Rent Theory, Problems and Practices

Agricultural Experiment Stations of Alaska, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin, Cooperating.

(PUBLICATION AUTHORIZED AUGUST 10, 1962)
UNIVERSITY OF MISSOURI
COLUMBIA, MISSOURI
CONTENTS

Rent Determination Within the Farm Firm—Virgil L. Hurlburt, Farm Economics Research Division, Agricultural Research Service, United States Department of Agriculture .................................................. 5
Discussion—Loyd Glover, Head, Economics Department, South Dakota State College .......................................................... 26

Ground Rent and the Allocation of Land Among Firms—M. Mason Gaffney, Professor of Agricultural Economics, University of Missouri .................................................. 30
Discussion—Laurel D. Loftsgard, Associate Professor of Agricultural Economics, North Dakota State University ......................... 49

Obstacles to Economic Determination of Farm Rents—Maurice M. Kelso, Professor of Agricultural Economics, University of Arizona ......................... 51
Discussion—John C. Frey, Professor of Land Economics, Pennsylvania State University .................................................. 63

Evaluation and Discussion of Seminar Papers—Don R. Kaldor, Professor of Agricultural Economics, Iowa State University of Science and Technology .................................................. 67
Rejoinder to Discussant's Comments—Maurice M. Kelso .............. 73
Ground Rent and the Allocation of Land Among Firms—A Reply—M. Mason Gaffney .................................................. 74
Rent Theory, Problems and Practices
North Central Regional Land Tenure Research Committee

The papers presented herein were first presented at the Seminar on Rent Problems and Practices held in Chicago, Illinois on April 12, 1961. The Seminar was planned under the direction of the North Central Land Tenure Research Committee. The following people were members:

Franklin J. Riess, Illinois
Julian H. Atkinson, Indiana
John F. Timmons, Iowa
Wilfred H. Pine, Kansas
John H. Bondurant, Kentucky
Elton B. Hill, Michigan
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The Farm Tenancy Subcommittee prepared the agenda, selected the authors of papers and made arrangements for their presentation. The following people were in charge:

Frank Miller, Chairman
Julian H. Atkinson
John H. Bondurant
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Virgil L. Hurlburt (Agricultural Research Service)
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FOREWORD

Approximately 20.5 percent of the farm operators in the 48 contiguous mainland states and 21 percent of those in the 13 North Central States including Kentucky are tenants; an additional 21.9 percent in the country as a whole and 24.7 percent in the North Central Region are part owners.

The conditions under which tenants rent entire farms and part-owners or tenants rent fields for specific crops or for pasture are highly variable. Some operating units are well equipped with modern dwellings, barns, paved feed lots,
water supply, fences, terraces, waterways, and other facilities essential to the comfort of a family and to efficient operation of a business; others have few of these items. Some units are large enough and/or sufficiently well equipped for livestock enterprises for tenants to take advantage of the economies of scale; others are small or poorly equipped leaving labor and capital only partially employed. Many of the fields rented by part-owners or by tenants who have more than one landlord have no buildings or fences on them. Some landlords share the variable costs of growing and harvesting crops such as fertilizer, insecticides, chemicals for weed control, seed and custom charges for harvesting crops; others pay none of these expenses.

The wide diversity of resources and services contributed by parties to leases leads to inefficient combinations of factors and low rates of return to farm businesses. These conditions bring to farm managers and extension workers a constant stream of questions about the rights, duties and privileges of the contracting parties. The people who advise tenants and landlords are not adequately supplied with research findings needed for objective answers.

This shortage of basic information has long been recognized by land economists and farm management specialists. However, efforts to deal with the problem have been limited to preparation of lease forms, model business agreements and procedures for determining the equity of leases.

In 1959, the Farm Tenancy Subcommittee of the North Central Land Tenure Research Committee undertook the task of developing a framework of basic theory that could be used as a guide in setting up research projects dealing with land renting problems and practices. Seven prominent Land Economists were asked to prepare papers dealing with important phases of rent theory and practices and to present them to other Land Economists for discussion and debate at the Farm Foundation Office in Chicago, Illinois, April 11, 1961. The papers, and formal discussions and parts of the debate are contained in this bulletin. They set up guide-lines which can be used by research workers in the development of information that can be used in preparing equitable leases.

There was substantial agreement that marginal value product contributed by a factor under specific conditions of soil, climate, market, scale of operations and factor mix in farm firms is the key to equitable distribution of income.

There was also agreement that the researcher has the task of determining this value so that the people who advise with land owners and renters can use it in preparing leases.

As would be expected in a discussion of this type, there were differences of opinion as to how economic theory should be applied to land renting problems. Some at the seminar insisted that theory should be used as a general guide in allocating resources to individual firms and equity in division of income would be taken care of automatically through competition in the rental market. Others felt that the differences in bargaining positions of land owners and renters were too wide for equity to be achieved in the market place. Still others would go so far as to keep land ownership within the reach of all users through judicious use of the ad valorem property tax.
Research workers will find in the bulletin suggestions for many types of inquiry that, if pursued, will lead to more nearly optimum use of resources by farmers as well as to socially desirable distribution of income.

RENT DETERMINATION WITHIN THE FARM FIRM

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I. THE FRAME OF REFERENCE

This thesis is that theory of economics, and more specifically theory of the firm, can serve as a guide in determining the contract rental payment for any tenant operated farm. Any landlord and tenant can apply theory of the firm to the task of determining shares, cash payment, or a combination of share and cash, and achieve more effective results than they can do by any other method. Application of principles of economics to the task of determining rent offers an efficacious solution to this major and ubiquitous problem of tenancy.

The objective in a leasing arrangement for any two parties cannot be satisfaction alone, devoid of economic analysis. Lack of knowledge as to technical relations can and does create opportunity costs of which either or both landlord and tenant are unaware. There is individual and social waste if given sets of resources produce significantly less than the quantity of output of which they are capable, or if a specified output is produced at well above minimum cost. The two parties and society benefit from efficiency in use of resources.

The problem of determining the rent for any farm may be defined as a problem in economic analysis. This problem is to determine the form and amount of payment for use of resources in a farm firm, for a specified period of time, so that the terms and conditions of payment themselves encourage use of the quantities and combinations of inputs required for efficiency and the resource owner receives the marginal value products contributed by the resources he supplies to the firm.

I have excluded other problems in tenancy and tenure purposely, to concentrate on contract rent determination within the firm. Essentially, this assumes that two parties, each with control of specific resources, are negotiating. Other

1I am particularly indebted to Mr. Marshall Harris; his thought contributions have influenced strongly the content of this paper. Appreciation is also expressed to: Dr. Gene Wunderlich and Walter R. Butcher of the Farm Economics Research Division; Dr. Frank Miller, University of Missouri; Dr. Arnold Paulsen, Iowa State University; and Dr. Maurice M. Kelso, University of Arizona. Responsibility for this presentation rests with the author, however. The ideas expressed do not necessarily represent the position of the Agricultural Research Service or the U.S. Department of Agriculture.
papers in the seminar will deal with allocation of resources between firms, the exogenous influences on the general level of rents, and particularly, the implications and consequences of the problem of selection of parties.\(^2\)

I have also disposed of a pervading phase of the problem by assuming some knowledge of input-output relations by the contracting parties. This second assumption may not be too unrealistic, for technical knowledge, usually sufficient to the purpose, is available through public and private sources, to those who do not have it. The reference here is to the output responses in ranges that are known to produce results which at least begin to approach optimum combinations—such as rates of fertilizer application, required amount of machinery, amount and kind of feed per animal, and the like. It is unfortunate that the same cannot be said for knowledge of the economics of leasing. This paper and this seminar would be unnecessary if leases were made in accordance with pertinent principles.

Landlords and tenants cannot be expected to apply technical knowledge beyond that offered to them by specialists and technicians. In short, no small part of the faults in present methods of determining rent is attributable to the specialists, including agricultural economists, who have been doing research on tenancy and advising landlords and tenants. I make this as an assertion rather than taking it as an assumption. Technicians simply have not come to grips with the problem nor have they made use of the practical guides that theory offers.

The other specific assumptions for the following discussion are:
1. Farm firms are in business for profits;
2. They operate with limited capital and under uncertainty;
3. Each party owns or controls selected fixed inputs—land, buildings, machinery, tools, equipment; and, for the purpose here, operator labor is a fixed input;
4. Leasing is a form of firm organization and financing; share and cash leases are simply two different methods of payment;
5. The functions of the lease are to provide a basis for combining resources in production and to distribute firm income to the owners of the resources used.\(^3\)

\(^2\)All references to rent, rental payments and rent determination in this paper are to contract rent. This differs from use of the terms in the sense of economic rent of land (classical, quasi-rents or surplus value (neoclassical), or "payment . . . to any factor of production which does not have a perfectly elastic supply" (Boulding, Economic Analysis, 3rd Ed. p. 212).
\(^3\)Actually, there are several more assumptions, largely implied ones. At least passing reference should be made to them, for they are pertinent to the task at hand, and overlooking them may result in fringe discussions which divert attention from the central issues involved in rent determination. For example, private property is an automatic assumption; but one need not go into detail of discussion of the extent of control exercised by government over private property. Likewise, a functioning economy is assumed, with competition and uncertainty, and the availability of research and education facilities. In short, I am discussing the problem of rent determination within the farm firm in the present environment of the economy of the United States.

Nor is it amiss to note that appreciation for and understanding of theory of the firm is extended by knowledge of the content of general economic theory. This includes theory of demand, supply, prices, production, income distribution, capital formation, equilibrium, the several forms of imperfect competition, and welfare economics. Although understanding of selected principles may suffice for a landlord and a tenant to work out the details and content of their lease, the technician must rely on, and make use of, a much greater body of knowledge to be able to explain the significance and application of those selected principles.
Little need be said here about the existing situation and how rent is determined in practice. Other papers will bring out many of the relevant points, and particularly how practice differs from the procedure presented below. We likely will differ little as to opinions about the characteristics of the present situation—but will differ much as to how theory of the firm can be applied effectively to improve it. There may also be differences of opinion as to how much and what kind of theory is now being applied.

Suffice it for the purpose to enumerate that: payments are determined largely by custom; shares are standardized over large areas, and share rentals predominate as the form of payment. Important principles are overlooked in the determination. There is seldom separation of consumption and production facets; little attention is given to the distinction between fixed and variable costs; overhead firm costs which do not contribute to output are treated the same as other costs, and often the same as variable costs; and shares of expenses and returns are taken as givens rather than determined by calculation. It is to correction of these errors of omission and commission that theory of the firm can contribute in problem solution. Theory offers the simplifying framework by which the complexities of every-day reality can be reduced to understandable, meaningful, and relevant relations.

II. THE THEORY FRAMEWORK

There should be no need for lengthy discussion of theory of the firm as to its content and meaning. Rather, the task here is to explain the application and to demonstrate how the necessary and sufficient conditions of the Hicksian model specify the requirements for organization of the tenant operated firm. From these requirements one can deduce the procedure for determining rent, whether share or cash.

The relevant economic model is that of a firm maximizing its net income. It should be noted, further, that there is need for a quantity of resources sufficient to provide a flow of income large enough for some such purpose as supporting a family. But, capital is limited, so that only the ratios of marginal returns to marginal costs are equated.4

The owner-operated firm cannot serve as a model for organization of the tenant operated farm firm or suffice for testing between tenure groups as to efficiency in use of resources. Owner-operators depart from the efficiency conditions. Two samples of farms may test the same or significantly different, and the analyst has no idea whether one or the other departs further from optimum combination unless optimum combinations are calculated for each group. But the concept of the owner-operated farm, debt free, is useful in that it has none of the built-in errors which may arise from terms within a lease.

4For detail see: Hicks, Value and Capital; especially Chapter VI. Heady, Economics of Agricultural Production and Resource Use, Part II; Part III; and Chapters 20 and 21. Lange, Price Flexibility and Employment. Weintraub, Price Theory; Chapters 3 and 4. Leftwich, The Price System and Resource Allocation.
The owner-operated firm, for example, suggests the basis for dealing with problems of the division in management between landlord and tenant. The effect of management shows up in the earnings of factors in combination. An owner-operator (entrepreneur) benefits from and pays the costs of his own decisions. The problem of tenancy is to reward the two parties for the relative values of the management decisions they make, independently and/or jointly. Joint decisions create no difficulties, operationally, so long as both parties appreciate the economics of the particular decision involved (two parties can agree upon an error in reasoning). It is largely the independent decisions, and particularly those of the operator who assumes entrepreneurship for the tenant-operated firm, that cause trouble. Attention is devoted to these later in the discussion.5

The full set of "required" conditions for the tenant-operated firm simply specifies the relations which offer landlord and tenant the same incentives as an owner-operator (i.e., an entrepreneur) would have in running his business for profit. Beyond the efficiency and stability conditions (Hicks), these are, as enumerated and discussed in Iowa Agricultural Experiment Station Bulletin 416:

1, the share of variable input must equal the share of output obtained from it; 2, shares of all products must be the same; 3, each resource owner must receive the full share of the product earned by each unit of resource he contributes; and, 4, the resource owner must have opportunity to receive return on investment made in one production period but not forthcoming until a subsequent period. In addition, Heady and Egbert have suggested that sufficient capital to operate effectively is one of the necessary conditions—and one cannot but agree.6

Need of provisions for compensation for improvements that are unexhausted at termination date arises from: 1, the definite time covered by the agreement—usually one crop year; 2, the necessity of investment inputs on a continuing basis; and, 3, the fact that length of lease, length of production period, length of output effect of selected inputs, and length of planning horizons for the two parties with respect to the agreement itself do not necessarily coincide. Compensation provisions are a means to achieve the incentive condition number 4 above. Whether the cost of a specific input is shared or is paid by one party will influence the amount of compensation needed, but does not change the need for compensation provision. And the need exists whether the input is fairly short-run such as fertilizer (but longer than the lease period) or is a longrun one such as buildings or fences that contribute to crop or livestock production. Theory merely specifies the requirements that compensation provisions must meet to achieve particular results. Determining the content and details of provisions is a computation-negotiation job, for the same results may be obtained by different means.

5In brief, treatment of returns to management in the literature is on the assumption that the entrepreneur provides the capital and the management, and receives payment in the profits of the firm. Labor is hired at a wage. If management services are hired, they too are paid a wage or salary.

6See: Heady and Egbert, An Application of Linear Programming in Testing Efficiency of Leasing Systems—Iowa State College Journal of Science, Vol. 33, No. 2, November 15, 1959, p. 145-160. "Differences in capital appear to be as important as leasing construcks in causing tenure arrangements to be conflicting or consistent between tenant and landlord."
The Share Lease

From the efficiency, stability, and incentive conditions one can proceed directly to the basic relations to be achieved in share rentals. In brief, these are:
The share of fixed costs = the share of variables costs = the share of returns.
In further detail: Different fixed costs are paid by each party; cost of land is balanced against cost of labor and machinery, e.g., to achieve sharing of total fixed costs. But each variable cost is shared; variable costs are not balanced against each other, nor against a fixed cost. Each separate form of return (i.e., each product) is shared the same, and all products are shared. This follows because the efficiency and stability conditions specify the relations in the optimum pattern of resource combination for any firm, and the incentive conditions specify the relations which prompt maximization of firm income rather than that of either tenant or landlord alone. For emphasis and completeness of concept here I add that in the equating of fixed, variables, and returns, the consumption facets (especially and usually the residence) are separated and handled apart from the production facets, and those overhead costs which do not affect output are excluded from the calculation of share of fixed inputs.9

Thus, determination of share rent becomes a calculation in which parties to the agreement make estimates and judgments in a specified framework. This is the case of uncertainty, as contrasted with the perfect knowledge assumption of the strict Hicksian model. Also, the supposed limitations of the static model are removed by using discounted values (whether single or multiple value expectations) and designating as different factors the unit of factors applied in different time periods.

A number of observations may be made about the equating of share of firm fixed with share of variables with share of returns—which equating is repeated for each production period:

1. Each resource owner receives the earnings of the resources he contributes, regardless of the level of intensity of operations. That is, the resource owner receives the marginal value product of his resource whether the farm is operated at its optimum combination or a long ways from it. So long as a good job is done in pricing the fixed inputs, and in selecting the quantities of them to use in combination, each party receives the full benefits of both his fixed and variable inputs. There are no income transfers between parties. (This is subject to the limitation stated in observation 2).

2. Adequate form of compensation arrangement must be made for resources which are unexhausted and immovable at termination.

3. Two parties can arrive at the share they wish, by shifting ownership of fixed resources, or by cash payment for use of fixed resources furnished by the other party.

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4. The tenant or the landlord can be rewarded for superior management by treating management as a fixed input and putting an opportunity cost evaluation on it.

5. Each party has fixed resources that create problems in valuation. But at the same time, the division of these inputs between parties sets up the possibility for bargaining effectively, in that each has something to balance against the resources of the other party.

6. Agreement can be made for one party to buy the other's share of specified product, at an agreed price, without disturbing the economics of the whole arrangement.

7. Fixed inputs furnished by the landlord and contributing to output of product in which he does not share the returns—for example, the buildings furnished by the landlord for livestock owned by the tenant, may and must be handled by separate and distinct calculation. These fixed costs are excluded from the calculation of shares of firm fixed costs. Essentially, this is the same idea as two different plants making up a firm, or in other words, the operator runs two separate but related businesses.

8. The shares are independent of product prices and of variable costs. The share reflects directly the portion of firm fixed cost assumed by one party. Effect of change in product prices and in costs is taken care of by the two parties through decision as to the quantities of variables to use and thus as to volume of output. If adjustment or calculation of share of fixed cost is done for each production period, and agreement is reached upon quantities for variables, the lease terms are automatically adjusted to changing prices and costs.

The Cash Lease

Requirements for the cash lease are the same as those for share leases, as to the efficiency, stability and incentive conditions. Beyond these, the guide to rent determination is for the cash rental to equal the marginal value product of the resource involved. Again, separate calculation should be made for the consumption facets, and output-increasing overhead costs should be distinguished from overhead firm costs which are not output increasing.

Under cash rent the tenant pays all variable costs, receives all earnings of the firm, and pays the costs associated with the fixed resources he furnishes. Although it is feasible and possible for the tenant to rent machinery and even livestock from the landlord, usually it is only land and buildings for which he pays a cash rental. I mention these others to indicate that there is nothing in theory to suggest that cash rental must be limited to land and buildings. The principles are exactly the same when applied to other fixed inputs. However, discussion is confined to the rental of land and buildings.

The farm operated under cash rent automatically meets the four incentive conditions, if the rent approximates the marginal value products of land and buildings. Payments above or below the marginal value product will result in income transfers between parties, or if seriously out of line from the tenant’s out-
look, may encourage practices that knowingly result in resource depletion. Also, the fact that cash rent is a fixed charge for the tenant, to be paid regardless of level of income (unless there is agreement to a sliding scale cash rent) puts the burden of risk on the tenant. These are merely characteristics of the cash lease; however, they do not influence or change the basic requirements or the nature of the problem in calculating a rental. They do suggest, however, the necessity for the two parties to agree upon a level of operation for the firm, as a part of the rent calculation process. The reason for doing so, from a theory viewpoint, is that the earning of any resource used in combination is a function of the other resources combined with it. The marginal value product of land is known to vary with the intensity of its operation.

The Share-Cash Lease

The necessary and sufficient conditions are the same as those for the share lease and the cash lease. The basic relation to be achieved in the rental calculation is a combination of those for the different types of lease. For the portion of the business that is shared by the two parties the share of fixed cost = the share of variable costs = the share of returns. For the portion of the business in which cash rent is paid for one or more resource, the cash rental must approximate the marginal value product of the resource. There are difficulties of estimation involved in the calculation-negotiation process, and it may well be argued that there will be imperfections regardless of the care exercised. It may be argued further that the share-cash lease is an improvisation in practice to take care of those instances in which one or the other party is unable or unwilling to participate in all of the activities. Nevertheless, theory offers guides, which, if used and understood, would serve to decrease many of the dissatisfactions now expressed by both landlords and tenants. Appreciation for the economics of cash rentals for buildings used in production, separate and distinct from land, for example, might serve to get more investment in necessary buildings and decrease the cost-shifting practice of "taking care of buildings" by charging excessive rent on hay and pasture.

Theory of Factor Valuation as Related to Rent Determination

Evaluation of variable inputs causes no difficulties in rent determination. There are decisions to be made as to quantities and qualities, but prices are taken as given in their markets. This refers to those inputs that are always variables—fertilizer, gasoline, tractor fuel, insecticides, and the like. All are output increasing, and most of them are used up within one production period. Some variable inputs, as fertilizer, for example, may have carry-over value. For these, some difficulties in valuation may arise at time of lease termination—or at the time the lease is negotiated—but the difficulty as such stems from lack of technical knowledge about carry-over.

Nor should the fact that selected variables are often used in limited ranges that have been found to be workable by long practice in a given area, be allow-
ed to confuse the issue of the fixed-variable complex. I refer, for example, to the practice of applying a specified quantity of a trace element in fertilizer, or to using a weed-spray at a determined rate. In short, no variable becomes a fixed input simply because it is limited in quantity.

Land, buildings, operator labor, and management are the factors that have the more difficult evaluation problems associated with them. Their evaluation is critical and crucial in the rent determination process, because as stated above, the sharing of costs of fixed resources is the key to this major problem in tenancy.

