91). Burnham visualizes a struggle between industrial managers and absentee owners which he likens to the struggle of Charles Martel against the "do-nothing" kings of eighth century France. Burnham's absentee "finance-capitalists" are the industrial equivalents of absentee landlords, of course. Cf also Schumpeter 140-2
83. Buck 34
84. Mitchell 6
85. Inman and Fippin 50. There are, of course, all kinds of landlords who exercise all degrees of supervision from none at all to virtual management. Schikele and Norman classified Iowa landlords and rated their practices as follows: Relatives, 23% of landlords, Good; Retired Farmers, 21% of landlords, Poor; Active Farmers, 10% of landlords, Good; Widows and estates, 12% of landlords, Very Bad; Business and Professional Men, 14% of landlords, Good and Bad; Loan Companies, 20% of landlords, Bad (Schikele and Norman 180)
86. The problem is like that of car-rental services. Some customers will abuse a rented car grossly, and almost all will show it less respect than their own. Car owners must compensate themselves by charging high rentals. They charge about \$6/day plus 8¢/mile, while one operates and maintains his own car for considerably less.
87. City land, not subject to erosion, is ideal for renting when it can draw an income without being much improved and vulnerable to tenants. Slums and blighted areas, with their central location and old buildings, have this virtue and so contain mostly tenants, while newer houses on cheaper land are mostly resident owned.
88. For example for the Corn Belt see Baker 61
89. Truesdell 122

90. Schikele, "Farm Tenure ..." 239
91. Schultz, PRODUCTION AND WELFARE ... 151
92. Ely and Wehrwein 218
93. Ackerman and Harris 410
94. Ibid 25. Cf also Timmons, "Institutional Obstacles ..."
140-1. For an extended legal treatment see Mangum.
95. Bittenheim 257
96. Baker 61
97. Case 265
98. Weeks and West 19
99. Baker 61
100. Cf Schikele, "Effect of Tenure..." 190
101. Mitchell 16
102. Haggard 190
103. Jones, William O., 538-44
104. Taylor, OUTLINES
105. Schultz, "Capital Rationing ..." 122
106. 1940 Census of Ag 3:35
107. See Table 1, p.126, above

CHAPTER III

1. 1950 Census of Ag 2(ch 10):775
2. Ibid 2(ch 12):Table I
3. Computed from data in 1950 Census of Ag 2(ch 10):775;
Ibid 2 (ch 12): Table I; "Survey of Consumer Finances"
10; and INCOME DISTRIBUTION 83.
4. Described in Bowman. She refers to it as the "Gini con-
centration ratio, a usage probably truer to history
than that adopted here.
5. Sources for the various countries are as follows: Denmark,
1953 Danmarks Statistik Arbog 50; Sweden, Freund 237-8;
Germany, Oppenheimer; Rumania, Roberts 370-1; United
States, 1950 Census of Ag 2(ch 10):775; Egypt, Warriner
35; Brazil, FACTS FOR FARMERS Aug-Sept 1955; Venezuela,
Hill, G., et al 24; Chile, Carroll
6. Computed from 1945 Census of Ag 2:82
7. Computed from 1950 Census of Ag 2(ch 10):842
8. 1940 Census of Ag 3:84
9. Ibid
10. Ibid
11. Ibid: 88 et seq. There may have been a few more such states
in 1940. Lack of resources kept the author from the
time-consuming process of checking the less likely
possibilities. In 1950 there were almost certainly
more because from 1940-50 the value of real estate
rose a good deal more on farms 1,000 acres and over
than on all farms. (See Table 30, below).
12. Ibid
13. 1910 Census of Ag 5(ch 12):883. Unfortunately the Census
grouped these data only by number of tenants, not by
acreage. Were they grouped by acreage the acre values
might not rise so much, or at all, with size. But it
seems probable they would not fall nearly as much as
they do when the small cropper units on valuable land
are taken as the individual "farms".
14. Bachman and Jones 73
15. Levy, Hermann, 228
16. Ibid
17. Ackerman and Harris 58
18. Ibid 435-6
19. Nelson, Lowry, 143
20. Hammar and Muntzell
21. Cash 35
22. Craven 158
23. Raper 91
24. Woofter et al

