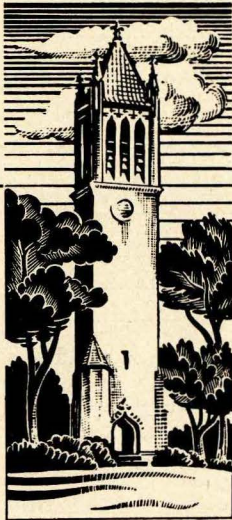


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# ADJUSTING FARM RENTS TO CHANGES IN PRICES, COSTS AND PRODUCTION



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## SUMMARY

Landlords and tenants are continually searching for means to keep their rents up to date with changing prices, costs and production. Their problem arises from the inflexibilities of rental terms as fixed by custom and contract—coupled with wide variations in prices of farm products, in costs of land ownership and farm operation and in crop yields and livestock produced. This study was designed to discover ideas and information which should prove helpful to landlords and tenants interested in introducing rent flexibilities into their farm leases. The study has three objectives:

(1) To analyze the division of net income between landlord and tenant over a period of years in order to determine the extent to which and the rapidity with which it reflects cost, price and production changes.

(2) To determine possible reasons for rent inflexibilities and to analyze these reasons in terms of effects upon landlord-tenant relations.

(3) To develop and analyze several rent adjustment alternatives in terms of their weaknesses and strengths.

Basic information for the study was obtained from the farm records of tenants and landlords cooperating in the Iowa Farm Business Associations over a period of at least 15 years. These records—some of which dated from 1921—provided the basis for calculating the net returns ratios from 1921 through 1950. The net return ratio trends were related to production, price and cost trend data obtained from the Iowa Crop and Livestock Reporting Service. In addition, a sample of 65 tenants and 25 landlords were interviewed to learn the possible effects of rent inflexibilities upon landlord-tenant relations and how they had attempted to overcome these inflexibilities.

From the analysis of rents on the farms studied, two main deductions may be made as to why rents fail to keep pace with prices, costs and production: (1) Wide fluctuations in the net rent ratios appeared for all kinds of rents. (2) The kind of rent apparently affects the direction of the trend in net return ratios.

Five major factors can explain both variations in net return ratios and direction of trends in these ratios. (1) Amounts and shares of rents become relatively fixed by custom in communities and resist changes necessary to keep up with prices, costs and production. (2) Since landlords and tenants contribute different kinds of resources as well as different amounts of the same resource, changes in prices, costs and production have differential impacts upon their respective contributions and shares (or amounts) of income. This situation is not reflected proportionately in their relative returns. (3) The duration of the rental contract for one or more years does not tend to reflect farm income changes during the life of the agreement. (4) Unpredictable changes in prices, costs and production are basic difficulties in keeping rents up to date. (5) Laws relating to

liens in connection with rental payments tend to reinforce inflexibilities in rentals.

Findings in this study coincide with trends in kind of rent as reported in the United States Census of Agriculture each decade from 1850 through 1950.

Interviews with the 90 landlords and tenants revealed that they had made a total of 165 adjustments growing out of rent inflexibilities since 1939. Some of these adjustments were successful; most of them were either avoidable through lease adjustment provisions or else resulted in net losses to both parties.

The 165 changes made by landlords and tenants may be grouped into three types: (1) Changes in leasing provisions within the same type of lease and by the same landlord and tenant—included 94 changes. (2) Changes in kind of rent by the same landlord and tenant—included 26 changes. (3) Changing farms or occupations—included 45 changes. (Included in this third type were 10 tenants who changed type of lease in connection with changes in farms.)

The interviews indicated that more flexible leasing provisions could have prevented much of this farm change and the accompanying costs of moving and becoming adjusted to a new farm.

Three kinds of specific provisions designed to adjust rents to changes in income were found in use by landlords and tenants. One provision, a "base and bonus" idea, involved the determination of a base rent accompanied by an escalator clause for increasing the rent as prices of farm products went up. The provision has proved satisfactory during the last 15 years, although prices and production have been at high levels also. The ability of the plan to withstand a severe change in prices and production has not been rigorously tested.

Another plan, a "cash or share option" idea, provides two alternative rent-determining arrangements—one cash, the other share. The tenant was permitted to exercise his option up to September 1 of the current crop year. The basic weakness in this plan consisted of the advantage to the tenant by allowing him sole choice in the rent determination between the two alternatives. In recognition of this weakness, the date of declaration of choice by the tenant was advanced to July 1.

The third plan, embracing a "commodity price adjustment" idea, was in operation on nine hog-producing farms. This plan included (1) determination of a base rent and (2) a provision for adjusting the rent up or down at the rate of \$0.25 for each \$1 change in the local price of hogs per hundredweight on a particular day. This plan was considered satisfactory by both landlords and tenants during its period of operation, 1940 through 1952. However, crop yields were relatively high during this period and no major death or gain loss was experienced in the hog enterprise. Obviously, this plan would not have made adjust-

ments for such production failures of crops or livestock.

Some other proposals for rent adjustment, although not found in the farmer interviews, have been advanced by several state experiment stations. One plan provides for rent adjustments in keeping with changes in the "prices received" index, including major farm commodities of the state. Similar to the preceding plan, this arrangement starts with an agreed-upon base rent per farm or per acre. However, in contrast with the preceding plan, this plan includes all, rather than just one, of the major farm commodities as a base for farm rent adjustment. Its basic weaknesses are twofold. First, it does not provide for variations in production. Second, the price changes of all major farm commodities may not coincide with the prices of particular products produced on a particular farm.

Another proposal advanced by the state experiment stations provides for rent adjustment based on changes in both price and production. This arrangement also starts with a base rent per farm or per acre and provides for annual adjustments in line with "prices received" for major farm commodities. In addition, this plan provides for adjustment in rent in terms of changes in yield resulting from floods, drouth, insects, disease and

similar factors beyond the control of the farmer. Although this arrangement is an improvement over the other plans, its weakness lies in not taking changing costs into account. This weakness also applies to preceding plans.

This study points out the nature and causes of rental problems created by the failure of farm rents to keep up with changes in farm income. It reveals weaknesses as well as success features of current attempts and proposals to improve this situation. From this study of the problem and attempted solutions, six general interrelated conditions appear worthy of serious consideration by landlords and tenants interested in working out and in implementing rent adjustment arrangements. The arrangement should:

- Be worked out ahead of the leasing period for which it is to apply, be clearly stated in writing and agreed to by both parties;
- Encourage efficient use of farm resources;
- Provide for changes in prices of farm products;
- Provide for changes in farm production beyond the control of the farmer; and
- Be readily workable and not unduly complex.

# Adjusting Farm Rents to Changes in Prices, Costs and Production<sup>1</sup>

BY WALTER E. CHRYST AND JOHN F. TIMMONS<sup>2</sup>

Farm rents, whether in the form of cash, kind or shares, are influenced largely by custom.<sup>3</sup> As customary shares and amounts resist change, farm rents tend to become "sticky" and to lag behind changes in prices, costs and production.<sup>4</sup> Caught between the static nature of rent and the dynamic changes in costs, prices and production, landlords and tenants are continually searching for ways and means to adjust their rents to changing farming conditions. In response to this demand for rental changes, this study was conducted to investigate alternatives whereby landlords and tenants may keep their rents more in line with changing costs, prices and production.

The general approach used in the study was to (1) delimit the scope of the problem, (2) diagnose the main elements of the problem and (3) develop ways of adjusting farm rents to changing prices, costs and production. Sources of evidence for carrying out this threefold approach were interviews with selected landlords and tenants, farm records on file in the Department of Economics and Sociology, Iowa State College, and indexes of costs, prices and production for Iowa.

## IMPORTANCE OF RENTING TO IOWA'S AGRICULTURE

A majority of Iowa's farmers (53 percent) rent all or part of the land they operate, according to the 1950 Census of Agriculture. In terms of farmers, 107,765 of the state's 203,159 farmers rent all or part of their land. In terms of land, 53 percent, or slightly more than 18 million acres, are rented. In terms of production, more than half, or around 1 billion dollars' worth of agricultural production, came from rented lands in 1950. The estimated value of rented land in the state is around 3.6 billion dollars. Consequently,

from the viewpoint of number and proportion of farms, acres of land, value of land and agricultural production, rented lands are very important in the state's agriculture.

Of equal importance to tenants, landlords and the public is the way in which these lands are used, the way in which the agricultural production is achieved, the level of farm production and the division of returns from this production between landlords and tenants. These factors are conditioned to an important degree by the rents received and paid by landlords and tenants, respectively.

## THE PROBLEM OF "STICKY" RENTS

The "sticky" character of farm rents caused by custom and contract fails to reflect changes in costs paid for factors, prices received for products and production affected by natural and technological conditions. Consequences of "sticky" rents failing to reflect these changes result in two major problems. First, landlords and tenants may not receive the productivity resulting from their respective contributions. Thus, resources at their disposal may not be allocated in a way necessary to maximize the aggregate output of the farm. Second, disagreements and conflicts between landlords and tenants may develop and result in terminating the rental relationship. This, in turn, leads to (1) costs of moving and finding a new farm by the tenant, (2) costs of finding a new tenant by the landlord, (3) reduction in income while tenants are becoming adjusted to new farms, (4) disorganization of rural communities due to tenants moving about and (5) losses in agricultural production to the public, both currently and in the future, since tenure mobility is an important obstacle to soil conservation.<sup>5</sup> This study is concerned with lessening such costs insofar as they are caused by farm rents failing to keep in line with changing costs, prices and production conditions.

A rent determined as satisfactory to both landlord and tenant in a particular year for a certain

<sup>1</sup>Project 1043, Iowa Agricultural Experiment Station.

<sup>2</sup>Production Economics Research Branch, Agricultural Research Service, United States Department of Agriculture and Department of Economics and Sociology, Iowa State College, respectively.

<sup>3</sup>The term "farm rent" as used in this report refers to kinds and amounts of payments landlords receive for their land and other contributions to the operation of rented farms. Farm rents may be expressed in the form of cash per acre, a share of the crops, a share of the livestock, a fixed amount of crops or livestock, or some combination of these forms.

<sup>4</sup>Throughout this report, prices refer to products sold; costs refer to expenses and factors purchased; and production refers to the total physical output of the farm as influenced by natural conditions (such as weather, insects and disease) and technological changes.

<sup>5</sup>The effects of tenant mobility and reduced planning horizons upon erosion control measures was emphasized in a recent study in western Iowa. See: John C. Frey. Some obstacles to soil erosion control in western Iowa. Iowa Agr. Exp. Sta. Res. Bul. 391. 1952.

farm may cease to remain satisfactory unless it is adjusted to changing costs, prices and production. As changes in costs and prices vary considerably with respect to the kinds of contributions made by each party, rents become out of line with the original agreement. For example, land costs (such as taxes) continue upward after prices of farm products have turned downward. Also, operating costs (such as machinery, fuel and labor) remain high after prices of farm products have turned downward.

In general, land costs are more rigid than costs pertaining to crop or livestock production. For example, in periods of rising prices, farm wages rise more rapidly and peak earlier than taxes. In periods of falling prices, wages fall both faster and farther than taxes. If the landlord bears the tax and the tenant pays for hired labor, the lack of proportional change in these costs will tend to increase the net return of one party relative to the other. Thus, in a period of rising prices, it could be expected that the tenant's costs would advance more rapidly than the landlord's costs, and, with the same division of gross returns, the landlord would get a greater share of the net return. Conversely, in a period of declining prices, the landlord's net return would tend to decrease relative to the tenant's net return.

In a share agreement, a fall in prices will have the same relative effect on the gross income of each party. But expenses are not borne in the same ratio as the product is divided; a change in price will result in a change in the net return ratio of landlord and tenant.<sup>6</sup> With respect to the cash lease, changes in prices may have an even more pronounced effect upon the division of net returns. To the extent that changing prices are not reflected in the cash rent, only the gross and net income of the tenant is affected, and this must result in changes in the net return ratio.

Changes in production can also affect the net return ratio. Crop and livestock losses because of drouth, flood, insects or disease result in an unequal net income incidence on the two parties. Benefits of conservation improvements may go in part to the landlord, with the tenant bearing, initially at least, the increased cost. Production decreases through acreage limitations or marketing quotas may also affect the net return ratio. Previous experience with acreage reduction programs has indicated that, through increased application of capital and labor (for example, increased fertilizer applications and/or more widespread use of improved seeds), the total product may not be reduced.<sup>7</sup>

Thus, for a share-type lease, the tenant's costs may be increased and the landlord's costs lowered,

<sup>6</sup>The net return ratio, as defined and used throughout this bulletin, is the landlord's net return as a percentage of the total net return to the farm. The net return ratio is used as a measure of relative change rather than a measure of absolutes of income and contributions. The method of computation is discussed in more detail later in this bulletin.

<sup>7</sup>See: T. W. Schultz, *Production and welfare in agriculture*, pp. 143ff. Macmillan Co., New York, 1949. Prof. Schultz points out that an 8-percent reduction in corn acreage in 1937, 1938 and 1939 in the six central Corn Belt states was accompanied by a 17-percent increase in corn production.

with the landlord's net return increasing relative to the tenant's net return. Effects of acreage control are even more pronounced for the cash-rent lease. Cash rents lag behind changes in prices, costs and production with the result that the landlord's gross returns change slowly while his costs decline and the tenant's costs increase. On the basis of these differential changes in costs, it would be expected that the net return ratio would increase.

The foregoing changes in costs, prices and production appear to be the basic reasons for maladjustments in the net return ratios. They cause landlords and tenants to search for ways to make compensating adjustments in their rental provisions.

#### OBJECTIVES OF THIS STUDY

To develop an understanding of this problem and of possible rent adjustment measures, the objectives of this study were to: (1) find the division of net income between landlord and tenant relative to changes in prices, costs and production, (2) assess the effects of these changes upon landlord-tenant relations and (3) analyze remedial measures for adjusting rents to changes in costs, prices and production.

The steps used in carrying out these objectives were to: (1) determine variations in net returns to landlords and tenants under particular types of rent over a period of years, (2) determine variations in net returns to landlords and tenants under several types of rent at a particular time, (3) determine the effects of variations of net returns to landlords and tenants upon the landlord-tenant relationships, (4) find out and appraise the kinds of measures currently used by landlords and tenants to introduce flexibilities into rent-determining features of their rental arrangements and (5) develop means whereby landlords and tenants may keep fluctuations of divisions of net income within the limits of variation they desire.

#### HYPOTHESES FOR DIRECTING THIS STUDY

This study proceeds with the development of three types of hypotheses as the directors of the inquiry. First, *delimiting* hypotheses were used to delimit the specific problem to be analyzed in this study from the broader problematic situation of rental difficulties. Second, *diagnostic* hypotheses were used to appraise the elements which caused the problem as well as the elements which tend to alleviate the problem. Third, *remedial* hypotheses were used to develop means whereby the success elements may be strengthened and the failure elements overcome.

Delimiting hypotheses for this study are: Because farm rents do not adequately reflect changes in costs, prices and production, landlord-tenant relationships are subject to severe stresses, conflicts and terminations. A companionate hypothesis is that these stresses, conflicts and terminations can be lessened or alleviated if provisions

are made in farm leases for keeping rentals up to date with changing costs, prices and production.

Diagnostic hypotheses are: Changes in prices, costs and production result in changing net return relationships between landlords and tenants for different lease types. Also, for any one lease type, changes in costs, prices and production result in divisions of net returns not anticipated by the parties at the time the original rental agreement was made. Furthermore, the resulting division of net returns becomes partially or wholly unsatisfactory to one or both parties as the net return ratio exceeds the margins or zones of tolerance.<sup>8</sup>

Remedial hypotheses are: If landlords and tenants have sufficient knowledge of the effects of changes in prices, costs and production upon the division of net returns under various kinds of rents, they will be in a position to select lease provisions necessary to keep their rent in line with changing conditions. Also, if the two parties are aware of possible adjustments which may be used in leases to keep rents up to date, they will be in better position to make such modifications as they feel necessary to provide for a more satisfactory division of returns from year to year. These are the kinds of provisions which landlords and tenants currently seek in their efforts to keep farm rentals up to date with changing conditions.

#### PROCEDURES USED TO TEST THESE HYPOTHESES

Procedures used in this study centered around (1) obtaining the evidence necessary to test the above hypotheses, (2) analyzing it in terms of testing the hypotheses and (3) summarizing results of these tests as a basis for enlarging the range of choice of lease provisions by landlords and tenants and as a basis for further study.

#### SOURCES OF EVIDENCE

Evidence for testing the several hypotheses was obtained from five sources: (1) farm records of tenants cooperating with the Iowa Farm Business Associations, (2) interviews with these tenants and their landlords, (3) related research studies, (4) United States Census of Agriculture reports and (5) cost, price and production data on file in the Iowa Crop and Livestock Reporting Service.

Sources of evidence used to test the three groups of hypotheses are as follows:

##### *Delimiting hypotheses*

Interviews  
Farm records  
Census  
Crop reporting data

##### *Diagnostic hypotheses*

Interviews  
Farm records

##### *Remedial hypotheses*

Interviews  
Farm records  
Related research studies

<sup>8</sup>Zones of tolerance, as developed in subsequent sections, consist of variations in net rent ratios from the original net rent ratio which landlords and tenants will tolerate before resorting to changes in lease provisions or lease types, or termination of relationship. The margins of tolerance are the limits of the zones of tolerance. Factors influencing the margins of tolerance are discussed later in this bulletin.

#### SELECTION OF SAMPLE FOR INTERVIEWS

To obtain evidence for testing the delimiting hypotheses, tenants who had made various types of lease changes were interviewed. The object was to learn whether these changes were a result of the parties' inability to make their leasing contract sufficiently adjustable to provide a division of the net return satisfactory to both. Tenants and landlords, over a period of time, have several possible alternatives open to them. They may: (1) make no change in lease type; (2) change lease types including (a) cash to crop- or livestock-share, (b) crop-share to cash or livestock-share or (c) livestock-share to cash or crop-share; (3) change rented farms or occupations by tenants and change tenants or investments by landlords or (4) for tenants, buy farms and become owner-operators and, for landlords, sell or operate their farms.

Interviews were obtained with 65 record-keeping tenants and 25 of their landlords who made 76 of the changes listed above (table 1).

For each of the nine change alternatives listed above, an effort was made to interview 16 tenants and their landlords who had made that type of change. But, for some alternatives, 16 potential respondents were not available. If more than 16 changes of a particular change type were made, a random sample of 16 was drawn; if less than 16 changes were made, the total number available were interviewed. In addition to those who had made changes in lease type, 16 tenants who made no changes in lease type were interviewed to learn what changes, if any, had been made in lease provisions to keep abreast of economic conditions.

#### INFORMATION SOUGHT AND SCHEDULE USED<sup>9</sup>

Detailed schedules covering the period 1939 to 1950 were obtained from landlords and tenants. The schedules were designed to provide information in the following basic areas: (1) changes in lease provisions or type made between 1939 and 1950, (2) whether changes were a result of changes in prices, costs or production, (3) appraisal of each change as a remedy for the conditions originating the change, (4) effect of the change, or the need for change, on landlord-tenant relations and (5) desirability of holding the division of net returns within a certain range of variability (or zone of tolerance).

#### PURPOSES AND KINDS OF RENTS IN AGRICULTURAL PRODUCTION

##### PURPOSES OF RENT

Farm rent has three important purposes. First, it helps allocate resources among particular kinds and amounts of uses in the productive process.

<sup>9</sup>Schedule forms (blank) used in interviewing landlords and tenants may be obtained from the Department of Economics and Sociology, Iowa State College.

TABLE 1. INITIAL AND FINAL CLASSIFICATIONS OF INTERVIEWS WITH 65 TENANTS AND 25 LANDLORDS.

	Type of change							Change in farm or occupation	Change to owner	No change
	Cash to		Crop-share to		• Livestock-share to					
	Crop-share	Livestock-share	Cash	Livestock-share	Cash	Crop-share				
(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)		
Expected*	10	1	10	6	9	8	10	16	16	
Rejected†	1	1	1	2	0	2	0	0	2	
Transferred into class	0	0	1	0	1	0	5	1	4	
Transferred out of class	5	0	0	2	1	3	0	1	0	
Completed‡	4	0	10	2	8	2	13	12	16	
Unvisited§	0	0	0	0	1	1	2	4	2	
Lease changes found in addition to change sought**	0	0	0	0	0	0	7	3	0	
Total changes studied	4	0	10	2	8	2	20	15	16	
Lease changes made with change in farm††	1	0	0	4	2	3				
Landlords interviewed‡‡	3	0	2	0	0	1	7	4	8	
Total interviews§§	8	0	12	6	10	6	27	19	24	

\* The number of changes of a given type expected upon the basis of information available from the farm record-keeping accounts. An effort was made to obtain 16 changes of each type. If the farm records indicated that less than 16 changes of a specified type had occurred, all were included in the sample; if more than 16 changes were observed, 16 were drawn at random.

† The elimination of a sampling observation after interview disclosed the failure to make the specified change.

‡ Original sampling observations for which schedules were completed.

§ Original sampling observations for which schedules were not completed by reason of inaccessibility.

\*\* Changes in tenure status disclosed by interview in addition to change contained in sample.

†† A change in lease type accompanied by a change in farms.

‡‡ The number of landlords who were a party to the change and who were accessible for interview.

§§ Interviews associated with a specific type of change. As some respondents had made more than one type of change, the number of interviews is greater than the number of respondents.

Second, it distributes returns between landlord and tenant from the joint use of their combined resources. Third, farm rent helps to keep landlords and tenants working together as teams which is necessary in the continued joint use of their combined resources.

#### THE PRODUCTIVE FUNCTION

Resource allocation is at an optimum, in terms of maximum farm output, when marginal value product equals the marginal cost of resources contributed. One important function of farm rent is to encourage use of resources contributed by landlord and tenant in such a way that this objective of resource allocation will be realized in the interest of increasing farm production for the mutual benefit of both parties and the public. The allocative function of rent and conditions under which this function may be achieved has been analyzed in a number of current studies. It is not developed further in this report.<sup>10</sup>

The productive function of rent is closely related to but beyond the immediate scope of this report. This study assumes that the initial rentals, affecting the productive and distributive functions, were satisfactory to both parties as the basis for the original bargain.

#### THE DISTRIBUTIVE FUNCTION

The second function of farm rent is to distribute returns in relation to the productivity of resources contributed. This function is closely allied to the productive function which requires each contributor of resources to receive full benefit for the part of the production that results from his re-

spective contribution. If all returns were shared exactly alike and all resources were contributed equally, there would be no problem of adjusting farm rents to prices, costs and production; these changes would be automatically reflected in the distribution of returns. But contributive shares of the major productive resources—land and labor—are not shared alike because each party needs the other's resources, complementary to his own, to operate the farm. Furthermore, particular resources contributed by each party react differently to price and cost changes. These conditions mean that farm rents must be adjusted to reflect changes in costs, prices and production in an effort to keep rents in line with the initial rental agreement.

#### THE TEAMWORK FUNCTION

Since renters and their landlords need each other's resources to operate farms, the interests of landlords and tenants are largely complementary. Farm rents are a major factor in facilitating or obstructing this complementary nature of interests. Full cooperation between landlord and tenant is essential in achieving the productive and distributive functions of farm rent. To maintain this cooperation, provisions must be made for keeping farm rents abreast of changing conditions of prices, costs and production.

This study does not try to assess the efficacy of either the productive or distributive functions of rents at the time the original rent was determined. Apparently, the original rent was satisfactory to both parties or the parties would not have reached an agreement on the joint use of their respective resources in the operation of the farm. The original rent provided a common basis for building their relationships in operation of the farm. The study reported here is concerned with maintaining this relationship by making the changes in farm rent needed to keep the division of returns

<sup>10</sup>See: D. Gale Johnson. Resource allocation under share contracts. Jour. Political Econ. 58:111-123. 1950. Rainer Schickele. Effects of tenure systems on agricultural efficiency. Jour. Farm Econ. 23:185-207. 1941. Earl O. Heady. Economics of farm leasing systems. Jour. Farm Econ. 29:659-678. 1947. Louis S. Drake. Comparative productivity of share- and cash-rent systems of tenure. Jour. Farm Econ. 34:535-550. 1952.



in line with the intended division of net income at the time of the original agreement.<sup>11</sup> It develops the thesis that a satisfactory division of returns will not remain satisfactory unless it is adjusted from time to time because of the constant operation of changing factors beyond the control of either party. Unless these adjustments are made in an appropriate manner, the most satisfactory landlord-tenant relationship may deteriorate into conflict or termination through no fault of either landlord or tenant.