From the theory viewpoint, about all that needs to be said here as to operator labor and management is that the opportunity cost concept provides a guide to use in the determination process. The theory as such causes less difficulty than does the task of applying it. Admittedly, the opportunity cost of a factor is zero if there is no alternative use for the resources. And, there may be debate as to whether the within firm environment, or within farming, or the whole range of economic alternatives is the suitable next best opportunity. Here there are problems in judgment. What, for example, is the basis for determining the cost of operator labor in an area in which there are many off farm and nonfarm work opportunities at wage rates well above those being paid for hired farm laborers? Also, what is the line of demarcation between labor as such in the performance of tasks that require continuous exercise of judgment? About all that can be said is that the value of labor can be at neither of the extremes of alternatives available. The best that can be done is to make reasonable judgment as to what constitutes an opportunity cost. Likewise, there may be few alternatives to give reasonable estimate of the value of the management input. None-the-less each of two thinking parties should be able to arrive at estimates of cost of input of labor and of management through the opportunity cost concept.

Valuation of buildings to determine annual cost has no knotty theory aspects. There are difficulties of judgment, decisions as to rate of depreciation, and the necessity of distinguishing between depreciation, annual upkeep, and improvement costs. There is necessity for handling the problem of valuation of the residence (a consumption good) separately from the production factors. Further, one can note the necessity of valuation in terms of the farm as a firm—the value in this given business—rather than value in some other firm. Here, part of the problem of valuation is tied up with the problems of allocating resources between firms. For example, a machine shed and shop that is suitable for combination with a 1000 acre spread is decidedly underutilized if combined with other resources on a 100-acre spread; and the owner of such building cannot expect the 1000 acre valuation to apply in the 100-acre unit.

There is no point in arguing as to which of the factors has the least perfect market; but the contrast between markets for most of the fixed inputs and markets for the variable inputs is at least to be mentioned. The land market stands out noticeably as one characterized by relatively low rate of turnover, lack of

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8See: Stigler, The Theory of Price, Chapter VII.
standardization and gradation, buyer and seller familiarity with mainly local conditions, overlapping of lack of recognized market areas, and the almost universal tendency of packaged deals—that is, with farms sold as units combining land and other factors.

Contrary to classic theory, I see no separate, crucial, or especially difficult valuation problem as such arising from the fact that land, no matter how defined, is immobile and occupies a given location on the earth’s surface. This simply becomes one of the characteristics of the factor; it is immobile. Part of the troubles of the classic concept arise from definition alone. The classic and neo-classic definition of land as space simply does not lend itself to manipulation in production economics. Particularly, the distinction between man-made and natural characteristics side-tracks the valuation problem, if for no other good and sufficient reason than that no one can distinguish between what is man-made and what is a “gift of nature” in other than the space characteristics.

Land must be defined in terms which describe it as a factor. This does not deny the necessity of or substitute for other definitions in other problem settings. There may be need, for example, for a special definition of land in the legal setting, including inheritance and transfer. But, in production economic terms, factors are distinguished from each other on the basis of substitutability. Technically, different qualities or grades of land, within the same firm, are different factors—an acre of non-tillable pasture is not the same as an acre of rotation cropland. There is no conceptual problem here, but, of course, in practice there is the necessity of classification in terms which make possible the working out of farm plans that make full use of the different grades. And it follows that the market value of the land in the farm unit becomes the sum of the values of the quantities of the different grades. The “cost-pricing” in the rent determination process can take comparable form.

Estimates can be made of reasonable market value for agricultural purposes, in terms of community judgments as to type and intensity of use. Such decisions are being made, daily, by others than real estate appraisers. And two parties should be able to agree upon an appropriate earning rate to translate the present value into an annual cost.

What more might be said is spelled out in considerable detail in an available publication, from which I quote a definition of land. “For purposes of evaluation, farmland is defined here in terms of unit area. It includes the natural resources (fertility, structure, and topography) and the added physical inputs incorporated with and inseparable from it. It varies through time (between production periods) with use and treatment. Land is a genus, made of specie grasses or grades. Land is distinct from such structural features as buildings and fences, but is inseparable from such incorporated improvements as tile drain or absorbed labor. Distinction must be made also between land and water, at least in surface areas of streams and lakes, but not in water content or holding capacity of soil. The essential distinctions are between land, real estate, and other capital goods—not between man-made characteristics and phenomena of nature, because within
limits man can change the characteristics of land. In any significant economic sense, land is a form of capital."

This brief discussion of theory attempts to bring together the main and particularly relevant points. A few references have been made to discussions in the readily available literature. I have been conscious of the advice of the Evaluations Committee, November 10, 1960, that "Efforts should be made to discourage lengthy treatment of widely accepted principles of theory and research methodology which is available in textbooks and research bulletins and which has no unique application to the problem areas being discussed. Obviously, references to relevant materials of this nature are highly desirable." If I have erred in either direction it may be attributable to my judgment—or this may be a reflection of the healthy differences of professional opinion regarding what are relevant materials. For example, as to the discussion of value of fixed resources, I suggest that explanations of indifference, preference and taste, which are to be found in the literature, are pertinent to the task at hand, for they do provide foundation for the application of theory of value in the practical setting; but these are sufficiently accepted. They need no citation.

III. APPLICATION OF THE THEORY

Share Rent

Taking share of fixed = share of variables = share of returns as the guide, determining the rental becomes a problem in (1) pricing the fixed factors, and (2) deciding on quantities of them that each party will supply. Attention must also be given to necessary amounts of variables to apply to the fixed inputs. The lease is incomplete without agreement on size of business, quantities of selected inputs such as fertilizer, and decision as to division of management responsibility. But for purpose of explanation here, assume that two parties have sufficient capital to operate under a set of practices which give returns above costs. It is beside the point whether either must borrow funds for the year’s operation —because interest on borrowed capital reduces personal and net income, but does not affect gross. It is the gross returns that are divided in the same percentage as fixed costs are shared. How do the two calculate the fixed costs? I shall discuss this in fairly broad terms, with only enough detail to indicate what is to be done regarding the inputs with the most difficult valuation problems—land, buildings, operator labor and management.

Pricing the Land Input

In the long-run and under competition (which need not be perfect) the marginal value product of land = value of marginal product of land = the eco-

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10 This does not overlook the problem of selection of parties. I assume that the selection has been made and thus concentrate attention on calculating the shares.
nomic rent = the contract rent = the annual cost of land. The present capital value would be the sum of the discounted annual earnings. In the short run, and under existing conditions of the market there may be doubts as to the actual figure for any and all of these values. The question is one of how can the best possible estimates be made.

In spite of the many weaknesses of the land market, including the practice of pricing farms as whole units rather than pricing land by itself as one of the constituents in a package, what happens in the market is one of the guides to pricing land in the rent determination process. Admittedly, there is a dearth of information. One is not certain that quoted market values are a reflection of actual sales, of asking, or offering prices. None-the-less, both landlords and tenants have some workable ideas on the level of exchange (market) values for land in a given community; there are community judgments as to agricultural values. Workable comparisons are made between farms of different sizes, varying qualities, with different sets of buildings, locations, and the like.

Recourse to use of market values requires that the two parties concerned in a rental determination probe the situation and make a thoughtful analysis of the particular property, in terms of value for agricultural purposes, uninfluenced by sale possibility for urban development or such. From the framework of theory, the owner who chooses to rent his land for agricultural purposes when its sale value potential far exceeds its value for farming has already made a choice which says, in short, that he is willing to forgo the more attractive money offer; and if he knows any economics at all, he should know that a given acre of land will produce the same value of corn (when the land is combined with other production inputs) whether it is priced at one dollar or a thousand, per acre.

One solution to the problem of land pricing, therefore, becomes an analysis-negotiating process in which the landlord and the tenant examine the probable market value of the land in the given farm, and agree upon a price which would reflect willing buyer, willing seller relations. Admittedly there is a fairly broad range within which the actual value may thus be determined; but it is to be remembered that when translated in the annual cost terms, with a discount rate of 5 percent, the estimated value has to change 20 dollars to effect one dollar in annual cost per acre.

Suppose that two parties have a good set of farm records, and that the level of operation for the firm is one in which attention has been given to the quantities of variables to be used, so that the inputs are in balance as to required amounts—and no fixed input such as machinery is out of line. The two would then be in a good position to perform the land pricing task. They would already have made some estimate of the cost of land, or used some valuation figure to measure the land input. In short, it is impossible to make a complete cost-returns statement without figures for each input. There would be additional use-value in the farm records data, however, in that those data provide information for the two parties as to rate of earning in the firm.

In sum, about the best that any two parties can do in estimating the cost
of the land input is to explore quite fully the implications of opportunity cost. I have described how the additional acre-additional-return estimating procedure can be used, in How Much for More Land, Iowa Farm Science, August, 1958. The reasoning in it is the same as that above.

What about the circularity of reasoning, in looking at market value and applying an arbitrary percentage to estimate the cost of the annual land input? Is there any more circular reasoning on the land pricing than is involved in or with other factors? For the inputs with well organized markets (the variable inputs), market prices are taken as given and the quantities applied or used are a function of their effects on earnings in the firm. The question of price of the input at the time of the input is subordinate to the question of quantity. It must be seen, however, that for the variable inputs too, there is a relation between the prices today and the costs of producing them as factors, and that their costs are influenced by changes in technology, quantities demanded, supplies available—in short, the working of a competitive market situation.

For the fixed input, land, theory of factor value says that we look at the flow of income over a period of years and discount that flow to determine a present value. We know that market prices differ from this "capitalized value" but are supposedly related to the income flow. For the variable input we look at the immediate and short-run effect and accept the current market prices—and, in doing so, assume an instantaneous adjustment of factor price, which assumption is comparable with the instantaneous adjustment assumed in the static equilibrium situation. It appears to me that the charge of circularity has been over-emphasized for land and the existence of the same type of circularity for short-run inputs has not been recognized. Presumably there is no more circularity of reasoning in charging land at cost to the firm than in charging other inputs at cost. The root of the problem rests in determining cost to the firm.

In the opportunity cost sense, making use of reasonable market value for the specific farm does not quite complete the circle of reasoning. That is, one does not go all the way through the process of calculating a flow of income, discounting that flow, determining a present market value, and then taking a percentage of it as an estimate of cost. Rather, one takes an estimate of reasonable value of this specific property, and applies a percent to it as an estimate of cost. The necessity for doing so arises from the absence of a cost figure for land as specific as is that of $75 per ton for a fertilizer of a particular mix.

Admittedly, use of current estimates of market value of land, even with the cautions extended above as to value for agricultural purposes and value of this given farm, are subject to error. This results from current and past faults in the operation of the land market. It can be established that current market prices of farmland reflect more than land earnings. Data can be assembled to demonstrate that some of the advantages of technology have been and are being capitalized into land values. Therefore, use of current land values would give the landowner advantage in the negotiating process, and would build into the rental determination process even more than exists currently the present faults in the structure of land values.
With sufficient attention to the task of land pricing by the contracting parties, most of the difficulties can be overcome. The effects are strongest in the short-run. And, remember that costs are calculated each year. By the time that many landlords and tenants do use the calculation procedure, abetted by the fact that some of the same problems are present with the costing of the operator's labor, use of the procedure should tend to decrease the faults of pricing land, in practice. That is, with careful attention to cost of land as such, awareness of what happens to land prices calculated with residual procedures, and with careful balancing of inputs in the tenant-operated farm business, the major faults of pricing in the present land market could be alleviated and thus would create no special problem in the rent determining process.

**Pricing the Buildings and Other Structural Inputs**

Current practices in real estate appraisal suggest usable procedures for determining "reasonable" values for buildings. Admittedly, the task is an application of judgment. Cost of replacement minus depreciation is one guide. Also, some of the rather standardized tables which give square foot values for different structures may suffice to make the estimate of present value. One question to be answered is that of adequacy for the farm business—particularly excess capacity, but also on the limitational side. The central idea is for the two parties to arrive at an estimate which reflects value to the firm. The pitfalls of extremes can be pointed out—e.g., value of a building to the firm is not what the owner paid for it 30 years ago, nor what replacement would cost today; the answer rests in intelligent judgment. Translating the present value into terms of annual cost requires decision as to depreciation, and attention to need for up-keep and repair. A careful estimate of repair costs, with the expectation that such repairs will be made, may substitute for and obviate the need of a depreciation figure.

Fences and other improvements appear to offer no special or difficult problems in pricing. Appraisal practices suggest workable guides to any two parties who are negotiating a lease.

**Pricing Operator Labor**

Little more need be said than has been stated in the theory section. The task in determining the labor input as a cost is essentially one of applying the opportunity cost concept. For some, the level of wage rates in the community will suffice. For others, special consideration will need to be given to quality aspects—and the main difficulty here would be in valuing the below-par labor input, rather than that of the skilled worker. Some difficulty might arise in the judgment process in distinguishing between quality performance of the labor input and the exercise of management as such, for timing is of the essence in many operations and the selection of time is a management decision. But, successful farming practices in a community do carry some guides to labor requirements, including the quality aspects. Operators are known for their abilities to get work done, as well as for their management capabilities. This knowledge can be applied in the rent determination process with corrections to be made in it from year to year.
Obviously, evaluation of the labor input is in terms of labor to be used—not necessarily the full time of an operator. For the crop-share lease particularly, this requires an estimate of the amount of time devoted to or required for crop production—which is a fraction of the firm labor requirement when the operator has livestock. Negotiation between the two parties should be able to encompass the details such as non-or off-farm work by the operator.

Additional hired labor should cause no problems. The full-time hired man can go in as a fixed cost at his wage rate, for that portion of his time devoted to products which are shared. Who pays this fixed cost is a decision to be made by the two parties. It can be paid by either party, or shared. Temporary and day labor is to be treated as a variable, and thus becomes a shared cost.

*Pricing the Management Input*

The modal situation in leasing leaves to the operator most of the day-to-day decisions. An operator may also have quite complete decision making authority and be responsible for the firm as a whole. At the other extreme is the operator who carries out the instructions of a landlord (usually a retired farmer). This difference in number of decisions by operators illustrates one facet of the management input. Another is the quality aspect.

Treating management as a fixed cost has the effect of changing the sharing by changing the proportion of fixed costs paid by one party. This is especially the case for the one party in the agreement who supplies superior management. Thus, a capable operator can be given a “high value” management input. This increases his share of fixed, his share of variables, and his share of returns. If the business is operated at a profit, and is larger because of his management capacity, he is rewarded by the larger number of dollars of gross returns he receives. Likewise, if the firm operates at a loss because of errors in management decision, the decision maker suffers a larger part of the consequences (than if no account is taken of the management input).

The critical question is: How do the two parties place a value on management? Again, the answer comes in terms of intelligent negotiations in which the two parties make use of such information as: rates charged by farm management businesses; opportunity cost comparisons with firms of the same size of business with hired management; knowledge of community judgments of the individuals involved.

*Pricing the Input of Machinery and Equipment*

About all that needs to be said additionally here is that account should be made for both inadequate and excess capacity machines. The inadequate machinery situation, for special cases such as combining grain or baling hay may be handled by machinery hire as a variable cost. An excess capacity machine, possibly used by the operator to do custom work on other farms, can be charged, pro-rata to the farm business for the time it is used.

Replacement cost minus depreciation, knowledge of sale values for used
equipment, plus careful study of machinery requirements for the size of business, should be sufficient to handle most of the problems of machinery valuation. The detail of deciding upon a rate of depreciation should be influenced by knowledge of usable life of the machine, and is a matter for negotiation. It should be noted that this negotiation as well as the several other instances enumerated above assumes that the two parties are acting with knowledge and without particular benefit of excessive bargaining power. Estimates of repair costs are more difficult than for buildings, because of the unpredictability of breakage. But repair costs might be estimated and entered as a fixed cost, without duplicating any of the depreciation cost.

Other Fixed Costs

The remaining fixed inputs—largely of the operating expense as vs. the investment expense variety, should cause no special problems. Knowledge of the firm requirements as to quantities, and wise use of information that is available on farming practices that pay in the community should serve as guides to make the necessary decisions. Further, it may be noted that in a few of these other fixed costs there is opportunity for the two parties to do some shifting and agreeing as to who furnishes particulars, if they wish to arrive at a given sharing arrangement.

Application of lime results in an output effect lasting for several years, and often beyond the length of lease. For one production period and for rent determination, there are more reasons to handle this as a fixed than as a variable cost. Obviously, both parties benefit from the input when the output is shared. Also, the whole input cost is paid in year 1, and the output (return) is spread over years 1 to 5. Interest on the pro-rated charges for years 2 to 5 is cost. Lime cost plus application cost plus compound interest can be divided into equal yearly amounts. The pertinent question is—Who Pays?

The estimated cost of land as an input supposedly does not include the periodic input of lime. When treated as a separate input, lime cost can be paid by either party, or shared. If shared, the sharing can be in any proportions desired, and this cost then is the same as that of any other fixed input in determining the sharing of fixed inputs in the firm. If shared, or if paid entirely by the operator, there is need for compensation provision.

One easy and workable answer would be to lime a fifth of the land each year (assuming lime has a five year effect and then must be repeated). The same reasoning applies to rock phosphate. Here again, as I understand the technology, some "minimum" quantity of phosphate availability is a necessity but additional amounts do not increase output.

What about conservation practices—the ones that either increase output (as water spreading structures) or prevent soil losses and thus prevent decline in productivity (or prevent increased cost of production through use of more fertilizer to get the same output)? These too become inseparably associated with the land over a time period. As a type, these can be handled the same as lime—except for the annual up-keep costs. Installation can be handled as a fixed cost, and up-keep as a variable.
The Sharing of Variable Costs and Returns

As already indicated, assuming sufficient discussion and agreement between the two parties as to level of operations and size of business, and a careful determination and agreement of the share of fixed cost that each is to pay, the major problem of rental determination is solved. The share of fixed cost becomes the share of variable costs that each pays (respectively) and also becomes the share of returns he receives. This proportion can be whatever it may, depending upon the kinds and amounts of fixed inputs that the two agree upon. But, in practice, it will probably suffice to work out the percentages in some round numbers, in terms of 95 percent accuracy.

There are elements of bargaining in the process as described. Each party has some fixed resource to balance against that of the other. There are judgments to be made. And mistakes will be made in the process. But, a careful analysis by the two parties should result in a workable arrangement. If the two appreciate the nature of the economic reasoning involved, they should be happier with the results and achieve better results than they can by any haphazard dependence on custom.

For emphasis I add that all variable costs associated with the products which are shared must be shared. Granted, that two parties may agree that one will pay a given number of dollars for one item, to balance against a determined outlay for another variable, if and when the amounts are agreed upon—not that one will pay the cost of an input of a variable without specifying the quantity thereof. But this has exactly the same effect as if each paid a share of each variable cost. The point to be stressed is that variables cannot be shared differentially, with no agreement on quantities, without effect on either the level of operation of the firm or income transfers between parties.

Determining The Cash Rent

Much of what has been said above as to determining the share rent applies as well for calculation of cash rental. The same problems in resource valuation are involved, if the cash rental is to approximate the marginal value product of the resource.

One procedural solution is for the two parties to agree upon a level and a program of operation for the farm. This would include sufficient detail to take care of such items as upkeep and prevention of resource depletion. If the two agree on a level of operation, and make careful estimates of the gross earnings of the farm, they have a basis for estimating the cash rent for land and buildings. They can apply the calculated firm rate of earning to the estimated cost of the fixed input and thus determine a cash rental value for it.

If there is more detail of information on actual earnings of different factors in the business—available from experience or research—these data can be used. It might be known, for example, that investments in machinery return only their costs; that investment in fertilizer gives high returns; or that labor earns less than its marginal cost. If so, these data can be put to use. High returns on fer-
tizer suggest that more fertilizer should be used. Low returns to labor might mean that the farm is far from its optimum combination pattern, that labor is being misused, or even that the wrong products are being produced. If so, a recombination of inputs is required.

The suggestion above that the two parties use the over-all firm rate of earning as the best available estimate of earning of fixed factors was made on the assumption that the two parties would not know the detail of separate factor earnings. In the absence of such information, and if a good job has been done on combination of inputs, the over-all firm rate is definitely superior to any form of residual calculation. This follows from the theory. Under limited capital, if the marginal return-marginal cost ratios are equal and close to 1, the earning rates of variables and of fixed inputs approximate each other.

In short, cash rent is determined by: 1, agreeing upon a level of operation for the farm and from that making an estimate of costs and of returns; 2, calculating an over-all rate of firm earning from the estimate of costs and returns; and 3, applying the firm rate of earning to the estimate of cost of the fixed input. This becomes the rental payment.

Several observations can be made about this method of determining the cash rental:
1. It will work equally well for a tract of land or a complete and whole farm. The detail of difference between the two does not change the nature of the relations involved. In essence, this difference is only in size or complexity of the business.
2. A tenant may use this same method with each of two or more landlords from whom he leases land or buildings.
3. The agreed-upon rental payment need not be binding upon the operator in limiting him to an exact plan of operation. That is, it can be understood that the agreement is for the purpose of determining a rental payment. If the operator wishes to farm more intensively and thereby increase income above the estimated level, his cash rent can stay the same. Specific clauses in the lease can take care of matters of protection against depletion. (Admittedly, this will result in income transfer between parties, for the tenant thereby gets the additional earnings of land.)
4. A sliding scale rental can be fitted to this plan, to take care of unusual departures in income resulting from weather or prices of products.
5. As in share rent, the overhead firm costs which are not output increasing are excluded from the calculation and remain as responsibility of the resource owner—namely, property taxes, interest, and insurance. Further, separate and distinct calculation should be made for the consumption goods if any are involved.

The problems of factor valuation—particularly for land and buildings—are exactly the same in cash rental as in share rental. Inasmuch as land and buildings (and other improvements on the land) are usually the only resource that is hired in a cash rental, the problem of land pricing may be more of a stumbling block
in the calculation process for cash rent, for there is less incentive and opportunity for bargaining between the parties and the two may not see the necessity for careful attention to a complete plan of operation for the farm. This might be the case, especially if a short-cut method of calculation is used and the two try to reach an agreement by applying a rule of thumb earning rate to the "Cost" of the input. In such case, the tendency might be for heavy reliance to be placed on current market value of the property, without too much question as to particulars of forces that create non-agricultural values for the specific property. This tendency, and other faults in the application of ideas arising from general practice or custom, should not be allowed to replace reasoning from economic principles—that is, trying to apply appropriate theory of the firm to the task at hand.