25. Ibid 201, 217. There were also some regions displaying the opposite contrast. For additional instances from the Southeast see Rogers; Miley 583; Weaver 38-46
26. Goodrich 72. For similar observations on a broader scale see Hammar 779.
27. 1910 Census of Ag 5:271-2. Cf also Wilcox and Hendrix 26, re Indiana.
28. Hamilton and Parker. Also cited in Schroeder. For an example from the Sierra Nevada Foothills see Weeks et al 20-4.
29. Roberts 42, 46
30. Ibid 360
31. LAND REFORM 20, cited in note.171.
32. Gay 259
33. Ibid 260
34. Warriner 81-90,
35. Jacoby 174, 186
36. Computed from Jacoby 182; and Hardie B20 (sic)
37. Freund 225-6. Note that his statement applies to tillable land only. Poor pasture and woodland was often held in large units.
38. 1900 Census of Ag 1:xcii, xc; and Turner, OWNERSHIP UNITED STATES 12-18
39. Computed from 1900 Census of Ag 1:314
40. Computed from 1953 DANMARKS STATISTIK ARBOG 50. Strictly, these data are for "properties", not operating units. But as there is in Denmark only very little tenancy the two are not likely to be very different.
41. Carrion 70, 85
42. Computed from 1950 Census of Ag 2(ch 12): Table I
43. Computed from INCOME DISTRIBUTION 83
44. Baker 22
45. Ibid 26
46. From ILLINOIS FARM ECONOMICS July-August 1947, Table i.
Cited in Wilcox and Cochrane 55
47. THE LAND 1:205
48. 1950 Census of Ag 5(Part 6):51
49. Goodrich et al 72
50. Hamilton and Parker
51. "Analysis of the Ownership..."
52. AGRARIAN PROBLEMS...
53. Jacoby 142, 163
54. Ackerman and Harris, ch 13
55. What Size Farms..." 148
56. 1940 Census of Ag 3:80. Cf also Weeks, "Factors Affecting Selling Prices ..." 514
57. Ibid 3:148
58. Lee, J. Karl, 95-98. Cf also Poli 31, for similar data from the Imperial Valley
59. Levy, Hermann, 71
60. Ibid 158, 228
61. THE LAND 2:530-1. For parallel data on Denmark see Jensen 294-305; Gronborg 4; for Hungary see EUROPEAN AGRICULTURE 150

62. 1950 Census of Ag 2(ch 12): Table I
63. Land fertility may be depleted, but that occurs, where it occurs, usually more slowly than capital normally depreciates. And a large part of the value of land is never depleted: its site relative to markets, water, sunshine, temperature zones, subsoil, etc.
64. Davis and Mumford 34
65. Computed from 1930 Census of Ag 3(1):18
66. Bachman and Jones 55
67. In this age when not everyone any longer reads the Hebrew Prophets it is perhaps well to explain that allusion by citing Isaiah 5:8: "Woe unto them that join house to house, that lay field to field, till there be no place, that they may be placed alone in the midst of the earth!"
68. Hammar
69. Saloutos and Hicks 25; Cf also INTERSTATE MIGRATION 3258, testimony of Professor Paul Taylor
70. Goodrich, Allin and Hayes 71
71. Johnson, D. Gale, 642
72. Cited in Wilcox and Cochrane 500
73. Duerr et al, 14
74. Wilcox and Hendrix 2-3. Cited from Duerr et al, 53-5
75. Goodrich, Allin and Hayes 76-7
76. Goodrich 75, 514-6; Weeks et al, "Possibilities of Rural Zoning" 49-50; Duerr et al
77. "Crofters..." 602-3. Cf also Freund, 227 et seq, on Sweden; and NY TIMES July 14, 1950, p. 9, on Kashmir, where before the recent land reform small farmers were idle 6 to 8 months of the year.
78. Wilcox and Cochrane 81
79. Warriner 84
80. For studies of such areas see Lee, J. Karl; REPORT ON LARGE LANDHOLDINGS: Poli; Melcher; Wilson and Clawson.
81. Cf Ely and Wehrwein 125
82. The costs of subdividing land are largely costs of providing smaller farms with their own separate units of capital like fences, aqueducts and access roads, which would otherwise have been provided on a less intensive scale. The additional cost per acre is not due to the land's as such being imperfectly divisible in space, but to these capital items. For example, fencing for 10 acres costs more per acre than fencing for 100, just as a barn for 10 acres costs more per acre than a barn for 100. Most subdivision costs, therefore, can be counted as capital improvements which cost more per acre when provided separately for smaller acreages. To be sure these expenses are incurred because the land is divided, but so are the additional costs of smaller barns, houses, etc. And all result in the same outcome, that the land is served by more capital per acre, more evenly distributed over the land.