Neither the productive nor the distributive function of rent may be determined precisely for any particular farm, even though the necessary conditions and assumptions may be explicitly stated. Until these determinations can be made, and even thereafter, the problem of maintaining satisfactory relations among landlords and tenants rests largely upon (1) a reasonable value concept of rent as determined by the landlord and tenant at the time their relationship commences, (2) limits of toleration in net income variations around this original reasonable value and (3) adjustments necessary to keep farm rents within these limits of variation from rent norms acceptable to both tenant and landlord.

Although farm rent is the heart of the rental arrangement, many other provisions affect the successful operation of the farm. These include provisions for renewal, termination, improvements, land use practices and the many other points to be considered in providing for the successful operation of rented farms.

Rental arrangements are regarded in this study from two viewpoints. First, they may prevent farm rents from reflecting changes to a degree necessary for the continuation of the rental relationship. Second, the rental arrangement provides the potential means whereby adjustments in farm rents necessary to the continuing joint operation of the farm may be made.

#### KINDS OF RENT

Five major kinds of rent are paid by Iowa tenants as reported in the 1950 United States Census of Agriculture. These are cash, crop-share, crop-share plus some cash, livestock-share and other kinds (including fixed quantities of production, profit sharing and other combinations). As reported in the 1950 Census of Agriculture, nearly half (46 percent) of the state's tenants pay a combination of crop-share and cash as rent (table 2). The next most frequent kind of rent is a share of the livestock and crops, paid by 23 percent of the tenants. Seventeen percent pay only cash as rent; 8 percent pay a share of the crop only, and the remaining 6 percent use other miscellaneous kinds of payment.

<sup>11</sup>It is recognized that, in some instances, this action may be incompatible with the distributive and allocative functions of rent cited above. But there are both economic and social gains that may be obtained from a reduction in tenant mobility. Among these benefits are: longer planning horizons, reduction in soil erosion, reduced operating costs in the form of eliminated moving costs and breakage, community stability, continuity of the educational process and related items.

TABLE 2. TRENDS IN KINDS OF RENT PAID IN IOWA FROM 1880 TO 1950: U. S. CENSUS OF AGRICULTURE.

Year	All tenants (number)	Proportion of tenants who paid			
		Cash only (percent)	Shares and cash (percent)	Shares only (percent)	Other kinds (percent)
1880	44,174	19.1*	80.9†		
1890	56,720	44.0*	56.0†		
1900	79,736	55.8*	44.2		
1910	82,115	52.8	17.2	25.5	4.4**
1920††	89,064	50.0‡	18.4	28.8	2.8
1930††	101,615	45.2	44.0§		54.8**
1940††	101,484	29.2	44.0§	21.9	4.9
1950††	77,536	16.8	46.0	31.3	5.9

\* Cash and unspecified.  
 † Share-cash and share.  
 ‡ Prior to 1925, standing renters (renters paying fixed quantity of products) were included with cash tenants.  
 § Not available.  
 \*\* Includes share rents.  
 †† Census taken as of April 15.

#### CASH RENT

Although 17 percent of the tenants in the state pay only cash as rent for their farms, an additional 46 percent of the state's tenants pay part of their rent as cash under crop-share-cash arrangements.

Under the cash rent arrangement, the tenant agrees to pay the landlord a specific amount of cash for the use and occupancy of a particular farm or tract of land for a fixed period of time, usually 1 year. The payment is made at the beginning or ending of the period, or partial payments are made during the period. Cash rents are influenced by custom. They resist changes from levels of rents prevailing in the community and from amounts previously paid for particular farms. Furthermore, cash rents are determined from 12 to 18 months before the end of the production period and, hence, do not take into account changes in prices, costs and production no matter how great these changes become. In a period of rising farm prices, for example, cash rents even though renegotiated annually, tend to lag far behind. This means that the landlord receives a smaller share of the net returns. Conversely, during periods of falling prices, tenants receive a smaller share of the net returns.

#### CROP-SHARE PLUS SOME CASH RENT

As indicated in table 2, 46 percent of the state's tenants pay a share of the crop plus some cash as rent. Under the crop-share and cash kind of rent, the landlord furnishes the farm, and the tenant furnishes his labor and machinery; management may be shared in various degrees, and both parties share in the crop returns. The tenant pays an additional rent in the form of cash for pasture, meadow, improvements or premium for the farm.

Although the crop-share arrangement includes more flexibility in farm income than the straight cash rent, certain basic inflexibilities are inherent in crop-share rents. For example, the landlord contributes a relatively greater part of the more stable expenses, such as interest and taxes, and a relatively smaller part of the less stable operating expenses, such as costs of labor, seed, fuel and

machinery. His income comes partly from his share of crops and partly from a fixed cash rent. Thus, part of his income reflects changes in prices and yields and part remains constant for a given year.

As the landlord bears a relatively greater share of the less flexible costs, his expenses do not change so rapidly as the tenant's. Thus, the landlord may receive an increasingly larger share of the net returns when prices are increasing. However, if the tenant markets his share of the crops through livestock under increasing prices, the landlord will receive a decreasing share of the net income. The more cash rent involved, the greater his decrease in share of net income will be.

#### CROP-SHARE RENT

Only 8 percent of the state's tenants pay just a share of the crop as rent. Straight crop-share rent is more responsive to price and production changes than the crop-share-cash rent. The degree of responsiveness is equal to the importance of the cash segment of the rent. From the cost side, however, the share-rent contains the same kinds of inflexibilities discussed in the preceding section.

#### LIVESTOCK-SHARE RENT

Twenty-three percent of all tenants in Iowa pay a share of the livestock and crops as rent. Although there are more intra-kind variations of rents under livestock-share than under any other type of arrangement, the landlord usually furnishes part of the operating expenses, part of the livestock, some equipment contributions and the land.<sup>12</sup> The tenant contributes his labor and all or part of the equipment, livestock and operating expenses. Both share in income from livestock and crops. Thus, livestock-share rent is more flexible than the other kinds, because the sharing in costs, income and production is more widespread.

Despite these added flexibilities in livestock-share rents which permit them to respond more quickly and more completely to changes in costs, prices and production, certain basic inflexibilities remain. These remaining inflexibilities are caused largely by the response of nonshared resource contributions to costs. For example, similar to crop-share rent, livestock-share rent landlords contribute the land resources for which costs are sticky and lag behind price changes and cost of operating outlays.

#### OTHER KINDS OF RENT

Various kinds of rent are paid by 6 percent of the state's tenants. These "other kinds" of rent include fixed quantities of production, such as a certain quantity of corn in bushels or a certain weight of pork or beef. Such arrangements are flexible in reflecting prices, but they do not embrace production changes. Also, responses of costs may be relatively inflexible because of the nature

<sup>12</sup>The intra-kind rent variations under livestock-share arrangements increase because of the enlarged range of possible sharings when the livestock enterprise(s) becomes joint from expense and income viewpoints.

of resources contributed, as discussed in the share kinds of rent. These "other kinds" of rent also include guaranteed minimum wages to the tenant plus profit-sharing arrangements which contain inflexible elements to the degree in which income or costs are shared in fixed amounts.

#### EXPLANATIONS OF RENTAL TRENDS FROM 1880 TO 1950

Since the turn of the century, three important trends in kind of rent may be derived from the census data presented in table 2. These trends are subject to certain limitations because of the lack of complete comparability in kind-of-rent categories between the decennial censuses.

The trend away from cash rent has been unbroken each decade since 1900. In that year, 56 percent of the state's renters paid cash only for their farms. The big shift away from cash rents occurred during the 1930's when the proportion of tenants paying all cash dropped from 45 to 29 percent. This shift continued to 1950 when only 17 percent of the tenants paid all of their rent in cash. The tendency of cash rent to lag behind farm income during the 1930's, coupled with the Iowa lien law, appears to be a major factor causing this shift.

Another trend complementing the shift away from cash rents, is the increase in share rents which tend to be more flexible in reflecting changes in costs, prices and production. This trend continued in 1950, when 77 percent of all tenants paid at least part of their rent in shares of the farm production. Almost one-third of the renters, most of whom share livestock as well as crop income with their landlords, paid rent exclusively in the form of shares.

A third trend in kind of rent since 1910 is the increase in share-cash rent—from 17 percent in 1910 to 46 percent in 1950. Apparently it is an attempt to compensate landlords for costs that are not adequately represented in crop-share rents. These trends reflect efforts of landlords and tenants to adjust rents to changing economic conditions.<sup>13</sup> The trends also illustrate attempts by landlords and tenants to break away from customary rents. Both of these deductions support the basic thesis of this study which includes the need, nature and possibility of adjusting farm rents to economic changes.

#### FAILURE OF FARM RENTS TO ADJUST TO CHANGES IN PRICES, COSTS AND PRODUCTION

To fulfill the productive, distributive and teamwork functions cited above, farm rents must adjust to the dynamic economic environment in which modern farming operates. This section deals with measurement of the extent to which rents fail to adjust to a changing economy and

<sup>13</sup>It is recognized that changes in definitions and methods of enumeration may have reduced the comparability of these data to some extent, but the observations are accepted as approximations of the situations prevailing in the census years.

discusses some of the factors that contribute to this failure.

#### THE NET RETURN RATIO AS A MEASURE OF INFLEXIBILITY

The measure of inflexibility used in this study is the landlord's net income as a percentage of the farm net income. This is referred to throughout the study as the "net return ratio." The net farm income is computed according to standard practice of the Iowa Farm Business Associations. It is obtained by subtracting all business debits, which include all negative inventory changes, from all business credits; these include positive inventory changes and the farm contribution to family living.<sup>14</sup> Opportunity costs were not considered for real estate, capital or labor. The net farm income, computed in this way, represents the return to all of the resources used in the farm operation.<sup>15</sup> Similarly, when the landlord's net return is computed in like manner, it represents the return to the resources contributed by the landlord. The ratio between the two net returns, therefore, serves as a measure of the division of net income between landlords and tenants. If the ratio increases, the landlord receives a larger share of the total net income of the farm; if the ratio decreases, the tenant receives a larger share of the farm net income.

The net return ratio has definite limitations—it may range from negative values to infinity. It is possible, for example (particularly in the case of the cash lease), for the farm to have a negative or zero net income whereas the landlord may have a positive net income. Under these circumstances, a few cents difference in the net farm income can cause the net return ratio to move from a large negative value to a large positive value. This feature has impaired the utility of

<sup>14</sup>The real estate valuation is held constant.

<sup>15</sup>John A. Hopkins and Earl O. Heady. *Farm records*. 3rd ed. p. 179. Iowa State College Press, Ames, 1949.

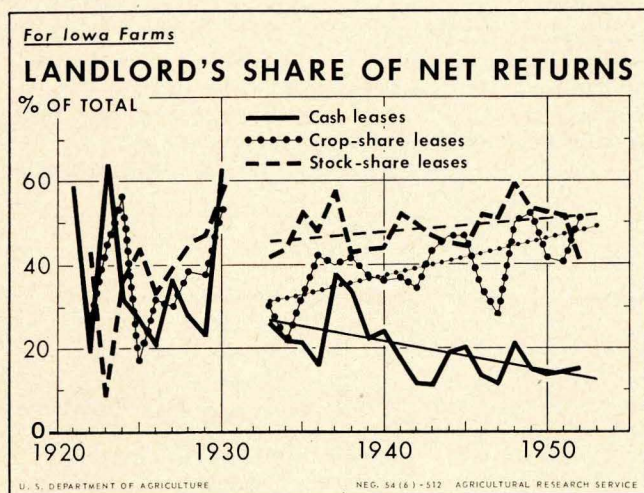


Fig. 1. Estimated division of net returns between landlord and tenant for cash, crop-share and livestock-share leases (1921-30; 1933-52).

the measure as a tool of analysis for the early depression years. But, under less extreme conditions, the net return ratio appears to be a valid measure of the division of net farm income.

#### VARIATIONS IN NET RETURN RATIO UNDER DIFFERENT LEASE TYPES, 1920-52

Records of tenants cooperating with the Iowa Farm Business Associations were investigated to determine the division of net return under each lease in periods of different levels of economic activity. One hypothesis advanced was that periods of rising and falling prices and costs affected the division of net returns differently for each type of lease. To test this hypothesis, a sample of records was drawn for each type of lease for each year and the net returns for the farm and for the landlord were determined.<sup>16</sup>

It seems appropriate to divide the 1920-52 period into three subperiods for purposes of analyzing the effects of economic forces upon the division of returns between landlords and tenants. These periods are: (1) 1920-30 when prices displayed little trend but were subject to considerable variation; (2) the early depression years of 1930-34 when prices broke sharply and remained at a level much lower than the one that prevailed in 1920-30; (3) 1935-52 when prices, in general, were moving higher. These three periods offer considerable contrast—a period of fluctuating prices with little trend, a period of falling and low prices, and a period of rising and high prices.

#### CASH LEASE

The net return ratio for cash leases has been subject to extreme variability throughout the period under consideration. The average cash-renting landlord has received from as little as one-ninth of the net farm income in some years to as much as 100 percent plus some of the tenant's capital in other years (fig. 1).

Considering first the "Twenties," the net return ratio was extremely variable in the forepart of the period. In 1921, for example, it is estimated that the cash landlord received 59 percent, or nearly three-fifths, of the net return of cash-rented farms. But, for the following year, his share of the net farm income was 19 percent, or less than one-fifth of the total. The next year, 1923, the landlord's share again rose sharply, reaching 64 percent of the total, only to decline to an estimated 31 percent in the following year, 1924. Throughout the remainder of the twenties, the division was relatively stable in comparison with the early part of the period.

In 1930, as the depression period was starting,

<sup>16</sup>A sample of 10 records for each type of lease for each year was sought and obtained for 1929-52. In order that the division of returns should be as representative as possible of the lease type, only tenants who had not changed lease types while with the associations were used in this period. The reason was that those who had made no changes probably had adjusted their resources to the lease type better than those who had made changes. In the early years of the association, however, there were not enough cooperators who had not changed lease types to fill some of the samples, and some who had changed their form of tenure were used. Even using all available cases did not permit a full sample for some early years. The number in each sample appears in Appendix A.

the cash net return ratio again rose sharply, increasing from 23 percent in 1929 to 63 percent in 1930. The net return ratio increased again in 1931 to the point that cash-rent landlords not only received all of the net farm income but received, in addition, part of the tenant's assets.<sup>17</sup> The following year, 1932, offered no change from 1931.

In 1933, the cash net return ratio was again within the range of the pre-depression years, standing at 26 percent. From 1933 to 1952, the ratio showed a downward trend that declined at the rate of 0.7 percent per year. Two deviations from the trend are of interest—the high levels of 1937 and 1938 and the low levels of the early war years, 1940-43. Possible explanations of these deviations, along with the downward trend, are discussed later.

#### CROP-SHARE LEASE

The crop-share lease, like the cash lease, showed considerable variability in the division of net returns from 1922 to 1930 (fig. 1).<sup>18</sup> But the general trend throughout the latter part of the period was upward, with the most pronounced increase occurring in 1930 when the net return ratio moved from 38 percent in 1929 to 53 percent.

In 1931, the ratio again increased substantially, with the landlord receiving 227 percent of the net farm income. As with the cash rent, this was possible only because the landlord received all of the net farm income plus a part of the tenant's assets.<sup>19</sup> In 1932, the situation was even more unfavorable to the tenant; the average farm net income and the average tenant net income were negative while the average landlord net income was positive.<sup>20</sup> From 1934 through 1952, there

<sup>17</sup>It is of interest to note that all cash tenants in the 1931 sample had a net loss, while all landlords had a net gain. The same condition prevailed in 1932.

<sup>18</sup>As the Iowa Farm Business Associations' record-keeping system was just being established, it was difficult to obtain a sample of records sufficiently large to estimate accurately the net return ratio for this period. The wide fluctuations in the 1920-30 period may be due partly to the limited number of observations. The number of observations used in making the estimate for each year is shown in Appendix A.

<sup>19</sup>In 1931, 7 of the 10 farmers in the sample had negative net incomes while all of the landlords had net gains.

<sup>20</sup>In 1932, 7 of the 10 tenants and 2 of the 10 landlords had negative net incomes. The sums of the landlords' net income, however, were positive, but the sums of net incomes of the tenants and of the farms were negative.

was a pronounced upward trend in the crop-share net return ratio, with the linear trend rising about 0.8 of 1 percentage point per year. Deviations from the trend, however, are similar to those for the cash lease. They are discussed later.

#### LIVESTOCK-SHARE LEASE

As with the cash and crop-share leases, the livestock-share lease showed wide fluctuations for the 1922 to 1930 period.<sup>21</sup> But there is evidence that the ratio had an upward trend during the period, with the landlord's share of the farm net income reaching 59 percent in 1930.

It is in the early depression years of 1931 and 1932 that the livestock-share net return ratio stands in marked contrast with the cash and crop-share net return. In 1931, the average landlord's net income, the average tenant's net income and the average farm net income all were negative.<sup>22</sup> The landlord's share of the net farm loss amounted to 41 percent of the total. A similar result occurred the following year when the landlords took 59 percent, or almost three-fifths, of the losses from the farming operation.<sup>23</sup>

In 1934, the net incomes were positive and the average landlord's share of the net farm income was about 41 percent. For the rest of the 1934-52 period, the net return ratio showed a significant upward trend, with the landlord's share of the total net increasing an estimated one-third of 1 percent per year. Again, there was substantial deviation from the trend in some years—perhaps, however, the most significant item, apart from the trend, is the marked decline in the ratio from 1948 to 1952. Factors contributing to the trend and deviations from the trend are discussed in subsequent sections.

#### POSSIBLE REASONS FOR INFLEXIBILITY

Factors that affect the net return of landlords and tenants under various lease types are shown in table 3. These factors may be classified into

<sup>21</sup>Again, this may be due partly to the limited number of observations available for this period.

<sup>22</sup>Nine of the 10 farms in the sample had a net loss, and 8 of the 10 landlords had a loss.

<sup>23</sup>In 1932, all net incomes—farm, landlord and tenant—were negative.

TABLE 3. FACTORS AFFECTING NET RETURN OF LANDLORD AND TENANT UNDER EACH LEASE TYPE.

Type of lease and party	Factor						
	Endogenous		Exogenous				Production
	Lease provisions*	Legal provisions	Prices		Costs		
			Livestock	Grain	Operating	Fixed (real estate)	
Cash							
Tenant.....	X	X	X	X	X		X
Landlord.....	X	X				X	
Crop-share							
Tenant.....	X	X	X	X	X		X
Landlord.....	X	X				X	X
Livestock-share							
Tenant.....	X	X	X	X	X		X
Landlord.....	X	X	X	X	X	X	X

\* Forces such as custom, differences in types of resources supplied by landlords and tenants and the contractual nature of rent are manifest in the lease provisions. The legal framework of tenure which may govern lease provisions as well as provide methods of adjusting difficulties not covered in the lease provisions does not lend itself to this classification.

two types: endogenous, or those over which the landlord and tenant have control in the bargaining process; and exogenous, or those which arise from outside of the rental contract and are not subject to any degree of modification by either party. Examples of the endogenous factors may be found in the agreements that designate the quantity of each resource each party will contribute, how the resource will be used and how the return from the resource will be divided. Examples of exogenous factors are the legal provisions that form the framework within which the lease must be drawn, changes in prices of product sold and disparity of these changes, changes in costs of items contributed and disparity of these changes, and changes in production.

More specifically, there are at least five reasons why rental agreements do not readily adjust to changes in the economic environment. These are: (1) customary amounts and shares, (3) differences in kinds of resources contributed by landlords and tenants, (3) the contractual nature of rent, (4) state laws affecting farm rents and (5) unpredictable changes in prices, costs and production. These factors are discussed in sequence.

#### CUSTOMARY AMOUNTS AND SHARES

It would be difficult to overemphasize the impact of the custom of the community upon rental arrangements. The shares which the tenant pays as rent may be quite uniform over large areas in which the quality of the land may vary considerably. These shares may be independent of the quantity of labor, capital and managerial ability he supplies. Over time, customary shares have been influenced little by changes in the price level or the development of new farming techniques. The shares have tended to remain constant while prices have changed violently, as they did in 1921, 1931, 1938 and 1947.

Abrupt changes in production point up still more sharply the inflexible nature of farm rent. Yields may be reduced to half, or less, of normal (as in 1934 and 1936) or a partial crop failure (1947) may be followed by a bumper crop (1948). Yet the share rental arrangement, rooted in custom, remains unchanged. Similarly, in the short run, the cash rent is independent of production, and the amount becomes enmeshed in the norms of the community, thus making it resistant to economic force.

#### DIFFERENCES IN RESOURCES CONTRIBUTED BY EACH PARTY

In general, the contributions of landlords and tenants are complementary, though, in some instances, the responsibility for supplying certain factors is shared. The tenant usually supplies all or most of the labor and equipment while, in all cases, the landlord supplies the land. All of the items considered real property are supplied by the landlord, though minor exceptions may occasionally be noted. The costs of supplying the contribution may vary by the nature of the con-

tribution when prices and costs are changing. The tenant's net income is not affected by changes in real property costs as is the landlord's net income. Similarly, the landlord's net income is usually independent of the labor cost, but this may be an important determinant of the tenant's net income. The costs of one party's contribution may change more than the cost of the other's, but the inflexibility of the rental arrangement may prevent the differential cost changes from being taken into account. This results in a substantial impact upon the division of net return.

#### THE RENTAL CONTRACT

The rental contract is made in advance of the production period. As a minimum, it must provide for the contributions of each party and the amount of rent, or the way in which rent is to be determined. These decisions and agreements must be made before the prices and costs that will prevail during the production period, or the output of the contributions are known. This factor alone introduces a lag of at least 1 year in the rental process. Development of the share arrangement was an effort to provide for this lack of knowledge, but prices, costs and production can vary enough to impair the effectiveness of this type of arrangement. Some cash leases that are in effect contain provisions for adjusting the rent in the event that prices or production vary too widely from those expected to prevail during the lease term. In law, however, consideration is an element of offer, and offer and acceptance must precede performance. Thus, for all leases, the rent or its method of determination must be established in advance of the production period covered.

#### STATE LAWS AFFECTING FARM RENTS

For the 62.8 percent of Iowa tenants who pay part or all of their rent in form of cash, the Iowa landlord's lien law tends to reinforce the static nature of cash rents. Under the law, this lien is created automatically by statute as part of the landlord-tenant relationship without any provision in the lease.<sup>24</sup> The statute gives the landlord a lien for his rent upon all crops grown on the farm, the increase in livestock born on the farm and upon other personal property of the tenant including other livestock used by the tenant or kept upon the farm during the term of the lease.<sup>25</sup> Additional liens may be established between landlord and tenant as part of the rental arrangements. Both types of liens (created by statute and by agreement) can exist at the same time and may be expired in the same manner at the same time.<sup>26</sup> A special provision limiting the

<sup>24</sup>Iowa Code, Section 570.1 (1950). For a more complete discussion of the Iowa lien law, see: John F. Timmons, Improving farm rental arrangements in Iowa. Iowa Agr. Exp. Sta. Res. Bul. 393, January 1953.

<sup>25</sup>Certain property of a personal nature is exempt from the lien law. See Iowa Code, Section 627.6 (1950) and *Hipsley v. Price*, 104 Iowa 282, 73 N.W. 584 (1897) for exceptions and interpretations thereof. These exceptions are insignificant in terms of the needs of modern-day farming.

<sup>26</sup>Iowa Code, Section 570.6 (1950) and *Beh v. Tilk*, 222 Iowa 729, 269 N.W. 751 (1936).

statutory lien in the event of crop failure is discussed later in this report.<sup>27</sup>

The effect of the landlord's lien is to make rent recoverable by the landlord although economic conditions may have changed during the rental term leaving the tenant in no position to pay. In this and other studies made at Iowa State College, tenants were encountered who were paying in 1948 on cash rent contracted for 1932 and 1933. The law serves to reinforce the inflexible aspects of cash rent when the inflexibility is threatened by economic circumstances.

#### CHANGES IN PRICES, COSTS AND PRODUCTION

The factors discussed above contribute to changes in net return ratio by failing to permit farm rents to adjust to the prevailing economic environment. Conceptually, if prices, costs and production were static, the net return ratio under all lease types would remain static for the duration of the contract. Further, if prices and costs always changed in the same proportion, the net return ratio would remain the same. Production changes always affect the net return ratio if the total costs and total returns are divided on anything other than the same basis.

