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Analysis of Farmland Rental Markets in South Dakota

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ANALYSIS OF FARMLAND RENTAL MARKETS IN SOUTH DAKOTA

BY

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ANALYSIS OF FARMLAND RENTAL

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This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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Chapter 1

INTRODUCTION

Farmland leasing is a common method for transfer of use rights to farmland. In the U.S., four out of ten acres of farmland are leased (U.S. Census of Agriculture 1982). Farmland leasing agreements convey specific rights to agricultural land in exchange for cash or an in-kind payment.

Farm operators lease farmland because it is a means for providing flexibility to the size of operation without encumbrance of long term debt. Land owners lease their farmland to obtain a return from their land assets without the necessity of farming the land themselves.

Because it is an important means of resource control, farmland rental and the market where rental transactions occur, are of concern to land owners, farm operators, lenders and public policy makers.

Problem Statement

Leasing of farmland has existed in one form or another at least since feudal times. It has been extensively used in the United States since the post Civil War era. "Tenant farmers" or "sharecroppers" were once considered a lower socio-economic class subject to exploitation by powerful landowners. More recently, farmland rental has been considered the first rung on the "tenure ladder", used extensively by landless persons attempting to become farm operators. This tenure ladder led eventually to full ownership and operation of farmland.

The number of acres of farmland rented in the U.S. has remained relatively stable over the last 50 years. However, rented farmland acres in South Dakota have fluctuated over that time period. The percent of land in South Dakota farms that was rented approached 60% in 1930, rose to 70% in 1940, then decreased steadily to about 36% in 1982 (Table 1.1). Nationally, the percent of land in farms that was rented was almost 44% in 1930, declined to 35% in 1950, and was reported to be 39% in 1982.

Changes in farmland tenancy patterns have occurred as agricultural production methods have changed. Changes in production technology have increased the efficient scale of operation in agriculture. Increased use of purchased inputs have pushed capital requirements for commercial farming operations to higher levels (Johnson 1972).

Under these conditions, leasing of farmland has become a more attractive option for farm operators seeking to expand their operation to achieve greater economies of size. Currently, the majority of farm operators are part owners, i.e., those who own farmland and lease additional land. Part owner operators also farm more acres individually and in the aggregate than either full owner or full tenant operators (Janssen 1983).

Rental of agricultural land has been discussed in economic literature since Adam Smith commented on the tenure patterns in England in The Wealth of Nations (1776). Alfred Marshall infused new life to

Table 1.1 Rented Agricultural Land in South Dakota and the United States

	South Dakota					United States				
Year	Total Acres in Farms	Acres Rented by Tenant	Acres Rented by Part-Owner	Total Acres Rented	Percent of Land in Farms That is Leased	Total Acres in in Farms	Acres Rented by Tenant	Acres Rented by Part-Owner	Total Acres Rented	Percent of Land in Farms That is Leased
	Thousands of acres					Millions of acres				
1930*	36470.1	13034.9	8337.3	21372.2	58.6	990.1	307.3	125.2	432.5	43.6
1940*	39473.6	15277.2	12202.1	27479.3	69.6	1065.1	313.2	155.9	469.1	44.0
1950*	44785.5	8053.7	12188.2	20241.8	45.2	1161.4	212.2	196.2	408.4	35.2
1959*	44794.0	7331.0	12526.5	19880.8	44.4	1123.5	166.8	234.1	400.9	35.7
1969[b]	39584.8	4312.5	10490.8	14841.8	37.5	1063.3	137.6	241.8	379.4	35.7
1982[a]	38615.0	3400.5	10585.4	14015.1	36.3	986.8	113.6	269.9	383.5	38.9

* Information from Special Report accompanying Ag census that year.
a) Excludes abnormal farms, which are primarily land held in trust by tribal governments.
b) Excludes abnormal farms and farms with <$2500 of sales.

Data from U.S. Census of Agriculture, 1930, 1940, 1950, 1959, 1969, and 1982, respectively.

patterns, and the number of leases a farm operator or landowner is involved in.

Over the last 4 to 5 years, the financial situation of many farm operators has deteriorated. Many farm operators are experiencing financial difficulty due to decreasing land values, high interest rates and low crop prices. Difficulties involving inability to obtain financing, income uncertainty, and restricted cash flows are causing changes in rental arrangements.

During the 1970's, when farm incomes and land values were rising, participants in some areas were switching to cash rents and cash rent prices were increasing. In recent years, there has been a net shift from cash rent to share rental agreements and cash rent prices are falling. Operators are trying to reduce yield and price risk in addition to relieving pressure on cash flows. In some instances bankers have been limiting loans to farm operators to encourage use of share rental agreements (Scott 1985).

Farm bankruptcies and foreclosures are bringing new participants into the market and changing the nature of the landlord-tenant relationship. Widespread foreclosures and default of collateral may increase the amount of farmland owned by nonfarmers and increase the importance of land rental agreements and institutions.