**Share-Cash Agreements**

The more difficult problems of determination of rentals in share-cash arrangements involve businesses in which the landlord furnishes some form of fixed input but does not share in the output of product to which that input contributes. This is true of the crop-share-cash lease, especially on farms for which livestock and livestock products are the major source of income. The easy answer for such items as hay or pasture is to make the calculation as if all costs and returns are to be shared as discussed above, and then the value of the landlord's share is bought by the tenant, at estimates of price and quantity which can be agreed upon in advance. The landlord thus receives payment for his share of the crop. Payment for use of buildings used by the tenant in his separate livestock enterprise requires another type of calculation, because income arises from sale of livestock in which the landlord does not share. One solution is to proceed with the determination separately for that part of the business which is shared, and to calculate a cash rental separately for the additional item furnished by the landlord. This would require an evaluation of the cost of the input and a rate of earning on it, as discussed in the cash rent section, above. If several items of input are supplied, however, a more detailed calculation procedure is needed. The two parties should separate the shared and the cash rental items distinctly, by estimating the portions of them that contribute to output which is shared. All of the costs of products not shared become costs of operator, and he pays a cash rental for factors supplied by the landlord. The detail here is a matter of negotiating and bargaining, with reasoning from knowledge of production relations. It is explained in detail in the publication now in process—*Farmer's Bulletin—USDA—Your Farm Rent Determination Problem*.

**Other Provisions of the Lease**

The needs for agreement upon a level of operation, for fitting the length of lease to the type of farming enterprises, and for compensation provisions have been mentioned. How these theoretically desirable contents of leases are to be worked out raises several practical problems, but knowledge of theory and espe-
cially of the use of economic analysis of the particulars offers guides to their solution. Part of the explanation of why most leases are for one year, with rather indefinite provisions for renewal, may be that the parties have not really analyzed the economic consequences of short-term planning, nor the impact of the uncertainty in continuity and the indefiniteness of level of operation on factor earnings and, thus, on rental payments.

Research and experimental data on these facets, and on the possibilities of different types of compensation provisions, if made available to negotiating parties should encourage use of more appropriate practices in leasing. Here I place somewhat less emphasis on the needs for research as such, although admittedly some of the answers can come only through research, than on the necessity of more rigid analysis of particulars by the parties to the lease. Also, part of the "answer" rests in the more careful selection of parties—in short, the application of economic analysis to that problem phase, too.

One further facet of the decision-making-operations-complex points to the need for agreement on how to handle the day-to-day details, including the payment of variable expenses. This is particularly evident in crop-share leases, but also for all share leases in which the landlord is not available for frequent consultation. The tenant is usually responsible for obtaining and applying the variables. He may pay the whole cost, with either periodic or one annual settlement with the landlord (in time, so that each may close his books for income tax purposes). The detail of how this is to be handled can be a part of the lease, whether the lease is written or oral. If either party carries the full cost of the variables for several months, there is sufficient reason for payment of interest at time of settlement. Also, there may be need for several other settlement payments. For example, if the estimates of machinery repair or building upkeep at the start of the period differ substantially from the actual costs, the differences can be corrected by cash payments between parties at the end of the production year.

IV. Recapitulation and Conclusion

In this paper, I have tried to simplify the details that characterize rent determination in practice. This is done in the belief that only through simplification of these details, and recognition of principles, can any two parties expect to reach a workable agreement—one which achieves the ends of a business arrangement in which the resource owner receives the marginal value products of the resources he supplies to a farm firm. This does not deny in the least that many judgments remain to be performed, even with the best application of the relevant theory; but these problems of judgment can at least be cast into a framework, in which solution is the result of the use of the guides available in theory.

It may be argued by some that the theory is quite meaningless because the information and knowledge are lacking to make it applicable. But this argument simply avoids the issues involved. If the information for solution of a problem is lacking, but there is adequate understanding of the nature of the problem, then the solution comes about by doing the best possible job in obtaining and using
the needed information. For example, there is little information available for accurate measurement of marginal value products. We do not have the techniques for measuring marginal value products in a farm firm at a given level of operation. But, both practical and experimental data are available for working out an optimum combination for a given set of resources. More use can be made of these data.

The necessity for applying principles and making use of theory in the determination of both share and cash rentals suggests the need for some form of economic counselling service, available at charge, for landlords and tenants. Any two parties could take their problems of rent determination to this service and receive advice on how to go about the necessary calculation. This applies especially to landlords and tenants who have little understanding of economics. However, the counselling service would differ from much of that available. The service agent would need to know and apply the appropriate economics.

The treatment and the discussion here has been largely shortrun, with emphasis upon the production period covered by a lease—usually a year. If two parties wish to work out the details of a continuing operation, the procedure may become a series of shortrun applications. There are advantages to both parties in examining the consequences of a lease that is expected to run for more than one year. The analysis by Joe Arroyo, using linear programming to determine optimum combinations for a six year period compared with three periods of two years each, shows significantly greater income for the one long period plan.\footnote{Dynamic Programming Models for Identification and Measurement of Inefficiencies in Leasing Arrangements, Gonzalo, Jose C. Arroyo, Doctoral Thesis, Iowa State University, 1960—publication in process.}

Although the emphasis has been upon the short-run, the implications are definitely long run. Experience with the process of using the shares of fixed costs in the firm as the determinant of shares of variables and of returns will likely demonstrate that some of the faults of the land titles markets are taken into account, that land does become priced in relation to its productivity, and that only land income (rather than farm income) is capitalized into land values. Applying theory to the task of determining rents should result in more specific attention to required inputs and levels of operating farm businesses.

In this same line of thought, there are numerous impacts on both the economics of farm organization and operation and upon content of leases from outside the farm. For example, faults in the property tax system have impacts on both the land titles market and the rental market. One can suggest the basic procedure in handling taxes on real property in the rental determination process, regardless of these faults. In short, the idea is to exclude property taxes from the rental calculation—or to subtract property taxes from the gross of the firm, and distribute the remaining returns between the landlord and the tenant in the same proportion that fixed costs are shared. But the further point of importance here is that these other faults in the economic system should not be al-
lowed to fail the procedure of rent determination; the lease is not a device to correct errors in property taxes. The full solution should come from treating the tax problems, and others, as separate problems. Tenancy reform and improvement as such does not include the cure of tax problems. There is a tax problem and a tenancy problem. They are related, but the solutions come separately.

I have proposed above that the solution of the major problems in leasing that stem from and are associated with the fact of split in decision making rests in looking at the end result to be achieved. For share rent this is the equating of shares of fixed costs, variable costs and returns. The tenant or the landlord can be rewarded for his superior management input by treating management as a fixed cost and placing a value on the input. One further interrelation should be mentioned. The two parties decide upon a level of operation as a part of the agreement itself; and they can come to terms as to who makes the decisions. Thus, the livestock-share lease which approaches a partnership in fact, with both parties sharing actively in all of the management decisions, handles the problems of decision making. The crop-share agreement in which the operator makes most of the day-to-day decisions, likewise takes care of the management split by valuing the operators management input. I do not deny that there are difficulties involved in making the judgment and coming to realistic values for any one agreement. But, the theory framework sets up the guide for the two parties to make their judgments.

The procedure discussed above differs substantially from practice. The extent of the difference itself may be sufficient barrier to cause many parties to throw up their hands in dismay and say "nothing doing." The question arises, therefore, as to what arrangements short of sharing all variables can be worked out to approximate the necessary and sufficient and incentive conditions? What can any two parties do who do not wish to go all the way? Suppose the landlord is unable or unwilling to share in the variable expenses?

I think the answer in this situation still rests in knowledge of the economics of leasing. One solution is that cash rentals be worked out to replace those sharing arrangements that depart so far from what theory suggests as the proper terms of the share lease. Also, and again in the longer run, as numbers of landlords and tenants begin to apply the theory of the firm, there should be effect upon combinations of resources, with more attention devoted to economic analysis of the farm businesses. As these are adopted by tenant-operated firms, and if the advantages can be seen (separated in some way from the impacts of government programs and all the exogeneous influences on the firm), then owner-operators would supposedly adopt some of the management practices too. In the longer run, improvement in the economics of operation of tenant-operated firms would affect all farm firms.

This discussion emphasizes the need for firm analysis and attention to required inputs for a determined level of operation. The same need exists in the selection of products. Economics of production applies to all firms, whether tenant or owner operated. This emphasis on required inputs and selection of pro-
RENT DETERMINATION WITHIN THE FARM FIRM

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In discussing the paper by Dr. Hurlburt, I perhaps should have restricted myself to the question: "Is the theory sound and is it relevant to the problem at hand?" However, because the differences between Dr. Hurlburt and myself are primarily differences in philosophy and not differences in construction of theory, I have confined my remarks largely to the issues growing out of this difference in philosophy. These issues concern primarily definition of the problem, selection of theory and the role of theory.

Dr. Hurlburt's paper is an impressive plea for more use of economic theory in the determination of contract rent. He apparently has been moved to make this plea because of a conviction that rent negotiations based on customs and ignorance are resulting in a misuse of our agricultural resources and are bringing about unfair inter-firm transfers. Society, in his opinion, is not getting the best use of resources employed on rented farms because of this failure to follow rules dictated by economic theory in farm-rent negotiations.

Hurlburt's problem (in my words, not his) apparently is to obtain adoption of economically sound rental arrangements which will avoid the individual and social waste assumed to occur when these arrangements are imperfectly devised. In other words, he is after the individually and socially perfect lease.

Dr. Hurlburt spent little time defining the problem. This was not necessary in the approach he has taken. He has selected from our orthodox body of economic theory a model which he feels is appropriate for use in devising the ideal rental arrangement. His problem, then, is simply to make the real situation coincide with the model.

The solution to his problem will be the so-called perfect lease. He defines it as one in which "the terms and conditions of payment will encourage use of the quantities and combinations of inputs required for efficiency and so that the resource owner will receive the marginal value products of the resources he supplies to the firm". Thus the solution to the problem is narrowly and sharply defined from the beginning. The only remaining role of the investigator is to work out the details of a lease which welds these two decision-makers—landlord and tenant—into a single firm, or at least makes them act like a single firm in the operation of the farm.

Two issues are raised by Dr. Hurlburt's definition of the problem and the solution offered, and it is the discussion of these two issues that constitutes the body of my critique. The issues are these:

1. What is the role of theory in problem solving?
2. Is rent a price, and is it the same in a farm partnership as in a farm lease?

Dr. Hurlburt's concern that more sound economic analysis be used in management decisions is a natural one for an economist and I share his concern. I think, however, that research economists need to be careful not to become the prisoners of their theory. Theory is a useful tool; it gives insight which we could never secure without it. But I have never felt that theory was intended to describe what ought to be. It is an abstraction or simplification which is useful in telling us what the results would be if certain actions were taken under certain assumed conditions. It tells us how to get from A to B but not that B is desirable.

To define an economic problem in terms of closing the gap between the real situation and the model drawn from theory is to accept an unnecessary mental restriction in working out a solution. Dr. Hurlburt, I believe, admits this restriction and feels it keeps him on the straight and narrow path of economics. My own reaction however, is to resent such restrictions. My own definition of the leasing problem would have to await my investigation of goals or ends. Hurlburt's approach rules out any investigation of goals or ends and concentrates on means to achieve a goal which the theory conveniently is assumed to have supplied.

For instance, I might, at the beginning of my investigations hypothesize that the landlords' goals include security of property and rent. A lease must provide them with security in the matters of rent collection and maintenance of property value. In investigating the tenants' goals we might find one of these to be freedom of operation, including no interference from the landlord. If these are found to be important goals, then the perfect lease is probably going to be
something quite different from what Dr. Hurlburt describes.

Suppose we assume a rental arrangement which gives a landlord reasonable security of rent and property through provisions for either a cash rental payment or a payment tied to some factor which the tenant cannot influence. The tenant is then left free to operate as he wishes subject to provisions against depletion and supplemented with a provision for payment for unexhausted improvements. Under this situation would we not approximate the same allocation of resources as under owner-operatorship? We may have the tenant still paying too high or too low a rent, but this should be taken care of eventually in the competition for renters or by renters for farms.

We know that custom frequently sets the rental share in a community, but there is often bargaining for other things such as the furnishing of other inputs. These may offset a share that is too high or too low. Part of the difficulty may be that tenants are generally poor managers and that they do not get fair treatment by landlords, or they are not aware of opportunities. But is taking him into full partnership the solution for this problem? Isn't it rather a problem of education?

The second issue I want to raise is whether the approach to rent determination described in elaborate detail by Dr. Hurlburt is more appropriate to a partnership than to a farm lease. This raises the additional question whether rent is a price, and whether it is the same in a partnership as in a lease. I can readily visualize prospective partners using the process he describes and can see how his paper would be useful to them, but it is very difficult for me to visualize a landlord and tenant negotiating their rental arrangement in the way he has outlined. A lease is a device for conveying or transferring rights of possession, use and enjoyment of land from landlord to tenant for a specified time and consideration. In this transfer there are two independent decision-makers involved, each seeking his own self interest. The device can be improved, I am certain, but the direction Dr. Hurlburt has taken to find an improvement has led him almost away from the lease form.

The existence of high risks in farming has resulted in arrangements for sharing inputs and outputs, rather than just paying a cash rent. Landlords have been willing to go along with this and it has been popular with tenants. Also, sometimes the landlord has other resources in addition to land to contribute, and sometimes he may desire to continue participating in management decisions. Thus many leasing arrangements border on being partnerships. But the question arises, is there a basic difference in computing the shares in a partnership and computing the consideration in a lease? The arrangement in one case is intra-firm—the division of payments among partners will be based on the relative contributions of the partners. The arrangement in the other case is inter-firm, that is, between buyer and seller. These two arrangements can become relatively indistinguishable at times, but are they the same? The paper by Dr. Hurlburt is primarily concerned with intra-firm divisions of the pie rather than inter-firm negotiations for the buying and selling of rights to the use of the land.
According to Dr. Hurlburt the determination of rent is a matter of following some precise rules and is not a matter of negotiation. Is rent a price that performs a function in the allocation of resources? Is it losing that function when it is determined by rules of sharing and input valuation rather than by negotiation based on supply and demand for rentable land?

Most of our leases in the North Central region are share leases and it is probably true that there are conditions in most of these leases to encourage resource owners to maximize the returns from the resources they contribute, rather than try to maximize the returns on the combined resources in the farm firm. This explains our natural inclination to suppose that share leases result in inefficiency and waste, although the studies with which I am familiar have not found much evidence of this. Because most share leases are of one year duration, the landlord has considerable coercive power to make the tenant farm according to certain recognized standards.

In order to perfect this situation (that is, achieve maximized returns to the combined farm firm) most tenure economists have advocated, as does Dr. Hurlburt, making the lease even more of a partnership than before—rather than making it less of a partnership and more of a lease. If we investigate the question, "why have landlords not moved further towards sharing costs and giving tenants security of tenure?", we might find such reasons as these: 1, the landlord's reluctance to undertake further involvement in management; 2, his concern that increased sharing might open up further confusion of rights, duties and liabilities; 3, the landlord's desire to retain an arrangement which provides him security of rent and property. Hence, can the lease really be perfected by turning it into a partnership? Will this be acceptable to either tenants or landlords? Is this the only way to solve the problem of alleged inefficient use of resources on rented land?

It would seem to me that the same rigorous use of theory could be made after bringing back into the picture some of the limiting institutions and human values which Dr. Hurlburt has assumed away. My own approach would be to investigate first the goals and concerns of landlords and tenants. Then I would work from there in devising a lease, and I would not overlook society's interest in efficiency and other goals.
GROUND RENT AND THE ALLOCATION OF LAND AMONG FIRMS

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Introduction

This paper deals with ground rent, not contract rent. There are several reasons for singling out ground rent and treating it separately. It is ground rent, not contract rent, that determines the allocation of land among firms. It is ground rent that determines the optimal allocation of land between present and future uses, that is to say that determines the optimal timing of demolition and renewal. It is ground rent which perdures, and extends in anticipation into the remote future, and is capitalized into land values so high relative to current income as to pose the financing problem which is the main root of tenancy. It is ground rent which provides the main rationale for public outlays on projects that open up new lands, and so guides the allocation of developmental resources.

Some problems in defining and imputing ground rent

In basic conception, ground rent is a straightforward and uncomplicated idea: it is the net product of the ground, that is the gross product less the private costs of making the ground productive. It was a concept that commended itself to our simple classic forebears and might lay some claim to having been the foundation of classical economics.

Yet as we all have learned to our sorrow, in its application the concept poses several perplexities which have even led some economists to throw up their hands and abandon it, at least as a practical tool.

Likewise some economists have given up the idea of imputing products to labor, or other specific inputs. Yet if we cannot impute returns to specific inputs we have lost a good deal of the value of economic analysis—for much of our policy recommendation is based on attributing outputs to specific inputs. So I believe it is worth making the effort to clarify the concept and keep it in working order.

Ground rent as an income

Ground rent is basically an income, received in return for a flow of services from a resource that is not depleted by use. It does not include payment in return for depletion of virgin fertility, as some of that is not an income but a transfer payment. Of course ground rent is also net of depreciation and turnover of artificial fertility, and of all other inventories and improvements.

Ground rent vs. the income of improvements

Several economists have registered difficulties in distinguishing ground rent
from income imputable to improvements. I believe it is possible to resolve most of these problems and will suggest what seem to me workable solutions to several which come up frequently, proceeding in order of increasing sophistication.

Improvements physically mixed with soil

The distinction of an improvement from the ground is not dependent on the improvement's being aboveground. Underground tiles are economically quite comparable to fences or barns: they are products of human effort; they increase output; they require maintenance; and they depreciate. Easy visibility is helpful in appraising, but not otherwise very relevant to economic analysis.

The same is true of soil amendments, except that these are more analogous to inventories of raw materials which remain about constant in quantity while the individual components turn over.

"Permanent" improvements

Some improvements depreciate so slowly that for practical purposes they may be regarded as permanent. Examples are filling in shallow underwater sites—"making" land for urban use; or cutting a natural dike to drain a swamp. But the fact that the improvement and the site are now inseparable for a very long time does not prevent the economist from distinguishing the natural from the human contribution.

The human contribution can be no more than the cost of the operation, and later the cost of duplicating it. It can be less, if the costs exceeded the benefits, and/or if they exceeded available alternative costs, or if the raw site, if available today, could be developed in a better way by some new method or for some higher use. The rest of their combined values imputes to the site, and would in fact be its market value if it were still unimproved.

Confusion may arise because the unimproved site would yield no income, which leads the unwary to conclude it has no value. Man's propensity is to underestimate his debt to Nature, and overestimate his own contribution. It is surprising how often one meets the argument, even from economists who should by training be sensitive to its irrelevance, that "land produces nothing until combined with other inputs". No input produces anything until combined with other inputs. But the point is often clarified when one seeks to buy a raw "unproductive" site and learns the price.

Influence of offsite improvements and activity

Physically, the thing we call the "ground" is distinguished from other things in that it is Nature's contribution as opposed to man's. Economically, however, man contributes to its value. External economies spill over from improvements and activities on neighboring sites, both private and public. The clearest contribution is from developmental public works. Markets, affected by worldwide forces of supply and demand, also affect value.

These external human contributions differ from natural ones in certainty of permanence. Roads may deteriorate, for example, and with them the land values
to which they contribute. However, this deterioration is by no means as certain as that of improvements on private land, for in general there is a presumption that the right of way dedicated to the public will be continuously maintained by the public. In a progressive society, continual improvement of transport and utility services are the rule.

So long as we can distinguish the contributions of the atomistic site-holder from those of society it is possible to distinguish the value and income of the ground from those of the individual. Only where the line between the individual and society becomes blurred, as sometimes it does, is the line blurred between ground rent and other distributive shares. An example would be when a private utility, protected with a public franchise, develops a utility network to improve its own lands. In such instances, it is necessary to fall back on ad hoc analysis of the terms of each situation in order to make meaningful distinctions. It becomes essentially a problem in determining which developmental functions fall on the private landholder, and which on the public. Those which fall on the individual landholder should not be regarded as enhancing land values, but as exploiting latent values which he is in a position to develop. Those which the public supplies are exogenous to the individual and contribute to the value of land as such.

If we take a large overview, even those land values which seem to be created by human design are seen to be rather the exploitation of natural potentialities. If a municipality or county, for example, enhances the value of private parcels within its jurisdiction by supplying improved water service or roads at a cost below the value of the service, it is simply exploiting an opportunity inherent in the territory it monopolizes, just as the parcel holder exploits his position by building a house or planting an orchard.

Local government represents landholders collectively, and is the medium through which they must act to supply their parcels with certain kinds of collective improvements. Failure of local government to supply an optimal level and mix of services represents a failure of landholders to improve the natural opportunities which they control. The true latent potential rent of lands is that which would obtain if local government as well as the individual landholder behaved optimally.

As we proceed up the hierarchy of levels of government the number of imponderables increases, but the same basic principle holds. If we identify the landholder with the local government, then public improvements that raise parcel rents are simply taking advantage of a natural opportunity appurtenant to the land. If we regard government as alien to the landholders, then it is even more obvious that the individual landholder can take no credit for the increased rents due to public effort.

_Distinguishing ground rent from the income of old improvements_

The "unimproved value of land", as the Australians call it, is the value a site would have without the present improvements. Of course, this does not
mean a value based on use without any improvements. Unimproved value is rather what one would bid in anticipation of improving the land anew; and ground rent is the anticipated net income on which such a bid would be based.