This easy divisibility of land in space does not alter nor contradict the fact that land is very imperfectly divisible in time, hence arduous for impecunious farmers to finance. Indeed, one can sum up in one phrase the forces that lead to dwarf farms by noting that small buyers divide land minutely in space to fit their finances because they cannot divide it in time.

83. Weeks, "Suggested Approach ..." 15. Professor Weeks' reasoning is closely parallel to that of this paragraph.
84. The average net product of land, at n acres, equals the average output at n minus the average cost at n .

The marginal net product of land, between n and $(n + 1)$ acres equals the average net product at $(n + 1)$ plus the acreage at n times (the increase of average output minus the increase of average cost). More briefly:

$$ANP_n = AP_n - AC_n$$

$$MNP_{\substack{(a=n) \\ (a=n+1)}} = ANP_{(n+1)} + a_n (\Delta AP - \Delta AC)$$

85. Bachman and Jones 41-2
86. Heady 369
87. Ibid 752. Cf also 708
88. Renne, LAND ECONOMICS 258
89. Schultz, "Capital Rationing ..."
90. Schultz, PRODUCTION AND WELFARE ... 53
91. Wilcox and Cochrane 128
92. Ibid 58
93. Ibid 55
94. Not all economists make this error. David Weeks has defined optimum land utilization as that which supports the largest permanent population at the highest standards. (Forestry vs Agriculture" 962)
95. As for example in Knight and Hines 347; and more elegantly in Stigler, THEORY OF PRICE 115
96. 1940 Census of Ag 3:35. Land was reported at \$23.2 billions, implements and machinery at \$3.1 billions. By now the latter figure probably has grown more, percentage-wise, than the former, but as there are no data on land values separate from buildings after 1950 there is no knowing for certain.

Actually the relative importance of machinery is greater than the figures indicate, as the price of land is very high relative to its current contribution to gross output, and also because even in 1940 the "land value" figures included all improvements other than buildings. But after these qualifications it remains strikingly true that any computation of "efficiency" which totally disregards land inputs is worthless.

97. Stokdyk 82
98. Bachman and Jones 33
99. Ibid 33
100. Heady 376
101. Wilcox and Cochrane 56
102. Lee, J. Karl, 1-3. In this area most of the land was in holdings much larger than those figures: about 32% of the farmland and 18% of the cropland in units over 15,120 acres; 62% of the farmland and cropland both in units over 320 acres; and only 16% of the farmland and 21% of the cropland in units under 80 acres. (Wilson and Clawson 39, 41 and 64) Strictly this latter study includes two less counties than Lee's, Fresno and Kings, but if anything that should reduce the concentration, as large parts of both those counties are well subdivided in irrigation districts. However, the Wilson and Clawson study is incompletely applicable in that it applies to ownership units, which tend to be more concentrated than operating units. Also, neither is very satisfying on the question of water supply relative to farm size. But the data allow ample room for those defects, and yet remain impressive.
103. Myers 434 ff. A parallel study of Scandinavian farming by Ludwig Nanneson is cited in Mead, W.R., 174
104. Pike, H.W.
105. "El Solyo..."
106. Balchin
107. Miley 583
108. San Francisco CHRONICLE, Letters, 11-30-55
109. Benton
110. Black, PRODUCTION ECON. 547-8
111. Holley, Winston & Woofter 2
112. Stapledon 190
113. "World's Largest Ranch" 50
114. San Francisco CHRONICLE, 11-1-55
115. Mill 265. Cited from Laing, JOURNAL OF A RESIDENCE IN NORWAY
116. Ibid 149
117. Lee, J. Karl, 4, 7, 37, 128
118. Ibid 98-9; also Wilson and Clawson 23. Cf note 102
119. Heady, McKee & Haver 431, 442
120. McCorkle 12, 13
121. EXEMPTION OF CERTAIN PROJECTS 149-52
122. Carpenter 30, 42
123. Parker and Hamilton
124. 1940 Census of Ag
125. Bachman & Jones 73
126. Stokdyk 80
127. Poli, Japanese Farm Holdings 2, 10; Poli & Engstrand 356; Millis 800; National Defense Migration 11313, 11341 ff.