South Dakota is heavily dependent upon the agricultural economy. Yet, prior to the 1986 SDSU survey, no statewide study of the rental market has been completed since 1951. There has been no

published economic research of the farmland rental market situation in any region of South Dakota since 1959 (Berry and Bau).

Objectives of Research

The primary objective of this research effort is to reveal some of the major characteristics of farmland rental agreements and the farmland rental market in South Dakota.

Specific objectives are to:

1. Examine the structural characteristics of the farmland rental market in South Dakota, including the characteristics of landlords and tenants.

2. Examine the relationship of characteristics of farmland rental market participants to rental agreement terms.

3. Test for significant differences in lease terms by region and by cropping pattern in South Dakota.

4. Examine the ability of the farmland rental market to respond to short term changes in uncertainty and financial conditions and the types of adjustments that are occurring.

5. Examine terms of rental agreements: a) for presence of conditions for efficient use of resources, and b) to determine if rental agreements distribute costs and returns approximately as output is shared.

Procedures

The primary source of data for this project was the 1986 SDSU Farmland Rental Survey. A copy of the survey instrument is available in

the Appendix. This survey was mailed to a random sample of 4,110 landowners and farm operators in South Dakota. The population for this sample was the ASCS producers list, which contains 100,141 entries. This list contains the names and addresses of farm operators and landlords who have cropland base acres and/or have been participants in federal farm programs in recent years.

A random sample of names from each county was drawn, using a five percent sampling rate for counties east of the Missouri river. An eight percent sampling rate was used for counties west of the Missouri, because of the lower number of names on the producers list for those counties. A total of 5583 names were selected.

The sample of names from each county was then mailed to the ASCS office in that county. County officers then identified each name as either a: 1) nonoperator landlord, 2) farm operator who rents land to or from others, 3) farm operator who is not involved in rental arrangements, or 4) as not active in any aspect of farming or renting at the current time. Of the 66 county offices sent lists, only three did not return them with the names appropriately classified. A total of 1473 names were eliminated because they were 1) fullowner operators not involved in land rental or 2) were inactive.

The survey was mailed to those identified as nonoperator landlords and farm operators involved in rental agreements. In the counties where the local offices did not classify the names, the survey was sent to the full 5 or 8 percent sample. Of the 1436 questionaires returned, 1155 contained usable information for this project.

Characteristics of market participants and rental agreements are identified using descriptive statistics and cross tabulation. Analysis of variance techniques and chi square tests are used to achieve the first four objectives. To complete objective 5, the above mentioned techniques are used in addition to crop enterprise budgets for specific areas of South Dakota.

Organization of Study

This thesis contains seven chapters. This chapter contains the introduction, problem statement, objectives and procedures for this research effort. The second chapter contains a review of literature used in developing this research. Theoretical literature on the impacts of land rental on resource use, the nature of the land rental institutions, and empirical studies done in the United States are reviewed.

The third chapter contains an analysis of specific characteristics of the farmland rental market, terms of rental agreements, and characteristics of rental market participants in South Dakota. Chapter three completes the first and second objective. The fourth chapter analyzes the adaptability of rental markets to changes in production due to regional variations in land productivity. Objective 3 is completed in the fourth chapter.

Changes in rental agreements are analyzed in the fifth chapter, to determine the responsiveness of rental markets to changes in economic conditions.

Farmland rental agreements are analyzed in Chapter 6 for the presence of incentive conditions theoretically necessary for renters to produce at optimal levels. In addition, Chapter 6 contains analysis to determine whether rental agreements in practice provide approximations of the incentive conditions in the division of costs and returns.

The final chapter, seven, contains a summary of the results and conclusions of the research. Implications of the results and suggestions for further research are also in the final chapter.

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Chapter 2

REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE

Leasing of agricultural land transfers specific property rights of land ownership to the renter, for a specific time period, for agricultural production. The division of the property rights through leasing agreements creates complications in resource use decisions. The landowner's and renter's objectives and interests may not coincide, leading to conflicts and use of resources in other than optimal combinations.

This chapter contains a review of the historical development of economic theory of farmland rental and rental markets in England and the United States. The first part of the chapter traces the evolution of the theory of rental markets from Adam Smith to the present. In the second part of the chapter, a review of some of the more important empirical works are presented. This latter section emphasizes review of contemporary farmland rental market conditions in the U.S.

Development of Rental Theory - Smith to Marshall

Adam Smith, writing in the Wealth of Nations (1776), discussed the evolution of land rental and the English system of fixed rents and perpetual tenancy. Smith identified a potential efficiency problem with land rental. Subsequent British and American writers built upon this observation.

Originally, tenants were serfs who were legally attached to the land, and applied only a subsistence level of effort. Eventually

landlords offered to pay a share of the product to increase output. The metayer (share tenant) provided only labor and the landlord provided seed, cattle and tools. Since the landlord shared all production increases and had power to take back the land, tenants would not apply their own stock, perpetuating a sub-optimum level of production.