Changes in prices and costs then are relevant to changes in the net return ratio only if the rate of change is disproportionate between the two items. Considering first the share-type arrangements, for example: If the costs of the items contributed by the tenant, such as fuel, repairs, labor and machinery, increase more in cost than items furnished by the landlord, such as taxes, insurance and building repairs, the tenant's share of the net return, as a percentage of the total, would be expected to decrease. Conversely, when prices are declining, if the costs of the items furnished by landlords do not decline in proportion with the costs of items furnished by the tenant, the tenant's share of the total net return will increase.

Considering the effect of changes on the net return ratio, if the net incomes of the two parties are not equal, and the total return is divided equally, a given change in production will affect the smaller net income relatively more than the larger net income. In other words, if the unique condition of sharing the total cost in the same way that the total return is shared is not met, a change in production will affect the net return ratio.

The situation with the cash lease is different. Although the differential price-cost changes are present, cash rent is an added factor. If the changes in cash rent are not in the same ratio as the changes in farm prices, the net return ratio may be expected to vary. For example, when prices are rising, if cash rents do not increase proportionately, the tenant's share of the net return increases relative to the landlord's share. Conversely, if cash rents lag behind prices when prices are falling, the landlord's share of the net may be expected to increase relative to the tenant's share.

<sup>27</sup>Iowa Code, Section 570.4 (1950).

Changing costs also affect the division of net returns under the cash lease. If changes in prices and cash rents were perfectly correlated, failure of costs to change in the same proportion as prices and rents alters the division of net returns. Further, the cash net return ratio is affected in the same way as the share net return ratio by disproportionate changes in the costs of contributions. If, in a period of rising prices, costs of supplying the land factor, taxes, insurance and similar items, fail to increase at the same rate as the costs of items supplied by the tenant (labor, fuel, machinery, fertilizer, seed, feed and related needs), the net return ratio will increase. Conversely, when prices are declining, it is evident that the failure of costs of the items supplied by the landlord to decline as rapidly as those supplied by the tenant would tend to change the net return ratio in favor of the tenant.<sup>28</sup> Changes in production, if not accompanied by proportional inverse changes in price, will affect the net return ratio of the cash lease. For example, a crop failure with only a moderate change in price may increase the net return ratio to 100 or more. Likewise, the net return ratio may be substantially reduced if a good crop isn't accompanied by a proportional decrease in price.

That prices and costs do not change uniformly over time is evident from observation of the various price and cost series. In fig. 2, the indexes of prices paid for production factors and prices received for farm output, both for Iowa farmers, are shown for 1910 to 1950. It is apparent that, in general, when prices are rising, prices received by farmers for their products rise more rapidly and reach higher levels than do the costs of the items they have to buy. Conversely, when prices are declining, prices received by farmers for their output fall more rapidly and farther than the costs of the items they use in the production process.

<sup>28</sup>The failure of rent to decline in proportion to prices is a force in the opposite direction, and one that usually overshadows the effect of the disproportionate change in costs.

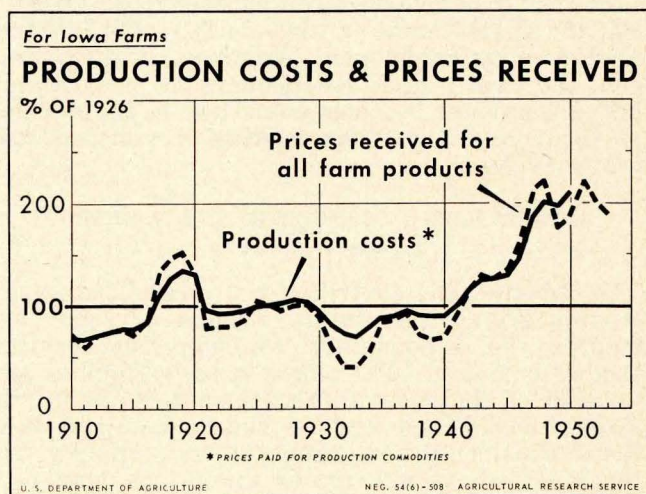


Fig. 2. Index of Iowa farm prices received and index of production costs (1910-50).

Specifically, it will be observed that from 1910 to 1918, farm prices rose sharply, no doubt because of the increase in demand engendered by the war. Costs of production also increased, but to a lesser extent than prices. In 1918 prices had increased 109 percent over the 1910 level whereas costs had increased only 89 percent. Between 1919 and 1921, however, farm prices decreased more than 50 percent while costs declined only 27 percent.

Similarly, between 1929 and 1932 the price index of farm products declined more than 60 percent while costs were declining 31 percent. Again, in 1937 to 1939 farm prices fell by 28 percent while the production cost index declined relatively little—about 6 percent.

Following 1941, farm prices and production costs moved upward together, with prices, in general, slightly leading costs. But in 1948 farm commodity prices declined about 21 percent—the relative decrease in production costs was about 2 percent.

A comparison of the index of production costs with taxes paid on farm real estate is of interest as the first is an indicator of the expenses generally borne by the tenant and the second is a measure of some of the expenses paid by the landlord. If costs of supplying the contributions of each party do not change proportionately, the net return ratio will be affected.

The prices-paid index and the index of taxes paid are shown in fig. 3. The relationship over time of these two costs is somewhat similar to the price-cost series discussed above. Taxes tend to rise less rapidly than prices paid for production items, and they also tend to decline more slowly. From 1910 to 1920, taxes increased along with production expenses; for the decade, the increase in taxes was 231 percent, and the increase in production expenses was 96 percent. But from 1920 to 1929, costs of production declined 20 percent while taxes increased 10 percent. From 1930 to 1933, the decline in taxes lagged behind the

decline in prices paid, although the magnitude of the change was about the same, 27 percent for both items. From 1934 through 1948, real property taxes failed to rise as rapidly as costs of production; the increase in costs of production for the period was 154 percent as contrasted with a 95-percent increase in taxes. This relationship tends to increase the landlord's share of the net return under any system of leasing.

#### PRICES OF CROPS AND LIVESTOCK

A relationship of particular interest to crop-share landlords and tenants deals with prices of crops and livestock. A crop-share landlord can market his share of the crop at current prices, while a tenant may market his crops through livestock production. To some extent he may have little or no alternative; the lease may specify that certain numbers of livestock be maintained—or more indirectly, he may by past experience know that production of livestock will help to strengthen his bargaining position toward the end of securing and retaining the lease of the farm.

If a tenant markets his crops through livestock, the effect of disproportionate changes upon the crop-share net return ratio is simple. If crop prices advance more in proportion than livestock prices, the landlord's share of the net return increases. Should crop prices decrease more rapidly than livestock prices, the net return ratio decreases.

In general, crop prices have both increased and decreased more rapidly than livestock prices (fig. 4). From 1910 to 1918, for example, livestock prices rose 101 percent while crop prices increased 141 percent; but, from 1918 to 1921, crop prices fell 64 percent, and the decline in livestock prices amounted to only 44 percent. From 1921 to 1925, crop prices increased 77 percent, livestock prices only 30 percent. Again, from 1926 to 1928, crop prices increased 24 percent, while livestock prices declined 4 percent. Similarly, from 1928 to 1932, crop prices declined more than livestock prices,

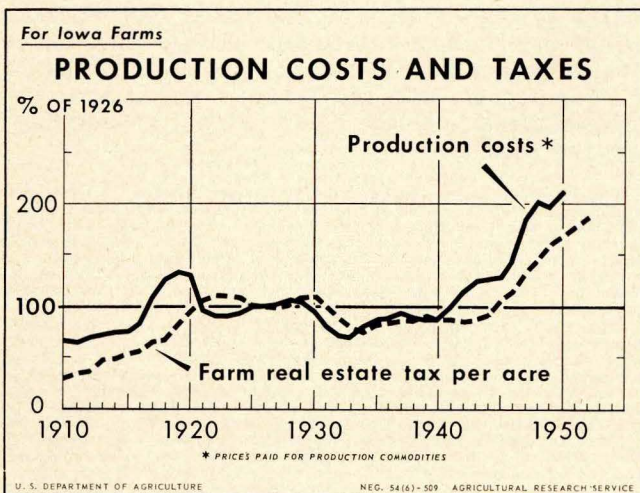


Fig. 3. Index of production costs and farm real estate taxes, Iowa (1910-50).

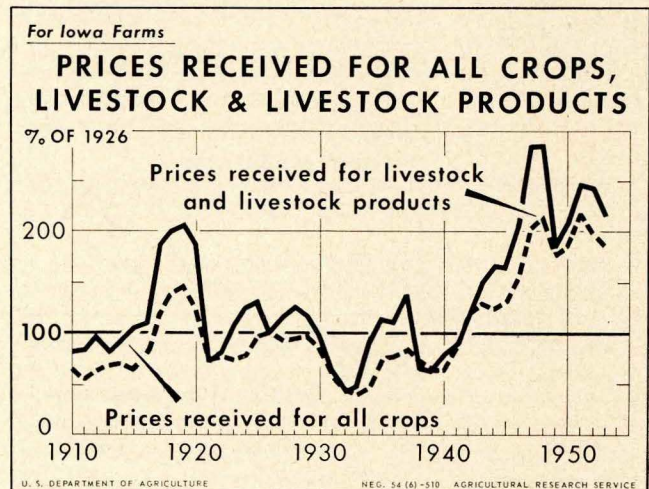


Fig. 4. Index of livestock and livestock product prices received and index of crop prices received, Iowa (1910-50).

but crop prices increased substantially more from 1932 to 1937 when prices were rising. Crop prices dropped more than livestock prices with the slump of 1938, but they tended to rise more rapidly during the war years.

The result of this relationship is to make the crop-share contract more favorable to landlords in periods of rising prices than in periods of falling prices. Conversely, the crop-share plan, for this and other reasons, will appeal to the tenant more when prices are falling than when they are rising.

#### FARM PRICES AND CASH RENTS

The chief factor in determining the net return ratio under the cash-rent agreement is the relationship over time between prices received for farm products and cash rent paid. A substantial decline in farm prices with little or no change in the level of cash rent can result in a net return ratio of infinite value; correspondingly, a substantial increase in farm prices with little or no change in the level of cash rent can result in the landlord's share of the net return approaching zero.

Figure 5 shows that the level of cash rents has not kept pace with changing prices. Here the index of prices received for farm products in Iowa is plotted with the index of the average cash rent paid per acre in Iowa. Three periods should be noted: (1) the price decline following 1929, (2) the partial recovery following 1934 and the recession of 1938 and (3) the war and postwar period.

In the first period, rents did not turn downward until 2 years after the break in prices in 1929. Further, rents did not decline as much, relatively, as farm prices. Between 1929 and 1931, prices declined 41 percent, rents 5 percent. From 1929 to 1932, prices declined 60 percent while rents were declining 22 percent.

Rents did not respond as rapidly as farm prices

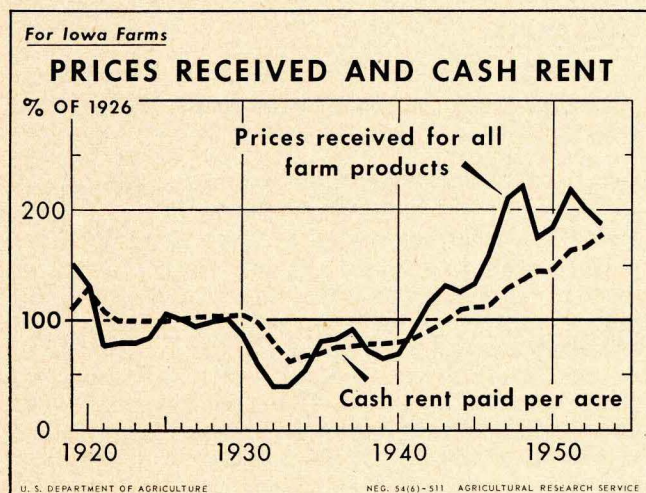


Fig. 5. Index of Iowa farm prices received (1919-50) and index of Iowa cash rent (1924-49).

to the changing economic environment after 1933. By 1937 prices had risen 130 percent, but rents had increased only 22 percent. Between 1937 and 1939, farm prices decreased 28 percent. Farm rents, however, continued to rise.

In the war and postwar periods that followed, prices increased much more rapidly than rents; from 1939 to 1949, prices increased 166 percent while rents increased 86 percent.

Thus, throughout the period under observation, cash rent did not turn downward as quickly as prices—or go as low. Similarly, when prices turned upward, rent was slow to respond, and, once having reversed the trend, it did not rise as far. This is a factor of major importance in determining the division of net returns under the cash lease.

#### DISPROPORTIONATE CHANGES AND THE CASH RATIO

As fig. 1 has shown, the period of 1929 through 1932 was one of considerable strain on cash lease arrangements. In 1930 prices were 14 percent below the 1929 level while rents decreased only slightly more than 1 percent. The landlord's share of the net return increased from 23 percent in 1929 to 63 percent in 1930. In 1931 prices of farm products were 31 percent below the 1930 level, and the landlords had a positive net income while the net incomes of the farm were negative. But rent had declined only 5 percent and the landlord's share of the net return was more than 100 percent. All cash tenants in the 1931 sample had a net loss while all landlords had a net gain. In 1932 farm prices again declined about 33 percent from the previous year while cash rents fell 18 percent. The impact of this differential rate of change was the same as in 1931, with all tenants in the 1932 sample showing net losses and all of their landlords showing a net gain.<sup>29</sup>

Farm prices in 1933 were unchanged from the 1932 level. Rent, lagging behind prices, declined 23 percent in 1933, and the landlord's share of the net return decreased to an estimated 26 percent. Farm prices in 1934-50 increased 244 percent while cash rents increased only 119 percent. Costs of production did not rise as much as farm prices (165 percent), and the tenant's net income increased relative to the landlord's net income during the period.<sup>30</sup>

<sup>29</sup>Year-to-year data on proportion of tenancy by lease type is not available. In 1930, however, 45 percent of all tenants were cash tenants. In 1936 it was estimated that 18 percent of the farmers were cash tenants. The reduction in the proportion of cash tenancy in this period has been attributed to the tenant's inability to obtain adjustments for changing prices and yields. From: Rainer Schickele and Charles A. Norman. Tenancy problems and their relation to agricultural conservation. pp. 175-181. Iowa Agr. Exp. Sta. Bul. 354. 1937.

<sup>30</sup>The years 1937, 1938 and 1948 are of particular interest. An abrupt increase in the landlord's share of the net returns occurred in 1937, when the estimated ratio increased from 16.48 in 1936 to 37.5 while the rent level remained unchanged from the previous year and farm product prices increased 12 percent. But the number of hogs marketed in 1937 was 20 percent less than the number in 1936, and total receipts from farm marketings were 9 percent below the 1936 level. Thus, the drought of 1936 apparently had its effect upon the division of net income in 1937. Production increased in the following year, but prices declined, and the net income ratio remained near its 1937 level. The same general situation occurred in 1948, when prices increased 5 percent, and the landlord's share of the net increased from 11 to 21 percent. Corn yields the preceding year declined from 56.7 bushels in 1946 to 30.5 bushels in 1947. The decrease in production was greater than the in-



Following 1933, as increases in rent lagged behind rising prices (fig. 5), the landlord's share of the net return had a downward trend. The estimated 1950 ratio was slightly more than half (13.89) of the 1933 ratio.

#### DISPROPORTIONATE CHANGES AND THE CROP-SHARE RATIO

Following 1926, as crop prices increased relative to livestock prices, with production showing little variation, the landlord's share of the net return increased, reaching an estimated 53.08 percent in 1930.<sup>31</sup>

In 1931, 7 of the 10 tenants had a net loss while all of the landlords showed a net gain, with the result that the landlord's net income amounted to 227 percent of the net income of the farm. The decrease in prices in 1931, without a proportional decrease in operating expenses, affected the tenant's net income more than that of the landlord.

In 1932, 7 of the 10 tenants and 2 of the 10 landlords had negative net incomes. The 33-percent decrease in farm prices, with only an 11-percent decrease in costs of production from 1931, apparently eliminated all tenants' net gain and resulted in losses for part of the landlords. Since 1933, as prices increased and costs of production increased less rapidly, there has been an upward trend in the division of net returns. But the division has varied widely from year to year.<sup>32</sup>

#### DISPROPORTIONATE CHANGES AND THE LIVESTOCK-SHARE RATIO

The landlord's share of the net return showed a general upward trend from 1923 to 1930, reaching 59 percent in 1930. The decline in farm prices from 1929 to 1930 affected the division of net returns less under the livestock-share lease than under either the crop-share or the cash lease.<sup>33</sup> The greater sharing of expenses and returns under the livestock-share plan has been an often cited advantage in that the division of net returns tends to be more stable in periods of wide price

crease in price, and, as production costs also increased, the tenant's net return decreased, and the landlord's share of the net returns increased. (Marketings computed from data appearing on pages 441 and 443, Thirty-eighth Annual Yearbook of Agriculture, Iowa State Department of Agriculture, 1937.)

<sup>31</sup>The 1920-25 period was ignored because of the sampling variability referred to previously.

<sup>32</sup>Farm prices increased relative to production costs in 1933 and the net return ratio for that year was positive, being an estimated 29.68. In 1934 the net return ratio decreased substantially, possibly due to the decrease of 51 percent in corn yields as a result of the drouth of 1934. Livestock production did not change between 1933 and 1934, and the price increased 23 percent. The tenant's gross income remained near the 1933 level, while the landlord's gross declined with the decrease in yield and was not offset by the increase in price. These changes left the tenant with a larger share of the net farm income.

In 1935 livestock production declined 24 percent but this was offset by a 60-percent increase in price. The landlord's net income, however, was influenced by a 78-percent increase in corn yields over 1934 and a 48-percent increase in price. The landlord's estimated share of the net returns increased from 22 percent in 1934 to 32 percent in 1935.

Another period in which the net return ratio may have been influenced by the differential rate of change between crop and livestock prices was from 1945 to 1950. A partial crop failure in 1947—corn yields declining from an average of 56.7 bushels in 1946 to 30.5 bushels in 1947, with less than a corresponding decrease in price—could account for the landlord's low share in 1947. Livestock product prices increased proportionately more than grain prices which would result in the tenant receiving a larger share of net returns if he marketed the crop of the previous year through livestock and if the landlord sold his part of the current crop.

<sup>33</sup>From 1929 to 1930 the landlord's share increased 174 percent for the cash lease, 40 percent for the crop-share lease and 26 percent for the livestock-share lease.

and production variability. This feature was demonstrated in 1931 when 9 of the 10 farms sampled indicated a net loss, and 8 of the 10 landlords had net losses. The landlord's share of the total net loss was 41 percent. The situation was similar in 1932 when 8 of the 10 farms indicated losses. All of the 10 landlords in the 1932 sample had losses; their share of the losses was 59 percent. This is in sharp contrast with the cash and crop-share landlords in the sample; all of the cash landlords and 8 of a sample of 10 crop-share landlords had net gains in 1932.

The trend in the division of net returns continued upward from 1933 to 1952. The general trend in prices also was upward with production costs following somewhat more slowly. If all returns were divided evenly, the increase in the landlord's share of the net return could be due to an unequal sharing of total expenses in the period of rising prices. With the landlord bearing the larger part of the expenses, an increase in the net return would have a greater relative effect upon his net return than on the tenant's net income. The increase could also be caused by the failure of costs borne by the landlord to advance as rapidly as those borne by the tenant, or a combination of both of these causes.

With the outbreak of war in Europe in 1939, price expectations of farmers may have changed substantially, and one of the principal advantages of the livestock-share lease for the tenants was no longer applicable.

#### FRAMEWORK FOR AND KINDS OF RENT ADJUSTMENTS

This section is devoted to the second objective of the study—a diagnosis of problems of rent adjustment in an effort to find success elements of adjustments as the basis for remedial provisions in farm leases. The initial part of this diagnosis is the development of a framework for analyzing rent adjustments. Within this framework, the kinds of rent adjustments attempted by landlords and tenants included in the study are summarized. Both the framework presented and the kinds of rent adjustments are basic in the analysis of specific methods for adjusting rents presented in the following section.

#### A FRAMEWORK FOR MAKING RENT ADJUSTMENTS THE RENT NORM CONCEPT

The expected ratio of the division of the net return between landlord and tenant is termed the rent norm, and the division of net return for the first year is accepted as its approximation. This norm is used as a basis for determining variations in the net return ratio that landlords and tenants would be willing to tolerate before making provisions for adjustments. Likewise, this norm provides the basis for putting adjustment provisions into effect in an effort to maintain the norm within limits of permissible variations. The meth-

od of approximating the rent norm in terms of expected ratio of the division of net returns based upon the initial period of the lease has definite limitations. First, it may not reflect the expected ratio during the initial period in which considerable change in prices, costs or production has occurred. Second, use of the division of net returns during the initial lease period may not fully take into account the possibility of major changes in resource contributions in the case of a crop-share tenant who starts with little or no livestock and subsequently builds up the livestock enterprises, or a livestock-share landlord who reduces his contributions by shifting away from livestock. Likewise, rent norm, defined as the landlord's share of the division of net income, may increase as the landlord adds capital to the enterprise in the form of soil improvements, buildings or other productive resources.

If the norm is formulated on the basis of current prices, costs and average production, it will remain constant as long as the lease provisions remain unchanged. If the norm is expected to change, then changes in contributions are also anticipated. The constant rent norm concept rests on the projection of current price-cost ratios through the term of the lease, with no change in technology or no change in marginal production of contributed resources. Consequently, resource productivity changes should be estimated and incorporated into the rent norm. Otherwise, the norm concept introduces inflexibilities not in keeping with changing conditions, and, in this sense, violates the objectives it presumably helps achieve.

Rent norms vary with different kinds of rent. As the ratio of contributions differs under the two lease types, a landlord who rents for cash probably does not expect to receive, and his tenant does not expect to give, as large a share of the net returns as would a landlord and tenant who were operating under the crop-share plan. For the same reason, a landlord who rents his land under the crop-share plan would expect a smaller share of the net returns than would a landlord who uses a livestock-share arrangement.

This rent norm concept is similar to the base condition used by the landlords and tenants in this study in their attempts to vary rents with prices, costs and/or production of particular commodities produced on the farm covered by the lease. The rent norm concept also resembles the base wage in industries that use flexible wage provisions, sometimes known as "escalator" clauses. Notwithstanding its several limitations, the rent norm concept provides a point of departure or base point for working out changes in rents in keeping with movements of prices, costs and production.

#### THE CONCEPT OF PERMISSIBLE VARIATIONS

In searching for rent adjustment provisions, landlords and tenants are willing to accept minor variations from the rent norm derived and adjusted from their original agreements. The extent of the variations that both parties are willing to

tolerate constitute the "permissible variation" concept. The mechanics of correcting for all variations would be extremely complicated. The important point is that landlord and tenant agree upon the range of variations they would permit before bringing adjustment provisions into action.

The expected variation of the division of net returns over time is illustrated in fig. 6. The livestock-share landlord's share of the total net is indicated by BC, the cash landlord's share by AD, and their respective rent norms are indicated. If  $OX_1$  is a period of rising prices and cash rent lags behind prices, the cash landlord's share of the net could be expected to decline. But if the cash landlord's share were to benefit with the increase in prices as does the livestock-share landlord's, while the cash landlord's costs did not increase in proportion to the tenant's costs, his share of the net return would increase in a period of rising prices.

If prices are declining (period  $X_1X_2$  in fig. 6) and if the cash rent does not decline as rapidly as prices, the landlord's net income will increase relative to the tenant's net income and the net return ratio will increase. The situation would be different for the livestock-share landlord. If his costs did not decline as rapidly as the tenant's costs while his income decreased the same as the tenant's income, he would receive a smaller share of the net returns. This would not necessarily result, however, if the tenant's costs were greater than the landlord's costs.