It is not necessary to go back to the cave men, therefore, to find bare land. It is a concept that looks to the future, not the past, for its meaning. In a dynamic society there is continual supersession of yesterday's optimal use by tomorrow's, with consequent obsolescence of improvements and need to rebuild in whole or part. Bare land value thus comes to light with each renewal. And it may be estimated at any time, for appraisal or assessment, by contemplation of the prospective costs and benefits of renewal from the ground up.

We are accustomed to thinking of ground rent as determined residually, although economists now recognize this as simply a convention. In imputation of income between land and old improvements, it is a poor convention. The old improvements usually have no appreciable salvage value, that is to say no opportunity cost. But the land does. Its opportunity cost is its marginal net productivity in its highest future use. It is necessary for old uses to impute that amount to the land to justify their continued tenure.

Land plays a unique role in the demolition and replacement decision because of land's unique attribute of permanence. Ordinarily, almost the only thing of value to be salvaged from an old building is the site beneath it. The sticks and stones are junk, whose opportunity cost is far below their present value in place. Almost the only reason for demolishing an old building is to salvage the site for a higher alternative use.

It is the old improvements, therefore, which must be valued residually. Their historical cost is irrelevant; any depreciation schedule based on it is, too. Their only value is the excess of the joint yield of land and improvements over the opportunity cost of the bare land. When this excess falls to zero the improvements are worthless. Their historical cost may never have been recovered, but that is spilt milk. The full opportunity cost must be imputed to land, as to every resource, to justify keeping it from its highest alternative use.

An interesting corollary is that when land ripens into eligibility for urban use, virgin fertility loses most of its value. Thenceforth, little or no depletion need be charged, although physical depletion will probably accelerate. This will temporarily increase the net ground rent from farm use, and to some extent thereby tend to postpone urbanization.

None of that is to imply that land should never be valued residually. In determining the future value, for example, this is usually the most practical means. It is the future rate of interest that is externally "given". In general, that resource should be valued residually whose opportunity cost is more difficult to define and measure. In respect to land and old improvements, that is the old improvements. It is land whose opportunity cost is easier to define.

The problem of putting a value on land in the infinite series of future uses—what foresters call "soil expectation value"—poses many interesting problems of its own, in mathematics and the treatment of divergent expectations. I will not
get into any detail on this, other than to note that there is a good deal of it, some of which I have tried my hand at elsewhere.\textsuperscript{13} If anyone should care to allege that more needs to be done I would have to agree. But I do believe this is the most promising approach to the question.

\textit{Insulation of markets and the meaning of "opportunity cost."}

The "opportunity cost" of land may be at different levels depending on what problem one is analyzing. There are barriers keeping land from what otherwise would be its highest use. If we accept those barriers as "given" in a particular analysis, then the relevant opportunity cost is the highest use possible within those constraints.

In our capacity as consultants on farm management, we agricultural economists accept many uneconomical constraints, and advise farmers how as individuals to optimize within those constraints. That is perfectly proper—provided we do not let the attitudes engendered in that work come to dominate all our thinking and emasculate us as social scientists. For it is also our function to advise citizens how, in their capacity as voters, they can create social institutions most conducive to economic welfare.

In our capacity as social scientists and consultants to governments we can raise our sights to higher opportunity costs for land that emerge when we consider breaking barriers to optimal allocation of resources. Such a barrier might be, for example, a poorly conceived zoning pattern. An analogous one, to which the later part of this paper is devoted, is unequal access to credit, which often prevents the highest opportunity cost, viewed as an annual ground rent, from finding expression in a commensurately high bid for the land title.

The highest ground rent, after all undesirable market barriers have been breached, is a concept which may be called the "latent" ground rent. Ideally this rent would be charged against all land uses so as to eliminate all marginal extensions of land-holding, in space as well as time, whose marginal product does not cover the cost.

Generally, a goal of social policy should be to see that all land uses meet this test at the margins, both spatial and temporal. But in evaluating the management plans for individuals, within those constraints that must be accepted, land use is rather to be judged on the basis of those opportunity costs that make themselves felt to the individual, which are often somewhat lower. They are by no means, however, always as low as the residually imputed rent in the current use, and when that is so, the deficit must be imputed to the manager as a negative profit. We cannot blame the land for its own mismanagement, for land is passive and irresponsible. The land should be imputed its opportunity cost and the managers get blame or credit, as the case may be, for deficits below or surpluses above that.

Marginal vs. Average ground rent

If we begin with fixed complements of labor and depreciable capital (i.e. other than land), and increase the land input, the average and marginal products of land rise and then fall in a pattern with which we are all familiar, the marginal curve intersecting the average curve at the latter’s maximum. We can apply this analytical tool to ground rent by letting the complements increase along with the land, choosing that application of the complements which would be optimal for each acreage considered. Subtracting the average complementary costs from the average gross product leaves us with the average net product of the land, or ground rent. The curve will rise to a maximum and fall, just as does the simple average product curve, only of course with a less steep gradient. The point is illustrated in Figures 1A and 1B.

Average net product (ANP) is the difference between AGP and ACC in Fig. 1A. It is graphed separately on Fig. 1B. Note the characteristic lens-shape. Having the average net product curve, a marginal net product curve may be constructed to it, related just as in the simple case. This is the MNP curve of Figure 1B. It can also be constructed as marginal gross product less marginal complementary costs.

In long run equilibrium, marginal, and average rent would be equal. However, long run equilibrium is a remote will-o-the-wisp that economic forces pursue without often attaining. In particular, in times when the optimal scale of farming has changed rapidly, as over the last twenty years, necessitating a painful regrouping of rural spatial relations, the number of farms of optimal size is few. Divergence of average and marginal rent is the rule.

Added to this, even in periods of static technological optima, inadequate financial resources for land purchase hold many units in the stage of increasing
Fig. 1A

COSTS AND REVENUES IN DOLLARS

Average gross product, (AGP)
Average Complementary costs, (ACC)

Fig. 1B

LAND IN ACRES

Average net product (AGP less ACC)
Marginal net product (MNP)
average returns to land, where they manage to survive by imputing less than the marginal cost to a large bloc of their assets—say the owned plus the first mortgage portion—which they get on better terms than they could additional funds. At the other extreme, are those with superabundant assets, relative to their management capacity, who can and do accept lower marginal rates of return than many others in their neighborhoods. These fortunate persons will not be forced by competition back to an optimal landholding.

In analyzing the allocation of land among firms, it is the marginal rent that is relevant. When the optimal acreage has risen materially, as recently, so that many farms find themselves below that optimal size, the social opportunity cost of land in other holdings is to be reckoned at the marginal rent, which is higher than the average. It is possible for expanding farmers to pay more for marginal acres, either as rent or purchase price, than they could pay for the average acre of their farms. It will pay many less aggressive farmers to partition their holdings among their expansive neighbors at such high prices. This is part of the pulling and hauling involved in the awkward transition from one average acreage to another. But woe be unto that individual, or that people, who mistake these high prices for those which the market can sustain!

Another element of instability in the transition to a larger average farm acreage is the speculative expectation of continued rising land prices that may be engendered by a long period of actual increase. By and large, and notwithstanding many exceptions, it is larger landholders with greater financial strength who are able to put the higher present value on these future expectations. This factor adds strength to another sort of "economy of scale", derived from financial rather than technological conditions. And so a move toward farm enlargement may feed, to an extent, on itself, as expectations of rising land prices stir up speculative demand which fulfills and reinforces the expectation.

In the last twenty years, our profession has directed its cruelest barbs against the farmer who remained too small, although much of his inertia might be rationalized as an effort to recover part of the unexhausted values of old improvements. By contrast we have been gentle with him who remained or became too large. It is also possible, however, to operate too many acres with too little management, labor, buildings and equipment, and move to the right of the optimal point of maximum average rent.

In this event, the marginal net product or marginal rent of land is less than its average value. As Figure 1B indicates, the marginal rent falls to zero, while the average is only a little below its maximum. This means that such farms can dispense with land at small marginal reductions of output. Experience with acreage control programs, where many farmers with little difficulty maintained output after large acreage reductions, suggests that this situation is not so uncommon. The essential diseconomy of holding surplus, underutilized acres is concealed when land prices are rising by a good percentage each year. This "capital-gain", magnified by its partial exemption from income tax, constitutes a sort of
revenue from lands otherwise unproductive and seems to obviate any close economy of the land resource by the affluent. But when two decades of annual price increments have brought land values to a high plateau from which further increments are unlikely, but on which base taxes and interest and depletion begin to burn even the "strongest hands," we move into a time of very different reckonings when fundamental reconsiderations of our ideas about economies of scale are due.

**Tenancy and the contrast of marginal rents**

Tenancy is an institution whereby those who hold title to surplus land to which they can impute little marginal rent lend it to others with title to too little land to round out an optimal unit. The economic pressure leading to tenancy is the difference between the marginal rents, not the average ones, imputed by those with too much and too little land. The average rents, in fact, might be the same. Average rent might even be higher on the larger holding, (although this is unlikely,) and it still be economical to lease land to a smaller one.

**Sub-rents vs. whole unit rents**

The ordinary meaning of rent is as applied to a whole economic unit like a 160 acre farm. Within the unit, however, there is an internal spatial organization which puts a higher premium on some space, e.g. in and around the farmstead, than on other, e.g. the back forty. In his use of land the farmer should, therefore, recognize sub-rents, and economize accordingly. And in buying or selling land to expand or contract his acreage he should price it by how it fits into his scheme of things, not as an entirely homogeneous input. In respect to location, every inch of ground is unique, and in adding land to an enterprise, additional acres are likely to be marginal not just in quantity but in location as well.

**Deduction of agent costs**

When land is leased, tenant-landlord relations consume a good deal of attention, as Dr. Hurlburt's paper shows. This is expensive, and if the landlord employs an agent will be measurable in a monetary excess of what the tenant pays over what the landlord receives. It is arbitrary whether we define ground rent as what the tenant pays, or the lesser amount that the landlord receives, net of agent costs. In this study, I will follow the latter definition: ground rent is what the landlord receives, net of agent costs. This definition has the advantage that this is the ground rent on which an absentee landlord would base his bid for a land title. It is also the net social value of the land under tenancy, agent cost being dead loss.

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14At higher land values the proportion of virgin soil which it is economical to deplete has declined as the value of a centimeter of topsoil has risen. More of the virgin fertility has become conservable. Higher unit depletion charges, and higher conservation outlays, mean lower net rents.
DIFFERENTIAL CAPITALIZATION AND THE ALLOCATION OF LAND AMONG OWNER-OPERATORS

This audience requires no demonstration that land ideally should move to the firm prepared to impute it the highest marginal rent (net revenue product). That is the clear implication of basic economic analysis, subject only to special reservations and quibbles that do not challenge the underlying principles of economizing.

Our institutions raise many specific barriers to this goal, items too numerous to detain us here. But one barrier is so universal, so transcendent of specific ages and cultures, as to warrant our attention as a general problem of economic theory. That is the barrier between borrowers and lenders in the markets for money and credit.

Let us suppose, to make the point, that leasing land has been outlawed: operators must be owners, and owners operators. In this world of owner-operators, land would move to the tenure of the highest bidder. But this bidder would not necessarily be he who would impute the land the maximum marginal rent. Capitalization rates are of co-equal weight in determining bids, and these rates vary among individuals.

Individuals differ widely in the relation of the assets they command to their capacity to manage them productively, so there is no tendency for marginal productivities of assets to be equal as among individuals. It is widely assumed in our profession that money and credit markets ameliorate this condition, but, at best, our financial institutions leave a wide gap between the high interest rates they ask and the low ones they pay: necessarily so if they are to support themselves, and, often, a good deal more so because they are sheltered from competition.

But that is the best view of it. There is room for debate whether financial institutions on balance tend at all in the direction of equating the financial strength of individuals, inasmuch as the overriding criterion of lending is collateral security. To a high degree, therefore, financial institutions are media via which money runs uphill, that is from depositors of moderate means, who need the liquidity that financial institutions can provide them, to borrowers with abundant collateral security. Thus financial power tends to cluster about established nuclei, rather than spread itself about equimarginally.

Land economists are familiar with this phenomenon, and with the various rationalizations of it. Many economists are more sympathetic with those rationalizations than I, and if this paper were to be twice as long, the additional half would deal with these issues. For brevity's sake I am declaring them beyond the scope of this paper, hoping that Section V, which discusses how we may short-circuit the money markets, will obviate the larger part of such a discussion anyway.

"Financial strength" is a concept of several dimensions. For expository brevity we may sum them up in \( i \), the interest rate internal to the firm, and this
paper will follow that practice henceforth. This $i$ is a very simple concept, yet in my experience often calls up all manner of irrelevant and even mystic connotations, so let us dwell on it for a moment. It is premised on the idea that each individual and firm is an island, so to speak, in respect to credit, separated from other islands by the costs of transferring funds. On each island there is struck a separate supply-demand balance which determines a separate insular interest rate, $i$. This insular $i$ is the joint product of all the factors contributing to the individual's supply and demand, and does not depend on or imply any particular dogma about interest. It is the obvious and immediate result of the simple fact that it costs money to lend money, and these lending costs vary with the borrower.

In order to avoid confusion between this concept and various others, and to signalize the insular analogy, let me christen it the "insular" interest rate of the individual or firm. The insular individual interest rate is the internal rate established by the balance of supply and demand within the partially insulated economy of the individual. Those have low insular interest rates whose owned assets and credit lines are large relative to their ability and inclination to administer these assets; and those have high insular interest rates whose ability and inclination to put money to productive use are high relative to the assets at their disposal.

A low-$i$ firm can bid land away from a high-$i$ firm if the marginal rent of the land is the same to both. This in itself is not a serious diseconomy, but the low-$i$ firm can now expand, and the other must contract, until a final equilibrium in which the marginal rent is materially lower to the low-$i$ firm than to the other. At this point the marginal rents of the two firms will bear the same proportion as their interest rates. This is the problem of differential capitalization.

The problem is exacerbated when there prevails a general expectation that rents will rise in the future. Suppose, for a simple example, that rents are expected to rise in a geometric progression of $d\%$ per year. The capitalization formula becomes

$$V = \frac{a}{i - d}$$

(1)

Subtracting $d$ from $i$ in the denominator adds leverage to $i$. In the simple capitalization formula $i$ is co-equally important with $a$; but here $i$ is more important.

Consider a numerical example. If the insular interest rates, $i$, of two firms are 8% and 4%, and constant future rents are expected, the two firms will adjust their marginal landholdings until the marginal rents bear the ratio of 8% to 4%, or two to one. But if they expect future rents to rise at 2% yearly the ratio becomes \(\frac{.08 - .02}{.04 - .02} = .06\) or three to one.

Let us put it in terms of marginal cost. Assuming for the present no taxes, the marginal cost of holding title to land for one year equals $V \times i$, where $V$ is land value and $i$ is the firm's insular interest rate. Thus the marginal cost of
holding title for one year varies directly with a firm's $i$. As the firm equates marginal cost with marginal net revenue product (marginal rent), the margins of return to which different firms extend their landholdings vary directly with $i$, the symbol which epitomizes their financial strength.

Now, within this framework again, let there prevail a general expectation that rents will rise in the future. The increased leverage of $i$ may be demonstrated almost as simply as in our first example, and much more generally.

The rising expectations reach back to the present and manifest themselves in two ways, immediately. One is a higher present land value, $V$; the other is an annual increment to land value, $dV$, as the higher expectations of things to come move each year closer to the present. The higher land price, $V$, raises the marginal annual cost of holding title in proportion to the internal interest rate, $i$; while the annual price increment, $dV$, may be regarded as a deduction from marginal cost (or an addition to marginal revenue, as one prefers).

Thus, the anticipation of rising future rents has two effects which are mutually offsetting. The anticipated price increment prompts all firms to expand their landholdings, while the higher land price already realized constrains them all to contract. But the joint forces will nonetheless have an important net effect because their impact is uneven as among different firms. Annual price increments affect all firms similarly. But the impact of higher land prices is proportional to the insular interest rates, $i$, of different firms.

The leverage of $i$ is now increased in two ways. First, the base on which interest is reckoned has risen. Second, the annual increment to land value, $dV$, a constant as among different firms, is to be subtracted from the interest cost, thus magnifying the relative effects of given differences in interest cost.

Let us repeat this reasoning in symbolic form. The equation of marginal cost and marginal revenue in the land market requires basically that marginal rent (MR) equal interest cost, $Vi$:

$$MR = Vi$$  \hspace{1cm} (2)

But with rising rents expected we must change (2) by subtracting the annual price increment, $dV$, from interest cost.

$$MR = Vi - dV$$  \hspace{1cm} (3)

This may be called the "dynamic equilibrium condition" of the market for land titles.

The leverage of $i$ is brought out most markedly when we divide through by $V$:

$$\frac{MR}{V} = i - \frac{dV}{V}$$  \hspace{1cm} (3a)

The rightmost expression, $dV/V$, is the annual rise of land value expressed as a percentage. If the figure is say 2%, the constraining force of a 3% insular interest rate, $i$, is cut down to 1%. The force of a 6% insular interest rate is cut down

\[\text{15 Under our present assumptions, that is. In practice expectations of increments vary with individuals, posing an additional problem not treated here. It is also probable that credit-weak individuals cannot put much value on increments until shortly before the date of actual cash realization.}\]
relatively less, to 4%. The ratio of the two constraints is cut from .06/.03, or two to one, down to .04/.01, or four to one.

The net result of rising expectations then is an increased leverage for interest differentials, tending towards greater disparities of marginal rents between low-i and high-i landholdings. Holding land completely idle under new reclamation projects, or in suburban areas, is the extreme manifestation of this. Where price increments are rapid, they alone may be enough to offset the cost of holding title and justify (to the individual at least) holding land whose marginal revenue product is zero.

Is it not plausible that the same force, in milder form, has been working in the farm real estate market in the last twenty years? A recent study alleges that increments to farm land values have constituted half the net income of agriculture in recent years, but regardless of the exact figure, these increments have clearly been a major force to reckon with.

Our profession has neglected to make this reckoning, with the result that our analysis of trends in land tenure gives undue, at times it seems exclusive, emphasis to technological factors. For example, recent analysis of trends in farm size has focussed on the rise of mean acreage per farm, with technological forces receiving almost all the responsibility. Meantime, we have shut our eyes to an equally striking acreage trend, that is the increasing dispersion of farm sizes around the mean, or the drift toward extreme contrasts between large and small farms. This is easiest measured in the Lorenz Concentration Ratio, an expression of the bend in a Lorenz curve. The Lorenz Concentration Ratio for the distribution of farm land among holdings of different sizes has been rising rapidly.

This aspect of recent trends would seem to defy and deny the technological imperative that is usually invoked to exorcise demons of doubt over the welfare implications of farm consolidations. For technological factors alone would tend to force farms toward mean optimal sizes. Instead, however, farms are becoming ever more disparate in size. This trend is more consistent with a thesis based on increased relative importance of the problem of financing title to land that is expensive today and expected to be moreso tomorrow. This is not a thesis that can be demonstrated with experimental data borrowed from the Department of Agricultural Engineering. It is a job for fresh research by land economists, and one which we have neglected overlong.

But, for the present paper, we are primarily concerned with the conclusion that the allocation of land among owner-oprators is powerfully influenced by capitalization rates which vary among individuals; and that these individual differences take on magnified importance in a rising market. These conclusions give us some insight into the economic forces leading towards tenancy, which we take up next.

THE FUNCTION OF TENANCY

*Short-circuiting the money markets*

Tenancy is a means for transferring management control of land from those
with surplus to those with shortage of both land and the financial strength to buy more. It accommodates the weakly financed who prefer to buy durable inputs as they do others, one year at a time, and avoid the financial burden of investing in a costly present claim on remote future values. It substitutes the borrowing of land for the borrowing of money.

Tenancy is thereby a means to mitigate the problem that would obtain in a world of owner-operators, the problem of widely divergent marginal rents of land on large and small holdings: high rents on undersized, overstaffed holdings; and low ones on oversized, relatively undermanned holdings.

The function of tenancy, as often expressed, is to let landlords help tenants by bearing for them the financial burden of holding title. This interpretation strikes a change of nuance that is misleading. It seems to presume that the high price of land is an ineluctable burden imposed by Nature, a "given" with which man has no choice but to cope as best he can.

From the small individual viewpoint, it is true, the market level of land prices is fixed externally. But to transpose this viewpoint to a social analysis constitutes a splendid example of the fallacy of composition. Landlords collectively do not supply land. Nature and public works largely monopolize that function. Landlords collectively rather bid up the prices of titles to this land, above the reach of tenants. Thus they collectively create the need that as individuals they fulfill.

Individual usefulness coupled with collective dispensability is the eternal ambivalence, irony and tragedy of the landlord class. We are ill equipped to understand and cope with worldwide land reform movements, likewise the resistance to them, without an appreciation of both sides of this paradox. To attribute tenancy solely to the financial weakness of tenants is to hold, at least implicitly, an unforgivably naive concept of the origin and determination of land values. Tenancy springs as much from the financial strength of landlords as from the weakness of tenants. It is the contrast of the two, not the absolute level of either, which is essential. Any policy recommendation is doomed to frustration that ignores this basic relationship.

Land vs. other durable inputs

Why is leasing so much more common with land than with, for example, tractors? Because land is much more durable, so that its price-earnings ratio is much higher than for tractors—say 20 as compared to three or so. But there is a difference of kind as well as degree, because tractors wear out while the ground is relatively permanent, and often even better than that, appreciating. So tractor prices must be reckoned low enough, normally, that imputable earnings will return both a yield and the initial outlay within the machine's brief life span. The machine is a self-liquidating investment, but land is priced so as never to return the initial outlay, only a yield on it. Amortization of purchase must come from other funds.