128. Holley, Winston & Woofter 93
129. World's Largest Ranch 60-1, 96
130. 1948 Stockholders' Report, Kern County Land Co. 15;
Exemption of Certain Projects 942-3; Violations of
Free Speech 22796-8. After 1941 the company began slowly
to develop these lands, and by 1954 had increased the
gross cattle revenues to several millions. The over-
ripeness of these lands is attested to by the fact
that in each year since 1941 the cumulated income
ensuing from the improvements has exceeded the cost
of the improvements cumulated to the preceding year
(1949 Stockholders' Report, Kern County Land Co., p. 8;
and ensuing reports)
131. Black et al 439
132. Carrion 342
133. Gronborg 4
134. Brasse-Brossard
135. Computed from 1900 Census of Ag 5(1):186-7
136. The present analysis assumes constant net income and
capitalization rate. For the general case see
Chapter VI.
137. 1945 Census of Ag 2:156
138. There is, of course, no one optimum size, the optimum
varying with the individual. But the individual's
capacity is only one of several factors affecting the
optimal operating unit, and the other factors, techno-
logical ones, do not vary with individuals. And the
financial circumstances of individuals, which deter-
mine the ownership unit, vary much more than their
working capacities, due to the cumulative effects of
inheritance, credit rationing, linkage of risk, com-
pound interest, the advantage of a good start in life,
family connections, social position and so on. There-
fore it seems plausible that, while operating econo-
mies may prescribe medium sized farms, financial con-
siderations, varying widely with individuals, prescribe
a vast range of farm sizes, and tend to pull owner-
operations away from medium sizes toward extremes.
139. 1910 Census of Ag 5:883
140. Ibid 882
141. Woofter et al xxiv
142. Ibid 35-6
143. 1900 Census of Ag 1(Part 1):lxxxviii-xcxi
144. Wilson and Clawson, Tables 3 and 5, p. 29
145. Ibid 63
146. Turner, ...NORTH CENTRAL STATES 38
147. Turner OWNERSHIP ... 41. Cf also Wiecking 31; Warriner
passim; and Roberts 14
148. Cf for example Poli 25
149. Warriner 22-3
150. Meyers 12

151. The word "concentration" in the Lorenz Concentration Ratio refers to concentration of much land in the hands of a few people; and not to concentration of size distribution near the mean, but the opposite of that.
152. Computed from Roberts 370-1; and Freund 237-8.
153. In Ackerman and Harris 310
154. Inman and Fippin
155. Ibid 55
156. Computed from Ibid 7; Turner, OWNERSHIP ... 6 (footnote), 7; and 1900 Census of Ag 1(Part 1): lxxxvii-xcii. Cf also Banks 33
157. Turner, ...NORTH CENTRAL STATES 22-3. In 1900 it was 120 acres for in-county landlords, and 183 for out-of-staters.
158. Turner, "Absentee Farm Ownership..." 50-1
159. 1900 Census of Ag 1(Part 1):xc
160. Meyers 11
161. Stokdyk 81
162. For data on such large holdings see THE LUMBER INDUSTRY passim; Banks 37; REPORT ON LARGE LANDHOLDINGS ...; Gray, "Land Speculation"; Billington, "Origin ..." and WESTWARD EXPANSION; Beard 23, 49; Hibbard Chap. 12; Hedges; Livermore; Ely, "Outlines..." 116; Gates, opera omnia; and Harris, ORIGIN...
163. 1940 Census of Ag 3:75
164. Myers 491-4
165. Black et al 494-5
166. Packard 55. See Note 29, Chap. I for several other sources.
167. EXEMPTION OF CERTAIN PROJECTS 942-3; 972-3
168. "World's Largest Ranch"
169. "El Solyo"
170. REPORT ON LARGE LANDHOLDINGS..30
171. For parallel observations in foreign countries see Gay 265; Warriner 102; Ackerman and Harris Chap. 13; Hardie A7-A8 (sic); Crist 229-30; and LAND REFORM 20, from which we quote:

"In Venezuela, for example, within easy reach of the capital now there are fertile regions utilized for extensive grazing which, with a different system of land tenure, could become a market garden area for Caracas. In other regions, all the produce from the areas of intensive cultivation on less fertile and steeply sloping hillsides has to be transported by human beings or pack animals across less intensively cultivated fertile areas to the town."

"The pattern of land utilization is thus the reverse of that which market conditions and natural resources require. The hillside land, which is best suited for pasture and woodland, is intensively cultivated for subsistence crops by hoe culture which destroys the top soil, while the valley floors, more suited for arable cultivation, are used for grazing."