#### ZONES OF TOLERANCE

Permissible variations in the net income ratios from the rent norm are divided into three "zones of tolerance" in this study. A zone of tolerance is defined as the limit of variation beyond which an adjustment provision is brought into action in an effort to limit the variation due to exogenous factors, including costs, prices and production. The three zones of tolerance used in this study to

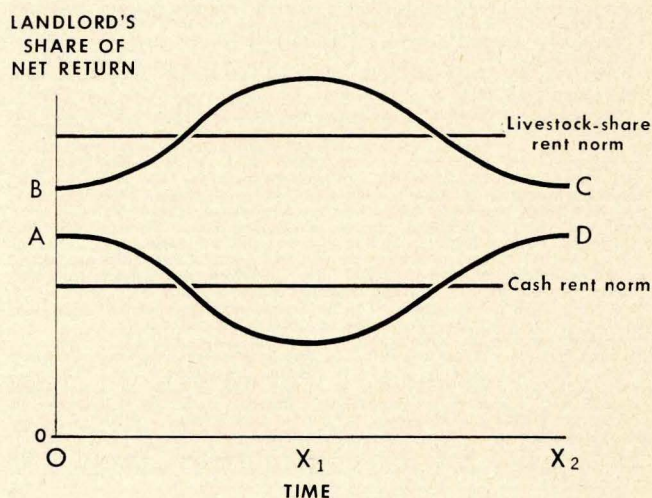


Fig. 6. Expected variation of division of net returns about the rent norm of a share and a cash lease.

analyze rents and possible adjustment provisions are as follows: (1) the zone within which parties can modify the lease provisions to bring the division back within acceptable limits, (2) the zone within which changes in the lease type must take place to restore the net return ratio to an acceptable value and (3) the zone within which they must seek new rental partners to receive a satisfactory share of the farm net income.

As the net return ratio moves away from the rent norm, dissatisfaction with the lease provisions develops, and the farther the deviation from the norm, the stronger the dissatisfaction. If the deviations are sufficiently large so that another lease type would be more favorable to one of the parties, pressure will exist against both the lease type and the lease provisions. Further, if neither the lease type nor the lease provisions are changed and the net return ratio deviates widely from the norm, the dissatisfied party may attempt to improve his position by seeking a new rental partner. These three critical points are shown in fig. 7. In the diagram, ON is the rent norm. AA<sub>1</sub> is the range through which the division of net returns would be permitted to vary with no change in the lease provisions. BB<sub>1</sub> is the range of permissible variation of the net return ratio with no change in lease type. Should the net return ratio deviate from the norm to this extent, a workable situation can be restored by changing the lease provisions. In the event that the lease provisions are not sufficiently flexible to provide a satisfactory adjustment, additional latitude is available through changing lease types—as is shown in the range CC<sub>1</sub> in fig. 7. Deviation of the net return ratio beyond either C or C<sub>1</sub> leaves the dissatisfied party with no alternative but to change rental partners; that is, if he is a tenant, he must seek another farm, or, if a landlord, a new tenant.

Each limit of permissible variation is the result of several factors that affect the individual. The amount of variation in division of income

that the party to a lease will tolerate may be modified by his ideas as to what is customary, by his alternatives to the present situation, by his chances of achieving these alternatives and by his bargaining position.<sup>34</sup> Acceptance of a division which varies widely from the expected division may hinge upon the physical mobility of the party's resources or the social mobility of his family. A tenant with strong community ties would be willing to accept an unfavorable income division if his achievable alternative lay outside the community; landlords, living in the same community with the tenant, have not always utilized their bargaining position to the fullest advantage because of a fear of incurring social displeasure.

The premium placed upon risk aversion is reflected in the width of the zone of tolerance. A landlord with relatively fixed financial commitments may be willing to accept wide variability in the net return ratio in exchange for stability of income in absolute terms. A tenant in a favorable risk-taking position may be willing to accept variability in income in exchange for a larger net income over time. Thus, both landlord and tenant, in the above circumstances, would have wide zones of tolerance as a result of their willingness to take risks.

The parties to the lease may consider the productivity of their resources without observing the return on the other resources used in combination—in which case the limit of tolerance would have little or no meaning. The limit of tolerance can be expected to vary widely among individuals; it is not subject to a precise determination for all parties concerned with leasing.

#### KINDS OF ADJUSTMENT FOUND IN INTERVIEWS

As just discussed, landlords and tenants appear to tolerate certain ranges of variation in the ratio of farm rent to net farm income. When the variations exceed these permissible variations, however, one or both of the parties initiate action to make adjustments. The nature of the adjustments depends upon the extent of the variation.

#### CHANGES IN LEASE PROVISIONS

This study included certain leases in force for all or part of the 1939-50 period and totaling 608 years of leasing. Cash leases studied totaled 209 years; crop-share leases, 199 years; livestock-share leases, 200 years.

*Cash lease.* Adjustments in cash lease provisions were few relative to the total number of possible adjustments. In the 209 years of cash leasing investigated, only 49 changes were disclosed. Of these 49 changes, 48 were changes in the amount of cash rent. The other change involved changing the date of notification for the

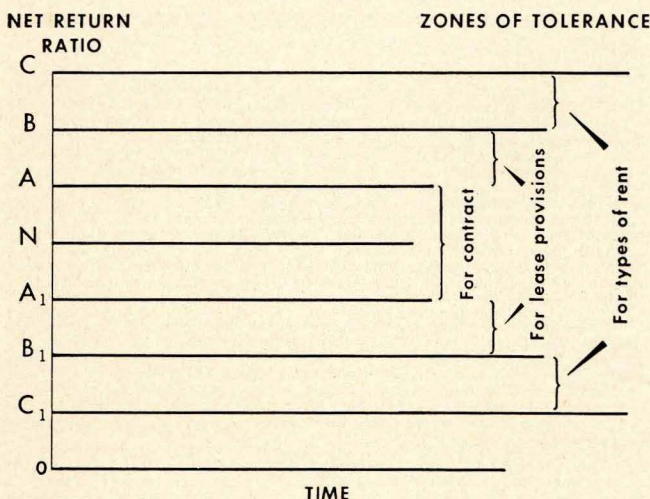


Fig. 7. Types of farm rent adjustments within various zones of tolerance.

<sup>34</sup>A study in north-central Iowa indicated that landlords and tenants considered five factors in determining a "fair" rent: "what is customary," contributions of the parties, productivity of contributions, bargaining position of each party and what is satisfactory to both. These factors have been discussed by John F. Timmons, I. W. Arthur and Walter E. Chryst, What rent for your farm? Iowa Farm Science, 5:147-149.

termination of the relationship. It would be inferred from this that landlords and tenants renting for cash adjust their rental provisions once each 4 years on the average.

The number of changes appear to depend partly on the length of time the lease has been in effect. The relationship is not a close one, but of the 19 tenants who were on the cash lease for more than 5 years, 14 had made changes; of the 16 on the cash-type lease less than 5 years, only 3 had made changes. A leasing arrangement existing for 5 years or more may be expected to have some of the elements of success. To determine these elements, cash leases of 5 years' duration or longer were treated separately.

Tenants on the cash lease for 5 or more years made 38 changes in their lease provisions, a change about each 3 years. Increasing or decreasing the cash rent were the only changes made by these tenants. Tenants related to their landlords made 7 changes in a total of 35 years' cash leasing, or a change each 5 years.

Changing prices, costs and production were responsible, either in full or in part, for all changes in cash rent. According to the tenants, changing prices were responsible for half of the 38 changes. A combination of changing prices and costs were responsible for an additional 10 (or 26 percent) of the changes. Changing prices, costs and production accounted for another 11 percent of the total. Thus, changing prices entered into 86 percent of the changes made in cash rent. Only 5 percent of the changes were attributed to increase in the landlord's costs.

Landlords interviewed indicated more interest in costs as a rent determinant than did tenants. Five landlords were interviewed who had made 19 adjustments in cash rent. The landlords attributed 16 (or 84 percent) of the changes to rising prices and costs and 3 (or 16 percent) to changing prices, costs and production. The corresponding tenants had attributed 16 (or 84 percent) of the rent increases to rising prices alone and 3, to increasing prices, costs and production. The 3 adjustments caused by prices, costs and production were the result of a flexible lease based upon these factors.

Few cash tenants considered any alternatives to changing the cash rent. No alternatives were considered for 29 (or 76 percent) of the 38 changes made.

Either an increase in the cash rent or a change to a share arrangement would have resulted in an increase in the landlord's share of the net returns. Consequently, eight of the nine alternatives considered involved changes to a form of the share lease and were suggested by the landlord. None of the alternatives were acceptable to the tenants as they felt that the share rent would result in the landlord receiving too large a share of the net return. The increase in cash rent was acceptable as a compromise between the division occurring with the prevailing cash rent and the division that would occur under a share arrangement.

Of the 38 changes, 34 (or 89 percent) provided a satisfactory solution for the short run.<sup>35</sup> The lag in cash rent with respect to prices (fig. 5) was the reason given for the satisfaction with 74 percent of the changes in cash rent.<sup>36</sup> A satisfactory division of the net returns or a level of rent lower than share rent accounted for the satisfaction of tenants with 20 percent of the changes.

Only four of the changes were unsatisfactory. These changes were based upon personal costs of a related landlord. They were not associated with farm production, farm price level or farm costs.

The 38 changes were made by 14 tenants. Tenants making 22 (or 57 percent) of the 38 changes believed that they would have been evicted if they had refused to accept the higher rent. Tenants were not sure whether or not refusal to grant rent increases in another 32 percent of the changes would have necessitated their moving. In terms of numbers of tenants, 10 of the 14 (or 62 percent) granting increases in the cash rent felt that the increase was necessary for the continuation of the rental arrangement. Three tenants (or 22 percent) were not sure that they could have stayed without increasing the rent.

The six landlords interviewed were not as well satisfied with the rent adjustments as their tenants. Of the 19 changes, 5 were satisfactory, and 14 were moderately satisfactory, with the landlords feeling that rent never advanced as rapidly as prices—the same reason the tenants gave for their satisfaction.

*Crop-share lease.* Of the 65 tenants interviewed, 31 had more than 1 year's experience renting under a crop-share agreement. The total leasing experience of these tenants amounted to 199 years. A total of 31 changes in lease provisions were made by these tenants. Of these 31 changes, 11 were caused by changes in prices, costs or production, and 22 resulted from other causes.<sup>37</sup>

The 11 changes were made by 7 tenants, and 8 of these involved increasing the cash rent. One tenant was permitted by his landlord to substitute home improvements in lieu of increased cash rent.

<sup>35</sup>The concept of satisfaction as used here pertains to the existence of a workable situation. It is assumed that dissatisfaction cannot arise without the presence of an achievable alternative. The alternatives may develop from within or without the present situation. Thus, a tenant may be satisfied if he cannot improve his position with respect to the division of net returns or by altering his lease provisions by changing lease types. If, however, the tenant's lease is sufficiently flexible, he may use the flexibility to offset alternatives arising within his lease type, e.g., comparable farm renting for less than his farm, or alternatives outside of his lease type, such as another form of lease providing a larger share of the net return to the tenant. Flexibility in lease provisions then can restore a workable situation which permits the operation to continue and provide a satisfactory solution to problems of income division.

<sup>36</sup>One tenant making eight changes in the cash rent in 12 years was not completely satisfied. He had experienced renting for cash in depression years and wanted to base his rent on prices during favorable years in order to have an argument for reducing rent when prices were declining. This tenant had developed a lease in which the amount of rent would be determined by the price of whole milk, but was unable to get it into effect as the landlord regarded such a lease as unduly complicated.

<sup>37</sup>The changes in lease provisions not resulting from changes in prices, costs or production were such changes as the tenant managing the disposal of the crop because of the landlord's enfeeblement, renting soybean ground for cash because of lack of storage for hay on rented tract, taking over maintenance of improvements because tenant expected to inherit property and corrections of mistakes in lease.

Only two adjustments in share proportions were found. One respondent made two changes in his lease at different times because of changes in production. In 1942 and in 1944 the corn crop was a near failure, and, on one occasion, the landlord sold his interest in the crop to the tenant for less than \$1 per acre. In the other year, the landlord gave the tenant the entire crop. This permitted the tenant to utilize the corn as ensilage and resulted in a larger income than would have been forthcoming had the corn been handled in the usual way.

As would be expected in a period of rising prices, the changes were usually made at the landlord's suggestion. All of the increases in cash rent and the home improvements in lieu of an increase in rent were suggested by the landlord. The decision to give all the poor crop to the tenant was arrived at jointly.

No alternatives were considered for any of the changes and all were satisfactory to the respondents. The usual reason given for the satisfaction with the change was that prices advanced more than the rent advanced, or, even with the advance, the cash-rented land was cheap compared with their share-rented land. All tenants felt that the landlords were satisfied with the size of the increase. Three tenants believed that if the increase had not been granted they would have been evicted, and the other four said that the increase was not absolutely necessary in order for them to stay on the farm. Of these four, three were renting from relatives.

*Livestock-share lease.* Thirty-three tenants were interviewed who had had a total of 199 years of experience with the livestock-share lease from 1939 to 1950. Ten of these tenants made 14 changes in lease provisions to adjust for changes in prices, costs or production. Four tenants made changes for other causes.

Twelve of the 14 changes were made to compensate tenants for their increased costs. The cost increases for which the tenants wanted compensation were changes in fuel prices, machinery and repair costs, and wages.

Four of the changes involved transfer of the poultry and dairy enterprise to the tenant. The procedure in all of these cases was for the tenant to buy the landlord's interest in these enterprises and to use grain from an undivided supply. The tenant bought protein supplement feed. The number of cows or chickens permitted outside of the lease arrangement was limited by the landlord. All of these changes were made at the tenant's suggestion. Transfer of the dairy cows to the tenant was successful in maintaining the rental relationship, but tenants assuming the poultry enterprise regarded the adjustment as inadequate and later moved to other farms.

In another case, the landlord took half of the poultry enterprise when prices increased in 1942. As poultry was only a small part of the output, the tenant did not resist the change but later changed landlords to get a more satisfactory lease.

Another adjustment in the division of returns on one farm was to alter the shares from dairying. Dairying was the principal source of income from the farming operation. Following a rise in the tenant labor cost, the tenant's share of the milk proceeds was increased from 50 percent to 67 percent. Later, after the landlord has built a new barn, the original division was restored. The landlord and tenant were related in this case.

One tenant discontinued paying the landlord half of the value of products used in home consumption as a partial adjustment for increased operational costs. The change was not adequate to offset the tenant's higher costs, but it helped hold the relationship together.

Three tenants approached the problem of adjusting for increased costs more directly by obtaining the landlord's participation in the contributions that had risen most in cost—machinery, fuel and labor. One landlord found that the only incentive that would cause the tenant to operate a beef enterprise on the scale that the landlord wanted was to pay part of the cost of the additional hired labor. This payment has been effective, and both landlord and tenant expressed their satisfaction with the arrangement. Another tenant had been paying rent on the hired man's house and this practice was discontinued when wages increased. But the tenant did not feel that this was an adequate adjustment. In addition to the concession on wages, the landlord (the tenant's father) started paying a fixed sum of \$600 per year to offset increased costs of machinery and fuel. While the tenant did not feel that these amounts were adequate, the payments were responsible for the continued operation of the lease. The third tenant received \$50 per year for the part-time services of a grown son but did not feel that this was sufficient and moved to a larger farm where the son's labor would be utilized more effectively.

Alternatives were considered for only 3 of the 14 changes. The alternatives considered by one tenant were all of the dairy and all of the poultry, or all of the dairy and half of the poultry. The second alternative was rejected because the tenant felt that the landlord's share of the net returns was already too high.

The other two alternatives were considered in lieu of the tenants taking over the poultry enterprise. One tenant wanted the landlord to pay half the cost of the tractor fuel, the change that gave rise to the dissatisfaction. The landlord would not make this concession. The tenant did not feel that the adjustment was adequate and eventually secured a change in lease type. The other tenant who considered an alternative to taking over the poultry wanted the landlord to pay a larger part of the costs of grass seed. The landlord refused to do so, but later assumed the cost. Both changes together did not provide a satisfactory solution, and the tenant later moved to a smaller farm that he owned.

Further adjustments were desired after six of the changes were made. Giving the tenant the

poultry enterprise was insufficient adjustment in both cases and three of the four landlords' contributions to machinery, fuel and labor expenses were regarded as inadequate.

At the time the changes were made, the tenants regarded only one as necessary to keep the rental relation intact. Subsequently, however, 4 of the 10 tenants moved or changed lease types because they were unable to make adjustments in the livestock-share contracts.

Landlords of eight tenants were interviewed. Provisions of five of the eight leases had been changed. One of the changes involved changing the lease term. The tenant changed from a 3-year to a 1-year lease to be in a position to change lease types, or farms if necessary, if prices and costs changed in such a way that he would be better off with another type of lease. This tenant had previously changed to a livestock-share type lease in 1946 because of an expected decline in prices with a smaller decrease in costs. He had secured a 3-year livestock-share lease as protection against that contingency. As prices and costs increased contrary to his 1946 expectations, the longer term lease proved to be to his disadvantage. The other five changes are discussed above. All changes were satisfactory to the landlords and none desired further modification of the lease term at the time of interview.

At the time the changes were made, none was regarded by either landlords or tenants as necessary for the continued operation of the lease; but of the five tenants making changes, two later moved or changed lease types because of dissatisfaction with the division of net returns under the livestock-share arrangement. Of the three who made no change in the lease provisions, two later discontinued the relationship and moved because of an unsatisfactory division of the net return.

#### CHANGES IN LEASE TYPES

Large shifts from one form of tenancy to another occurred in Iowa from 1945 to 1950. According to the United States Census of 1950, the number of cash tenants declined nearly 40 percent during the period, while the number of share-cash tenants increased 50.9 percent. The number

of tenants classified as share and cropper, which would include livestock-share tenants, decreased 34.3 percent, and the number of unclassified tenants decreased by 23.7 percent. The 50.91 percent increase in share-cash tenants is even more significant when considered along with a 12.1-percent decrease in total tenancy of all forms.

Various lease types offer landlords and tenants a set of alternatives for adjusting the division of net returns. Approximately 400 tenants cooperated with the Iowa Farm Business Associations from 1940 to 1950 and these tenants made a total of 148 changes in lease type during the 10 years (table 4). The period was one in which the cash-rent type of lease was most favorable to tenants from the standpoint of division of net returns and the livestock-share lease the least favorable. Throughout the period, there was a net gain of 21 cash leases and 14 crop-share leases, and a net loss of 35 livestock-share leases. This would indicate that tenants held an advantage in bargaining power during the period. The situation is somewhat different, however, when the time covered is divided into the war and postwar periods.

The war period, 1940 through 1946, was one of decreased supply of farm manpower, and tenants were in a favorable bargaining position. Of 80 changes made in lease type, there was a net gain of 19 to the cash lease, a net loss of 1 to the crop-share lease, and a net loss of 18 to the livestock-share arrangement (table 4). Tenants were able, in large part, to select leases that gave them the most favorable divisions of the net returns.

In the postwar period the bargaining position of tenants has been reversed. With the return of veterans, many of whom were seeking rental farms, competition for farms has been stronger and tenants have had less choice as to type of lease. Of the 68 changes occurring in lease type between 1947 and 1950, there was a net gain of 2 to the cash lease, 15 to the crop-share lease and a net loss of 17 to the livestock-share plan. As the net return ratios of the cash and livestock-share leases show considerable divergence in this period, the shift to the crop-share arrangement may constitute a compromise between the two lease types.

The data presented in table 4 have been found

TABLE 4. CHANGES IN LEASE TYPES MADE BY MEMBERS OF THE IOWA FARM BUSINESS ASSOCIATIONS IN THE PERIOD 1940-50.

Year	Lease type									Total
	Cash			Crop-share			Livestock-share			
	To	From	Net gain	To	From	Net gain	To	From	Net gain	
1950	5	7	-2	15	7	8	3	9	-6	
1949	7	4	3	7	6	1	1	5	-4	
1948	7	4	3	8	5	3	0	6	-6	
1947	5	7	-2	7	4	3	3	4	-1	
1946	6	1	5	4	3	1	1	7	-6	
1945	8	1	7	2	7	-5	2	4	-2	
1944	8	3	5	3	8	-5	1	1	0	
1943	1	5	-4	12	1	11	0	7	-7	
1942	7	3	4	3	6	-3	1	2	-1	
1941	5	4	1	4	3	1	1	3	-2	
1940	4	3	1	4	5	-1	3	3	0	
Number of changes to lease type	63			69			16			148
Number of changes from lease type		42			55			51		148
Gain			21			14			-35	0

to be subject to some error through inaccuracies of observation and classification. The shifts in lease types made by business association cooperators in the postwar period, however, are similar to those indicated by the United States Census data summarized in table 2.

Only three tenants could be found who had changed from a cash lease to another form and also had retained the same farm and landlord. These three tenants changed to a crop-share arrangement; none were found who had changed to the livestock-share plan. The changes were made in 1947, 1948 and 1949. All changes were made at the landlord's suggestion. The changes, according to the tenants, were caused by increased farm prices and ownership costs. As two of the landlords did not offer alternatives in the form of higher cash rent, apparently they felt that cash rent could not be increased enough in the environment of custom to provide an adequate adjustment. Two tenants were willing to pay a larger cash rent, but not the cash equivalent of the share rent. The third party, who was offered an alternative in the form of a substantial increase in cash rent, declined the alternative for the same reason, even though the cash rent, including the increase, would have amounted to less than the share rent.<sup>38</sup>

Two of the three tenants were reluctant to make the change to share rent as they expected to receive a smaller share of the net returns under the new arrangement. One was not opposed to the change since his principal income was from livestock and not from the crops grown on the farm.

While the change resulted in higher rent, two tenants regarded it as successful because it provided a division of the returns acceptable to both parties and permitted continuation of the rental relationship.

Two of the three tenants felt that they would have been required to move had they not accepted the changes. In all cases, acceptance of the changes in lease types was acknowledgment of the superior bargaining position of the landlords.

A total of 10 tenants were interviewed who had changed from the crop-share lease to another type of lease while retaining the same farm and landlord. Of these 10, 8 had changed to cash leases and 2 to the livestock-share. Of the 10, half had changed their lease type in order to adjust for changes in prices, costs or production. Three tenants changed from a crop-share to a cash lease and two tenants from a crop-share to a livestock-share lease.

None of the tenants who changed lease types as a result of direct economic causes was related to his landlord. All tenants making the change for other reasons were related to their landlords.<sup>39</sup>

<sup>38</sup>One tenant, who was not satisfied with the change at the time it was made, moved after 1 year on the crop-share plan. The increase in the landlord's share of the returns was responsible for his moving.

<sup>39</sup>Three of the five changes made for reasons other than adjusting for prices, costs and production were made because of the landlord's inability to further participate in management. The remaining changes were made to simplify record keeping. All the changes from the crop-share lease arising from noneconomic causes were designed to transfer part of the managerial duties of the landlord to the tenant.

Of the 3 changing from a crop-share to a cash lease to compensate for economic changes, 2 made the change in 1941 and 1 in 1945. Both of those changing in 1941 said that the change was made because cash rent was lower than share rent, and both suggested that the change be made. The tenant who changed from a crop-share lease to a cash lease in 1945 did so at the landlord's insistence and had to accept a 3-year cash lease.<sup>40</sup> It was the tenant's opinion that the landlord expected a decline in farm prices following World War II and wanted a cash lease as protection against a decline in income. This view was substantiated in part when the landlord insisted on changing back to the crop-share lease after the expiration of the 3-year period when prices had risen rather than declined. The tenant felt that his bargaining position was weak relative to the landlord's and he was left with no alternative but to comply with the landlord's wishes.

None of the tenants changing from a crop-share lease type for economic reasons considered any alternatives.

Two tenants changed from a crop-share to a livestock-share lease; one made the change in 1940 and the other in 1947. Both changes were made because of the landlord's dissatisfaction with his share of the net returns under the crop-share arrangement. The tenant making the change in 1940 felt that his capital was limited and that his return would be greater under the livestock-share plan. No alternatives were considered by the tenant making the change in 1947, as he felt that number of farms available for renting were too few relative to the number of tenants for him to bargain effectively.

Tenants making the change from crop-share leases to cash leases were well satisfied with the change. The reason given in all cases was the failure of the cash rent to advance as rapidly as prices.<sup>41</sup> Two felt that their landlords were satisfied with the change when it was made and also after a period of time had elapsed. The third tenant felt that his landlord was satisfied originally, but after a rise in prices the landlord insisted on changing back to the crop-share plan.<sup>42</sup>

Neither of the changes to livestock-share renting worked out successfully. One tenant became dissatisfied with his share of the net return and was able to buy a farm from the landlord. The other tenant making the change from crop-share to livestock-share has been dissatisfied with the division since the change was made and is seeking adjustments in the lease.

A total of nine tenants who had changed from the livestock-share lease were interviewed. Of these nine, seven had changed from the livestock-share plan to the cash lease, and two had changed from the livestock-share plan to the crop-share

<sup>40</sup>The tenant had rented the farm for more than 20 years previously on a year-to-year basis.

<sup>41</sup>Of the three making the change, two later bought the farms they were renting.