For these and related reasons the interest burden of holding title to land is much heavier than the interest burden of financing less durable inputs. The
financial cost of keeping a tractor is largely depreciation. In its later years especially, interest is negligible. The financial cost of holding land is almost all interest. Therefore the interest-elasticity of demand for land is much higher than for less durable investments. The spectrum of interest rates operates selectively. Low- \( i \) firms are pushed into land investments; high- \( i \) firms out of them. The contrast creates the need for tenancy of lands.

**The inadequacy of tenancy**

While tenancy meliorates the differential capitalization problem by short-circuiting the money markets, it is at best a partial solution to the economizing problem thus posed. As landholdings grow larger than one man can handle, recourse to leasing somewhat defers the advent of diminishing marginal returns to land, by virtue of decentralizing management. But the overpressed landlord cannot thus unburden himself of all participation in management, not if he wishes to secure much income from his land, and maintain its physical condition. In fact, recourse to tenancy creates new management problems that do not exist before: the tenant-landlord relationships, and often the still more complex tenant-agent-landlord relationships. So, while a landlord may put off the penalty of diminishing returns to scale of management, he cannot do so indefinitely.

If landlords generally were energetic about administering all their assets, and put little value on their own time and talent, they could collect rent from and oversee quite a few tenants without suffering seriously diminishing marginal returns. No doubt there are those who do. But, in general, landlords have many demands on their time, including the proper enjoyment of their rental incomes. The very reason for becoming and remaining a landlord is to secure a fairly certain income from surplus investable funds without having to make a career of administering them. Exhortation to landlords to dedicate more careful attention to rental contracts, therefore, is largely shouting into the wind. Administrative energy and talent are scarce and costly resources, not to be allocated to the details of landlord-tenant relations without recompense.

Tax theory recognizes an "excess burden" from indirect taxes, which cost taxpayers more than they gain the fisc. Rent theory needs to recognize an analogous excess burden in leasing. The tenant sometimes pays more than the landlord receives, the difference being imputable as "agent cost." The tenant also suffers other costs that are not revenues to the landlord, as his short term lease precludes the long-term production planning that is essential to optimal improvement and use. These and related "excess burdens" of tenancy insure that leasing cannot entirely solve the problem posed by differential capitalization. A landlord cannot as a rule secure from leased land a net return as high as the marginal rent which his tenant could impute to the land were he, the tenant, its owner-operator. And so a gap remains between the marginal rents imputed to land on undersized and oversized owner-operations, a gap roughly commensurate

16"The gap between the two marginal net products can only be completely closed if the person who owns the land and the person who makes investments in it are the same." Pigou, A. C. Economics of Welfare, p. 151.
with the excess burdens of tenancy. And the lands which are consigned to the
perils of operation by non-owners suffer under all the frustrations of the land-
lord-tenant relationship.

AN ALTERNATIVE TO TENANCY: THE EFFECTS OF
AD VALOREM REAL ESTATE TAXES ON THE
ALLOCATION OF LAND

It is widely recognized that leasing and lending are means to help move
land assets from the tenure of those with more than they can manage effectively
to the tenure of those with less. It is not so widely recognized, hence the more
important to stress, that here is in our institutional baggage a third means to the
same end. That is the ad valorem land tax component of the general property
tax.

The ad valorem land tax is a fixed annual charge on land, based, assuming
the assessor does his job, on the maximum latent rent, or opportunity cost, of
each site, without regard to present use, user, or owner. It is, in the lawyers'
expression, in rem and not in personam, which is to say it is based solely on
qualities of the land and not on qualities of individuals owning or operating it.
Regarding it as a cost of holding title to land, it contrasts sharply with interest,
since the latter charge varies among individuals and so creates the problems we
have been discussing.

There is a tendency to regard taxes as an additional burden heaped on top
of others, adding to the total cost of holding title to land. From an individual
and short run viewpoint this is true enough. But to transpose this attitude to
social analysis of the effect of land taxes, as is oft times carelessly done, is again
a fallacy of composition betraying either innocence or amnesia of the principles
of tax capitalization. As ad valorem land tax rates rise, land values tend to fall,
(ceteris paribus). The land tax burden is therefore not piled on top of the interest
burden. Rather it tends to displace it as the prime cost of holding title to land.

The displacement of an interest charge that bears on different individuals
unequally by a tax charge that is indifferent to individual credit ratings is going
to have quite an impact on the allocation of land among firms. This substitu-
tion makes it costlier for low-i landlords to hold land, and cheaper for high-i
tenants, and for others with poor credit. It reduces the capital barrier to land-
ownership and displaces it with a more direct test of marginal productivity, to
wit, the willingness to pay an explicit annual charge. Thus it tends to reallocate
land from the better financed to the land-hungry who impute to land a high mar-
ginal rent.

The point is illustrated numerically in Tables 1A and 1B. Table 1A shows
the effect on land price, \( V \), of a constant annual ad valorem land tax of rate \( t \),
according to the formula
This is the standard textbook concept of tax capitalization. Table 1A shows the process of capitalization at several different interest rates. Note that capitalization proceeds faster at lower interest rates.

**TABLE 1A**-**TABLE OF LAND VALUES AS DETERMINED BY COMBINED INTEREST RATES AND TAX RATES, WITH ANNUAL NET RENT EQUAL TO $1**

\[
V = \frac{1}{i + t}
\]

<table>
<thead>
<tr>
<th></th>
<th>Land Values in $</th>
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<tbody>
<tr>
<td>.00</td>
<td>50</td>
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<tr>
<td>.01</td>
<td>33</td>
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<td>25</td>
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<td>17</td>
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<td>.05</td>
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<td>.10</td>
<td>8.33</td>
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<td>.15</td>
<td>5.88</td>
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<tr>
<td>.20</td>
<td>4.55</td>
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<tr>
<td>1.00</td>
<td>.98</td>
</tr>
</tbody>
</table>

**TABLE 1B**-**BIDS FOR LAND AS DETERMINED BY COMBINED INTEREST RATES, TAX RATES, AND MARGINAL IMPUTABLE RENTS. THE HIGH BID IS IN THE SHADED AREA AT EACH TAX RATE**

\[
\text{Bid} = \frac{\text{Rent}}{i + t}
\]

<table>
<thead>
<tr>
<th></th>
<th>Bids for Land in $</th>
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</thead>
<tbody>
<tr>
<td>.00</td>
<td>150</td>
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<tr>
<td>.01</td>
<td>100</td>
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<td>.02</td>
<td>75</td>
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<td>60</td>
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<td>.04</td>
<td>51</td>
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<td>.05</td>
<td>42</td>
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<td>.10</td>
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<td>.15</td>
<td>18</td>
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<tr>
<td>.20</td>
<td>14</td>
</tr>
<tr>
<td>1.00</td>
<td>2.94</td>
</tr>
</tbody>
</table>
Table 1B shows the reallocation of land that occurs as tax rates rise. Whereas Table 1A assumes an annual marginal rent ("a" in formula #4) of $1 for all parties, Table 1B assumes that Messrs. 2%, 4%, and 8% have, for the site in question, marginal rents of $3, $4, and $5 respectively. With no taxes, Mr. 2% is easily the highest bidder, but as tax rates rise the bid shifts to Mr. 4% and finally to Mr. 8%. Thus land taxes tend to reallocate land from "strong hands"—those with financial surpluses—into more productive hands.

It follows from this analysis that society may short-circuit both the money markets and the leasing markets by heavy use of ad valorem land taxation, squeezing much of the value from land titles and substituting tax costs for interest costs. This method has the advantage over leasing and lending of leading towards a complete equating of marginal rents among different firms, with no residual inter-firm barriers such as those that characterize the money and the rental markets.

The advantage of heavy taxation is greater in the event of a general expectation of rising prices for land titles. Let us return to Eqn. 3a (p. 41), wherein we analyzed the effect on land markets of anticipated price increments. The yearly tax rate, (t), fits into the equation as an addition to the right side:

\[
\frac{MR}{V} = i - \frac{dV}{V} + t
\]

The firm adds land to its holdings until it reaches the marginal equilibrium condition that the last unit yields interest and taxes, less the percentage price increment (complementary costs having been already netted out in finding MR).

Note that the leverage of i is increased by dV/V, but reduced by t. Note further that the allocative impact of t varies directly with dV/V, and inversely with i. The skeptical reader may confirm this by constructing numerical examples on the pattern of the paragraph following Equation (3a), p. 41.

Land taxation has a related but additional advantage of releasing for higher uses the resources otherwise devoted to engineering such loans as do take place for land purchase. The legal, administrative and appraisal talent and training that go into arranging land purchase loans would be largely obviated. It need not go unemployed, however, as the need for short and intermediate credit to the new title-holders would expand.

The foregoing analysis applies, of course, only to so much of the general property tax as falls on land, and that is assessed in practice as the law directs, on the latent productivity or opportunity cost of land. The part that falls on improvements (which includes that which is nominally levied on land but actually is increased when land is improved) has less wholesome effects, since the form and durability of improvements are alterable by the men who create and maintain them, and certainly will be altered with a view to avoiding taxes. The effect of such taxes on the character and quantity of improvements makes

\[17\] Also on truly permanent improvements like some land-fills. It would make good sense also to tax these, provided (a) they are truly indestructible, and (b) the incentive to produce more of them is retained by a policy of compensating the producers or their assignees for the right to tax them.
an interesting study. We are here concerned, however, solely with the effects on the allocation of land.

Taxes on improvements as a rule add more to the costs of those who use land more intensively, and so tend to dull the edge of the market’s allocative incentives. The difference between high and low marginal rents imputed by more and less intensive users of land is diminished by these taxes.

It is not necessary for a specific acre to be improved to suffer from discrimination of this sort. Suppose an acre is sold from a vacant holding to another with an adequate farmstead. The assessor tends to judge farms as units, and so to speak spread the farm buildings over the lands they serve. In due course, the new acre will in theory be assessed at a higher rate on account of having been thus “improved.” In practice, this may account in part for the tendency in some jurisdictions toward relative over-assessment of smaller holdings.

Thus, *ad valorem* taxes on real estate improvements add one more to the barriers obstructing an equimarginal allocation of land among firms. The overall effect of general property taxes as levied in most American jurisdictions today is therefore mixed. Taxes on the land component improve allocation; taxes on improvements worsen it. Whether the net effect is positive or negative is not immediately obvious.

There is some reason to believe that the positive effects outweigh the negative, since the highest development of land is generally found in regions that rely heavily on property taxation. Some striking contrasts are to be made between for example the Anglo-Saxon colonial countries and the Spanish; between the Midwest and the Southeast of the United States; between Denmark and England; and between the Irrigation Districts and the land and cattle baronies of our western states. These contrasts suggest that property taxation is not the curse one would gather from the tenor of many references to it, and that the benefits of its land-tax component outweigh the undesirable damages inflicted by the tax on improvements.

**SUMMARY AND CONCLUSIONS**

It is possible to distinguish ground rent from other distributive shares so long as one approaches the problem with some sympathy, and with patience for detail, which is to say so long as one really wants to. It is necessary for individuals to do so in order to allocate land with precision to its highest uses.

That necessary condition is not sufficient, however, for once ground rent is identified there yet remain other barriers to the conveyance of land titles to the hands of those who would put the lands to their highest uses. The most general such barrier is the insularity of individual interest rates, and the differential capitalization that results.

Leasing of surplus lands is a means whereby individuals can by-pass the money-markets and shift some lands into higher uses, but there are heavy excess burdens in the landlord-tenant relationship that keep leased lands from reaching their highest development. Society may, however, by-pass both the
money market and the leasing market by relying heavily on *ad valorem* land taxes.

**DISCUSSION: GROUND RENT AND THE ALLOCATION OF LAND AMONG FIRMS**

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Gaffney's analysis of "ground rent and the allocation of land among firms" is a thought provoking discourse of many related, but seemingly insufficiently developed, premises. Adequate treatment of this subject in its entirety would have been impossible within the time limitation provided. Although Gaffney has touched on many important facets of land allocation, I would have preferred a more exhaustive analysis of one or two of his major headings such as "Some problems in defining and imputing ground rent". Also, it would have been more interesting to me if a closer tieup between theoretical ideas and empirical bases had been made. Gaffney has given a lucid exposition of accepted theoretical ideas but little, if any, attempt was made to expose either the imperfections of rent theory or the difficulties in using this theory to explain the allocation of land among firms. In particular, some recognition of risk and uncertainty would seem necessary.

It appears from the first few pages of Gaffney's paper that valid analyses of ground rent rests on a careful imputation of returns to land. Yet, his definition of ground rent—"gross product less the costs of making the ground productive"—infers that ground rent is a residual return after all other factors have been paid their market costs. Although this contradiction is a bit vague and has been partially qualified, it adds confusion to the conceptual framework developed later on, particularly because of the heavy emphasis on optimal rent being the highest average net product which is computed as a residual return. In other words, just exactly how does one determine the opportunity cost or future marginal productivity of land? Is it a residual value or an imputed value, or does it depend on the particular situation being analyzed? Gaffney infers that it is the latter. However, this implies that one should impute a rent to land if possible, otherwise a residual value will suffice. If land is allocated on the basis of its marginal value productivity, this framework creates much doubt as to its validity because it is doubtful that land is allocated according to our abilities and tools for determining its marginal value product.

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18Presented at the UCLTC Seminar on Rent Theory and Practice, April 12, 1961.
Throughout the paper, there was a lack of explicitly defining whether the conceptual analyses applied to the individual firm or to society. Although the goals of both must be identical in terms of maximum welfare or a social optimum, the diversity of their goals or conflicts must be reckoned with when explaining or analyzing causes that allocate land. The variety of precepts regarding land is the major difficulty in determining both the allocation of land and land use. Thus, if optimal farm size is represented by highest average net product, how does one include the non-pecuniary benefits that an individual may derive from land? One can hardly discount these benefits as being sufficiently unimportant to not include them. The emphasis which our society has placed on "family farm theory" indicates that the net product from land used for agricultural purposes must contain some intangibles—easily included in a theoretical framework but nearly impossible to handle in an empirical analysis that endeavors to impute a return to land or determine its marginal value product. In fact, one may even advance an argument here that land to society is becoming relatively less important than non-land resources and that the allocation of land is highly dependent on the supply price of non-land factor services. This does not imply that the marginal rent of land is not important. Instead, it suggests that the classical ideologies regarding the economic rent and allocation of land do not sufficiently recognize the degree of complementarity among resource factors. Analysis based on marginal value product of one factor is a necessary but not sufficient condition for explaining economic phenomena. Accordingly, the allocation of land is not explained by determining simply the magnitude of its marginal value product. In fact, its immobile characteristics make the analysis more complex (or, perhaps, less simple) than that for optimally allocating non-land resource factors.

By using a residual return as the average net product of land, Gaffney described and illustrated that long run equilibrium occurs when average net product and marginal net product are equal. Accordingly, optimum farm size can be defined as the acreage which yields the highest average net product to land. Using this analysis, I question his interpretation of acreage control programs as exposing the level of marginal rent. He indicates that because output is nearly maintained after an acreage control program has gone into effect, the marginal rent on this land must have been less than average rent or the optimal rent point. And the reason this is so is because so much land had been operated prior to the program that its marginal value product had been driven below the optimal point. My disagreement with this reasoning is that: 1, product price changes that accompany acreage control programs largely explain why output has been maintained, rather than the notion that farms were too large; 2, very rapid advances in technology coupled with the fact that the lowest production acres have been idle does not allow valid comparisons inferred in the above analysis. That is, all land is not homogeneous in terms of productive ability and technology has not remained unchanged while these measurements of output were made. The problem of farms being too large is of minor significance, at least, as yet.
While I am not prone always to agree with the varying emphases in our profession, I am reluctant to share Gaffney's views that our profession has not reckoned with the trend in dispersion of farm size. He states that the Lorenz concentration ratio for the distribution of farm land holdings of different sizes has been rising. Consequently, he cites a need for corresponding analysis in terms of trends in land tenure. However, this dispersion of farm size may not be a general event throughout the country. For example, a recently completed study by ARS alleged that for the 10 Great Plains states, there was essentially no increase in concentration of land ownership for the 13 year period from 1945 to 1958. Although this study concerns only land ownership, it has a definite bearing on dispersion of farm size.

A scholarly treatment of capitalization rates and effects of ad valorem taxes has been made in the paper just given. The importance of variations in both has been illustrated quite effectively. I chose to treat these very lightly because there still remains much doubt in my mind regarding the operational significance of interest rates when determining land values and the allocation of land. There is repeated evidence that the textbook example of the capitalization method for determining land values is, at best, only a conceptual guide for explaining forces at work in the land market. Other factors such as aesthetic values, technology, risk and so on are of major significance both for determining land values and allocation of land.

In regard to ad valorem taxes, Gaffney points out that the effects of this tax are opposite on land versus improvements. And satisfactory separation of the two for tax purposes would seem quite remote.

This discussion has touched on only a few points in Gaffney's paper. In general, I believe he has brought to our attention may stimulating views on this topic. Although I would have preferred a less esoteric and more operational treatment of the subject matter, Gaffney has done a commendable job of exposing areas of inquiry that should not be treated lightly by the researchers in our field.

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**OBSTACLES TO ECONOMIC DETERMINATION OF FARM RENTS**

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University of Arizona

Two papers have preceded this one; each has advanced a theoretical analysis of a single facet of landlord-tenant relations. One of the papers has laid out a normative theory of optimum rental determination within the farm firm; the other has presented the theoretical basis, partly explanatory, partly normative, of the operation of the farm rental market.
There are two kinds of theory from which deduced hypotheses may be drawn. The first or explanatory theory permits deduction of hypotheses that predict what will occur or what one will find in the real world when he goes looking. The second or normative theory permits the deduction of hypotheses of what ought to occur or what ought to be made to occur in order to attain certain goals or norms. Explanatory theory as the name implies explains why one finds what one does in the real world, or what one can expect to find in the future. Such theory departs from reality only to the extent that man’s finite knowledge and limited mental capabilities force him to use fewer variables than exist in the real world and to work with many assumptions which will be, at least in part, “unreal.” Normative theory on the other hand expresses what “ought to be” in the real world if certain assumed goals or norms are to be attained. Such theory departs necessarily from the conditions of the real world, for its very nature is to portray what changes in that world ought to be introduced if the desired goals are to be reached. It is an ideal construct based on certain value and goal parameters.

The topic assigned to me is to discuss obstacles to economic determination of farm rents. The very term “obstacles” implies that I should approach my topic from within the context of normative ideals advanced by the two preceding authors. There can be no “obstacles” to the realization of the predictions of explanatory theories. Explanatory theories predict either rightly or wrongly; they can only be adjudged to be inadequate if unrealized in fact; they cannot be prevented of realization by obstacles.

The realization of the predictions derived from normative theory can be, of course, prevented by obstacles of one sort or another. Men can be prevented from attaining their goals.

The only way in which the topic assigned to me could be discussed within the context of an explanatory theory advanced by either of the preceding authors would be in the sense that the theory advanced by him might be “inadequate,” too unreal to be acceptable, as a result of which his theory does not describe reality, not because there are things preventing our seeing what the theory prescribes, but because the theory really is not explanatory but just masquerades as such.

I do not believe the preceding is the intention of the title assigned to me, so I am going to phrase my discussion within the context of the normative theory of rental determination within the farm firm and the normative theory of the farm rental market both of which are derived from the conventional economic theory of farm firm efficiency maximization and perfect competition in the market.

Such a normative theory of farm rental determination embraces the following two aspects: (1) Management decisions relative to production choices (in the case of landlord-tenant firms these must necessarily be joint management decisions) directed to the goal of maximized returns to the farm firm over variable outlays, and (2) bargaining between the parties to the agreement (landlord and
tenant) over sharing arrangements in the net income that will result from the management decisions reached.

MAXIMIZING RETURNS OVER VARIABLE COSTS

Conventional normative theory specifies generally that the production choices to be reached by the landlord and tenant jointly should be such as to maximize the "farm firm" net income over time through the classic process of marginal equalities appropriately adjusted for uncertainty and time preference. Necessarily involved will be knowledge of marginal productivities, expected prices of inputs and outputs, and the whole structure of factor-factor, factor-product, and product-product marginal value product relationships. The goal of these management decisions will be to maximize net return over variable cost to the farm firm and not to maximize the net return over variable cost to the landlord on the one hand nor to the tenant on the other.

BARGAINING OVER SHARES IN THE NET

After management decisions have been agreed upon, which under the usual normative assumptions will maximize net income over variable cost to the farm firm, the second phase of the problem faced by the landlord and tenant is to bargain over sharing arrangements in the net in some context of equality of bargaining power so that the shares will be equitable in some acceptable sense. Normative theory on this point usually assumes that the bargaining must be done under conditions approaching perfect competition in the land title, land rental, and capital markets. Competitive market conditions imply equal and full knowledge of the conditions of the market on the part of both parties and equal and accessible alternatives available to both.

Accepting the conventional assumptions implicit in the above formulations, land, labor, capital, and management would combine within landlord-tenant firms in the economically "most efficient" combinations and the distribution of the rewards (net income over variable costs) accruing to the firm would accord with imputed contributions to value product by each party. Under such conventional assumptions, rents would be a "fair price," and tenants and landlords would meet, bargain, and decide as equals.

But they don't bargain as equals and rents aren't "fair prices" in the above sense. Why? Obstacles to the attainment of this Elysian state intrude. What are these obstacles and how do they prevent attainment of this normative ideal?

OBSTACLES TO ATTAINMENT OF IDEAL RENTS AND RELATIONS

Obstacles rooted in the minds of the parties to the lease:

1. *Obstacles rooted in custom*. Rote, rule-of-thumb decision-making will cause rents and relations to deviate from the conventional ideals of normative theory. The management plan agreed upon by the parties may not actually attain maximum net income over variable costs because the production plan rests on customary
practices. This may be the outcome in owner-operated farms, also. But it may be
the case frequently in landlord-tenant negotiations that customary plans are
made because they mitigate the complications of intricate plans and the dif-
ficulties of working out equitable sharing arrangements. So customary farming
systems may be followed. Neither may the sharing arrangements be in line with
equitable rents because the shares may be in keeping with customary sharing
practices rather than with the ideal of proportionality to the shares in fixed costs.