172. Schultz, ECONOMIC ORGANIZATION ... 303. Like D. Gale Johnson previously cited, Schultz apparently uses "capital" metonymically to include land (see footnote, 71 p. 221 this chapter). Inasmuch as the returns to capital, in the classical sense of the word, are quite low on small farms, due to the overcrowding of capital on them, he probably refers here to land alone.
173. Schultz, PRODUCTION AND WELFARE... 143-5
174. Ibid 142 et seq; Schultz, ECONOMIC ORGANIZATION ... 353-4
175. Myers 435, 447, 455, 487
176. Computed from 1945 Census of Ag 2:67; and 1950 Census of Ag 2(Chap 10):775. 1900 is the first year for which all data are available from which to compute LCR.
177. Preliminary Reports by States, 1954 Census of Ag
178. Computed from 1900 Census of Ag 1:230; and 1950 Census of Ag 2(12):Table I
179. Computed from "Survey of Consumer Finances", and CONSUMER INCOMES ... 96
180. 1950 Census of Ag 2(10):775
181. Computed from 1940 Census of Ag 3:78-9 and 82; 1950 Census of Ag 2:776
182. 1950 Census of Ag 2:774-5
183. Substituting 1945 data for the breakdown under 10 acres, where 1950 data are not available, as indicated in Table 31.
184. Many economists have attributed the maldistribution of labor relative to land primarily to the immobility of labor as such. But in view of the fact much of American farm labor is on wheels, and especially in view of the fact that in the 'thirties migration was primarily into the very areas where there was already the least land base per man, there seems little basis for that opinion. (Goodrich, 75, 514-6; Goodrich, Allin and Hayes, 71 ff.)

CHAPTER IV

1. Ely, "Land Speculation" 127
2. Lewis et al 22
3. Pigou 142-3
4. That is, nearest the present, where the future values are least discounted.
5. Even urban sites are occasionally "conserved", as Ely professed in his doctrine of "ripening costs", in the sense that use plans extend over time and apparent present disuse may be an integral part of a use plan that promises higher future returns. But this would only explain sporadic appearances of mis-use. We are dealing with a chronic problem. For more on this point see Section C, this chapter.
6. TO PREVENT SPECULATION ...S. 21. Testimony of Mr. Romans. He also alluded to two lesser "speculators".
7. Billington, "Origin..." In more recent times, Bureau of Reclamation land settlement specialists have observed that new farmers generally tend to break more land than they can profitably farm with the capital at their disposal. FARM EXPERIENCE STUDIES xiv. Cf Danhof, 320, footnote
8. "Acreage Limitation..." 61
9. To add to the confusion in 1949 the first party "accused of land speculation" by the Bureau of Reclamation on the Columbia Basin Project was not the seller, but the buyer who had met his price! (Huffman 63)
10. FEDERAL RECLAMATION BY IRRIGATION 112
11. TO PREVENT SPECULATION...S. 16
12. FEDERAL RECLAMATION... 116
13. Hedges 232
14. Fisher, E.M., "Speculation..." 154
15. Gray, "Land Speculation" 64. Cf also ibid 68 where he makes "land speculation" virtually synonymous with private property.
16. Chambers, "Farm Land..." 687
17. Chambers, ibid, and RELATION...
18. George 255
19. Brannen and Sanders 7
20. Goldenweiser and Truesdell 70
21. Cornick, PREMATURE SUBDIVISION... 159. Cornick distinguishes land "value", capitalized from the current income, and land "price", which includes the "speculative" component.
22. TO PREVENT SPECULATION...S. 25
23. Goldenweiser and Truesdell 70
24. THE LUMBER INDUSTRY 181