<sup>42</sup>Only one landlord involved in any of the changes from crop-share leases was interviewed. This landlord was a banker who managed a large number of farms at the time the change was made and did not recall many of the details surrounding the change.

arrangement. All of the former group of tenants, and one of the latter group, are related to their landlord.

Six of seven changes from livestock-share to cash resulted from changes in prices, costs and production and occurred after 1945. Of the two changing from livestock-share to crop-share, one made the change in 1941 and the other in 1949. The tenant making the change in 1941 was not related to the landlord and possibly would have encountered more resistance to the change if the attempt had been made in the postwar period.

Of the eight changes resulting from changes in prices, costs and production, seven were made at the suggestion of the tenant. This would suggest that both landlords and tenants had knowledge of which lease was most favorable with respect to their incomes. None of the changes were suggested by landlords; the one change not suggested by the tenant was a result of a court order in the administration of an estate. The court contended that the livestock-share plan entailed too much risk for the estate. The court decision was satisfactory to the tenant who had previously failed to obtain a change of lease type or modification of his livestock-share lease provisions.

Two alternatives were considered by those changing to the cash lease. One tenant said that he would have discontinued farming and sought employment as a farm laborer had he been unable to change from the livestock-share plan. Another tenant offered to buy the farm from the landlord, and after 6 years' operation on the cash lease plan the landlord sold the farm to the tenant.

All tenants changing from the livestock-share lease expressed satisfaction with the change. Of the eight making the change, seven regarded the change successful and one moderately successful. The tenant with reservations with respect to the success of the change in lease type found livestock improvements difficult to obtain after changing from a livestock-share to a crop-share lease.

The success of the changes was due to the effect upon the division of net income. Six of the respondents who said the change was successful attributed their satisfaction to their larger share of the net income, and one to the fact that prices subsequently increased more than his cash rent.

Seven of the eight tenants changing from livestock-share leases believed that their landlords were satisfied with the change but some expressed reservations or indicated that landlords were not as well satisfied as they were before the change was made. One tenant, who was related to his landlord, said that the change was not satisfactory to the landlord at any time following the change. This tenant has since bought the farm.

Although all but one of the tenants making the change were related to their landlords, half, or four, of them said they would not have continued to rent on the livestock-share lease.<sup>43</sup> In

<sup>43</sup>The landlord's views were not obtained. As all but one of these respondents were related to the landlord, it was necessary to interview several tenants in the landlord's presence. Every effort was made to prevent these interviews from causing difficulty between landlord and

addition to these, one more was uncertain as to whether he would have continued with the livestock-share arrangement. The change from the livestock-share lease appears to have been a necessary adjustment in the division of net returns for the preservation of the rental relationship.

#### CHANGES IN FARMS

A total of 19 tenants who had changed farms or discontinued farming were interviewed. Of these 19 tenants, 15 made the change because of dissatisfaction with the lease. The four making the change for reasons other than dissatisfaction with the lease changed because of dissatisfaction with the farm, uncertainty of tenure, inability to agree with the landlord and death of the landlord.

All but one of the tenants changing farms because of dissatisfaction with the lease changed lease types at the same time. In addition to these tenants, one former tenant was interviewed who had quit farming and assumed another occupation as a result of his inability to get a satisfactory lease. Of the 13 tenants interviewed who changed lease types and farms simultaneously, two changed from the cash lease, three from the crop-share type, and eight from the livestock-share lease.

Both of the tenants interviewed who changed farms and changed from the cash type lease did so because of demands from the landlords for more cash rent. The two tenants felt that, in the light of price uncertainty, the landlord's desired cash rent involved too much risk. One tenant made the change in 1947, and the other in 1948—years in which prices fluctuated considerably.

One tenant offered his landlord the alternative of some increase in cash rent, although a smaller increase than the landlord desired, or changing to the crop-share arrangement. Neither of the alternatives was acceptable to the landlord and the tenant moved after finding a farm available on crop-share terms. Risk aversion was an important factor in the tenant's resistance to increased cash rent.

The other tenant who changed from the cash plan changed to the livestock-share, and made no counter offers to the landlord. The tenant felt that the cash rent was already too much at the time the landlord made the additional demand, and as he had an opportunity to rent a larger farm on the livestock-share plan, with the landlord bearing more than the customary expenses, he refused to grant the increase.

Both tenants felt that the change improved their long-run position with respect to division of net income, and regarded the change as successful. Neither believed that any problems with his present landlord were incapable of solution or that he would have to change farms again in order to adjust the division of net returns.

tenant, and when the landlord was present he was not asked to confirm or deny the information given by the tenant. Of the landlords not present at the time of interview, all were economically inaccessible or in a state of health that prevented their being interviewed.



Three tenants were interviewed who changed farms and changed from the crop-share type of lease at the same time. Two changed to the livestock-share, and one to the cash lease arrangement.

The changes from the crop-share leases were unsatisfactory to tenants who made the change. The tenant who changed farms and changed from the crop-share to the cash lease made the change in 1950 and did so because of inability to agree with the landlord about rental terms. The landlord wanted to change to cash rent or to change the landlord's share from 40 to 50 percent. The tenant offered to change to cash rent at a rate lower than the rate the landlord asked. Agreement on the terms could not be obtained and the tenant moved to a less productive farm renting for less than the proposed rent of the original farm. The tenant now feels that the rent is extremely high relative to the productivity of the farm and that he would have been in a better position if he had paid the rent the first landlord asked. The move did not provide a satisfactory solution to the tenant's problems and unless the rent is reduced on the second farm he indicated that he will move again.

The two tenants who changed farms and changed from crop-share to livestock-share leases did so because of an expected decline in farm prices. One made the change in 1941 and the other in 1946. Both expected the livestock-share lease to provide a larger share of the net returns to the tenant on a decline of price level. But prices did not decline, and both tenants believed that they would have fared better by continuing on the old arrangement.<sup>44</sup> Neither of the crop-share landlords offered any alternative to the tenant when he desired to make the change in lease types.

Two of the three landlords owning the farms from which the moves were made were interviewed. Each landlord confirmed his tenant's version of the difficulties leading to the move. The landlords had no trouble in obtaining new tenants willing to rent on the terms the former tenants had rejected.

Eight tenants were interviewed who had changed from livestock-share leases at the time they changed farms; three tenants changed from livestock-share to cash, and five changed from livestock-share to crop-share leases.

The eight changes were distributed fairly uniformly over the period studied with only two of the changes occurring in the same year.

All of the changes were made for a single reason; livestock-share rent was considered high relative to rent under the other lease types. Half of the tenants would have continued on the livestock-share plan and remained on the farm if some adjustments had been made in the poultry

<sup>44</sup>One tenant succeeded in getting a livestock-share lease that differed somewhat from the customary lease—the landlord pays three-fifths of the fertilizer costs and receives half of the crop, pays part of the hired labor costs and bears other expenses normally paid by the tenant—and the division of net returns under the livestock-share plan is not considered unsatisfactory. The other tenant making the change eventually became dissatisfied with the division of the net return and moved to a smaller farm that he had previously purchased.

and dairy enterprise. Three other tenants would have remained on the farm if they could have changed to another lease type. Thus, in seven of the eight cases, the costs associated with moving could have been avoided by modifying the rental arrangement—and, in half of the cases, the modification needed was very small.

None of the landlords involved offered the tenants any alternative to acceptance of the livestock-share lease unchanged. One landlord, after the tenant had moved, offered the adjustments the tenant wanted originally if he would move back. The tenant had changed to a cash-rented farm and would not have rented again on the livestock-share lease without additional modifications.

All tenants changing farms and changing from the livestock-share lease considered the changes as a satisfactory solution to their rental problems of income and income division. Four of the tenants later acquired ownership stating that land prices and ownership costs had not increased as rapidly as rent. None of the tenants believed that their new rental arrangements contained any problems pertaining to the mechanism of the lease that could not have been worked out with the new landlord. Not all tenants making subsequent changes did so because of inability to agree with the landlord on rental terms.

Only one tenant was interviewed who had changed farms and retained the same lease type. The change was made because of the tenant's dissatisfaction with the division of net returns under a livestock-share arrangement and his inability to obtain modifications of the leasing arrangement. The tenant wanted to have all of the returns from the poultry and dairy enterprises to compensate for his increased costs. The landlord would not agree to these changes and the tenant rented another farm under a livestock-share lease which permitted him to retain all dairy and poultry receipts. This change provided a satisfactory division of the net return for a number of years. The tenant eventually became an owner but not because of any dissatisfaction with the lease. The owner of the farm from which the tenant moved verified the tenant's account of the cause of the change. The farm was rented to another tenant on the same terms that the original tenant had refused to accept.

One tenant was interviewed who had given up farming as an occupation. The tenant had operated a small farm on the livestock-share arrangement. He became dissatisfied with the division of net returns and believed that the division was not appropriate to the ratio of the contributions. The landlord offered the tenant a crop-share lease but the tenant did not feel that this would be an adequate adjustment. He had an opportunity to enter another line of employment and this has provided a satisfactory solution to his income problems.

A total of 20 tenants were interviewed who had changed from a form of tenancy to full ownership. Of these 20, 11 became owners because of direct dissatisfaction with their rental arrange-

ments. The rest acquired ownership for such miscellaneous reasons as desire for security of tenure, freedom from landlord's interference in the management of the farm and inheritance.

Of the 11 tenants changing to ownership, only two attempted to negotiate with the landlords before leaving the farm. One tenant, renting on crop-share, would not have terminated the rental relationship if the lease type had been changed to cash. He had rented the farm for a number of years on a cash arrangement and changed to the crop-share plan at the landlord's insistence. Following 1 year on the crop-share plan he moved to a farm he had previously purchased.

The other tenant who negotiated with his landlord before buying a farm had operated several years on a livestock-share arrangement. During this period his operating expenses, particularly those for machinery replacements, repairs, fuel and labor, increased considerably. The landlord offered to pay part of the hired labor cost but the tenant did not consider this an adequate adjustment.

All except one of the tenants interviewed who obtained ownership in the 1939-50 period were well satisfied with the change. The reason given by all of those satisfied was the rising level of farm prices throughout the period, which enabled them to reduce their debts easily and secure their equity in the property.<sup>45</sup> The one tenant who did not find ownership a satisfactory solution to his rental problems bought a small farm. Operation of this farm did not keep him fully employed and he felt that he would have been in a better position by staying on as a renter on the other farm.

Six landlords were interviewed, three of whom had sold their farms to the tenants. These three landlords sold because they needed their money for other purposes; the tenants bought because the costs of ownership were less than the rent they were paying. Of the remaining three landlords whose tenants bought farms, two confirmed that their tenants bought because of inability to agree on rental terms and one that he bought because of the difference between rent and ownership costs. Both landlords whose tenants bought farms because of their inability to agree on rental terms succeeded in obtaining tenants who would accept the terms the landlord desired—the changes having occurred in 1948, a year in which the demand for rental farms was very intense.

#### IMPLICATIONS OF OBSERVED CHANGES FOR RENTAL ADJUSTMENTS

The preceding information obtained through interviews with landlords and tenants indicates that they have attempted numerous means for making adjustments in light of changing costs, prices and production. The rental adjustments attempted, although not numerous, are outlined in the next section as possibilities for other land-

<sup>45</sup>From 1939 through 1949 average cash rent increased 122 percent while land values increased 102 percent. Computed from B. French and W. Chryst. Prices affecting Iowa agriculture 1910-49 (mimeo). pp. 34-39. Ames, 1950.

lords and tenants to consider in working out their rental problems.

It becomes obvious from this information that share arrangements provide more protection against variability of prices, costs and production than cash leases; consequently, share tenants made fewer changes in their arrangements than cash tenants. Changes in cash and crop-share lease provisions are restricted largely to changes in the amount of cash rent. Half of the changes in the livestock-share provisions were of questionable value and half concerned the problem of increased costs directly.

The difficulty in finding tenants who had changed lease types while retaining the same farm and landlord indicates that this technique is seldom used. But no difficulty was encountered in finding tenants who had changed farms. Of the 14 changing farms because of dissatisfaction with their rental arrangements, 13 changed lease types at the same time. Since few make changes in lease type while retaining the same farm and landlord, but nearly all change lease types with a change in farms, there is some reason to believe that a given lease type remains in effect on the farm with the new tenant. This could be expected since landlords have been in a favorable bargaining position since World War II. If the tenant cannot obtain changes in lease provision or lease type, his alternative is to find a landlord willing to rent under the type he desires. The cause of 14 of the 19 moves investigated was to obtain a lease type not available on the farms the tenants were operating.

Of the 20 tenants interviewed who acquired ownership, 4 were pushed into ownership because of inability to get a satisfactory lease, and 7 became owners because of more favorable expectations of income under ownership than renting. The remaining 9 tenants who acquired ownership did so because of inheritance, desire for security of tenure and related factors.

#### ALTERNATIVE METHODS OF RENT ADJUSTMENT

This section is devoted to the third objective of this study—appraising various methods, proposals and experiences for adjusting rents to changes in costs, prices and production. Specific methods used by landlords and tenants interviewed are presented and analyzed. Some additional rent-adjustment proposals are examined. Rent-adjustment experiences in selected foreign countries are summarized. From these methods, proposals and experiences, landlords and tenants are provided with a wider choice of possible means for working out rent-adjustment provisions to fill their needs.

#### DETERMINATION OF SUBJECTIVE ZONES OF TOLERANCE

Interviews with farm tenants and landlords summarized in the previous section, indicated that

(1) certain variations from the rent norm are tolerated by landlords and tenants, (2) beyond these permissible variations (zones of tolerance) landlords and tenants attempt to make adjustments and (3) zones of tolerance as well as adjustments attempted vary with individual landlords and tenants. Thus it is not possible to determine precise margins of tolerance as bases for specific types of remedial adjustments for all tenants and landlords. In each instance, they should decide for themselves the variations in net return ratios they will tolerate before making adjustments.

#### FACTORS INFLUENCING MARGINS OF TOLERANCE

As an aid in arriving at zones of tolerance for a particular landlord and tenant, some of the more important factors affecting margins of tolerance are reviewed. In general, the willingness to accept a given variation from the rent norm appears to rest largely upon the nature and effectiveness of alternatives available to mitigate the variation. These alternatives are appraised according to: (1) the degree to which they will alleviate the current difficulties and (2) the costs involved in their acceptance.

The extent to which an individual is willing to rely upon custom is important in determining how much variation he will permit in the net return ratio before seeking the remedy of a change in the lease provision. Some landlords and tenants view a change in prices, costs and production as an aberration which will "average out" in the long run, while others view such a change as indicative of a trend and seek remedial action immediately. Again, the acceptability of a particular change in a lease provision is not the same for everyone and this results in different margins of tolerance. Evidence of this was found in cases where the transfer of minor enterprises under some livestock-share leases was sufficient to maintain the relationship while the same offer was rejected in other cases with the result that the tenant moved to another farm. Heavily encumbered landlords may be more dependent upon the stability of the farm income than debt-free landlords, hence they may react more quickly to a change in the economic environment.

With respect to the margin of tolerance determining changes in lease types, individuals are influenced by different kinds of factors. In considering a change in lease type, tenants and landlords may consider such items as their capital position, change in type of farming required, increased risk and redistribution of managerial responsibilities. Some share tenants, having saved a year's cash rent, changed to cash rent when the increase in the share net return ratio was relatively small; others, in a similar liquidity position, were unwilling to assume the risks of cash renting and remained on the share arrangement. Similarly, landlords in a position to supply the additional management required under the share lease could be expected to tolerate less of a decline in the cash rent net return ratio before changing to

share arrangements than those landlords who could not supply the extra management. Landlords were interviewed who appreciated the superior nature of the livestock-share arrangements but were unwilling to supply the additional management, either by increasing their personal supervision or by hire.

The amount of variation in the net return ratio a tenant will tolerate before changing farms will depend upon such items as the location of the alternative farm, type of housing, difficulties of moving and re-establishing operation, and reluctance to disrupt community ties and children's education. It is unlikely that any two tenants will attach the same importance to each of these factors, and to the extent that they fail to do so, different margins of tolerance will result. Landlords may weigh differently the difficulty of finding another tenant and the loss of income while his operation is becoming adjusted to the farm, with the result that their margins of tolerance for changes in tenants will differ.

Willingness to change to ownership as an alternative to an unfavorable leasing situation will be governed by such factors as capital position, age of operator, number of heirs and anticipation with respect to future price levels. Some tenants were interviewed who did not hesitate to buy a farm as an alternative to their leasing situation. Others, in equally favorable capital positions and also dissatisfied with the division of returns, continued to operate as renters. The different ways in which operators view the hazards and needs of farm ownership prevent the determination of a margin of tolerance of any widespread applicability. A number of tenants were interviewed who had made the transition to ownership as soon as the net return ratio deviated from the norm. Others were found who were somewhat dissatisfied with the division of returns but were reluctant to risk their savings in an attempt to acquire ownership.

Similarly, the decision to leave farming as an occupation is determined by considerations that vary widely by individuals. Again, the alternative opportunity is applicable, particularly as viewed from the standpoint of occupational preferences. Also, the age and training of the individual may enter into his decision to leave or remain in farming. Similarly, before turning to other outlets for his capital, a landlord with an agricultural background may tend to tolerate a larger deviation in the net ratio than one viewing the farm only as an investment.

The variety of factors considered and the differential weighting by individual landlords and tenants makes determination of the margins of tolerance upon any aggregative basis meaningless as well as difficult. The distributions of net return ratios accompanying changes of particular types reveal large variances. It appears to be relatively meaningless, therefore, to design techniques that will keep the net return ratio within a specific zone of tolerance for all landlords and tenants. The task of determining variations in net return ratios from the rent norm falls upon each landlord

and tenant. After this decision has been made, there are numerous methods whereby variations in net return ratios may be decreased. These methods are discussed in the following sections.

#### PROVISIONS IN USE BY LANDLORDS AND TENANTS

In trying to adjust rents to changes in costs, prices and production, certain landlords and tenants had developed specific rent adjustment plans as provisions in their rental arrangements. Some of these provisions justify serious consideration for more extensive use; other provisions appear to have serious limitations.

#### BASE AND BONUS PLAN

One rent-adjustment provision was reported in use by a tenant who had rented for cash for more than 35 years and had experienced the price collapses of 1921 and 1929. In 1942, realizing that prices were rising, that rent would follow, that prices would eventually turn down and that cash rent would lag, he offered a "bonus" to his landlord beyond the 1941 rental for renewing the lease. In subsequent years, the 1941 rental terms served as the base and the amount of the bonus for the forthcoming period was negotiated on the basis of prices received, costs incurred and rent of comparable land in the current production period. The advantages of this plan are twofold: (1) The tenant is protected against any sudden decline in prices as he is legally committed only for the base rent and (2) the landlord receives a rent based upon current economic conditions.

The plan requires a high degree of mutual confidence. As the tenant is obligated only for the base rent and as the bonus for renewal is negotiated after the legal date for serving notice of termination, the tenant could refuse to pay any compensating amount and thus obtain use of the property for 2 years at the base rent. The landlord is aware of this possibility but is well satisfied with the way the plan functions. Also, the plan does not provide for crop failure and hence does not constitute an adjustment for serious declines in production. Neither does it provide for exceptional high production which would provide a basis for the tenant to pay a higher rent.

#### DEFERMENT OF RENT DETERMINATION PLAN

A similar arrangement was found between another landlord and tenant. No rent was agreed upon at the time the farm was let. At the end of each crop year, the parties met and decided upon an appropriate rent in consideration of prices, costs and production. While this plan enabled the parties to take all relevant factors into account, the shortcomings are even more serious than those of the preceding plan. The tenant's legal commitments for rent are extremely vague and a high degree of mutual confidence is required. The parties interviewed, however, had never encountered difficulty in arriving at an acceptable rent under this plan.

#### CASH-SHARE OPTION PLAN

Another arrangement was found under which a landlord offered his tenants the choice between cash rent for the entire farm or share rent for the cropland and cash for the hay land and pasture. The tenant was required to declare his intention with respect to the option by September 1 for the current crop year. Thus, if corn prospects were good and the price was favorable relative to the agreed cash rent, the tenant could choose to pay cash rent for the farm. If corn prospects were poor and the price unfavorable, the tenant could choose to pay share rent under their agreement. The particular tenant interviewed operated under this plan from 1937 to 1944, and, as prices were rising, he chose the cash rent each year.

Unless such a plan attracts better tenants, it offers few advantages to the landlord. The plan does permit partial adjustment for changes in prices and production, but, as the option rests solely with the tenant, the adjustment is one-sided. In an effort to compensate partially for this "onesidedness," the date of declaration was advanced to July 1 and much of the utility of the plan was lost to the tenant.

#### COMMODITY PRICE ADJUSTMENT PLAN

One of the most successful plans found in the study was in use on nine central Iowa hog-producing farms. The base rent in this case was \$6.75 per acre, which the parties considered as representative of the prewar price of hogs. The rent for each year was the base rent, plus 25 cents for each dollar the per hundredweight price of hogs was in excess of the base price on a particular day. For example, if the price of hogs were \$18.75 per hundredweight on the day accepted as the base day, the rent per acre would be \$9.75—\$6.75 plus one-fourth of the gain in price (\$12.00) or \$3.00. The plan is a compromise between completely flexible rents with respect to prices and the prevailing rent in the community. The use of the one-fourth ratio is a concession to the tenant's alternative opportunity to rent land from other owners at the going price. But the tenants were willing to forego the advantage to be gained from renting on the current market for the reduction in the uncertainty as to the impact of future price changes on their net income.

Actual operation of the plan is shown in table 5. From 1940 through 1948, the plan eliminated the lag and the cash rent moved upward, with the price of hogs enabling the landlord to receive a higher return than he would have received had the farm been rented at market rates. The price of hogs dropped substantially in 1949 and the rent was consequently reduced. As the price of hogs remained relatively low during the 1949-52 period, the rent remained below the rental market in the community. With the sharp upturn in the price of hogs in 1953, the rent was increased substantially. Thus, throughout the period, the landlord had a rent based upon current prices, and by the same method, the tenant's net income was

TABLE 5. COMPARISON OF AVERAGE CASH RENT PAID WITH CASH RENT DETERMINED FOR A PARTICULAR FARM BY THE PRICE OF HOGS.

Year	Price of hogs* (per cwt.) (dollars)	Less base rent (\$6.75/acre) (dollars)	Rent adjustment† (dollars)	Total rent (dollars)	Actual rent per acre‡ in area (dollars)
1940	5.30	-1.45	-0.36	6.39	6.14
1941	9.20	2.45	0.61	7.36	6.41
1942	13.10	6.35	1.58	8.33	6.60
1943	13.80	7.05	1.76	8.51	7.31
1944	13.20	6.45	1.61	8.36	7.89
1945	14.00	7.25	1.81	8.56	8.20
1946	17.50	10.75	2.68	9.43	8.45
1947	23.80	17.05	4.26	11.01	8.53
1948	22.80	16.05	4.01	10.81	9.86
1949	17.50	10.75	2.68	9.43	10.34
1950	17.70	10.95	2.74	9.49	10.31
1951	19.70	12.95	3.24	9.99	11.77
1952	17.40	10.65	2.66	9.41	11.53
1953	24.00	17.25	4.31	11.06	13.28

\* Average annual price received by Iowa farmers except for 1953, which is the September 15 estimate. Data supplied by Division of Livestock and Poultry Statistics, Bureau of Agricultural Economics, U. S. Dept. Agr.

† One-quarter of the difference between the per-hundredweight price and the base rent.

‡ Data supplied by Division of Land Economics, Bureau of Agricultural Economics, U. S. Dept. Agr.

protected from any decline in prices. But there was no protection from the failure of costs to decline with prices or the possibility that disease or other factors could have substantially reduced hog production. According to the landlord and tenant interviewed, the plan was functioning satisfactorily.

#### OTHER RENT ADJUSTMENT PROPOSALS

Following the substantial decline in farm prices in the early 1930's, a number of plans for keeping rent in line with changes in prices, costs and production were developed in Iowa and nearby states.<sup>46</sup> Some of these plans have definite advantages, along with definite shortcomings, but in either event, it is worthwhile to consider their features and see how the plans would function under different circumstances.

#### PLANS FOR RELATING RENT TO PRICES OF COMMODITIES

This type of plan was developed by at least four states in the Midwest in an attempt to alleviate the distress caused by failure of rents to adjust to falling prices. Three of these plans are quite similar and an analysis of one is applicable to the others.