The problems growing out of customary decision-making are accentuated
in times of rapid technological and economic change such as are now being ex-
perienced. When technology and economic conditions do not change over long
periods, customary ways of deciding and acting gradually gravitate to the "best"
and "fair." But when technology and economic circumstances change rapidly
and drastically, the dictates of custom rapidly get out of line with the full attain-
ment of normative goals.

Short-term leases as a customary agreement between landlords and tenants
prevent the attainment of maximum net incomes and equitable sharing because
of the short planning horizons that are implicit in such leases. Short planning
horizons result in maximized net incomes over short periods of time under cir-
cumstances where, if longer terms were considered, incomes would be enhanced
and systems of production would be different. Under these circumstances short
term leases result in less than maximum net incomes over variable costs over
time (result in less than full "social efficiency" in production) and in something
less than fully equitable shares in the firm's net, particularly when the shortness
of the term is more favorable to one than to the other of the two bargainers.

2. Obstacles rooted in lack of knowledge. The normative ideal of rent determination
so clearly outlined by Dr. Hurlburt rests on full knowledge of the erudite meth-
ods of economic analysis of income maximization by the farm firm and full
knowledge of the kinds and quantifications of empirical data required to clothe
and quantify the conceptual structure outlined in his paper. In order to attain
this ideal of rents and relationships, both parties to the agreement must know
equally and all about the value of marginal products, the "cost" or inputs, the
productivity of additional units of input, the degree of uncertainty implicit in
the inputs, and how to treat such uncertainty in the calculations. Not only must
both parties understand fully and equally the conceptual structure and processes
implicit in this formulation, but also they must have full and equal knowledge
of the empirical facts pertaining to all alternatives that they might consider.
There are few, if any, highly trained professional analysts who have such full
knowledge; it is dubious if any landlords or tenants do. To whatever extent they
do not, of course, the rents and relations they will reach will deviate from that
ideal.

Not only must both parties have full knowledge of the concepts and magni-
tudes implicit in the above formulation, but their understanding must be equal
if this normative ideal is to be reached. It must not be uncommon that one party
has a deeper grasp of the conceptual needs and a greater familiarity with the
empirical data involved than does the other concerning such things as the value of marginal products that may flow from different alternatives. Neither would it be surprising if they had different judgments as to the costs of the inputs particularly as to the imputed values of the fixed inputs that are contributed by each party. Also, they will have different notions of uncertainty and how uncertainty should be treated. Insofar as one of the parties is a stronger bargainer than the other, or insofar as he negotiates from greater knowledge and familiarity with conditions, he may be able to distort the arrangements in his favor. For example, he may be able to put the value of the land input high relative to the value of the management and labor input, or vice versa—or he may be able to obtain an agreement on an enterprise combination that is in his best interest. In any event, such negotiations and agreements growing out of unequal knowledge will distort the rental arrangements away from those presumed by the conventional ideal.

3. **Obstacles rooted in the traditional values of the culture.** The participants in the landlord-tenant institution are creatures of the culture in which they live. It is not surprising then that some of the obstacles to the attainment of the conventional normative ideal of rental rates and relations obstacles that express the mentalities of the flesh and blood participants are derived from the culture within which they live.

The tradition of the “democratic creed” is one of these. Under this creed, the culture, particularly the rural culture, has a strong bias toward freedom of choice and action for the individual. This bias is frequently expressed in such goals as “being one’s own boss,” or in the prescription against “entangling alliances.” On the landlord’s side this creed is reinforced by the tradition of the “rights” that attach to private property, the “ownership creed,” as this creed is embedded in the “enterprise creed.” The owner will not easily “bargain away” his rights to profit from any external economies that may come his way, or to profit from any opportunity to sell, or to profit from superior bargaining strength that his ownership of property may place on him. And society does not look with favor upon legislative proposals that might force him to do anyone of these things.

Landlord-tenant relationships, particularly under the conventional normative ideal, are a kind of partnership or business association in which two people jointly plan, manage, and share the income from a farm but these two traditional values of freedom and ownership rights prevent the attainment of this partnership-like ideal. Under the restrictions of these values, the partnership goal cannot be reached and to this extent the relation does not attain full maximization of net income to the farm firm nor a sharing of the fruits thereof in relation to the participant’s contributions.

Furthermore, the traditional values of the culture embrace other goals than net income maximization. Such other goals will obviously be apt to cause planning and sharing to deviate from that dictated by assumptions normative in traditional economic theory alone. But of more interest here is that the goals that
one of the two parties may have may be divergent from those of the other, and both may diverge from some abstract social goal of "firm efficiency." The landlord, being also the owner, may have a goal and interest in speculation in land and thus wish to manage his property so as to profit from speculative increases in its value. Or he may have a "trader" psychology and be interested in buying and selling farms for profit or pleasure. Or his interest in the farm he owns may be as an investment hedge against inflation rather than an expression of interest in farming as such. In any of these cases, the interest the landlord will want to maximize will be different from that of the tenant who is a farm operator, not an investor, or speculator, or trader in property. The interests of the landlord in speculation, in trading, certainly will lead him to avoid entangling alliances with the tenant in the form of long-run agreements or any firm insistence on how the farm shall be operated. If he is interested in it as an investment, he will want to maximize his returns from the farm and maintain its productive value unimpaired.

From the tenant's standpoint, who is a farm operator, his interest may include a "drive toward ownership" which means that his interest in the particular tenant farm is transitory and short-run because he is looking to the time when he will become an owner and leave this state of tenancy. Because of the circumstances under which the tenant operates he will be interested in short-run gains and consequently in maximizing short-run earnings, in contrast to the probable interest of the landlord in maximizing long-run earnings, especially if the landlord's goal is that of investment. And the tenant will not be interested in maintaining the long-run productivity of the property which may be directly contrary to the landlord's interest in doing so.

Very likely what is optimum for the landlord's "firm" will be different from that which is optimum for the renter's; furthermore, it is also likely that what is optimum for either of the parties will also be different from what is optimum for the "farm firm" as an abstract ideal of social efficiency. This can obviously be the case where the landlord is represented by an agent who is negotiating rental of the farm from some standpoint of maximized income from himself and his principal as compared to when the landlord is himself personally handling the negotiation. In this connection, one of the fruitful sources of difference in what is optimum for either party rests in the fact that they will be faced by differing degrees of uncertainty and by unequal degrees of capital rationing. But whatever the reasons—unequal uncertainty, capital rationing, planning horizon or whatnot—it will be more than likely that the optimum for either party will be a different optimum from that for the other. And there is no necessary reason to believe, even if their optima were to coincide, that this would be the same optimum as that for the ideal of abstract social efficiency.

Indeed, why should we posit that such coincidence should be ideal? To do so necessarily implies a particular value judgment—one which we categorically discard in the United States in most comparable circumstances. It may very well be that that structure of production and marketing which would maximize in-
comes separately to the producers of feed stuffs, to the producers of feeder cattle, to the cattle feeders, and to the livestock processors would not correspond to the ideal of maximum social efficiency obtainable if the "beef economy" were integrated under the central management of a single "firm." But we discard the latter goal of maximized "firm" efficiency because of a value judgment favoring "smaller," independent firms operating under conditions of competition.

Why then should we attempt to discard the maximization of landlord incomes vis-a-vis the maximization of tenant incomes in favor of a goal of maximized farm firm efficiency? More appropriate would be to improve the landlord-tenant institution so that it would function more "equitably" in the bargaining sense and accept such divergence from maximized farm firm efficiency as may be implicit in it.

**OBSTACLES ROOTED IN THE ENVIRONMENT OF SOCIAL STRUCTURE AND PROCESS**

**Increasing scarcities of opportunities to farm**

Under the impact of modern technology, farms are rapidly enlarging. This leads to the renting by owner-operators of "additional" fields or of whole farms or to the renting by tenants of two or more farms from different landlords or of larger units from one landlord. Whatever the reason, the result is a decrease in numbers of farms available, and increase in competition for land, an increase in land costs. This increase in demand for farm land to rent enhances the landlord's "bargaining power."

**Increasing capital requirements to farm**

Not only are land prices, and hence costs, increasing due to the increasing demand for farm rentals, but due to the impact of technology, there is a steadily increasing need for operating and nonland capital in agriculture as well. The increasing need for operating and nonland capital presses on the farm operator. The result is an increased demand for "borrowed" capital by farm owner and tenant operators alike which may very well include increased "borrowing" of farms which, of course, is another way of referring to tenancy. Nevertheless, the result is to add further to the increasing demand for land to rent.

Both of the above obstacles lead to increased demand for farm rentals. An increase in demand enhances the bargaining strength of the land-owner and would do so even if there were perfectly competitive land rental markets. If the land rental markets were perfectly competitive, it would not be argued that these two factors are obstacles to the attainment of efficient rent, because it is no deviation from efficiency and equity for the controller of a supply to profit from an increased demand for his resource. However, as we shall see below, because the farm rental market is less than perfectly competitive, this growing bargaining strength of the landlord persistently distorts the rents and relations away from conventional normative ideals.
Landlords who are represented by agents

A considerable quantity of agricultural land operated by tenants is in the hands of estates, joint tenancies, or institutional landlords who by the very nature of the ownership, and by the fact that they have to operate through agents to represent them prevent the development of "partnership" behavior which is so important in attaining maximum efficiency and equity in the landlord-tenant relation. By his very nature, the agent of a landlord cannot be an operating partner with another.

It is also probable, the agent's status relative to the landlord's being of this character, that the result will be a short-term planning horizon by the landlord as well as by the tenant. Here is an illustration where the circumstances surrounding the bargaining transaction so far as both parties are concerned may coincide—in this case in a short-term contract. But this will be out-of-line with the long-run ideal of abstract social efficiency. Consequently, when the landlord is not a natural person it will add to the divergance of the outcome of the landlord-tenant relation from that desired by the conventional normative ideal.

It is possible that, as an offset to this obstacle, agent management of a landlord's property may result in more knowledgable management plans in the direction of maximizing net returns to the farm than might otherwise be the case. It is likely that such agents will be more experienced farm managers and more experienced in directing the planning and management of farms than a landlord might be himself. In this event, the landlord, in the person of his agent, may be the more dominant personality in the decision over management plans and hence develop plans more beneficial to the landlord than to the tenant and thus diverge from the ideal goal; or the plans fostered by the agent may be more in keeping with the maximization of net income in line with farm firm efficiency.

The imperfectly competitive structure of the rental market

A lease is the result of a bargaining between a landlord or his agent and a tenant. If the bargaining transaction is to allocate income fairly between the parties in relation to the contributions made, it is necessary that there be full and equal knowledge on the part of each and that each have equal and equally accessible relative alternatives. In the absence of such equalities, one or the other of the parties to the negotiation has unequal bargaining strength. This may result from unequal knowledge of the marginal value products from alternative inputs and enterprises, or it may be that the alternatives available are unequally known by either party and are of unequal accessibility. In either event the bargain reached will diverge from that which would be expected under conditions of full and equal bargaining power.

In addition, there is no "rental market" where information concerning demand and supply conditions in the market can be broadly based, nor to which any prospective bargainer in the market can turn for information concerning rental alternatives or information concerning the level of prevailing rents. Because the character of the commodity bargained over—the farm—and the condi-
tions surrounding the landlord on the one hand and the tenant on the other are so different and so individual to each case, a broadly based market for the operation of supply and demand on rental prices is most difficult to achieve. But in the absence of it, whether it is difficult to achieve or not, the result is unequal bargaining strength between the two parties. Of course, circumstances will dictate in individual cases which of the parties will have the upper hand in that particular bargaining transaction. It is reasonable to speculate, although I have no empirical proof, that currently the landlord usually will have the upper hand in the transaction due to the increasing demand for farm land, the reduction in number of farms to rent, the “surplus” of people looking for farming opportunities, the increasing capital requirements and consequent greater degree of capital rationing, the more accessible alternatives outside the rental market available to the landlord, the absence of alternatives within farming available to the tenant, and the much less accessible alternatives to the tenant outside of farming; all these circumstances would seem to lead in the direction of an increased degree of bargaining strength on the part of the landlord. If so, the rental rates and relations may be distorted from the social optimum in the direction of the landlord’s “optimum” and toward enhancement of the landlord’s share in the farm’s “net.”

Legal form of the “partnership”

It is implicit in the ideal landlord-tenant relation that the relation should be akin to the “partnership,” namely, two persons joining forces, each contributing operating and capital inputs to the joint venture, sharing in management decision-making, and sharing in the returns from the venture comparable to their contributions. However, under the landlord-tenant relation a true legal partnership is not formed probably because the partnership binds each partner individually to the repayment of all debts of the partnership and gives each partner full power to commit the partnership. So long as this legal condition exists, it is doubtful whether the landlord-tenant relation can be converted into true partnership farming. In the absence of a formal and true partnership arrangement on the part of the parties, it is hardly possible to expect them to operate actually as if they were partners in the full sense called for by the conventional normative ideal of landlord-tenant relations. Anything that prevents the landlord-tenant relation from behaving like a full and true partnership will, more than likely, cause the relation and the rent to deviate from the conventional normative ideal.

Government programs

Government programs of all kinds but particularly those that effect prices take the blame for a lot of “distortions” when the norms against which they are measured are ideals of productive efficiency, and of distributive justice based on “equality.” So it would be easy to say that some of the obstacles that prevent equitable landlord-tenant relations and rent are due to the iniquities of government program activity. And, in fact, so far as landlord-tenant relations are
concerned, it can be said that price support activities can enhance the landlord's bargaining strength relative to the tenant's due to the tendency of increases in prices and incomes to be capitalized into land values, thus setting in motion that whole string of results that flow from higher land costs, higher capital requirements, etc., discussed above.

Another disturbing element in the landlord-tenant market today is the possibility that whole farms may be placed in the conservation reserve thus eliminating the tenant entirely from tenant-operated farms. This surely will increase the tenant's feeling of "uncertainty" before the farm is put in the reserve, and will increase the remaining landlords' bargaining strength relative to tenants after farms have been placed in the conservation reserve. The conservation reserve, when whole farms are placed in it, results in still further reduction in number of farms available which, in the absence of a comparable reduction of tenants seeking farms, adds to the bargaining strength on the landlords' side.

One important problem concerning knowledge relative to government programs deserves bringing up at this point. How do landlords and tenants share in conservation reserve payments when less than whole farms that are tenant operated are put into the reserve? How they should be handled under the normative plan advanced by Dr. Hurlburt is clear, but is the question of how they should do it understood by landlords and tenants generally? I doubt if it is! If the returns from the conservation reserve are shared between landlord and tenant in amounts comparable to regular income from the farm, then I expect the tenant is profiting at the landlord's expense. If the landlord takes it all on the argument that it is a form of rent for land that is not paid by the tenant, then I am sure that the landlord is profiting at the expense of the tenant. I wonder to what extent adequate information has been generally circulated as to what the proper economic approach to the sharing of the conservation reserve payments should be?

Society's lack of concern with the landlord-tenant problem

Underlying and surrounding all of the obstacles discussed above is the general obstacle of society's lack of concern over the problem and hence its lack of interest in doing anything about it. This lack of concern is rooted in the social values of the enterprise creed, the ownership ideal and the work ethic.

The enterprise creed and the work ethic say that the operations of business firms and the negotiations between the parties thereto should be free and uninhibited by governmental action. The ownership creed says that the rights of private property are sacrosanct and are not to be interfered with by government except as a last resort and under extreme provocation. These widely held and deeply seated social values which exist not only in the minds of landlords and tenants but in the minds of most Americans lead to several difficulties in the attainment of the normative ideals of rents and rental relations: 1. the absence of any social program of education specifically directed toward the solution of the landlord-tenant problem and the enhancement of knowledge on the part of landlords and tenants concerning desirable and appropriate methods of negoti-
ing their leases to the end of replacing custom with rationality and objectivity; 2, the absence of legal action by the state and other governments to ameliorate imperfections in the rental market in order to enhance the equality of bargaining power between the parties; and 3, the absence of government actions and programs to redress inequalities in the accessibility of alternatives available to tenants as compared to those available to landlords (currently).

**HOW TO OVERCOME THESE OBSTACLES**

Overcoming most, certainly the most important, among these obstacles is a matter of considerable difficulty because many of them are deeply seated in social values and goals well beyond the reach of ordinary educational and governmental action. It is all very well to say that failure to analyze the landlord-tenant relation within a sufficient economic framework is the cause of the inefficiencies and inequities that characterize it and that if only people were better informed concerning the analytic techniques and the data necessary they would arrive at rents and relations in line with the normative ideal. But it is obvious that education in how to be objectively rational would solve the problem because, to a considerable extent, the problem exists not because of irrationality and lack of objectivity, but because the rationality and objectivity is channeled in different directions and to different ends. American society is shot through and through by values and goals that are mutually contradictory, so it is nothing peculiar to find that the normative ideals of landlord-tenant relations are not attained because of contradictory goals toward which they are striving.

However, there are a few actions that might be taken to alleviate the situation somewhat and to move toward maximization of income and equity of relations between landlord and tenant.

First to come to mind, of course, is the great catchall called “education”. The content of the education we are talking about here, of course, will be designed better to acquaint landlords and tenants alike with the analytical framework of economic analysis and with the quantitative data to clothe that framework in order better to determine equitable rents and relationships as outlined in Dr. Hurlburt’s paper. As more landlords and tenants understand these processes and as more technicians who work with them in county agents’ offices and elsewhere understand them better also, much improvement will result in the landlord-tenant relation. But education cannot be expected to change the traditional values of the culture—freedom of choice for the individual, the sanctity of the rights of private property—nor can it change the fact that the interests of the parties to the landlord-tenant relation frequently diverge from each other and that both of them probably diverge from the abstract ideal of the social efficiency of the firm. If it is possible for the management of the farm’s assets to attain the ideal of abstract social efficiency only if it is operated as a firm, then it is obvious that the management of the firm must be held in a single hand either in that of the owner or of a corporation or of a true partnership. This is
another way of saying that the landlord-tenant relation never can for these reasons be relied upon to attain the optimum position of maximized efficiency of resource use and equity of income distribution in the farm as a firm. Education, like all education, may remove some of the difficulties in the landlord-tenant relation, but cannot clear them all away. The long slow evolution of social values and beliefs and the resultant institutional changes that will center all resource managing decisions in the farm as a firm must take place before significant change can occur in the landlord-tenant relation as a whole.

There are certain social actions also that can be taken to ameliorate the situation to a degree. For example, the idea of "homesteads in reverse" might be applied. This is a device for assisting surplus farm people to divest themselves of their investments in farm capital in order that they may migrate to other opportunity elsewhere. Insofar as this program includes assistance in migration to other opportunity it can be a way of helping reduce the number of persons seeking farms in a market in which the numbers of farms are shrinking. Going along with this, of course, must be social programs designed to increase the knowledge by tenants, at least, of alternative opportunities within agriculture, such as the location and character of other farms available for rent, and to enhance their knowledge of alternative opportunities outside of agriculture in the way of alternative employment opportunities available. Such a program must also include assistance of both a directive and financial kind to their attaining of these alternatives. These actions increase the tenants' alternatives to make them more nearly comparable to those available to the landlord and also by helping reduce the number of persons seeking farms in the face of a shrinking rental farm supply. Another form of social action should be to make readily and easily available to farm operators adequate supplies of operating capital with a minimum of capital rationing. One of the difficulties in the present farm rental situation is the large and increasing volume of capital necessary for operating and nonreal estate purposes which very likely will increase the demand for farm rentals in order to conserve operator's capital. If this particular obstacle is to be ameliorated by social action, some form of public operating-capital supply seems desirable.

Another form of social action—a legal undertaking—might be to reform the partnership or the corporation institution in such a way that it will facilitate landlord-tenant relationships and rent determination in a more truly partnership atmosphere. This might require something in the form of a modified corporation type arrangement in which the parties exchange their fixed capital inputs for shares of stock in the firm and their fixed service inputs for "contracts," in which they jointly must arrive at certain general management decisions as to the "board of directors" of the corporation. One of the parties as an officer of the corporation could enter into operating obligations and the assets of the particular firm would be all that are liable for the payment of such obligations.

It is obvious that in the foregoing discussion there are no world-shaking suggestions that will overcome the obstacles to the attainment of normative ideals of landlord-tenant relations in rents and relationships. I am not hopeful that
great strides in overcoming such obstacles are possible. Surely, the more that is
done to increase understanding on the part of technicians, farm advisers, and
landlords and tenants themselves as to the proper procedures for optimizing net
returns in the farm firm and for sharing them equitably between the two parties
is all to the good. It should contribute some advances. But it will not attain the
millenium.

**DISCUSSION: OBSTACLES TO ECONOMIC DETERMINATION OF FARM RENTS**

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Mr. Kelso sets the stage for his analysis by defining an obstacle as something that prevents the realization of predictions derived from normative theory. To link obstacles with explanatory theory, he states, would be of no consequence since this use of economic theory predicts either rightly or wrongly and cannot be prevented of realization. It is along this line of formulation that one might inquire into the nature and purpose of scientific deliberation in the field of economics, especially as it applies to a better understanding of farm rents.

A proposal might be made that positive and normative economics are not separate provinces at all, but simply successive methodological steps in a general pattern of scientific inquiry. If this be true, then normative analysis is not an end product in itself, but a transitional step that leads to an even more conclusive phase of economic construction. For lack of a better expression, this third stage might be called “economic engineering.” It is characterized by modes of operation that will direct a system of functionally related variables toward any one of a variety of outcomes that individuals, groups or society in general might desire. An obstacle, if viewed in this broad framework, takes on a somewhat different meaning.