25. Ely adopted a parallel terminology. He designated such holders "mere speculators". (Ely, "Land Speculation", 124).
26. A sharp line divides the problem speculator from other speculators. Ability to use land depends on individual traits, and all individuals differ. Individual sites also differ. There is, for each site, one and only one individual who is the best user. Anyone else who outbids him for title is a problem speculator. Thus, if quibble we must, we can carry this definition down to the finest point. Of course in practice we generally deal with much broader distinctions. For a fuller treatment of the point see Chapter V, Objection 1.
27. Ely, "Land Speculation" 127
28. Ely, "Outlines..." 104
29. Simpson and Burton 44
30. Land may also be "unripe" in the sense that the holder expects construction costs to fall in the near future, and awaits a chance to erect his buildings cheaper. But, again, this does not explain why the land was cleared of its former improvements, or otherwise unfitted for its previous use so prematurely.
31. Many writers seem to think not. E.O. Heady, for example, states: "Uniform interest rates would prevail in the long run under a competitive credit market." (Heady 559 footnote). See also citations on p. 350, below.
32. Scherman 88
33. Such an observation often evokes criticisms against the "time-preference" theory of interest. But it neither stands nor falls with that theory, or any particular theory of interest. It is simply an observation of fact: individuals differ, and there are barriers in the market between them. Any valid interest rate theory must admit of that fact. The time-preference, loanable funds, productivity of capital, and liquidity preference theories all do admit of it (as well as of each other, as Somers has so deftly shown). Keynes incorporated it most explicitly into his liquidity preference theory of interest (Keynes 144, 208).
34. Hoyt 120-1
35. MONTHLY REVIEW, Federal Reserve Bank of San Francisco, Jan. '52, p. 57; Wilcox & Cochrane, p. x. Cf Mazerik 30, on the acquisition of Tennessee Coal & Iron by U.S. Steel. Cf also Greeley, 18 and 58, for the same phenomenon in timber. In slack times the only sellers were the "hard pressed", and at all times the need to meet interest payments was an important factor controlling the rate of cutting.
36. Keynes 144-5

37. Schikele, "Farm Tenure..." 240. Schikele continues:
 "Many an encumbered owner-operator is starved for capital. He is sinking his savings into land equity and is left dry on operating capital. . . Any banker, however, can know relatively few farmers well enough to judge their characters, and those few are much more likely than not to be well-to-do, with easy access to credit almost regardless of their character. Results: lack of capital on farms where it is scarce and could contribute most to production expansion, and abundance of credit available to farms where no more is needed." Cf also Nicholson, who found the same pronounced tendency in markets for corporate securities. Cf also Wilcox & Cochrane 96
38. Hicks, POPULIST REVOLT, passim; Mead, REPORT OF INVESTIGATIONS... 4; FARM TENANCY 44
39. Gray and Turner. Cf also Cox, Ely and Hibbard 33
40. Mason 105
41. See note 134, Chap I, and pp. 114-115, Chap I; and Robbins 31
42. Packard 56-8
43. Heady 573
44. "Under existing institutional facilities a farmer is allowed to rent a larger volume of capital (in the form of farm land and buildings) than he is permitted to borrow." And: "A Corn Belt farmer with less than \$5,000 is not permitted to establish a firm of optimum size.... When a farmer makes the shift from renting to owning, his income is likely to be lowered." (Schultz, "Capital Rationing..." 314, 317)
45. Wantrup
46. Ely and Wehrwein, 135, 139.
47. Stigler, Theory of Competitive Price 175
48. Reder 36. See also 44
49. Brannen and Sanders 8
50. Jones, William O.

CHAPTER V

1. INVESTIGATIONS... 19. Some hint of the Japanese' high productivity is seen in their producing in 1941 almost 50% of the west coast truck crops from only 2.9% of the cropland (Poli and Engstrand 357). Of course this does not mean they outproduced Caucasians by 50/2.9, for they specialized in truck crops. But there is ample evidence that they tended to produce a good deal more per acre. See Poli, "Japanese Farm Holdings..." 10; Millis 800: NATIONAL DEFENSE MIGRATION 11313, 11341, 11815, 11824. Jacoby has noted a parallel in lower Burma, where Indian immigrants' "lower living levels enabled them to rent land at higher prices than the Burmese farmers." (Jacoby 85).
2. Birckbeck, cited in Johnstone 130. Cf Danhof 320 for many similar observations.
3. Knight 138. John R. Commons has summarized a study of the assets of 4,047 "millionaires" and concluded that an unusually high proportion of their assets were in land (Commons 253. Cf also Mezerik 56). Cf also Chapter III, above, where it is shown that larger landholdings have less capital per dollar of land value; and Chapter VI, below, where an explanation for this condition is offered.
4. Hedges 237. The Biharra Company of Egypt has also pursued this policy with success. Warriner 46-7
5. Mead, REPORT OF INVESTIGATIONS... 5. Cf Huffman 103
6. Black and Allen 408-9
7. Sometimes erroneously called diminishing marginal utility of income
8. Goldenweiser and Truesdell 70
9. INVESTIGATIONS OF LAND SETTLEMENT... 20
10. REPORT ON LARGE LANDHOLDINGS 31
11. FARM TENANCY 55
12. "The returns to the efficient farm operator who owns and works his land can be much higher, of course, than that received by the absentee landlord." ("Why it Costs More..." 94)
13. Many English farm landholders, according to the WESTMINSTER BANK REVIEW, are "businessmen who look upon a farm as a secondary source of income, a place to invest their profits, a pleasurable weekend occupation, a home for their retirement, or a means of 'living well off the land'." ("Farm Income...")