In the Iowa plan, the basic arrangement provided for the two parties to agree upon a base rent, either for the farm or per acre, and to modify the rent in direct proportion to changes in a weighted index of 10 major Iowa farm commodities.<sup>47</sup> For example, if the parties had agreed

<sup>46</sup>See, for example: Millard Peck. A plan for adjusting of farm products to changes in the price of farm products. Iowa Agr. Exp. Sta. Bul. 295. 1932; W. L. Cavert. Adjusting of farm rentals to fluctuating values. Minn. Agr. Ext. Ser. Cir. 42. 1933; H. C. M. Case and Joseph Ackerman. Farm leases in Illinois. Ill. Agr. Ext. Ser. Cir. 474. 1937; John F. Timmons. Landlord-tenant relationships in renting Missouri farms. Mo. Agr. Exp. Sta. Bul. 409. 2d ed. 1946.

<sup>47</sup>Later, use of the 10 major commodity indexes was discontinued and the standard "prices received" index, based upon a larger number

upon a base rent of \$6.00 per acre when the weighted price index was 80, the rent would be \$9.00 when the index reached 120 (or 150 percent of the base index). Conversely, had the index declined to 60, the rent would be \$4.50 (or 75 percent of the base rent).

Arising from a definite need to bring land rent in line with lower prices of farm products, and appearing at a time when rigid rental rates were causing widespread hardship on Iowa farms, the plan was adopted by many landlords and tenants.<sup>48</sup> The apparent advantage was the determination of a rent that the tenant could pay and the landlord could collect. The plan was announced in 1932 and put into use for the 1933 crop year by numerous landlords and tenants.

This adjustment provision provided only for changes in prices. Omission of the production aspects caused difficulty immediately after the plan was adopted. In 1934, a drouth reduced corn yields by almost half with the yield index declining from 112 in 1933 to 55 in 1934 (table 6). Prices, on the other hand, increased more than a third with the price index rising from 41 to 56 (table 6). Thus, the tenant's rent increased, although he had less income with which to meet his obligations. This combination of events placed a considerable strain on the sliding-scale leases.

Similar, but more stringent, circumstances existed only 2 years later in 1936 when drouth again severely reduced yields. Prices, however, remained relatively unchanged—cash rent, consequently, did not reflect the lower production and many tenants found it hard to meet the rent.<sup>49</sup>

of commodities, was substituted. Since most prices are highly correlated over time and the 10 major commodities have heavy weights in the other series, the differences in the rent adjustments were not appreciable.

The formula for computing the rent:

$$\text{Rent} = \text{base rent} \frac{(\text{current price index})}{(\text{base price index})}$$

or, in the example cited above,

$$\text{Rent} = \$6.00 \frac{(120)}{(80)} = \$9.00$$

Estimates of the number of flexible leases put into effect are not available but several hundred inquiries about the plan are on file at Iowa State College. Blank flexible lease forms were distributed by the college until 1951. Numerous inquiries are received each year for data to be used in computing the flexible rent.

Flexible leasing plans were also used extensively in Minnesota. As late as 1940, 11 percent of the cash leases in Minnesota had provisions for adjusting the rent on the basis of farm product prices. George A. Pond. Farm tenancy in Minnesota. Minn. Agr. Exp. Sta. Bul. 355. p. 30. 1940.

<sup>48</sup>See I. W. Arthur. Index cash rent—a plan to make sliding scale cash leases work. Iowa Farm Economist. 8:14-15. January 1942.

<sup>49</sup>Ibid. When a renewed interest in flexible leasing resulted from rising prices in the early part of World War II, Professor Arthur developed a provision designed to correct this deficiency. The provision requires that the landlord and tenant agree upon a normal corn yield for the farm and modify the rent in proportion to changes in the yield if the yield is 75 percent or less of the normal yield. Thus the rental computation becomes:

$$\text{Rent} = \text{base rent} \frac{(\text{current price index}) (\text{current yield})}{(\text{base price index}) (\text{normal yield})}$$

if the ratio of current to normal yield is less than 0.75. This correction factor would have reduced the rental commitment in 1934 and 1936, but would not have been applicable in 1947 when the corn yield of Iowa was 78.2 percent of the long-run average and prices increased by 29 percent. This, however, is one of the years in which the decline in yield was offset almost perfectly by the rise in price—the value of the reduced crop at the new price was 1 percent greater than would have been the value of a crop of normal yield at the old price.

The 75 percent of normal yield is an arbitrary point of adjustment—any level could be used if agreement is reached between contracting parties. It should be noted, however, that this type of adjustment is insisted in that no provision is made for increasing the rent in those years when the land is unusually productive, that is, the "bumper" crop years.

TABLE 6. AVERAGE RENT PAID IN IOWA, AVERAGE RENT ADJUSTED FOR PRICE CHANGES AND AVERAGE RENT ADJUSTED FOR PRICE AND PRODUCTION CHANGES.

Year	Average cash rent per acre Iowa*	Index of all farm prices (1926=100)	Rent adjusted for price changes†	Index of corn yields‡ (1926=100)	Rent adjusted for price and yield changes§
1953	\$13.64	187	\$14.10	137	\$19.32
52	12.64	198	14.93	159	23.74
51	12.29	216	16.29	111	18.08
50	10.95	184	13.87	124	17.20
1949	11.06	178	13.42	118	15.84
48	10.42	222	16.74	155	24.95
47	9.51	211	15.91	78	12.41
46	8.59	163	12.29	145	17.82
1945	8.46	135	10.18	111	11.30
44	8.22	128	9.65	133	12.83
43	7.49	132	9.95	140	13.93
42	6.78	116	8.75	153	13.39
41	6.20	90	6.79	131	8.89
1940	5.98	69	5.20	134	6.97
39	5.80	67	5.05	134	6.77
38	5.76	72	5.43	119	6.46
37	5.57	93	7.01	114	7.99
36	5.59	83	6.26	51	3.19
1935	5.07	83	6.26	98	6.13
34	4.88	56	4.22	55	2.32
33	4.33	41	3.09	112	3.46
32	6.00	41	3.09	109	3.37
31	7.31	61	4.60	84	3.86
1930	7.65	88	6.64	87	5.78
29	7.75	103	7.77	101	7.84
28	7.64	102	7.69	105	8.07
27	7.60	97	7.31	89	6.51
1926	7.54	100	7.54	100	7.54
Total	\$220.72		\$250.33		\$295.96

\* B. French and W. Chryst. Prices affecting Iowa farmers 1910-49. Dept. Econ. and Soc., Iowa State College, Ames. The 1950 through 1953 observations are from the Bureau of Agricultural Economics, U. S. Dept. Agr.

$$\dagger \text{Adjusted rent} = \text{base rent} \times \frac{\text{current price index}}{100}$$

‡ Index computed from data compiled by the Iowa Assessor Annual Farm Census. Department of Agriculture, Iowa. Yearbooks 28 through 53. The 1953 observation is a preliminary estimate of the Bureau of Agricultural Economics, U. S. Dept. Agr.

$$\S \text{Adjusted rent} = \text{base rent} \times \frac{(\text{Current price index}) (\text{current yield index})}{10,000}$$

The way in which the sliding-scale rent would have functioned over a period of years is shown in table 6. A hypothetical situation is used in which 1926 average Iowa cash rent is taken as a base and adjusted according to changes in the index of Iowa prices received. From 1926 through 1930, use of the price correction factor would have made little difference in the amount of rent paid. Following 1930, however, the price-corrected rent fell more rapidly and reached a lower level than actual rent paid, the price-corrected rent in 1932 (\$3.09) being about half of the actual rent paid (\$6.00). In 1935, 1936 and 1937, the price-adjusted rent would have been greater than the average rent paid, but it would have delined with the "slump" of 1938 and remained lower than the average rent paid until the beginning of the war years. But, with the increase in prices accompanying the war, adjusted cash rent would have exceeded the average cash rent paid from 1941 through 1949. In 1949, the adjusted cash rent was substantially reduced as a result of the price decline.

#### ADJUSTMENT FOR PRICE AND PRODUCTION

Table 6 also offers a comparison of rents adjusted for price only with rents adjusted for both price and production. The adjustment for both price and production is obtained by applying a yield correction factor to the price corrected base rent.<sup>50</sup> Thus, the series indicates what the base rent would have been in each year had it been adjusted for changes in prices received by farmers and changes in production as reflected by corn yields. A comparison of the series illustrates the need for the use of both factors in the adjustment process.

Both processes offer essentially the same result for the period through 1933. In 1934, however, the first year to place a strain upon the sliding-scale rent, the two processes resulted in substantially different outcomes—the price-adjusted rent, in the above example, increased with the increase in prices from \$3.09 to \$4.22. Had production changes been taken into account throughout the period, the rent would have declined from \$3.46 to \$2.33. The difference in results is even more pronounced in the 1936 situation. The two techniques offered approximately the same rent in 1935, i.e., \$6.25 for the price plan and \$6.10 for the price plus production plan. The price level remained unchanged between 1935 and 1936 with the consequence that the price-corrected rent remained unchanged. Corn yields, however, declined nearly 50 percent, and, had this been taken into account, the rent would have been adjusted downward to \$3.16. Similarly, in 1947, adjustment for price alone would have resulted in an increase in rent, while consideration of both price and production would have reduced the rent about one-third. The same circumstances were applicable in 1953 when the adjustment for prices alone would have resulted in a reduction in rent substantially less than the reduction necessitated by inclusion of production changes in the adjustment formula.

The argument is sometimes advanced that the landlord also has commitments which must be met and that use of these flexible schemes unduly favors the tenant. If viewed over the long run, this hypothesis does not appear to be true. For example, considering the hypothetical example used in table 6, either of the flexible plans discussed above would have yielded considerably more income than was actually paid for Iowa farmland for the period under observation. The sum of the average annual rents actually paid for the 1926-53 period amounted to \$220.72, whereas the sum of the price-corrected rents is \$250.33 and the sum of the price- and production-corrected rents is \$295.96. In the long run, any

<sup>50</sup>The formula for computing the price and production corrected rent is:

$$\text{Rent} = \text{base rent} \frac{(\text{current yield index})}{(\text{base yield index})} \frac{(\text{current price index})}{(\text{base price index})}$$

It is recognized, of course, that for a single commodity this is identical with the share rent in that rent paid in physical equivalents in any given year will hold the same relation to the total physical product as the base rent in physical equivalents was to the total physical product in the base year.

successful adjustment plan must provide a return to the landlord greater than the fixed cash rental because of the assumption of additional risks on his part. The tenant has protection from major unforeseen changes in prices and production and he must decide, from the viewpoint of his capital and equity position, whether this protection is worth the additional cost.

#### THE MISSOURI MULTIPLE COMMODITY PLAN

The Missouri plan takes a somewhat different approach to the problem of adjusting rent.<sup>51</sup> The landlord and tenant estimate the gross income of each major enterprise at the beginning of the lease year and agree upon the base per-unit price of each of the major farm products produced on the farm and on a base rent per acre. At the end of the lease year, when the rent is due, the per-unit price of each commodity is determined, and the percentage change is applied against the estimated income from the enterprise. The base rent is then adjusted by the ratio of the revised estimated gross income to the original estimated gross income.

An example of the use of the plan is presented in table 7. The assumption is made that the parties agreed upon a rent of \$12 per acre based upon expectations of a \$6,000 gross farm income. During the production period, prices changed in such a way that the gross income was \$4,605, or \$1,395

<sup>51</sup>Timmons, op. cit. pp. 21-24. Requests for over 10,000 of the lease forms based upon this plan were received by the Missouri Extension Service.

TABLE 7. ILLUSTRATION OF CASH RENT ADJUSTMENT MADE BECAUSE OF CHANGE IN FARM PRICE LEVEL BETWEEN TIME RENT CONTRACT IS DRAWN AND TIME RENT MUST BE PAID.\*

Probable production according to contract agreement	Estimated income	Farm price for each product		Percentage change	Resulting income
		At time contract is drawn	At time rent is due		
Enterprise					
Hogs.....	\$3,000	\$12.00	\$ 9.00	-25	\$2,250
Beef.....	1,200	15.00	12.00	-20	960
Butterfat.....	1,200	0.72	0.60	-17	995
Eggs.....	600	0.45	0.30	-33	400
Total.....	\$6,000				\$4,605

$$\text{Percent decrease in income} = \frac{1,395}{6,000} = 23.2$$

$$\text{Adjusted rent} = \$12 - \left[ \$12 \left( \frac{232}{1,000} \right) \right] = \$9.22$$

\* A modification of a table appearing in Timmons, op. cit., p. 22.

less than the expected income. The rent under the plan would then be correspondingly reduced by 1,395/6,000, or 23.2 percent (\$2.78), to \$9.22 per acre. Had prices risen by the proportions shown in table 7, the rent would have been adjusted upward by 23.2 percent, or to \$14.78. The advantage of such a plan is twofold: (1) Rent is associated directly with the enterprises of the farm business and (2) rent is based upon the current income, as affected by prices, of the farm.

An alternative provision is offered whereby the cash rent can be adjusted for changes in both prices and production (table 8).<sup>52</sup> In the use of this plan, the landlord and tenant determine the cash rent by the use of accepted shares and further agree upon a normal yield for each crop for the farm. The rent is then adjusted in line with the deviation of the current county yield from the long-run average yield. Thus, if, as shown in table 8, the landlord and tenant had agreed to base the rent for corn land upon a 40-bushel yield, and the county average yield for a given year was only 90 percent of the long-run average, rent would be paid upon the basis of a 36-bushel yield. Similar adjustments would be made for other commodities produced on the farm, with the total rent for the farm being the sum of the adjusted rents for each crop.

The plan has several advantages in that the cash rent is adjusted to current production and current prices. One of the more desirable features, however, is the partial dissociation of production on the farm from rent. This enables the tenant to receive the return to his management if superior, or conversely, frees his landlord of its cost if inferior. This feature is incorporated in another plan presented later.

#### THE CONTRIBUTIONS APPROACH

This plan seeks to divide the farm income in the same ratio as the parties contribute to the farm firm.<sup>53</sup> The value of the contributions may

<sup>52</sup>Timmons, op. cit. p. 23.

<sup>53</sup>See: B. H. Kristjanson and E. Solberg. Farm rental bargaining in North Dakota. N. D. Agr. Exp. Sta. Bul. 372. March 1952.

Max Tharp. Your farm lease. Bureau of Agricultural Economics, U. S. Dept. Agr. Misc. Pub. No. 627. June 1949.

Owen Brough, Bernard Parrish and Chas. Elkington. Farm leasing under irrigation. Bureau of Reclamation, United States Department of Interior, Wash. State College and Farmers Home Administration, U. S. Dept. Agr. Ephrata, Washington. February 1952.

J. B. Cunningham. What is a fair lease? Hoard's Dairyman 92:20. 1948.

C. B. Ratchford. Determining the rent in share and cash rental arrangements. So. Farm Mgt. Ext. Pub. No. 4. Raleigh. 1952.

Rental Arrangements in the Coastal Plain. N. C. Agr. Ext. Serv. Cir. No. 370. August 1952.

TABLE 8. ILLUSTRATION OF CASH RENT ADJUSTMENT MADE BECAUSE OF CHANGE IN CROP PRICES AND PRODUCTION BETWEEN TIME RENT CONTRACT IS DRAWN AND TIME RENT MUST BE PAID.\*

Items	Acres	Rent share	Rent acres	Yield			Value		
				Normal for farm (units)	Normal for county (%)	Current for farm	Price	Per acre	Total rent
Corn.....	10	1/2	5.0	40	90	36	\$ 1.50	\$54.00	\$270.00
Wheat.....	10	1/3	3.3	20	75	15	1.60	24.00	80.00
Meadow.....	10	1/2	5.0	2	50	1	16.00	16.00	80.00
Pasture.....	10	x	x	x	x	x	x	10.00	100.00
Buildings.....	x	x	x	x	x	x	x	x	300.00
Total cash rent for this year.....									\$830.00

\* Table reproduced from Timmons, op. cit., p. 23.

be measured: (1) by allowing the actual cash outlay for the item supplied or (2) when no cash outlay is involved, by allowing the "opportunity cost" of the investment or expenditure.<sup>54</sup> These total costs are then summed for each party and the gross receipts are divided in the ratio that each party's costs hold to the total outlay. The mechanism of the method is illustrated in table 9.

In this example, the opportunity costs on the landlord's investments, plus his actual cash outlays, amount to \$3,315, or 30.0 percent of the total estimated operating expenses of the farm. Consequently, of the gross farm income of \$15,000, he receives 30 percent, or \$4,500. The tenant, on the other hand, was responsible for 70 percent of the contributions and thus receives 70 percent of the income, or \$10,500.

This provision allows for the predetermination of the method of division; the variation in prices and production are accounted for in the same way as in a share agreement. Also, variation in costs are taken into account, and the procedure is relatively simple and should be feasible administratively. The division of the net return is known in advance with a fair degree of accuracy and is as certain as it is possible to determine contractually.

In a broader framework, however, the plan has shortcomings. First, it is redundant in that land values are used, in part, to determine the return to land. The land values are themselves a function of the return to land. Overestimating the value of land could result in higher rents, which would result in still higher values, which would result again in higher rents, and the process would be repeated. But unless the method were adopted upon a wide scale, this is not likely to be a serious limitation.

<sup>54</sup>The "opportunity cost" is the income foregone by devoting the resource to a particular use. For example, if \$1,000 invested in stocks or bonds would earn \$50 in a year, then the "opportunity cost" of using this resource in a farming operation is \$50.

TABLE 9. THE CONTRIBUTIONS APPROACH TO THE DIVISION OF RETURNS ON A RENTED FARM (HYPOTHETICAL EXAMPLE).

Division of expenses:			Contributions	
Item	Amount	Rate	Landlord	Tenant
Land and buildings	\$30,000	5%	\$1,500	
Taxes			615	
Maintenance				
Insurance			450	
Depreciation				
Machinery	10,000	5%		\$ 500
Depreciation on machinery		10%		1,000
Taxes, insurance				85
Livestock	10,000	5%	250	250
Operating expenses	3,000			3,000
Labor, 12 months	200/month			2,400
Management			500	500
Total contributions			\$3,315	\$7,735

Landlord's contribution relative to the total:  $\frac{3,315}{11,050} = 30.0\%$

Division of income:  
 Income: \$15,000  
 Landlord's share = \$15,000 (0.30) = \$4,500  
 Tenant's share = \$15,000 (0.70) = \$10,500

Second, the use of land values means that rent is determined by bargaining between buyers and sellers of land rather than between landlords and tenants. Land values are based upon the expected return over a long period of time while the tenant operator may only be concerned with those production periods in the immediate future. Thus, basing rent upon land values in a period of rising prices results in the land buyer's anticipations with respect to future land returns becoming a current reality to the tenant. To the extent that the buyer's anticipations diverge from current realizations, a cost is incurred which, through the contribution approach, may be shifted to the tenant.

#### ADJUSTING RENTS FOR PRICE AND PRODUCTION CHANGES

Efforts have been made in the past to develop methods of adjusting rent that will (1) protect tenants and landlords from adverse effects of changes in prices and yields, (2) provide tenants with the maximum incentive to use their managerial abilities to the utmost and (3) protect landlords from the consequences of inferior tenant-management decisions.<sup>55</sup> These plans have features of both the cash and share methods of renting since they propose to adjust the rent in accordance with changes in prices and production yet permit the tenant's return to reflect the quality of his management.

To identify the return to management with the tenant, the adjusting mechanism for changes in production must be partially dissociated from the production of the specific farm. To this end, township, county, crop-reporting district or state yield data may be used. Adjustment for production changes is made by correcting the base rent for the annual deviation from the area average.

Further, recognition must be given to the fact that under average management and because of technological advancements (such as hybrid seeds, new fertilizers and new knowledge with respect to weed control, cultivation and similar items) yields have an upward trend over time. Thus, if the long-run average yield were used as a base, the current yield under average management would usually be considerably in excess of the long-time average yield and this would necessitate an annual adjustment in favor of the landlord. This difficulty would be avoided if a moving average were used for the base yield.

It is probable that landlords and tenants do not desire to make adjustments for minor changes in yields—that they could agree upon a zone of permissible variation in production and make only those adjustments that would correct the rent back to the nearest mutually accepted limit of tolerance.

An application of this technique may be seen in the operation of a lease where it is assumed that landlord and tenant have agreed to make the rent

<sup>55</sup>Timmons, op. cit. p. 21.



TABLE 10. DETERMINATION OF RENT FOR A HYPOTHETICAL FARM OF 200 ACRES USING 1926 APPROXIMATE PRICES AND YIELDS.\*

Item	Acres	Landlord's share	Yield	Units	Price	Value of landlord's share
Corn.....	80	40	35 (bu.)	1,400 (bu.)	\$ 0.70	\$ 980
Oats.....	40	20	30 (bu.)	600 (bu.)	0.35	210
Clover.....	40	20	1.25 (tons)	25 (tons)	20.00	500
Pasture and farmstead.....	40	x	x	x	7.50	300
Total.....	200	x	x	x	x	\$1,990

$$\text{Base rent} = \frac{\$1,990}{200} = \$9.95 \text{ per acre}$$

\* Yields and prices approximately those obtained in 1926. Data rounded to achieve simplicity of presentation. Corn-corn-oats-clover rotation assumed.

flexible with respect to prices and to make corrections for changes in production when the state (or crop-reporting district, township or county) average yield deviates more than 15 percent from a 5-year moving average (see table 11). The correction for price changes will be the same as discussed in previous provisions. During bumper crop years in which the yield deviates to 125 percent of the moving average, the yield correction factor would be 125/115 and the rent would be increased by 8.7 percent; in years of drouths or wet seasons when the yield is only 75 percent of the moving average, the correction factor is

TABLE 11. DETERMINATION OF A CORRECTION FACTOR FOR CHANGES IN PRODUCTION USING A MOVING AVERAGE OF CORN YIELDS AS A BASE.

Year	Average yield for Iowa*	5-year moving average of yields	Current yield as a percent of moving average	Correction factor for rent†
1953.....	53.5	50.6	105.7	.....
52.....	62.2	52.0	119.6	1.04
51.....	43.1	45.7	94.3	.....
1950.....	48.2	48.4	99.6	.....
49.....	46.1	47.5	97.0	.....
48.....	60.5	48.6	124.5	1.08
47.....	30.5	47.5	64.2	0.76
46.....	56.7	53.4	106.2	.....
1945.....	43.5	52.2	83.3	0.98
44.....	52.0	53.7	96.8	.....
43.....	54.7	53.8	101.7	.....
42.....	59.9	52.1	115.0	.....
41.....	51.0	49.0	104.1	.....
1940.....	51.0	42.8	119.2	1.04
39.....	52.2	40.3	129.5	1.13
38.....	46.3	34.2	135.4	1.18
37.....	44.6	33.6	132.7	1.15
36.....	20.0	33.3	60.0	0.71
1935.....	38.4	35.8	107.3	.....
34.....	21.6	34.9	61.9	0.73
33.....	43.6	38.5	113.2	.....
32.....	42.7	38.0	112.4	.....
31.....	32.9	36.5	90.1	.....
1930.....	33.9	37.7	89.9	.....
29.....	39.5	39.7	99.5	.....
28.....	41.2	37.4	110.2	.....
27.....	34.9	37.3	93.6	.....
26.....	39.0	39.3	99.2	.....
1925.....	43.9	40.1	109.5	.....
24.....	28.0	40.5	69.1	0.81
23.....	40.5	.....	.....	.....
22.....	45.0	.....	.....	.....
21.....	43.0	.....	.....	.....
1920.....	46.0	.....	.....	.....

\* Iowa Annual Assessor's Reports. 1953 observation, Bureau of Agricultural Economics, U. S. Dept. Agr. Preliminary estimate.

† Derived by dividing the current yield as a percent of moving average by a base of 115 for those years when the percentage is in excess of 115; by 85 for those years when the percentage is less than 85.

75/85, which would reduce the rent 11.8 percent or to 88.2 percent of its uncorrected value.<sup>56</sup>

An example of the use of the plan is shown in tables 10 and 11. Here it is assumed that landlord and tenant agree that the base rent will be the amount that the landlord would have received under the crop-share plan with average management (table 10).<sup>57</sup> It is assumed that they will further agree that the rent will be adjusted in accordance with changes in the prices of all farm products and changes in production when such changes exceed the range of permissible variation, here assumed to be from 85 to 115 percent of a 5-year moving average. Corn yields are used as indicators of production changes. The method of determining the correction factor is shown in table 12.