Normative analysis is the application of some principle of selection to a pre-determined set of functional relationships. Maximization (minimization) is the selector most often used in economics, although other principles may also be appropriate. By applying such a principle of selection the analyst derives an “optimum” value or set of values for each of the variables in the functional complex-optimum, of course, in the sense that they are quantitatively consistent with the end-in-view of the selector. Thus, the analyst conceives of an “ideal” arrangement of economic magnitudes in a cause-and-effect linkage.

This whole construction is the source of so much controversy in economics that some digression with regard to its purpose certainly seems in order. First of all, it should be clear that an economic norm deals with a whole system of economic variables in ordered relationship. A norm cannot be fully understood if the system is not complete. If positive (explanatory) economics has not yet empirically verified the various components of the system, there isn’t much point in trying to proceed with normative applications. It is possible in theory to
derive such formulations, but suffice to say, this kind of theory may be getting far ahead of any workable understandings of the real world.

The point under consideration has special application to the subject matter of rent. If ability to predict is the test of whether or not explanatory economics is complete and normative analysis can proceed, where does the economist stand on matters pertaining to farm rents? Can the economist, one might ask, actually predict what farm rents will be? If he can, all is well. If he cannot, he might have to back up and give more consideration to empirical explanations.

Secondly, the purpose of normative analysis is not to dictate social ethics. It is to order inquiry into ways and means of changing the values of the various determinants in the system. It sets the stage for a study of “practices” that society can use to bring about preferred results. Its formulation of a different outcome, as compared with the existent, directs the investigator into a search for second-stage explanations and predictions that might be used to help regulate or control. More simply, a normative framework is only a research tool.

In essence, then, it matters not at all to the economic scientist what people should want. There is not reason for the economist to set himself up as a proponent of a particular methodological scheme, such as maximization, or even to try to demonstrate that all people with intellect strive to abide by such a principle. Economic science seeks only to help people attain what they want to attain, regardless of the righteousness of their motives or objectives.

In the case of maximization, anyone who can tell people how to regulate economic quantities to maximize also can tell them how to achieve something less. There is little question about the usefulness of the principle in guiding and directing normative inquiry, but learning how to regulate the values of the various determinants in the system is the objective—not to convert society to a mass of maximum outcomes.

All this is to say that the notion of a “fair rent” or an “equitable lease” under the theory of the firm is a misnomer in the real world. These expressions imply rental arrangements that are morally or ethically sound. Such matters clearly are outside the realm of economic science. The applied economist should not make the mistake of trying to superimpose the theoretical models of research on society as it now stands. To do so makes him a reformer, not an economic scientist.

Returning then to the subject of obstacles, they can have a meaning which is not linked completely with the hypotheses of normative theory. In the world of practical affairs, they are physical, economic and institutional conditions that obstruct the use of known regulatory procedures in the attainment of ends actually desired by people. Stated with more sophistication, they are second-stage variables which take on values that tend to be inconsistent with a desired outcome. Obstacles, so defined, are very much a subject of further scientific investigation. Further, prediction in science is the only way that measures for overcoming these obstacles can ever be determined.

Whether or not this analysis is in disagreement with the framework ad-
 advanced by Mr. Kelso is difficult to say. From time to time his paper suggests that he conceives of obstacles in the same light, yet there is sufficient ambiguity to raise question about the matter. The title is "Obstacles to Economic Determination of Farm Rents", which could be interpreted to mean obstacles encountered by economic researchers, or possibly obstacles to a determination of all the variables associated with rent prediction. The introductory discussion suggests obstacles to the actual realization of rents, but it also raises questions concerning the kind of rent under consideration. To the extent that Mr. Kelso interprets "predictions from normative theory" to mean what has been covered in this discussion, there is no disagreement. On the other hand, there truly is room for discussion if the analysis is aimed at reasons why people are not attaining rental rewards that coincide with the theoretical optima of marginal analysis. The arguments against this formulation are that explanatory theory needs to be grounded in reality before a study of obstacles can be made, and that the scientist is out of order if he seeks to make society conform to the dictates of a normative economic model.

If one is content to put aside these philosophical arguments, he finds in the main body of Mr. Kelso’s paper an excellent discussion of social phenomena that might have a bearing on farm rents. The forces and conditions that he describes might be called common-sense variables. They reflect a broad grasp of the world of practical affairs and the inter-play of a wide variety of disciplines. Clearly, he seems to recognize that the whole subject of rent cannot be wrapped up in one neat little package. One can only wonder why many of the conditioning forces that he described have not found their way into customary rent doctrine. Considering the whole battery of “exogeneous” variables, what has made the economics of farm rent such a tight little compartment? For a complete story, it might be wise to try an inter-disciplinary approach and not charge off many of these down-to-earth observations as non-economic “obstacles”.

While it is impossible to assess the relative significance of the various “obstacles” presented—they are posed only as hypotheses—one still might make judgments as to which holds the most promise of illuminating the rent determination process. To one who believes that rents in all walks of life are associated with bargaining and the processes of exchange there certainly is something to be said for the structure of the farm rental market which Mr. Kelso describes. Mr. Hurlburt alludes to this under the title of “negociation”, and it certainly is an integral part of Mr. Gaffney’s general ground rent analysis, but it is primarily Mr. Kelso who gives it equal weight with production economics in the analysis of individual contracting arrangements.

Landlords and tenants enter into rental contracts because their aspirations are unattainable through their own unaided efforts. This inter-dependence in a competitive society is a necessary basis for cooperation if they are to realize their objectives. Cooperation, on the other hand, depends on agreement as to the conditions of cooperation, and these conditions in a free society are resolved by the process of bargaining. Each seeks to work out an agreement which is advantageous to his own interests.
The final terms of a rental contract are determined by the bargaining power of the landlord and the bargaining power of the tenant. Each has a certain amount of ability to effect agreements on his own terms, and this in turn is governed by the direction and intensity of his drives and his knowledge of how to manipulate his position of scarcity and interdependence. No doubt income realization is part of the aspiration pattern, but values associated with consumption (the farm house and other prerequisites), work satisfaction, prestige, and the ethic of fair play or help to someone who needs a career certainly are other concomitant motives. The final agreement may fall far short of maximum firm efficiency with fixed costs, variable costs and returns shared in equal proportions—and who is to say that the terms of the agreement are wrong! Not only in tenancy but also in other subject matter areas, studies of bargaining strategy and decision-making are beginning to shed light on economic processes. Perhaps the time will come when experts on bargaining in farm tenure will offer their own theory of rent and will regard production aspects of the firm as "obstacles" to the attainment of perfect leases.

If one looks for additions to Mr. Kelso's discussion, there is something to be said for a more complete examination of household-firm relationships. Household decisions tend to have considerable impact on farm business organization and cannot be ignored in an industrial economy.

The tenant who can find a job in industry normally wishes to reduce his inputs of labor and management in the farm firm. With two income flows (on-farm and off-farm income) there is much to be gained by equating marginal net incomes from both sources. Generally this means a cut-back in farm production if marginal net returns from the agricultural plant are diminishing. Similarly, members of the tenant's family might have an incentive to take jobs in industry, rather than work on the farm. In essence, the income objective of the household takes precedence over the income objective of the farm business. The net effect on farm efficiency and rents depends on the mobility of resources and the relative bargaining power of the landlord and the tenant.

Under Mr. Hurlburt's formulation of necessary conditions, substitution and scale adjustments would take place within the farm firm to achieve within-firm efficiency, but often there is sufficient immobility to keep this from happening. Moreover, the tenant may be in a position to perpetuate the rental arrangement because other tenants do not compete. They, too, are on the market for off-farm employment.

Secondly, one might encourage further consideration of the "obstacles" that exist in the balance sheets of landlords and tenants. Mr. Kelso comments on the length of the planning horizons, the "trader psychology" of some landlords and the legal form of the partnership, but does not emphasize the fact that the landlord-tenant firm has no balance sheet of its own. It is a strange economic organism without any assets, any debt structure and any liquidity preference.

Most generally under leasing arrangements, the fixed inputs of the landlord and the fixed inputs of the tenant are entries in two entirely different networth
statements. Independently each party makes decisions to protect his asset-debt-preference structure. The nature of these decisions can affect the quantity of inputs available to the farm firm and the sharing of returns. In reality, one wonders if either party can be expected to work for maximum farm income without regard for his net worth position.

Where farm land is shifting into a higher use or is being held for mineral rights, the annual rent from agriculture may be incidental to the landlord. The expected appreciation in sale value or the mineral rents may be of sufficient magnitude to justify a holding of assets in the form of land even though returns from farming are approaching zero. While this does not preclude bargaining for high agricultural rent, examples can be cited where land has been made available rent free just to maintain its appearance. Similarly, the willingness of the tenant to contribute inputs and to negotiate for high rewards will be conditioned by his expectation and exante investment decisions. If for no other reason, the liquidity-prefences of the tenant, rather than his credit limitation, may keep him from setting up an efficient farm operating unit. As in the case of the household, the investment decision may take precedence over the production decision.

Mr. Kelso seems to have some difficulty with the subject of "how to overcome obstacles". This is to be expected because of the backwardness of empirical studies and the nature of the framework in which the "obstacles" are conceived. If economic science were sufficiently well-grounded to make a study of obstacles, there would be little difficulty in formulating hypothetical solutions. As matters stand, one is not completely certain that he wants to bridge the normative "gap" that he has used to guide his analysis.

Of the suggestions that he does offer, several appear to have merit from the standpoint of bringing about "desired" economic adjustments in agriculture. These are "homesteads in reverse", greater knowledge of alternatives within and outside of agriculture, and reform of the partnership or corporate institution. All are aimed at the concentration of agricultural land resources in the hands of fewer people. What one doesn't know, however, is what effect these land redistribution measures will have on the rights of individuals in society. Will the "non-landed" gentry be given equivalent social and political power with those few who remain to carry on a profitable agriculture? Clearly more research is needed concerning these possible consequences.

**EVALUATION AND DISCUSSION OF SEMINAR PAPERS**

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The special problems of concern at this seminar have an important relation to the larger problems of economic imbalance in the farm industry. The capacity of agriculture to adapt its resource structure and organization under conditions of economic progress is closely bound up with the process of evaluating factor
returns and with the functioning of the factor markets. Rent determination and land markets are an integral part of this complex.

Professor Hurlburt's paper focused on the normative aspects of rent determination within the farm firm. He presented a strong case for greater use of the theory of the firm in determining the terms and conditions for land rental arrangements. The theory of profit maximization by the firm is used as a normative model prescribing desirable economic behavior. In this setting, the "ideal" lease is one that provides resource owners with the incentives to fulfill the conditions for profit maximization. If firm profits are to be maximized, the lease must encourage tenant and landlord to act in ways that permit each to maximize his own position within the constraint of maximum firm profits. In the ideal lease, this is accomplished by making rewards a function of the marginal value products of the resources contributed and by insuring proportionality between input and output shares.

The social justification for profit maximizing behavior, of course, rests on its possible contribution to allocative efficiency. Under competitive conditions, profit maximization by all firms automatically satisfies the conditions for the optimum allocation of resources in production. When these conditions prevail, the substitution of "ideal" leases for other leases would increase national income and make it possible for everybody to be better off—a la Pareto. If competition is imperfect, this conclusion does not necessarily follow, however. Yet, there is a strong presumption that even in our present imperfectly competitive economy the adoption of "ideal" leases would make a significant contribution to the national product.

It is perhaps worth noting that each of the parties to a leasing arrangement which does not meet the test of an "ideal" lease could gain by adopting an "ideal" lease. This does not mean that the substitution of an "ideal" lease would automatically make both the tenant and landlord better off incomewise. In many instances, the use of an "ideal" lease is likely to make one of the parties worse off. What it does mean is that there will be some distributions of firm net income that could make all parties better off.

Suppose there is a leasing arrangement in which the division of firm net income between landlord and tenant is such that the landlord obtains a greater return than he would if the parties adopted an "ideal" lease. In these circumstances, presumably the landlord would oppose the adoption of an "ideal" lease, whereas the tenant would favor its adoption. Since the combined net income of both parties (firm net income) would be larger with the "ideal" lease, it would be possible for the tenant to bribe the landlord into accepting it. The tenant could overcompensate the landlord for his loss and still be better off than he was under the old lease.

The compensation principle might be used to encourage the adoption of "ideal" leases in cases where both parties will not automatically benefit. If compensation were paid, both parties would be better off and presumably both would favor adopting the "ideal" lease. However, some people might object to
compensation on grounds of distributive justice. If the landlord happened to be rich and the tenant poor, the question might be raised as to why the landlord should be compensated when he already has so much and the tenant has so little. The alternative to compensation in such cases is to revamp lease law and legally require tenants and landlords to meet the terms of the "ideal" lease. All this, of course, assumes that the empirical content of the "ideal" lease can be specified under different rental arrangements.

Much of Professor Hurlburt's stimulating paper is devoted to the application of the concept of the "ideal" lease to various rental arrangements. As he recognizes, this involves extremely difficult estimation problems. In the absence of direct estimates of marginal value products, he proposes that under a share lease factor income should be allocated between landlord and tenant in proportion to their respective contributions to total fixed cost. The cost of each resource contribution would be evaluated in terms of its alternative or opportunity cost price. However, this procedure does not seem to meet the requirements of the "ideal" lease except in the special case where the firm is maximizing profits.

In the "ideal" lease, the tenant and landlord would be paid on the basis of the marginal value product of the resources they contribute. If the factor income to the firm is divided between the parties in proportion to the share of fixed costs, the requirement that rewards be based on marginal value products will be met only if opportunity cost prices are proportional to marginal value products. If the firm is maximizing profits, this condition will be satisfied. However, when the firm's resource combination or product mix is out of line, proportionality between marginal value products and opportunity cost prices will not be uniform for all inputs and for all products. As a consequence, the division of factor income on the basis of opportunity cost prices will not give a result equivalent to that based on marginal value products. An example may clarify the point.

Suppose the ratio of land to labor and capital on a given farm is too low to produce output at minimum resource cost. In other words, the least cost combination at existing opportunity cost prices for resources involves more land in relation to labor and capital. Under these conditions, the marginal value products of labor and capital would tend to be relatively low in relation to their opportunity cost prices, whereas the marginal value product of land would tend to be relatively high in relation to its opportunity cost price. If the division of factor income were made on the basis of opportunity cost prices, too much income would be allocated to labor and capital and not enough would be allocated to land to meet the requirements of an "ideal" lease. As a result, the incentives to adjust the resource combination in line with the least cost combination would be distorted.

This does not necessarily mean, however, that the distortion would be greater than under current leasing practices. It might be greater or it might be less depending in part on how closely the opportunity cost prices used in estimating fixed costs approximated the marginal value products. It might be expected that
on farms where the resource combination is badly out of gear the distortion would be large. It is likely to be quite small on well organized units. The only solution I can see to this problem is to improve our methodology for estimating marginal value products within the farm firm. In principle, opportunity cost prices could be expected to do a good job only if the firm is utilizing the optimum combination of resources.

Improvements in farm technology are seldom factor neutral. Typically, they shift the relative physical productivities of different inputs. If a new technology raises the marginal physical product of capital in relation to that for land, the marginal value product of capital also will increase in relation to that for land. With an "ideal" lease, the return to the owner of capital would increase in relation to the return to the owner of land. However, if the division of firm net income were based on opportunity cost prices, there would be no necessary adjustment in the allocation of income, since opportunity cost prices may not be affected significantly by the technological change. Apparently, existing rental practices suffer from this limitation also.

The theoretical arguments against the use of opportunity cost prices in determining contractual rent are substantial. Nevertheless, Professor Hurlbut's proposals should not be dismissed so lightly. What is needed are some empirical studies to determine whether the distortion to incentives under his proposals would be smaller or greater than under existing practices. Even if his procedures do not fully meet the theoretical test, they still could result in an improvement in leasing arrangements.

Professor Kelso's paper dealt with the obstacles to achieving the "ideal" lease in practice. In the opening section, he properly recognized the normative nature of his assignment. Most of the ideas he presented appear to be highly pertinent and generally consistent with professional beliefs about the facts. I was surprised, however, that he made no reference to any empirical studies evaluating the efficiency of contemporary leasing practices.

How important is each obstacle in explaining departures from maximum firm net income? Are all obstacles equally amendable to corrective action? Answers to these questions seem essential if public and private efforts to eliminate the obstacles are to be effective and efficient.

Professor Kelso appears to associate incomes paid on the basis of marginal value products with distributive justice and equity. Of course, it is possible to define distributive justice so that it means a distribution of income based on marginal value products. But how many people would accept such a definition under any and all circumstances? If the distribution of resource ownership is not too unequal, many people might go along with such a definition. But if there are many wide differences in resource ownership, few people are likely to accept it.

As I understand the concept of the "ideal" lease, it is wholly the product of efficiency criteria. It implies nothing about distributive justice. It simply sets forth the leasing conditions which are consistent with maximization of firm net
income. When these conditions are not met, it is always possible to increase the income of both tenant and landlord by adjusting lease terms.

Likewise, there is nothing in the perfect competition model which implies that the distribution of personal income which it generates will be fair or equitable. The model assumes an initial distribution of resource ownership. However, the conditions for long-run equilibrium can be satisfied with any number of different distributions. In long-run competitive equilibrium, the distribution of personal income is determined by the distribution of resource ownership and factor prices which are equal to marginal value products.

Unquestionably, distributive justice and other goals do influence lease terms. And as a result, the usual requirements for the "ideal" lease may not be satisfied. Professor Kelso has made this point clear. But it may be questioned whether these other goals should be viewed as obstacles. Perhaps the theory of the "ideal" lease should be broadened to take account of non-income goals. This might be done either by substituting utility maximization for profit maximization or by subjecting profit maximization to certain non-income constraints. In either case, it would imply that the parties to the lease reach some agreement on the ordering of joint goals.

Professor Kelso's use of the term "bargaining power" has left me somewhat confused. At one point in his paper, he spoke about an increase in the demand for land as enhancing the landlord's bargaining power. At other points, he associated the term with market imperfections. It is not clear to me just how an increase in the demand for land would enhance the landlord's bargaining power in the absence of market imperfections.

I thoroughly agree with his view that tenant-landlord problems involve considerations that go beyond the functioning of the land rental and land title markets. Imperfections in the capital market and particularly in the labor market play an exceedingly important role in explaining the kinds of competitive pressures that play on the land rental market.

In the closing section of his paper, Professor Kelso made a number of suggestions for bringing current leasing practices more into line with the "ideal" lease. His view of what might be accomplished strikes me as reasonably accurate and provides a sobering offset to the more optimistic expectations of Professor Hulbert's paper. The emphasis on education and information is certainly justified. His comments on the need for social action to assist the transfer of surplus farm labor impressed me as particularly appropriate in view of the interrelationships among the factor markets.

Professor Gaffney's paper focused on the relations between ground rent and the allocation of land among farm firms. In discussing the problem of distinguishing between ground rent and income to improvements, it appears he may have missed one fundamental point—that investment in land improvement changes the productivity of land and makes land without improvement an imperfect substitute for land with improvement. Thus, for purposes of economic calculation they have to be considered different factors of production. With the
same input of other factors, the difference between the marginal value product of the land with improvement and that without improvement measures the contribution of the improvement. This contribution may be greater than, equal to, or less than the cost of the improvement. To say that the human contribution can never be more than its cost seems to imply that the economic system must always be in a state of general equilibrium.

Professor Gaffney presented a number of useful insights into the concept of opportunity cost as applied to land. Unfortunately, few agricultural economists who have expressed opinions on land retirement programs seem to be familiar with the underlying ideas discussed by Professor Gaffney. Land economists have an obligation to acquaint the public with the meaning and implications of the concept of opportunity cost as applied to land.

I agree with the view that some of our farms may be too large to produce output at minimum resource cost. But I disagree with the implication that this problem is as serious as the problem of too many small farms. Experience with control programs could provide some evidence on this point, but I am not aware of any such studies and Professor Gaffney does not refer to any.

Professor Gaffney’s analysis of the effects of differential capitalization deserves intensive study—far more than I have had a chance to give it. As I interpret the language of his paper, he says that the ownership of land gravitates toward firms with a low internal rate and away from firms with a high internal rate. By internal rate, he apparently means the marginal return on investment. Given the marginal value product of a tract of land, the firm with the low internal rate will capitalize its value at a higher figure than the firm with the high internal rate. Consequently, the low rate firm will outbid the high rate firm. What is not clear is why firms should always capitalize on the basis of their internal rates.

There must be some point in the expansion of the land base of a given farm where the internal becomes less than the external rate—the rate offered by alternative investments outside the firm. At this point, the external rate becomes the relevant rate in considering further expansion in the context of maximizing total return. Up to this point, expansion should continue in order to bring the internal rate into line with the external rate.

It is undoubtedly true that farms with relatively low internal rates are better financed than farms with relatively high internal rates. But unless the internal rate is higher than the external rate, why should these better financed farms continue to add to their land base? If they were to expand when the internal rate is below the external rate, they would be sacrificing more attractive alternatives. Therefore, they would not be maximizing their total return.

Also, farms with relatively low internal rates would tend to be units in which the resource mix better approximates the least cost combination. Consequently, the marginal value product of land would tend to be lower than on farms with relatively high internal rates. If the capacity to finance additional land were equal, which it is not likely to be, high rate farms could afford to pay more for the land than low rate farms.
It is my suspicion that differential capacity to finance additional land investment is by all odds a more significant factor in explaining changes in the pattern of land ownership than differential rates of capitalization. And I would argue that, even though the correlation between the capacity to finance additional land and the ability to manage assets may not be high, the two are not independent phenomena.

As Professor Gaffney points out, there are many imperfections in the capital market. While I have no axe to grind for the bankers, it must be recognized that not all these imperfections are the result of monopolistic activities on the part of financial institutions. Some are inevitable because of the existence of uncertainty. It can be argued, for example, that the heavy emphasis which banking institutions place on collateral security is in large part a reflection of various kinds of economic uncertainty.