14. Keynes 144
15. Justice McBride, concurring opinion in regard to water rights of Hood River. 114 Oregon 122 at 190-91
16. Huffman 42; Akagi. See also Arrington
17. Clawson 302-6
18. Colean 127 et seq
19. Ostrogorsky 204 et seq
20. Jacoby 44
21. Levi. 25:10
22. Levi. 25:23
23. Levi 27:24
24. Deut. 19:14
25. Ely & Wehrwein 190-1
26. Deut. 15:1-2
27. Robbins, passim
28. Ackerman & Harris 245
29. Teele, IRRIGATION IN U.S. 78
30. Smith, Bert
31. Hutchins, Selby & Voelker 79
32. Weeks & West 54
33. Clark, Colin, in THE FINANCIAL TIMES, 9-10-53
34. Bacon 85-7
35. Jewkes 194
36. Chap IV
37. Wilcox and Cochrane 175
38. Weeks and West 35
39. Ely, Hibbard and Cox 14
40. INVESTIGATIONS OF LAND SETTLEMENT... 17
41. FEDERAL RECLAMATION BY IRRIGATION 114
42. TO PREVENT SPECULATION...H. 10
43. Simpson and Burton 44
44. "A City - 200 Miles Long?"
45. INVESTIGATIONS OF LAND SETTLEMENT... 7
46. Lewis et al 31
47. "Oil Leases: Like Reno -- You can't win just watching. You have to take a chance. Send for information." (Advertisement, San Francisco CHRONICLE, March 22, 1953)
48. Lewis et al Appendix 2; Shannon and Bodfish
49. The Uthwatt Report, cited by Spengler, Edward H., in THE AMERICAN CITY November 1942 p. 49
50. NY TIMES August 11 1935
51. Walker Chap 9; Lasch Chap 6
52. Weeks and West 31, 36, 38 et passim
53. INVESTIGATIONS OF LAND SETTLEMENT 12
54. Ely, Hibbard and Cox 12
55. Ibid 14
56. Chambers, RELATION... 33. Cf also Hunter and Nuekols 8
57. Keynes 154-5
58. Bittenheim 217
59. Cornick, PREMATURE SUBDIVISION... 11

60. Ely, "Land Speculation" 131
61. Joseph Balestier, a contemporary, cited by Hoyt 30
62. Martineau, cited by Hoyt 30
63. Bутtenheim 219
64. Hoyt 387-90
65. W. C. Hill, cited in Vanderblue 118
66. Vanderblue 122. For an entertaining profile of the most prominent Florida boomer, Addison Mizner, see Johnston
67. Scherman 35. Original source Bureau of Internal Revenue STATISTICS OF INCOME (not in bibliography)
68. Scherman 109. Original source Department of Commerce LONG TERM DEBTS IN THE UNITED STATES (not in bibliography)
69. "Holdouts, those who refuse to sell except for arbitrary or unreasonably high prices, have long been and will continue to be a major problem." Bутtenheim 223
70. See Abbott; and Rienks. Mitchell reports the same problem in Korea and Japan (Mitchell 22-3), and it is familiar in most settled areas, the United States not excepted. Weeks observed in the Sierra Nevada foothills that, after preliminary subdivision that was excessive for later needs, "speculative mineral values and other factors have inhibited subsequent consolidation into appropriately sized livestock ranching units." (Weeks et al, 30-1)
 Buck reports that in China local custom forces sellers to offer their land first to adjacent holders (Buck 25). Such a custom, whatever its virtues in that environment, would tend to encourage concentration, since larger holders are adjacent to more pieces than smaller holders. Indeed even without this custom this longer boundary line gives the larger holder in all countries greater bargaining power and more buying opportunities, and must tend to favor concentration.
71. THE LUMBER INDUSTRY 2:10
72. Ibid 1:96. The particular study is of course now out of date.
73. Cited in Bутtenheim 254
74. A PROGRAM... Introductory pages by Walter Blucher
75. "Urban Lands" 34
76. Bутtenheim 254
77. PROGRESS REPORT 10. Cf Aschman
78. A PROGRAM... 13-14
79. Aschman 243
80. Beatty
81. Wiecking 30