The mechanism of the price-adjusting feature is the same as the one previously discussed and in widespread use at one time in Iowa. Thus, from 1926 through 1933, the rent paid on the farm used in this example would have been the same as the flexible cash rent, using \$9.95 as a 1926 base.

<sup>56</sup>This method differs from those discussed earlier in three respects: (1) adjustment can be either in favor of the landlord or tenant, depending upon the circumstances, (2) the trend in yields is taken into account and (3) the adjustment is less abrupt in that the closest limit is used as the new base. Under the other plan, a 1-percent change in yield, from 74.5 to 75.5 of normal, would result in a 25-percent change in rent—with this plan the change would be from 88.8 percent to 87.6 percent, or 1.2 percent.

<sup>57</sup>This would represent the maximum as the landlord would not bear those expenses commonly borne by the crop-share landlord. Actually, the initial rent would be expected to be more than the cash rent opportunity but less than the share rent.

TABLE 12. DETERMINATION OF RENT UNDER A PLAN PROVIDING FOR CHANGES IN PRICES AND UNUSUAL CHANGES IN PRODUCTION.

Year	Index of prices*	Base rent corrected for price†	Production correction factor‡	Rent corrected for price and production§
		(dollars)		(dollars)
1953.....	197	19.60	.....	19.60
52.....	198	19.70	1.04	20.49**
51.....	216	21.49	.....	21.49
50.....	184	18.31	.....	18.31
1949.....	178	17.71	.....	17.71
48.....	222	22.09	1.08	23.86**
47.....	211	20.99	0.76	15.95**
46.....	163	16.22	.....	16.22
1945.....	135	13.43	0.98	13.16**
44.....	128	12.74	.....	12.74
43.....	132	13.13	.....	13.13
42.....	116	11.54	.....	11.54
41.....	90	8.96	.....	8.96
1940.....	69	6.87	1.04	7.14**
39.....	67	6.67	1.13	7.54**
38.....	72	7.16	1.18	8.45**
37.....	93	9.25	1.15	10.64**
36.....	83	8.26	0.71	5.86**
1935.....	83	8.26	.....	8.26
34.....	56	5.57	0.73	4.07**
33.....	41	4.08	.....	4.08
32.....	41	4.08	.....	4.08
31.....	61	6.07	.....	6.07
1930.....	88	8.76	.....	8.76
29.....	103	10.24	.....	10.24
28.....	102	10.15	.....	10.15
27.....	97	9.65	.....	9.65
26.....	100	9.95	.....	9.95
Total.....		330.93		328.10

\* Weighted average of all farm prices received for Iowa. 1953 observation. Preliminary estimate from Bureau of Agricultural Economics, U. S. Dept. Agr.

† Base rent (\$9.95) multiplied by index of prices.

‡ Corn yield as a percent of 115 percent of 5-year moving averages for those yields in excess of 115 percent; as a percent of 85 percent of the moving average for those observations less than 85 percent of the moving average.

§ Production correction applied to price corrected rent.

\*\* Rent adjusted for unusual changes in production.

In 1934, however, the production-adjusting device would have come into use and the rent paid would have been 73 percent of the price-adjusted rent. This is determined by using 85 percent of the moving average yield of corn as a base for correction. Similarly, in 1936, when the ordinary flexible lease would have provided no relief to the tenant although yields were substantially below normal, adjustment for the production change would have reduced the rent to 71 percent of the rent based upon price flexibility alone. The following year, when both prices and yields increased substantially, there would have been a substantial adjustment in favor of the landlord. In the remaining years of the late thirties, the production adjustment and the price adjustment features would have worked in opposite directions. One would have provided the landlord with some of the benefits of unusually good crops, while the other protected the tenant from the effects of low prices. To the extent that these effects did not offset each other, the difference was reflected in the rent. The rent was adjusted for production changes in 1947 because of the drouth and again in 1948 because of the good crop.

In applying this technique to an example covering the period from 1926 through 1953, the production adjustments are distributed in such a way that those benefiting the tenant nearly offset those benefiting the landlord. Thus, the landlord who rents his farm over a long period is left in nearly the same position as he would have been had he rented under the flexible cash plan; the flexible cash plan would have yielded \$330.93 per acre, while the combination price and production plan would have yielded \$328.10, or \$2.83 less. This difference would have amounted to \$0.10 per acre per year. While few tenants rent for such a prolonged period, all of the tenants would have had protection from the adverse prices and yields.

A further feature of the plan is that while the landlord receives a rent that is related to the share rent under average management, a tenant with superior managerial ability is able to retain all of the returns due this superiority. Thus, in the example used above, had the tenant, through the early adoption of improved methods of cultivation, the increased use of new types of fertilizers and plant varieties, and the use of recently developed insecticides, succeeded in increasing his yields more rapidly than the average farmer, he would have been permitted to retain these benefits; conversely, to the extent that the tenant fails to adopt new methods at the average rate, he alone bears the cost and not the landlord. In addition to providing a rent that is based upon current price and production relationships, the plan provides an incentive for reduction of the "informational lag," i.e., the difference that exists between knowledge and practice.

#### ADJUSTING RENTS FOR PRICE, COST AND PRODUCTION CHANGES

Methods can be devised for stabilizing the net return ratio by reducing the effects of changes in

prices, costs and production. When these changes are known with complete accuracy, their effect upon the net return ratio can be eliminated entirely. The process of reducing the variation in the net return ratio is much more hazardous, however, when these changes must be estimated. While these processes have not been refined to the point that their general use can be recommended, the basic mechanism is presented to stimulate discussion and further study.

#### DETERMINATION OF THE ADJUSTMENT NEEDED

The amount that must be transferred between the landlord and tenant may be determined arithmetically. The amount of the adjustment, A, may be determined from the following formula:

$$A = N (\Delta R_r - \Delta C_r) + \Delta C_l - \Delta R_l$$

where N is the net return ratio to be stabilized;  $\Delta R_r$  is the change in farm gross return or effect of changes in prices and production;  $\Delta C_r$  indicates the change in farm costs;  $\Delta C_l$  measures the change in the landlord's costs; and  $\Delta R_l$  represents the changes in the landlord's gross returns. Depending upon the nature of the changes, the adjustment (A) may be either positive or negative. If positive, an amount must be transferred from tenant to landlord in order to restore the original net return ratio; if the adjustment (A) is negative, the transfer must be made to the tenant.<sup>58</sup>

The cost and return data from an Iowa livestock-share rented farm for 1943 through 1945 are shown in table 13. The net return ratio in the first year (1943) is 49.9, 57.1 in the second year and 51.2 in the third year. If it is assumed that the landlord and tenant desire to stabilize the net return ratio through time at the level of the first year, the formula above may be used. Thus, in 1944, the computation of the adjustment would be:

$$A = 0.499 (-1,525 - 3,459) + 1,226 - (-864) = -\$397.$$

The computation for the adjustment factor in 1945 would be:

$$A = 0.499 (-3,727 - 1,044) + 383 - (-1,928) = -\$70.$$

The application of the adjustment is shown in table 14. By transferring \$397 from landlord to tenant in 1944, the landlord's share of the farm

<sup>58</sup>The following equation represents the net return ratio (N)

$$\frac{R_l - C_l}{R_r - C_r - C_l} = N$$

where  $R_l$  is the gross return to the landlord,  $C_l$  is the landlord's costs,  $R_r$  is the gross return to the total farming operation and  $C_r$  is the tenant's costs, all in the base year. The rent adjustment (A) is added to the landlord's net return to stabilize N when prices, costs and production have changed, or:

$$\frac{(R_l + \Delta R_l) - (C_l + \Delta C_l) + A}{(R_r + \Delta R_r) - (C_r + \Delta C_r) - (C_l + \Delta C_l)} = N$$

when  $\Delta R_l$  is the change in the landlord's gross return;  $\Delta C_l$  is the change in the landlord's costs;  $\Delta R_r$  is the change in the farm's gross return;  $\Delta C_r$  is the change in the tenant's costs; and  $\Delta C_l$  is the change in the landlord's costs.

From the two equations, it is apparent that:

$$A = N (\Delta R_r - \Delta C_r) + \Delta C_l - \Delta R_l.$$

TABLE 13. INCOME AND COST DATA FROM LIVESTOCK-SHARE RENTED FARMS FROM 1943 TO 1945 WITH CHANGES IN INCOME AND COSTS BETWEEN 1943 AND 1944, AND 1943 AND 1945.

Year	Gross income		Costs		Net income		Net income return ratio
	Farm	Landlord	Farm	Landlord	Farm	Landlord	
1943	(dollars) 14,008	(dollars) 6,542	(dollars) 3,471	(dollars) 1,280	(dollars) 10,537	(dollars) 5,262	49.9
1944	12,483	5,678	6,930	2,506	5,553	3,172	57.1
1945	10,281	4,614	4,515	1,663	5,766	2,951	51.2
Change from 1943							
	( $\Delta R_f$ )	( $\Delta R_l$ )	( $\Delta C_f$ )	( $\Delta C_l$ )	Net farm income	Net landlord income	Net return ratio
1943	0	0	0	0	0	0	0
1944	-1,525	-864	3,459	1,226	-4,984	-2,090	7.2
1945	-3,727	-1,928	1,044	383	-4,771	-2,311	1.3

net return would have been reduced from 57.1 percent to 49.9 percent. A similar transfer of \$70 in 1945 would have resulted in the landlord receiving 49.9 percent of the net farm income — the same share that he received in 1943.

The formula for determining the adjustment is a general method, applicable to both the cash and share types of renting. While the example used in this section was taken from the records of a livestock-share farm, the same technique is applicable to cash renting arrangements. When the rent is paid in cash,  $R_1$  becomes the difference between the rent paid in the base year and the rent paid in the current year. The changes in total farm returns, total farm costs and the landlord's costs are the other relevant variables.

#### SHORTCOMINGS OF THE METHOD

Complete data are needed to use this adjustment technique. If the landlord and tenant have the data in a form sufficiently complete to use the method cited above, they are in position to use a shorter and more direct means of computing the adjustment necessary to restore the basic net return ratio. The simple plan is to apply the accepted net return ratio to the farm net return as determined from the records, compare the amount each party should have with what he has received and make the appropriate transfer.

If, however, the farm records are not maintained in a form that the direct method of computation can be used, it is necessary to estimate the changes in returns and costs. This may be done by using base amounts and correcting them by index numbers. For example, to take changes in prices and costs into account, the returns in the base year are increased or lowered by changes in the index of value of livestock products sold in

Iowa if the farm is a livestock farm, or the index of the value of all farm products sold if the farm is of the general type. Estimation of changes in costs may be similar in that changes in the base costs of the farm operation and the landlord may be estimated by using changes in the index of production costs.

The use of index numbers in the adjustment computation process is hazardous since the change in the series may not closely approximate the change actually experienced on a specific farm. If this is true, use of the above-described method of rent adjustment may contribute to increased variability of the net return ratio rather than to its stabilization. At this time, it is apparent that any widespread use of a plan to adjust the net return ratio on the basis of changes in indexes of prices, costs and production must await the development of indexes dealing with regional measures of changes in returns by type of farming, costs by type of farming, landlord costs by type of tenure and similar related items.

#### SOME RENT-ADJUSTMENT EXPERIENCES IN OTHER COUNTRIES

The problem of keeping farm rentals functioning effectively in a changing environment is not unique to Iowa or to the United States. Many countries have recently made interesting modifications in rental provisions.

Several northern European countries have enacted landlord-tenant legislation. In preparing such legislation, it was recognized that tenant mobility, caused principally by the dissolution of rental contracts in an effort to adjust rental situations, decreased the output from those resources committed to agricultural production. In light of this effect, steps have been taken in some countries to increase the length of tenure expectation of tenant operators. This has been accomplished by establishing a statutory minimum for the length of lease; in France, the minimum length of lease is 9 years;<sup>59</sup> in the Netherlands, 6 to 12 years is the minimum term, depending upon the improve-

TABLE 14. COMPARISON OF ADJUSTED AND UNADJUSTED NET RETURN RATIO FOR A LIVESTOCK-SHARE RENTED FARM.

Year	Net income		Adjustment	Landlord's adjusted net	Net return ratio	
	Farm	Landlord			Unadjusted	Adjusted
1943	(dollars) 10,537	(dollars) 5,262	(dollars) 0	(dollars) 2,775	49.9	49.9
1944	5,553	3,172	-397	2,881	57.1	49.9
1945	5,766	2,951	-70		51.2	49.9

<sup>59</sup>L. Prault. Les baux ruraux. Federation Nationale de la Propriete Agricole, Paris, n. d. Sec. 17.

Albert Alexander Costa. Tenant-landlord relations and French law. Paper presented at the Conference on World Land Tenure Problems. University of Wisconsin, Madison. Nov. 5, 1951. (mimeo rept.)

ments on the land;<sup>60</sup> and in England, while no minimum length is set, the tenant cannot be evicted as long as he farms the land in a way that is satisfactory to the Ministry of Agriculture.<sup>61</sup>

Following the lengthening of the lease term by statute, with the consequent elimination of the avenue of annual re-negotiations and of changing partners as means of adjusting rent, the necessity of providing flexibility in rental rates assumed increasing importance. In response to this increased need, each country developed procedures providing for the right of petition for rental change by either party.

#### IN FRANCE

In France, an advisory commission on leases made up of landlords, tenants and public officials was formed for each of the political subdivisions (corresponding to counties in the United States). This commission established a normal rent for each farm in its jurisdiction. The landlord and tenant are free to bargain in regard to the rent in the usual manner. If, however, a rent is accepted that departs from the norm more than 10 percent, either party may petition the courts for a re-evaluation of the rent, in which case acceptance of the decision of the court, based upon the advisory commission's findings, is compulsory. The rent is fixed for the duration of the contract and cannot be changed by negotiation between the parties without approval of the court. In the event of a poor crop year, however, the tenant may petition the court to have his rental obligation reduced. Also, either party may, at the end of each year, have the contract reopened by the courts for a re-evaluation of the rent. Thus, whenever the rent, and consequently, the division of returns, exceeds the limits of tolerance of either party, he may look to the courts for redress; and, in determining the adjustments, the court has the counsel of specialists in rental matters.

The French law provides for inter-lease type changes without changes in farms or changes in tenants. Share renting is permitted, but at the end of each 3-year period of the lease, either party may request the courts to convert the share lease to a standard form lease as described above. If such a request originates with the tenant, the landlord can defeat the change by personally assuming the operation of the farm.

#### IN ENGLAND

The British law is similar in many respects to the French. Again, the parties are free to bargain, but either may request that the amount of rent be submitted for arbitration.<sup>62</sup> Upon receiving a request for arbitration, the Minister of Agri-

culture, or his delegate, will appoint an arbitrator with specialized training to examine the conditions of the lease and set a rental value on the holdings. The decision of the arbitrator is final. A request for arbitration cannot be submitted more often than once each 3 years.

#### IN THE NETHERLANDS

The Dutch land law provides that every rent contract must be approved by an administrative body known as the Land Chamber, which is formed from landowners, tenants, members of the judiciary and economists.<sup>63</sup> The parties are free to negotiate, but the amount of the rent must be approved by the Land Chamber. Such approval is not forthcoming unless ". . . the general interests of agriculture are not hurt and the net revenue to be expected when management is proper guarantees the tenant a fair gain."<sup>64</sup> The rent is based upon the expected net return of the farm and the tenant's claim on the net income for family living and production expenses is considered a prior claim.

The administrative procedure is similar to arrangements in France and Britain. Either party may appeal to a special court, made up in the same way as the Land Chamber, which deals exclusively with rental problems. The parties, either separately or together, may request a revision in the rent each 3 years.

#### POSSIBLE USE OF RENTAL COMMISSIONS

The role of the rental advisory commission used extensively in other countries might be further examined for possible use in the United States. In Iowa, hundreds of letters are received each year by the Iowa State College, requesting information on rental rates and agreements, and extension service personnel counsel additional hundreds. Throughout the United States, a sizable number of studies designed to find answers to rental problem are being carried on by state agricultural experiment stations and the U. S. Department of Agriculture, and many publications dealing with tenure arrangements are distributed each year in answer to requests from landlords and tenants.

Despite the appreciable magnitude of this activity, little attention is directed toward the problems of a specific landlord and tenant combination. This lack is one of necessity; funds and personnel must be extended as far as possible, with the result that tenure studies can only develop the appropriate generalizations and leave the specific applications to individuals. It would seem, therefore, that there is need for another type of service in the farm rental field—one that would be available to landlords and tenants to assist them in solving specific rental problems.

Such a service, offered through a rental advisory board at a county or district level, could serve

<sup>60</sup>Cornelius D. Scheer. An appraisal of the place of equitable tenancy arrangements in a progressive agriculture (The Netherlands). Paper presented at the Conference on World Land Tenure Problems. University of Wisconsin, Madison. Nov. 5, 1951. (mimeo rept.)

<sup>61</sup>John Stuart Hill. Equitable tenancy arrangements in progressive agriculture. Paper presented at the Conference on World Land Tenure Problems. University of Wisconsin, Madison. Nov. 29, 1951. (mimeo rept.)

<sup>62</sup>Hill, op. cit.

<sup>63</sup>Scheer, op. cit.

<sup>64</sup>Ibid. p. 3.

three principal needs: (1) exchange of information, (2) advice and (3) arbitration. Considering these in order, the exchange of information would be with respect to the availability of farms or tenants. The advisory board could act as a clearing house for tenants seeking farms and for landlords seeking tenants. The landlord could list his farm with the board, describing its resources and giving his preferences with respect to the rental arrangement. The tenant seeking a farm would give information on such items as age, experience, amount of labor available and quantity and type of machinery and livestock. With this data available, the board would be in a position to provide landlords and tenants with a wider range of opportunities than are generally known to individual landlords and tenants.<sup>65</sup> In a recent survey in north-central Iowa, 88 percent of the tenants and 62 percent of the landlords viewed the idea of a landlord-tenant exchange with favor.<sup>66</sup>

In fulfilling its second function, advice, the board in its work with rentals would gain knowledge with respect to the productivity of resources and the operation of rental arrangements. From this position, they would be prepared to advise on measures necessary to establish the appropriate level of rent. Further, they could make recommendations with respect to adjustments necessary to keep the division of net returns within the limits of tolerance of landlords and tenants and to achieve a reduction in tenant mobility through the maintenance of a workable situation. It would be expected that such a board of public-minded citizens would be alert to the development of modifications needed to permit adoption of technological innovations and to insure proper land use. Additional service could be rendered upon request, in checking the agreement for omission of relevant items and the inadvertent inclusion of provisions which might become a source of conflict between contracting parties.

A third area of operation of the board would be to serve in the capacity of mediator in any disputes arising between the contracting parties. The board, with its personnel having competence with respect to the many aspects of farm tenancy, would be a logical body in which to vest the arbitration function.

Development of a system of advisory boards would require considerable time. One system of organization would provide for the board to be composed of landlords and tenants, serving without pay as public citizens with the assistance of regular public employees. The debt adjustment boards of the 1930's, FHA Advisory Committees and County Extension Program Committees are a few examples of citizens serving in public capacities similar to that required for a rental advisory board. So that the rental advisory boards might render their greatest service, attention should

<sup>65</sup>Some pioneer work in developing this service has been initiated in Iowa. Landlord and tenant exchanges have been organized in two Iowa counties. See: John F. Timmons, *Improving farm rental arrangements in Iowa*. Iowa Agr. Exp. Sta. Res. Bul. 393. 1953. p. 82.

<sup>66</sup>Loc. cit.

be given to the creation of the appropriate machinery several years in advance of the emergence of serious rental problems. Failure to be in position to deal effectively with the problems created by the rigidity of land costs in a declining price economy would increase the severity of the consequences of economic difficulty on farm people.

#### SOME RULES FOR MAKING RENT ADJUSTMENTS

This section reviews some of the conditions that became apparent during the course of this study and are helpful in the selection and carrying out of a flexible renting plan. Factors entering into the rent-adjustment provision can only be established by negotiation between the parties, but in these negotiations several conditions should be taken into account. These conditions are discussed briefly as follows:

*Provision be determined ahead of the crop year and set forth in writing.* To avoid confusion, the rent-adjustment provisions should be worked out in advance of the term covered by the lease. Ample time should be devoted to consideration of the wants of the two parties and development of the mechanics of adjustment. Further, the desires of the parties are much more nearly alike ahead of an abnormal change in price or production. Thereafter, one of the parties would find himself in an unfavorable position asking for an adjustment in the rent.

Setting the agreement forth in writing will be helpful in at least three ways. First, it will assist the parties in arriving at agreement on the process to be used in adjusting the rents; second, it will serve as an understanding throughout the period of the lease; and third, it will provide a means of obtaining enforcement of the provision, if difficulties should arise at the time of settlement.

*Provision to encourage efficient use of resources.* It is in the interest of landlord, tenant and the public that the leasing system provide an incentive for the best use of resources. To this end, flexibility in the leasing system is essential; the prospect of large losses arising through changes in prices, costs and production can act as an effective deterrent to expansion of the farm business to the most profitable level. If this be the case, the income of the contracting parties is reduced and the quantity of farm products available from the resources devoted to agriculture is less than the maximum.<sup>67</sup>

*Provision made for changes in prices.* Within a score of years, the Iowa Farm Price Index varied from a low of 41 (1932 and 1933) to a high of 222 (1948)—a change of more than 500 percent. Within a decade, the index ranged from

<sup>67</sup>This problem, while not dealt with in all of its aspects in this study, is of sufficient interest that the Iowa Agricultural Experiment Station is cooperating with six other Midwestern experiment stations, the Farm Foundation and the United States Department of Agriculture in a study to determine the extent and ways in which leases fail to provide the incentive for efficient resource use. In addition to this regional study, another study is nearing completion in western Iowa dealing with the differences in resource use on owned and rented farms.

69 (1940) to 222 (1948)—a change of 300 percent. A change of almost the same relative magnitude, but in the opposite direction, occurred between 1929 and 1932 when the index declined from 103 to 41.

Depending upon the type of lease employed, the production pattern of the farm firm and the variable and fixed cost ratios, these wide changes in prices can leave a substantial impact upon the division of net returns. The effect is most pronounced in the case of the cash lease, under which a change in prices may reduce the tenant's net income to zero and at the same time leave the landlord's net relatively unchanged, with the result that net return ratio becomes infinity. Conversely, a rapid and unexpected rise in prices with no change in the contractual rent, will result in a windfall gain for the tenant without any change in the landlord's net income, and, as a consequence, the net return ratio may be substantially reduced.

In nearly every case, the net return ratio under share rental plans will be affected by changes in prices of farm products. In the few cases in which landlord and tenant share all expenses in the same ratio that they share total output, changes in prices received will not affect the division of net returns.

*Provision made for changes in costs.* The necessity of leasing arrangements arises from ownership of complementary factors of production residing in different individuals. One may own land, another may supply labor, and capital may be owned by either or jointly by both. The landlord usually supplies the land and all capital fixed to the land; the tenant usually supplies all or part of the labor; the machinery and livestock may be supplied entirely by tenant or partly by the landlord.

Costs of supplying the contributions may change considerably and in different proportions. The costs of supplying land and buildings may not increase as rapidly as the costs of supplying machinery, fertilizer, tractor fuel and related items. The costs of supplying labor is much greater in periods of full employment than in periods during which under-employment or unemployment exists. Interest and taxes, however, respond slowly to changes in the business cycle. These differential changes in costs will result in a change in the division of net returns if compensating adjustments are not made in the lease provisions. A frequent complaint of tenants operating under a livestock-share plan pertained to increases in labor and machinery costs with no offsetting contributions from the landlord or changes in the division of the output of the farm.

*Provision for changes in production.* Variation in production can affect considerably the way in which the returns are divided. The magnitude of the change in the net return ratio depends upon the way in which costs and returns are divided. In the case of the cash lease, under which the landlord usually receives a fixed amount of money as

rent, random changes in production affect only the tenant's income. An unusually good season without compensating changes in prices will result in a higher net income for tenants. Conversely, a poor season, without compensating changes in prices, may mean that the landlord will receive a return greater than total net income of the farm. Then the tenant must deplete his capital resources to meet the rental commitment and deny himself and his family a return upon the labor expended in the production process.

Share-type arrangements afford considerable protection from variations in production. But when costs are not shared in the same ratio as the returns, variation in production, without compensating variations in prices, will change the net return ratio in favor of one party to the contract. For example, suppose the returns are divided evenly on a rented farm. An increase in production, with prices remaining relatively unchanged, will increase the net return of the party bearing the larger part of the cost more, relatively, than the increase in net of the other party. Had production declined, with the above conditions holding, the converse situation would have prevailed.