Unquestionably, agricultural economists have slipped up in failing to give adequate attention to the role of capital appreciation in analyzing the land market and the economic position of farm people. While this probably has been a significant factor in explaining the shifting pattern of land ownership and farm size in recent years, it seems to me that technological and factor price developments have been far more important over the longer pull.

REJOINDER TO DISCUSSANTS' COMMENTS

Maurice M. Kelso
University of Arizona

I am in full accord with the excellent statements offered by both Drs. Frey and Kaldor concerning my paper. Each of them where they imply criticism or questioning of the central position taken in it argues exactly as I myself, would argue. The implied criticism in their remarks arises from a misinterpretation of how I had formulated my discussion. I tried to make my approach clear in the opening section of my statement but failed of so doing.

I took the topic as assigned to me—“Obstacles to Economic Determination of Farm Rents”—and argued that this topic necessarily implies that conventional maximization theory of farm firm efficiency constitutes the “ideal” of rent determination and that, consequently, my task was to discuss why this “Elysian” state is not attained in this “vale of tears and suffering.”

My intent, then, was to point up those many factors in the real world from which maximized firm efficiency theory is abstracted and which are of such large importance and so pervasive of our farm rental markets that they cannot be ignored by simplifying assumptions if one is interested in prescribing for the attainment of any recognizable goals of flesh and blood people.

Consequently, my intent actually was to say what my reviewers have said about the shortcomings of efficiency criteria as goal measures in farm rental analysis. I did not make clear, apparently, that the “model” of farm firm efficiency maximization I set up was not “my” model but that usually offered by economic analysts and practitioners in this area.
One further observation by Dr. Kaldor needs consideration. He confesses to being “somewhat confused” over my use of the term “bargaining power.” His confusion is understandable because I now think my use of the term was a bit confused. I agree with him that increase in the demand for or decrease in the supply of farms to rent does not constitute increase in the landlord’s bargaining power. Increase in bargaining power can come about, of course, only from a change in circumstances that diverge still further from the conditions of “perfect competition.” Increase in demand or decrease in supply of rental farms might at times and under certain circumstances lead to less than perfectly competitive conditions but it would be the latter not the former, that had enhanced the landlord’s bargaining power. This criticism by Kaldor and my confession of error eliminate the first two “obstacles” I have listed under the heading “Obstacles Rooted in the Environment of Social Structure and Process.” The second paragraph under point #2 indicates quite clearly my own subconscious feeling when I wrote these paragraphs that somehow they didn’t quite “hold water.”

GROUND RENT AND THE ALLOCATION OF LAND AMONG FIRMS: A REPLY

M. Mason Gaffney
University of Missouri

I welcome the opportunity to expand on the points raised by Professors Kaldor and Loftsgard. Their comments remind me sharply that barriers in communication are as serious a problem as barriers in the credit markets. Hopefully the communication barrier may be breached by the give-and-take of discussion, reply, and rejoinder. I will begin with Professor Kaldor’s comments.

I do not believe it is quite accurate of Professor Kaldor to say that I “missed” the point that “land improvement changes the productivity of land.” That is a little bit like saying that one has but to hear the statement to agree with it. My position is rather that land has a latent opportunity cost, based on the best future use, which is independent of the present use and present improvements. I cannot even claim originality for that idea. While often honored in the breach, it is basic to ad valorem property taxation in the United States, and may be found in the opinions of many judges denying relief to landowners suing to be taxed on the basis of actual rather than potential use.

There is no question that improving land can increase the gross yields from it. That is a truism which I do not contest. The issue is rather whether economists should conceive of land rent as the residual crumbs which remain to be imputed to the land input under inefficient or overextended management; or the highest rent which could be paid by an alternative efficient or underemployed management. Again, the issue is whether land rent is the small net return real-
ized under an old, obsolete building, or the higher rent that could be paid by the optimal succeeding building.

The residual approach to imputing land rent is deeply rooted in economists' thinking, and will not give way easily. But it is my position that we should let the claims of the land input be more importunate. Under the residual approach we in effect rationalize management which is inefficient with respect to land: whatever is left over after other costs is the rent of the land, and so whatever pittance management imputes to land is enough.

It is perhaps this residual approach that lends plausibility to the idea expressed by Professor Kaldor that "land improvement changes the productivity of land." It is only a short step from that to arrogating the rent of land to the credit of the capital inputs that, under that interpretation, render it productive. It would make as much sense to impute the returns of capital to the land that renders the capital productive, or the labor that renders both productive. Any such approach is contrary to the whole spirit of marginal analysis and imputation.

The future-alternative approach recommended in my paper regards improvements not as changing the productivity of land, but as exploiting productive potentialities latent in the land. To the extent that that is mere quibbling over wording I apologize for it. But beneath the question of wording there is a substantive issue of importance, so that it behooves us to watch our terminology and weed out ambiguities.

Under the future-alternative approach, the imputed rent of land would often be higher than the rent currently imputed as a residual. We are accustomed to think of opportunity costs as being inferior to present returns, but that assumes perfect markets, an assumption conspicuously untrue of credit and land markets. If the full rent were charged against land-prodigal enterprise, it would show net losses. Those losses are properly imputed to the land manager—not to the land—as negative wages-of-management. Full-equity landholders can absorb such losses because their equity gives them a comfortable cushion. Some of them have superfluous funds to finance such waste. The residual approach imputes those wastes and lost opportunities to the land. But the land is blameless. Man is in command, and with authority goes responsibility. The future-alternative approach follows the spirit of Winston Churchill's dictum: The waste of capitalism is not in making profits, but failing to make profits.

Professor Kaldor intimates that I allege that land without improvement is a perfect substitute for land with improvement. That a + b does not equal a is another truism that I will not dispute. What I did say is that it is possible at any time to impute returns to a, the land, despite the presence of b, an old building on the land, by contemplation of the net productivity of a in its best future use. That is indeed in practice the way one does decide when to demolish an old building and renew a site. It is also at all times a way of appraising the site without reference to its present improvements.

I must disagree with Professor Kaldor's statement that "the difference be-
tween the marginal value product of the land with improvement and that without improvement measures the contribution of the improvement." In many circumstances, the marginal value product of good land without any improvement would be zero, yet we do not impute nothing to one input just because another input is limitational. Land is also limitational; so is labor, and probably some subclasses of labor and capital which one might define.

I suspect that Professor Kaldor had in mind something more complex and more defensible behind that statement, but I will not conjecture. Perhaps he will elaborate the thought for us in a rejoinder.

As to the last sentence of Professor Kaldor's paragraph ending at the top of page 72 that is simply a misquotation. My text reads "The human contribution can be no more than the cost of the operation, and later the cost of duplicating it." I do not deny that improvements can appreciate after being built. As a rule I think that technological advances tend progressively to lower duplication costs over time. Certainly that is conspicuously true of all earth-moving operations in recent years, for example. Neither of those implies that the economy is always in general equilibrium.

I agree with Professor Kaldor that internal or, as I have dubbed them, "insular" interest rates are influenced by external rates. I seek in vain through my text for any statement to the contrary. My points were that "financial institutions leave a wide gap between the high interest rates they ask and the low ones they pay," and "money runs uphill, that is from depositors of moderate means... to borrowers with abundant collateral security."

I hasten to correct the impression which my language evidently gave Professor Kaldor, that my paper is directed against bankers. Bankers do dabble in restrictive practises, as do many economic groups, and that undoubtedly aggravates the problems of making a free economy work. But my text reads that financial institutions leave a wide gap between depositors' rates and borrowers' rates: "necessarily so if they are to support themselves, and often a good deal more so because they are sheltered from competition." The writer intended to emphasize the first phrase; the reader's eye caught the second. Thank goodness for discussion and replies to rectify my misleading exposition.

I regard lending costs and collateral security as ineluctable in a credit system that is not to fall victim to every Billie Sol Estes. My proposal is rather to bypass the credit system, deflating land prices by means of heavy ad valorem land taxes so that land transfers do not entail heavy financing burdens.

I did note that an incidental benefit of that would be to release for higher uses much of the administrative and legal talent now devoted to negotiating mortgage loans. That might be construed as hostile to bankers, but the assumption of higher alternative uses for their talents is not facetious. Heavy land taxes would make of land a much more commercial article than now. Today, land's relative freedom from taxes, and its permanence, give it an heirloom quality that

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19The man who gave substance to his factor's slogan: "you go faster and farther with Heller dollars."
discourages commerce; and the high equity of most landholders makes them insensitive to all but gross changes in the optimal use to which lands should be put, and permits of long lags between altered demand stimuli and supply response. With high land taxes, lenders should make up in volume of transfers much of what they lose in value per transfer, with the net social gain of a much more sensitive land market. With land moving more easily to the most productive hands, the volume of building, regrassing, renewing orchards, etc., should increase, thereby providing an additional outlet for lenders. That would be even more emphatically true if we took advantage of the higher land taxes to permit lowering the taxes on houses and other buildings and improvements, thereby unleashing a vast investment potential now abeyant.  

Professor Kaldor suspects that "differential capacity to finance additional land investment is by all odds a more significant factor . . . than differential rates of capitalization." I suspect, rather, that those are two different expressions of the same idea. Differential capitalization is simply a tool of abbreviated exposition. As I wrote, " 'Financial strength' is a concept of several dimensions. For expository brevity we may sum them up in \( i \ldots \)" Generally, too, I think it is preferable to express economic phenomena in ways that recognize a full spectrum of possibilities. Professor Kaldor's phrasing seems to suggest that he visualizes each individual with a ration of credit at a fixed interest rate. That strikes me as being more absolute and inflexible than our credit institutions, ossified though they may be, actually are. One can always borrow more at a higher interest rate, as William (20%) Zeckendorf of Webb and Knapp, and Owen Cheatham of Georgia-Pacific Lumber, so dramatically illustrate in the large, and a million finance company customers illustrate in the small. Thus, the differential-\( i \) concept not only subsumes the credit rationing concept, but allows for more dimensions of reality.

In his last sentence, it seems to me that Professor Kaldor does nothing but state an opinion, with no gesture toward meeting my argument that technological factors would tend to push farms toward mean sizes, while in fact the movement has been toward extremes, small as well as large.

But the statement that disturbs me most is that "farms with relatively low internal rates would tend to be units in which the resource mix better approximates the least-cost combination." That seems to imply that there is a "least-cost combination" that is somehow independent of the cost of credit. What basis is there for assuming that the factor-mix that appears optimal to those who are relatively free of the interest constraint is socially superior to that of those who have to economize on credit, and hence have little or no land? "Least-cost" here seems to mean least per man, or per machine, without regard to the

\[ \text{If the taxes on a $20,000 structure, (over and above taxes on the vacant lot,) are $500 a year over 40 years, their present value at 5\% is} \quad \frac{\$500}{(1 + 0.05)^{40}} = \$500 \times 17.2 = \$8600, \text{ or 43\% of the initial sales price.} \]

That is quite a barrier for the state to raise between builders and buyers, the removal of which would open as large an untapped field of investment outlets as almost any single conceivable act of public policy today.
social cost of land. It is this habit of thought, so deeply rooted that we are
scarcely aware of it, against which my paper is largely directed.

Professor Kaldor has imputed to me heresies, where I plead orthodoxy. Turning now to Professor Loftsgard's discussion, he imputes orthodoxy where I plead heresy. Would that the ideas I expounded were indeed already "accepted!"

The use of marginal net revenue to land as an allocative norm is, so far as I am aware, quite alien to the spirit of today's received doctrines which emphasize the benefits of spreading the overhead of machine purchases over wide acreages, and emphasize too the declining and negligible importance of the land input in agriculture. It is the absence of such a balanced norm as net rent that lets many economists discuss "efficiency" almost entirely in terms of output per machine or per man, to overlook economy of land almost entirely, and hence to manifest a systematic bias in favor of land-prodigious operations. I will draw the curtain of charity over citations of chapter and verse, but the supply is endless.

As to the "non-pecuniary" benefits that one derives from land, it seems to me that among professional economists it should go without saying that those can be given monetary weights and included in the definition of "revenue." Revenues and costs, as used in my paper, are measured in monetary units, but are not limited to values that actually pass through the marketplace. The amenities of living, which some lands offer in much higher degree than others, are included in revenues. Is it also necessary to spell out that negative amenities are a deduction from revenues, or an addition to costs?

The marginal contribution of acreage to the amenities of family living obviously encounters diminishing returns. Indeed, the point is more evident in respect to such amenities than with respect to physical outputs, for the family that derives its amenities from ten acres pretty obviously gets more marginal benefits from the 11th than a much larger farmer does from the 1000th. And so the inclusion of amenities does not alter the general drift of the thesis of my paper.

I must confess that the topic sentence of Professor Loftsgard's second paragraph eludes me, and I will not try to comment on any of it but the direct question it contains: "how does one determine the opportunity cost or future marginal productivity of land?" In the text I shunted this question aside by referring to other sources, but, as long as the question comes up, let me summarize them briefly here.

The future opportunity cost of land is determined by converting the net land income anticipated from future plans to a constant annuity, \( a \), and of course selecting the plan yielding the highest annuity:

\[
a = \frac{i x \left[ R_n (1 + i)^{t-n} \right]}{(1+i)^{t-1}}
\]

where \( i \) is the relevant insular rate of interest; \( R_n \) is the net revenue (sometimes negative, since it includes costs) of year \( n \); and \( t \) is the terminal age of the new improvement.

One may, if he chooses, regard \( a \) as a sort of residual, the excess of future
annualized revenues over future annualized costs. One may, however, equally well regard \( a \) as the marginal net revenue of land-time, that is, the increase of net land revenues that would result from lengthening the future use one year toward the present. As in other imputation questions, the marginal net revenue derived directly equals the average net revenue under optimal equilibrium conditions. The marginal and average figures may also differ, for example, when the future use's life-span is compressed by the constraint of some anticipated early future change in the best use of the site, like urbanization. Then, marginal net revenue exceeds average net revenue. Where there is a difference, marginal net revenue is the proper guide to allocation at the margin of decision, so long as the corresponding average net revenue remains high enough so that the use-cycle is viable in its entirety.

It is a mistake, I believe, in general to regard residual imputation and direct imputation as distinct or incompatible procedures. As a rule they lead to equivalent, or at least reconcilable, results, which fact has been duly noted and incorporated into the generally accepted body of economic doctrine. In the concept of "marginal net revenue," indeed, residual and direct imputation are fused together in one package.

Purely residual imputation does have an important role in the theory and practice of distribution, it seems to me, a role which has been obscured by the inadequate attention which economists give to the time element in production.

Residual imputation is necessary when an input is fixed, in the sense that it is irrevocably committed to a use and cannot be withdrawn. Our custom has been to treat land that way, because we instinctively think of land as "fixed," but in the sense that is relevant for distribution theory I believe that is an error. Irreversible commitment, rather than spatial fixity, is the essential quality that calls for residual imputation.

Irreversible commitment of resources to one form or use occurs when we sink resource services into specific human products. When, for example, an investor finances the production of a pair of shoes, the resources so sunk are embodied in that form, undisseverably, in the sense that they cannot be withdrawn for other uses without unacceptable economic loss. Their salvage value is so far beneath their shoe value that for practical purposes they have, once sunk, no opportunity cost.

There is a time-lag between investment, the irreversible commitment, and the disclosure of its outcome through sale. The investor carries the shoes over that period and receives his return as a residual upon liquidation. That return is a residual not as an arbitrary convention, or a theorist's convenience: it corresponds to the facts of life. Over the period of commitment, the investor is without alternatives, without recourse. It is to this kind of truly residual return that the word "profit" is vulgarly applied, and in this case I believe the vulgar usage is a good one for economists to adopt, only being certain to net out all complementary costs more scrupulously than is customary.

The investor's residual profit is net of not only initial cost, but also of all
subsequent costs of storing, transporting, selling, etc. Again, those costs are exogenously fixed. The investor absorbs them and takes his return as a residual, an *ex post* discovery.

With buildings, the subsequent costs generally assume greater relative proportions than with commodities like shoes. Buildings also differ in that liquidation is not the work of an instant, but is a long slow trickle over many years. The net value of each year's trickle is a residual after current operating costs. So much is standard doctrine, or not far from it. The innovation I propose here is that site rent should be regarded as parallel to current operating costs, exogenously fixed by its opportunity cost, which is its annualized value in its highest future use. When the sum of these exogenous current costs exhausts the gross income of the building, the trickle of liquidation has dried up; there is nothing more to liquidate. The building has no value and should be demolished.

The reason that land merits this different treatment is that its commitment to a use is never irreversible. Its past services may be embodied in building values, just as are the past services of construction labor and other inputs. But unlike the other inputs, the site under a building continues to yield current services, year by year, without let or surcease, and these current services, and future services, may be withdrawn from the present improvement through demolition, and the land released to supply its services to another improvement. In that respect, land differs from almost all the other inputs originally committed to the building. They are like the old shoe which, when it ceases to be a shoe, is junk. But second-hand land suffers no discount. In the larger sense, indeed, there is no other kind, man having desecrated the entire planet, to these millenia.

Professor Loftsgard continues by suggesting that the "rent" concept does "not sufficiently recognize the degree of complementarity among resource factors." He is dead wrong. Rent is the excess of gross yields over *complementary* costs. It seems to me that Professor Loftsgard here misses the primary purpose of the "net revenue" concepts (average and marginal,) which purpose is to comprehend all elements of revenue and complementary cost in one inclusive expression. I select land inputs as the independent variable here because land is my present subject. One could make any other input the independent variable and not change the final conclusions.

As to the significance of acreage reductions in revealing marginal rents, the definitive study of that question, or any study, has yet to come to my attention, and my allegation, consisting of one sentence, was more muted than the vigor of Professor Loftsgard's refutation would suggest. I do attach weight to the general observation that acreage cutbacks are easier on large, land-prodigal farmers than on smaller, intensive farmers. Professor Loftsgard might still be proven correct when that definitive study shall have been released, but, if so, probably not for the reasons he gives. I question if there has been historically much positive

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21 The proper treatment of interest in this scheme is too controversial to develop in this brief reply. For present purposes, assume it is netted out.
correlation between acreage cutbacks and price increases: price supports have come first, and acreage controls followed later. "Advances in technology" is better phrased I think as adoption of known technology, and adoption of land-saving techniques is an obvious consequence of acreage cutbacks, not an exogenous variable. He is right, I am sure, about the selection of poorer acres to idle, and allowance must be made for that. In how many cases, though, are the "poorer" acres poorer in location relative to a large farmstead, rather than in soil qualities?

The hypothesis that the marginal net revenue productivity, or marginal rent, of land tends to be lower on larger farms receives tentative support from two or three recent studies contrasting participants and non-participants in the Soil Bank Programs. These programs provide an almost perfect testing ground for the hypothesis, since participation is voluntary with the landholder, and involves marginal adjustments of the land input, holding others more or less constant. Landowners had the option of leasing cropland (With proper histories of allotment crops) to the Soil Bank for short terms to hold idle, or to improve. Payment rates are adjusted (with dubious precision) for quality of land. Farmers naturally bank those lands whose marginal rent, to the individual farmers, falls below the government offer.

The three studies cited found participating farmers to average significantly larger in acreage, and in cropland acreage too, than non-participants. That is hardly consistent with the now orthodox view that larger farmers are the ones who make most "efficient" use of all the resources at their disposal, including land. Many participants gave such reasons as: "needed income to pay real estate taxes;" have too much land to cultivate;" "labor is hard to get;" "land is too far away to operate;" etc. Non-participants, on the other hand, "needed all their cropland to operate their farms efficiently."

It is not possible to evaluate the ARS study of ten Great Plains states which Professor Loftsgard leans on without citing. It is not even clear if its definition of "concentration" is at all the same as Lorenz'. But if Professor Loftsgard purports to allege that the Lorenz Concentration Ratio for U.S. farm land has not been rising, he is mistaken. I have computed the ratio from the U.S. Census of Agriculture from 1900 to 1950, and it rose from .58 in 1900 to .70 in 1945 and 1950. That is for the land in farm operations (not ownerships,) measured in acres (not dollar value.) If the acres had been weighted by their value, the increase would have been more striking. The value per acre of farms of 1,000 acres and larger increased 4.7 times, compared to 3.4 times for all farms, (including the group of 1,000 acres and larger.)

Rising Lorenz Concentration Ratios result from a rise of acreage in very large farms, largely those of 1,000 acres and more; and also from a rising num-

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The Chicago Fed's AGRICULTURAL LETTER for May 13, 1960, also cites an Iowa study showing a mean acreage for participants of 263, and non-participants 214.

23THE CONSERVATION RESERVE PROGRAM, p. 10

24op. cit., p. 20
ber of very small farms. The technological determinists have sought to circumvent this latter difficulty by defining the growing numbers of miniature farms out of existence. They are "not important", because they produce so little. They are not "really farms," but workers' garden plots. But that is indefensible. The less they produce, the more eloquent witness they bear of the unequal distribution of farm land, which is after all the questions before us. Small farms have always been part-time farms, probably always will be, and have played an important and conspicuous role throughout economic history. For that matter, many of the largest farms are also part time. Their owners are bankers, congressmen, railroads, oil companies, international playboys, and a host of things. In both cases the non-farm interests have a dominant impact on the individuals' behavior in the market for farm land, and it is little else but willful myopia to exclude them and their non-farm interests from analysis of factors determining the pattern of farm sizes.

Both Professors Kaldor and Loftsgard have been too hasty, it seems to me, in rejecting concepts and propositions with only superficial examination that often entailed confusing the incidental with the essential and have substantially misinterpreted what the writer was struggling to express. I plead guilty to the misdemeanor of inadequate, sometimes misleading and perhaps even incendiary exposition, but innocent of the major felonies charged.