82. TAX COLLECTION... See also TAX DELINQUENT LAND...
Before 1895 California foreclosed and sold delinquent land immediately, allowing a one year redemption period. Now many lands have achieved virtual tax exemption through protracted delinquency, moratoria, compositions, and lengthening redemption periods. The same holds for many states. See Buttenheim 250-53. That source is now somewhat dated, but it would be a Pangloss indeed who would aver that the problems there described have all been solved.
83. Buttenheim 29. For other studies see Melcher 91-6; EIGHTH BIENNIAL REPORT 102; "Tax Survey of Young County..."; THE LUMBER INDUSTRY 3:184-7; Packard 55; Murray 327-8; Aull, TAXATION OF FARMERS... Simpson, Herbert D., TAX RACKET... 77; REPORT ON LARGE LANDHOLDINGS 5,22-6; THE LAND 648 et seq
84. My personal belief is that attempts to enforce better land use by direct administrative controls have raised insoluble administrative problems, and disappointed their authors -- except insofar as these were administrative empire builders
85. Taylor, DECLINE...
86. Powell. See also the following articles in the Encyclopedia of Social Sciences: Entail; Perpetuities; Alienation; Landed Estates
87. San Francisco CHRONICLE December 17 1952
88. Powell 989-92
89. Buttenheim. Cf also Grebler 26. Concerning dower rights see Jome 31
90. Harris, "Legal Aspects..." 8-9
91. Powell 992
92. Schikele and Norman 180. So lax was the administration of the Henry Miller estate that one trustee, Houchin, is now posthumously accused of fraudulently conveying trust lands to himself (San Francisco CHRONICLE, August-December 1955 passim). If a trustee might go that far, what might he not do to the land he administers?
93. Stanford University has a 9,000 acre campus, approximately one-third the area of San Francisco, held in inalienable charitable trust. That is one acre per student. Not until recently, 65 years after the original grant, have the trustees made an effective effort to develop parts of "the farm" for income. Even yet they are reserving 4,000 acres for "campus use". NY TIMES November 28 1954
94. Pomfret Chap 2. Cf also Abbott, re France
95. du Bois, Ayres J., 552

CHAPTER VI

1. Cf Chap II, above, pp. 137-41
2. Goldenweiser and Truesdell 67. Cf also Gray and Lloyd;
3. See Chap V, above, Objection II. Cf also Danhof 320;
"Acreage Limitation..." 7-8; Billington, "Origin..."
205; Mead, REPORT OF INVESTIGATIONS... 5; and Gates 2
4. Gray, "Land Speculation", 67. Cf Ely, "Outlines..."
5. Simpson, Kemper, 7-8, 74; Report of Commissioner of Internal Revenue on Corporation Income and Excess Profits Tax Returns for 1939; Berle & Means
6. Haig; EIGHTH BIENNIAL REPORT... 191, 198-9, 101; Grebler Chap 8; Colean 79-80; Olcott, BLUE BOOK passim
7. The following sources indicate that larger firms tend to hold a higher ratio of land to other productive inputs, in the specified industries. Hydro-electric power: NATIONAL WEALTH... 77, 79; Anthracite: NATIONAL WEALTH... 86-7; Jones, Eliot, 107 ff.; REPORT, U. S. Coal Commission, 38. Molybdenum: Asch. Lumber: THE LUMBER INDUSTRY I xxii, 35-6, 106, 132, 208; Ibid II 156, 165; Greeley 12-13. Publishing: "Hearst" 52-3; Marion 58, 66. Aluminum: Muller Chaps 2 & 4; Burns 39. Steel: THE STEEL INDUSTRY 372-8; Fetter 76, 369; Stocking and Watkins 117; Moody, TRUTH ABOUT TRUSTS 144-7, 202; CONTROL OF IRON ORE 132 ff. Sulphur: Montgomery
8. Moonitz; Lutz; Henderson; Wallich; Meade and Andrews; Ebersole.
9. See Lamartine-Yates 146: "The smaller a man's acreage, the more important that he should have a large turnover, and that means livestock and market garden products rather than cereals."
10. Stokdyk, 82; Chap III, above, p. 240

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