*Provision be easily workable.* Any rent-adjustment plan used should be thoroughly understood by both parties. It is imperative that both landlord and tenant completely understand what the flexible plan will do under certain circumstances and the limitations of the plan.

Plans that are based upon general levels of prices, costs and production depend upon the maintenance and availability of index series of these factors. The parties should assure themselves that the series they use in their plan is appropriate for their intentions and that the data will be available at the time they make their final settlement. A number of series suitable for use for rent-adjustment are maintained by Iowa State College and the Production Economics Research Branch, Agricultural Research Service, United States Department of Agriculture.

It should be further noted, of course, that any plan used must meet all tests of legality.

#### FURTHER RESEARCH SUGGESTED

Two major lines of farm rental research are suggested by this analysis. These lines of further research needed to relax certain qualifications imposed on the results herein presented are (1) analysis of effects of rental terms in the original agreement upon resource allocation from viewpoints of landlord, tenant and the public, and (2) further refinements in limits of tolerance and further testing of rental adjustment alternatives in terms of meeting the tests of limits of tolerance and efficient resources allocation.

These two lines of continuing study emerge from two basic hypotheses posed by this study. First, in using the "rent norm" concept, this study accepted the ratio of rent to net returns resulting from the original agreement between landlord and tenant. The basis for this acceptance

was the apparent satisfaction with the rental terms by both parties; otherwise they would not have agreed to these terms. For purposes of this study, the rent norm concept proved to be a useful tool in measuring permissible and non-permissible variations in the net returns ratios resulting from factors beyond the control of the two parties. Likewise, the rent norm provides a criterion for testing alternative rent adjustment provisions designed to keep rents within certain limits desired by the two contracting parties. However, this study did not determine the effects of rental terms upon efficiency of resource use from individual or public viewpoints. Nor did it assume that landlord and tenant satisfaction with the ratio of net returns resulting from the original terms of the lease, indicated that the resources committed under the lease were used in the most efficient way. This study was concerned with analysis of (1) reasons why net return ratios depart from rent norms because of factors beyond the control of either landlord or tenant and (2) alternative rent-adjustment techniques for keeping net return ratios from fluctuating beyond certain limits. The task of analyzing the effects of rental terms in the original agreement upon resource allocation in terms of efficiency remains to be done.

Important groundwork for proceeding with this line of study has been laid in the regional leasing project recently completed.<sup>68</sup> The next step is being taken in a regional study designed to determine the relative efficiencies of alternative tenure arrangements upon resource use.<sup>69</sup> Cur-

<sup>68</sup>Virgil L. Hurlburt. Farm rental practices and problems in the Midwest. Iowa Agr. Exp. Sta. Res. Bul. 416. 1954. North Central Regional Publication No. 50. North Central Land Tenure Research Committee.

<sup>69</sup>This study is being undertaken by the North Central Land Tenure Research Committee and initial phases are underway by the Agricultural Experiment Stations of Missouri, Iowa, Nebraska and Kansas with the Agricultural Research Service, United States Department of Agriculture; Farm Foundation and University of Chicago cooperating.

rent phases are concerned with analyzing a limited number of forms of tenure in a few selected areas. Based upon the results of these initial phases, an extended application of the analysis to cover additional tenure forms in other areas throughout the North-Central Region appears to be in order.

The second line of continuing research suggested by this study involves further refinements in limits of tolerance, coupled with further testing of rental adjustments in terms of tolerance limits and resource efficiency. The study revealed that whenever ratios of net returns departed from rent norms in an appreciable degree, individual landlords and tenants resorted to various devices to remedy the departures. Some of these devices yielded satisfactory results; others failed. From the results of this study, it is not possible to delimit limits of tolerance in relation to rent norms that apply generally to all rental arrangements. Further research is needed to determine the feasibility of developing such generalizations. Also, in connection with the research suggested above, rent adjustment alternatives should be tested in terms of effects upon the efficiency of resource use. Further studies should also be concerned with analyzing and developing additional rent adjustment alternatives to compensate for changes resulting from factors beyond the control of landlord and tenant, including price, cost and production changes. This study indicates that important idea "seedbeds" for developing such alternatives are:

(1) The numerous arrangements with which Midwest landlords and tenants are continuously experimenting and

(2) The experiences of other countries with similar problems and comparable frameworks for their solutions.

## APPENDIX A

### TABLES

TABLE A-1. NET RETURN RATIOS OF FARMS OPERATING UNDER THE CASH, CROP-SHARE AND LIVESTOCK-SHARE ARRANGEMENTS: 1920-52.

Year	Cash		Crop-share		Livestock-share	
	Number in sample	Net return ratio	Number in sample	Net return ratio	Number in sample	Net return ratio
1952	10	15.1	10	50.8	10	40.7
1951	10	14.2	10	40.6	10	51.4
1950	10	13.9	10	41.3	10	52.3
1949	10	15.0	10	52.5	10	53.5
1948	10	20.9	10	49.8	10	59.2
1947	10	11.1	10	28.2	10	50.9
1946	10	13.5	10	34.3	10	51.5
1945	10	20.3	10	46.6	10	44.6
1944	10	19.1	10	46.5	10	44.9
1943	10	11.2	10	42.9	10	46.5
1942	10	11.6	10	34.3	10	49.5
1941	10	17.5	10	36.9	10	51.7
1940	10	24.1	10	36.2	10	43.3
1939	10	22.6	10	37.7	10	43.0
1938	10	33.8	10	41.3	10	42.4
1937	10	37.5	10	39.9	10	57.6
1936	10	16.5	10	42.0	10	47.8
1935	10	21.3	10	32.4	10	52.6
1934	10	21.7	10	21.8	10	43.5
1933	10	26.2	10	29.7	10	41.3
1932	10	*	10	*	10	59.6
1931	10	63.2	10	227.2	10	40.9
1930	10	23.1	10	53.1	10	59.1
1929	10	27.8	10	37.8	10	47.1
1928	10	27.8	6	38.6	10	44.6
1927	10	36.5	7	30.2	10	39.1
1926	10	20.6	8	31.6	10	32.8
1925	10	27.0	2	17.1	8	43.8
1924	10	31.5	7	53.6	10	36.7
1923	10	64.1	10	44.3	5	8.6
1922	10	19.2	3	28.2	3	42.9
1921	7	59.3	9	134.7	†	†
1920	†	†	6	131.7	†	†

\* Negative.

† No records available to determine ratio.

TABLE A-2. INDEXES OF PRICES RECEIVED AND PRICES PAID BY IOWA FARMERS FOR SELECTED ITEMS, 1910-53.

Year	Prices received for:			Prices paid for:		
	All farm products (1)	Crops (2)	Livestock and livestock products (3)	Production commodities (4)	Real estate taxes (per acre) (5)	Cash rent (per acre) (6)
1953	188	216	186	*	*	177
1952	201	242	196	*	186	167
1951	219	246	216	*	177	163
1950	186	206	185	209	168	145
1949	176	183	177	197	158	145
1948	222	285	213	201	145	137
1947	212	284	202	185	130	138
1946	161	204	155	144	113	113
1945	134	162	130	128	106	112
1944	127	165	122	126	92	109
1943	130	149	129	124	88	98
1942	115	118	116	114	85	90
1941	89	92	89	100	88	83
1940	68	81	66	88	87	79
1939	66	64	66	89	92	78
1938	71	67	73	90	87	78
1937	92	136	86	94	87	76
1936	83	109	79	88	85	75
1935	82	112	78	87	82	69
1934	54	93	47	79	74	66
1933	40	49	39	70	62	62
1932	40	41	41	72	88	81
1931	60	65	59	81	99	98
1930	87	99	86	96	109	103
1929	115	115	99	104	107	103
1928	99	124	96	106	101	103
1927	95	115	93	102	99	102
1926	100	100	100	100	100	100
1925	103	130	99	99	101	98
1924	84	123	78	94	108	98
1923	79	103	75	92	110	98
1922	79	81	79	92	110	98
1921	75	73	76	97	105	107
1920	131	188	122	130	96	128
1919	152	204	144	133	83	112
1918	146	200	137	125	67	102
1917	128	188	118	107	65	94
1916	83	109	80	83	56	90
1915	70	104	65	75	53	84
1914	75	95	71	74	49	78
1913	72	82	70	72	49	73
1912	69	98	64	69	36	71
1911	59	84	55	65	34	69
1910	70	83	68	66	29	67

\* Not available.

Source: Columns 1, 2 and 3 from: Indexes of prices received by Iowa farmers for farm commodities sold at local markets. (Rev.) Iowa Crop and Livestock Reporting Service, U. S. Dept. Agr. and Iowa Dept. Agr. 1953.

Column 4 from: Price trends as related to agriculture in Iowa. Iowa State Bul. 92-2. Iowa Dept. Agr. 1939; and Iowa farm prices and indexes. Mimeo. Iowa Dept. Agr. and Bureau of Agricultural Economics, U. S. Dept. Agr. 1945.

Column 5 from U. S. Dept. of Agr. Yearbook of agriculture, 1935. Table 478; and Agricultural finance review. Vol. 15, Supplement I. Bureau of Agricultural Economics, U. S. Dept. Agr. May 1953.

Column 6, 1910-47 from: Farm real estate situation, 1946-47. U. S. Dept. Agr. Cir. 780, 1948; 1948-53 from comparable unpublished data compiled in Bureau of Agricultural Economics.



## APPENDIX B

### SAMPLE LEASE PROVISIONS

Sample lease provisions are included in this appendix to illustrate how some of the techniques of rent adjustment may be incorporated in the lease form.<sup>1</sup> These provisions are grouped according to adjustments for (1) changes in prices, (2) changes in production, (3) combined changes in prices and production and (4) changes in costs.

#### PROVISIONS FOR ADJUSTING RENT FOR CHANGES IN PRICES

Sample lease provisions for two plans for adjusting rents for changes in prices are presented below. These provisions illustrate the Iowa plan and the Missouri multiple commodity plan, discussed earlier in the bulletin.

#### IOWA FLEXIBLE CASH RENT

##### Section I. Base Period and Base Rent Agreed Upon.

It is agreed that, with prices of farm products as they were during the year (or years) \_\_\_\_\_ the fair cash rental for this farm was \$\_\_\_\_\_ per acre. The foregoing will constitute the base period and base cash rent to be used in this lease. During the foregoing base year (or years) the official index of Iowa farm product prices as shown in *Iowa Farm Science* was as follows:

Year	Index
19_____	_____
19_____	_____
19_____	_____
19_____	_____
19_____	_____
19_____	_____
19_____	_____
19_____	_____
Total	_____
Average	_____

This means that with the official Iowa farm price index at \_\_\_\_\_ a fair rental for this farm is \$\_\_\_\_\_ per acre. If the index base is changed during the period of this lease, a corresponding change in the lease will be effective.

##### Section II. Amount of Rental.

The tenant shall pay to the owner, as rent per acre for the above described farm, an amount proportional to the simple average of the monthly index numbers of the prices received for Iowa farm products for the 11 months of March through January inclusive, of the lease year in question, as published in the March issue of *Iowa Farm Science*, Iowa State College, Ames, Iowa.<sup>2</sup>

Therefore, if the simple average of the index numbers of the prices of Iowa farm products for the 11 months specified above is:

331-340	the rental shall be	\$_____	per acre
321-330	the rental shall be	\$_____	per acre
311-320	the rental shall be	\$_____	per acre
301-310	the rental shall be	\$_____	per acre
291-300	the rental shall be	\$_____	per acre
281-290	the rental shall be	\$_____	per acre
271-280	the rental shall be	\$_____	per acre
261-270	the rental shall be	\$_____	per acre
251-260	the rental shall be	\$_____	per acre

<sup>1</sup>Farm lease forms, including provisions for flexible rents, are obtainable from Iowa State College and the United States Department of Agriculture.

<sup>2</sup>This average index is based upon the prices of Iowa farm products computed by the Iowa Crop and Livestock Reporting Service and published in the February issue of *Iowa Farm Science*.

241-250	the rental shall be	\$_____	per acre
231-240	the rental shall be	\$_____	per acre
221-230	the rental shall be	\$_____	per acre
211-220	the rental shall be	\$_____	per acre
201-210	the rental shall be	\$_____	per acre
191-200	the rental shall be	\$_____	per acre
181-190	the rental shall be	\$_____	per acre
171-180	the rental shall be	\$_____	per acre
161-170	the rental shall be	\$_____	per acre
151-160	the rental shall be	\$_____	per acre
141-150	the rental shall be	\$_____	per acre
131-140	the rental shall be	\$_____	per acre
121-130	the rental shall be	\$_____	per acre
111-120	the rental shall be	\$_____	per acre
101-110	the rental shall be	\$_____	per acre
91-100	the rental shall be	\$_____	per acre
81- 90	the rental shall be	\$_____	per acre
71- 80	the rental shall be	\$_____	per acre
61- 70	the rental shall be	\$_____	per acre
51- 60	the rental shall be	\$_____	per acre

To make the calculations necessary to fill out the schedule above, use the following equation:

$$\begin{array}{l} \text{Average price index} \\ \text{this past year} \\ \text{(Iowa Farm Science)} \\ \text{Average price index} \\ \text{in base period} \\ \text{(Section I)} \end{array} \times \begin{array}{l} \text{Agreed cash} \\ \text{rent in} \\ \text{base period} \\ \text{(Section I)} \end{array} = \begin{array}{l} \text{Rent per acre} \\ \text{due} \\ \text{this lease year.} \end{array}$$

$$\begin{array}{l} \text{Rent per acre due} \\ \text{this lease year} \end{array} \times \begin{array}{l} \text{Number of acres} \\ \text{in farms} \end{array} = \$_____ \text{Total rent} \\ \text{due this} \\ \text{lease year.}$$

The rental shall be paid in two installments, the first being due and payable on \_\_\_\_\_ (month and day) \_\_\_\_\_ each year, in a fixed amount of \$\_\_\_\_\_; the second due on February 15 of the lease year for which the rent is due. The amount due and payable February 15 shall be the full rental for the period of the lease as computed according to the table above, less any installment or installments previously paid. Payments of above rent are to be made by the tenant or his heirs or assigns to the owner or his heirs or assigns at the owner's residence shown above.

#### MISSOURI MULTIPLE COMMODITY PLAN

(1) It is agreed that the base rent for the above-described real property shall be \$\_\_\_\_\_, for the period starting \_\_\_\_\_, 19\_\_\_\_, and ending \_\_\_\_\_, 19\_\_\_\_.

(2) It is agreed that a factor for adjusting the rental payment shall be computed in the following manner:

(a) That, on this day, the parties have entered in column II of the attached schedule their mutually acceptable estimates of the income to be obtained from each enterprise shown in column I.

(b) That the parties have, on this day, entered in column III of the attached schedule mutually acceptable base prices for the commodities produced by each enterprise shown in column I.

(c) That the parties agree to accept the following market quotations as final prices to be entered in column IV of the attached schedule.

Commodity	Grade	Market	Date
Hogs	_____	_____	_____
Beef	_____	_____	_____
Butterfat	_____	_____	_____
Eggs	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

(d) That each price in column IV will be expressed as a ratio of the corresponding price in column III and entered in column V.

SCHEDULE FOR DETERMINING RENT ADJUSTMENT FACTOR.

Column I Enterprise	Column II Estimated income	Column III Accepted base commodity price	Column IV Accepted final price	Column V Accepted ratio of final price to base price	Column VI Estimated income revised by changes in prices
Hogs .....	.....	.....	.....	.....	.....
Beef .....	.....	.....	.....	.....	.....
Butterfat .....	.....	.....	.....	.....	.....
Eggs .....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
Totals .....	.....	XXX	XXX	XXX	.....

Rent correction factor =  $\frac{\text{Sum column VI}}{\text{Sum column II}}$  = .....

(e) That each ratio in column V will be multiplied by the corresponding income estimate appearing in column II and the result will be entered in column VI.

(f) That the ratio of the sum of column VI to the sum of column II be determined.

(3) The parties agree that the rent due and payable shall be the base rent as shown in Section 1 multiplied by the ratio determined in Section 2-f.

(4) It is further agreed that \_\_\_\_\_ percent of the base rent shall be paid on \_\_\_\_\_, 19\_\_\_\_, and difference between the rent due on the above day and the total rent due and payable as determined in Section 3 shall be paid on \_\_\_\_\_, 19\_\_\_\_.

PROVISIONS FOR ADJUSTING RENT FOR CHANGES IN PRODUCTION

Lease provisions for two plans for adjusting the rent on the basis of changes in production are presented below. These plans are based upon work done at the Iowa and Missouri Experiment Stations; the Iowa plan and the Missouri plan have been discussed earlier in this bulletin.

IOWA PLAN

This lease provision was originally developed to improve the operation of the Iowa flexible cash lease and, when used in connection with the flexible lease, results in a rent completely flexible with respect to prices and partially flexible with respect to production. But there is no reason why this provision cannot be used in conjunction with a fixed cash rent to make the rent respond to a severe change in production.

OWNER AND TENANT BOTH AGREE:

1. If in any given lease year there is, on the average for all of the land in corn on this farm, 75 percent or less of a normal corn yield, then whatever percent of a normal corn yield per acre there is on the above acreage, only that same percent of the cash rent as calculated by the foregoing method will be due; (except that in any event the tenant must pay a cash rental equal to the real estate tax bill for the 1 year in question).

Both parties agree that \_\_\_\_\_ bushels per acre is the normal corn yield for this farm.

Example: Suppose it is mutually agreed that the average corn yield on this farm is 60 bushels per acre. The average yield on this farm this year, however, is 40 bushels or 67 percent of a normal yield. If the cash rent as computed by the flexible-cash method turns out to be \$9 per acre, then the rent actually due will be 67 percent of \$9, or \$6 per acre in this year of partial crop failure.<sup>3</sup>

<sup>3</sup>Prepared by I. W. Arthur for use in "Iowa farm lease—flexible cash rent." Iowa Agricultural Extension Service, Ames, Iowa.

MISSOURI PLAN

The following lease provision can be used to correct rent for production changes without correcting for price changes. If this type of limited correction is desired, the landlord and tenant should consider the prices current at the time the lease is drawn in the last column of the table in Section 5 and strike out the market, grade and date columns. These prices may also be entered in column VII of the schedule for determining rent due and payable at the time the contract is drawn. The lease provision follows:

METHOD OF ADJUSTING CASH RENT ON THE BASIS OF STATE CHANGES IN PRODUCTION

(1) The parties agree that the land in the above-described tract of real property will be used as shown in column II of the attached schedule.

(2) The parties agree that the basic rental shares will be as shown in column III of the attached schedule.

(3) The parties agree that normal yields for this property are as shown in column IV of the attached schedule.

(4) The parties agree that the average yields for Iowa, as published by the state statistician, for the period \_\_\_\_\_ to \_\_\_\_\_, constitute the normal yields for the State of Iowa and are shown in column V of the attached schedule.

(5) The parties agree to use the following market quotations or prices in determining the rent of this tract:

	Market	Grade	Date	Price
Corn	_____	_____	_____	_____
Wheat	_____	_____	_____	_____
Oats	_____	_____	_____	_____
Soybeans	_____	_____	_____	_____
Hay	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

(If rent is to be adjusted for production changes only, complete the last column using current prices and delete the market, grade and date columns. If lease is to be used to adjust rent for both price and production changes, complete the market, grade and date columns and strike out the price column.)

The parties further agree that rent per acre of pasture land, the total rent for pasture land and the total rent for buildings are as shown in columns IX and X of the attached schedule.

(6) The parties agree that the rent will be computed at the end of the term in the following manner:

(a) That the average yields for the state for the current crop year, as published by the state statistician, will be entered appropriately in column VI.

(b) That each yield in column VI will be expressed

as a ratio of the yield shown in column V, and that this ratio will be multiplied times the yield shown in column IV and the result entered appropriately in column VIII.

(c) That the prices obtained in Section 5 be entered appropriately in column VII and each price in column VII be multiplied by the yield appearing in column VIII and that the result be entered in column IX.

(d) That each item in column IX multiplied by the corresponding item in column III and the result be entered in column X.

(e) That column X be summed.

(7) The parties agree that the rent due and payable on \_\_\_\_\_, 19\_\_\_\_, shall be the sum computed in 6-e above.

**PLANS FOR ADJUSTING RENT FOR CHANGES IN PRICES AND PRODUCTION**

A number of methods exist for adjusting rent for both changes in prices and production. These methods represent modifications and combinations of the lease provisions presented in the sections dealing with adjustments for changes in prices and adjustments for changes in production.

**IOWA PLAN**

A lease provision that will adjust the rent on the basis of changes in prices and certain types of changes in production can be constructed by inserting the Iowa provision for crop failure into the Iowa flexible rent provision above. The logical point of insertion is immediately following the formula for the determination of rent for varying price conditions.

As pointed out in the discussion, this crop-failure provision is one-sided and can provide a rather abrupt and drastic change in the rent due. If it is desired to approximate the adjustment technique discussed on pages 110-113, where the rent would be adjusted for both unusual increases and decreases in production and transferring the return or cost of management to the tenant, the following lease provision may be inserted in the Iowa flexible form immediately following the formula for computing the rent due:

It is further agreed that the rent will be increased if the average yield of corn for Iowa, for this crop year, as published by the state statistician, exceeds 115 percent of the average of the average Iowa corn yields for the 5 crop years immediately preceding the crop year covered by this contract by multiplying the rent as determined above by the following ratio:

Average yield of Iowa corn this crop year/115 percent of the average Iowa corn yields for the 5 previous years.

It is agreed that the rent will be decreased if the aver-

age Iowa corn yield for this crop year, as published by the state statistician, is less than 85 percent of the average of the average corn yields for the 5 crop years immediately preceding the crop year covered by this contract by multiplying the rent as determined above by the following ratio:

Average yield of Iowa corn this year year/85 percent of the average of the average Iowa corn yields for 5 previous crop years.

The average yields of corn for Iowa for the 5 previous crop years, as published by the state statistician, were as follows:

Year	Yield
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
Total	_____
Average	_____

**MISSOURI PLAN**

The Missouri plan for adjusting for changes in production will automatically adjust for prices if the prices prevailing at the time the commodities are sold, or the approximation of these prices, are used. One method of accomplishing this is for the landlord and tenant to agree to accept, at the time the contract is drawn, prices prevailing for specified grades at specified markets (may be local) on specified days. The use of this method of determining prices to be used in the rent determination is provided for in Section 5 of the lease provision presented above. The landlord and tenant should complete the first four columns of Section 5 and strike out the last column.

An alternative to this would be to use a weighted average of prices received for actual marketings—dividing total receipts from the sales from each enterprise by the number of units sold during the period covered by the contract.

**ADJUSTING RENT FOR CHANGES IN COSTS**

While various devices may be developed for adjusting rents for changes in prices and production, adjustments for changing costs along with changing prices offers a much larger problem. The share-rent approach completely adjusts the rent for changes in prices and production and thus stabilizes the division of gross returns. Similar techniques have been devised and presented in this bulletin that would stabilize the cash rent relative to gross return—this is possible as the gross return is determined by multiplying prices

**SCHEDULE FOR DETERMINING RENT DUE AND PAYABLE.**

Column I Land use	Column II Acres to be used	Column III Rental share (acres)	Column IV Normal yield for this farm	Column V Normal yield for state	Column VI Average yield this year for state	Column VII Price per unit	Column VIII Normal yield for farm this year	Column IX Value of rented share per acre	Column X Total value of rented share
Corn.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheat.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oats.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Soybeans.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hay.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pasture.....	.....	X	X	X	X	X	X	.....	.....
Buildings.....	X	X	X	X	X	X	X	X	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total cash rent	.....	.....	.....	.....	.....	.....	.....	.....	.....



3 1723 02095 0218

and production. As these prices and production vary, it is possible to determine how much the rent must be varied to keep the ratio constant. To determine the net return, however, costs must be subtracted out. This makes the advance determination of any factor that will stabilize the division of net returns exceedingly difficult. No technique was found in the literature or in practice, or was developed in this study which would with certainty in the *ex ante* sense, assure the parties that changing costs would not affect the return ratio. While the mechanism of the method

that must be used (if complete adjustment for changes in prices, costs and production is to be achieved) has been presented in this report, to have utility it must rest upon the use of several series of index numbers: Unless each of these series approximate the actual conditions that exist on the farm where the adjustment method is being used, the plan may increase the variability rather than contribute to its stability. For this reason, and considering the stage of development of the method, which requires further study, a sample lease provision is not included.