A system was eventually established in England where the farmer's rent was fixed and tenure was as secure as the proprietor's. This occurrence allowed English farmers to prosper, while the persistence of metayage on the continent impoverished the French farmer.

Smith believed rent levels were determined by the availability of food and fertility of the land. Higher rent is paid when land is more productive or when crops require more intensive cultivation. Riskier enterprises earn more rent because they must afford insurance as well as profit. As land became less abundant, more products earned rent.

Another English economist who contributed significantly to the definition of rent was David Ricardo (1817). According to Ricardo, rent is "that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil" (pp. 33). This payment is attributable to the limited supply and varying fertility of land.

When a country is young, land is considered a boundless gift of nature and no rent is paid. Population growth reveals the limited

supply and non-homogeneous nature of land. The best land earns rent when inferior land is brought into cultivation. Production on land of a third degree of fertility, causes land of the second level to earn rent and rent on land of the first level to increase.

Ricardo thought it was important to maintain this narrow definition of rent. Too often in practice, rent includes the interest and profit of capital. When land is improved, only part of the rental payment goes for use of the powers of the soil. The remainder is really a return to capital.

John Stuart Mill addressed the issue of farmland rental and metayage in The Principles of Political Economy (1857). In general he agreed with Smith, that share rent could act much like a tax, reducing a tenant's incentive to invest in improvements.

It was a mistake to condemn the share system, however, when successful share systems existed in Italy. Fixed rents and secure tenure were not conclusively the cause of better production and more prosperous farmers. The cause was more likely that share agreement terms were determined by custom and tradition, not competition or economic considerations.

Writing in Principles of Economics (1938), Marshall used a more formal analytical framework to confirm Smith's basic conclusions. Cultivators will not apply optimum quantities of labor and capital under a share system. If a landlord's share is one half the product, the farmer maximizes profit where return from additional inputs is equal to twice the cost (where marginal cost=marginal return).

Marshall also believed that security of tenure may inhibit application of inputs by the cultivator. If the landlord can dismiss the farmer however, labor and other inputs may be prescribed in quantities equal to those applied under the English system.

Modern Rental Theory - Schickele to Hurlburt

Economists in this period used various approaches to production analysis in a partial equilibrium framework, and derived similar conclusions. Subsequent articles build directly upon the contributions of earlier writers.

The authors reviewed generally agreed with Marshall's assessment that the marginal cost of share rental reduced the farmer's profit maximizing output level (Figure 2.1). Fixed cash agreements were not as likely to cause distortions as share leases. Most also believed insecurity of tenure caused by short term leases could affect application of inputs and efficiency. Each writer proposed changes in leasing institutions that could alleviate the efficiency problems.

Rainer Schickele (1931) applied Marshall's marginal analysis to the modern farm firm. He analyzed the impacts on farm efficiency and net social product of five representative types of tenure. Net social product is affected through reduced aggregate output, production of the wrong crops, and increased social costs.

Two conditions are required for attaining maximum efficiency: 1) the intensity of input application is such that marginal cost equals marginal return, and 2) factors must be combined to yield equi-marginal

Figure 2.1 Impact of share rental on profit maximizing level of input use and output level.

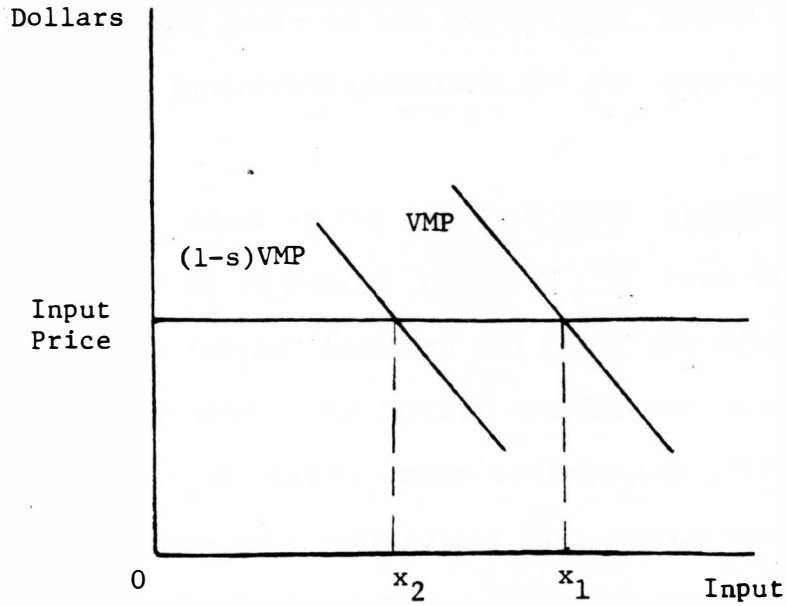

Figure 2.1a The rental share paid by the tenant reduces the value of the marginal product of the variable input and lowers the profit maximizing level of input use (VMP=Input Price) from x_1 to x_2.

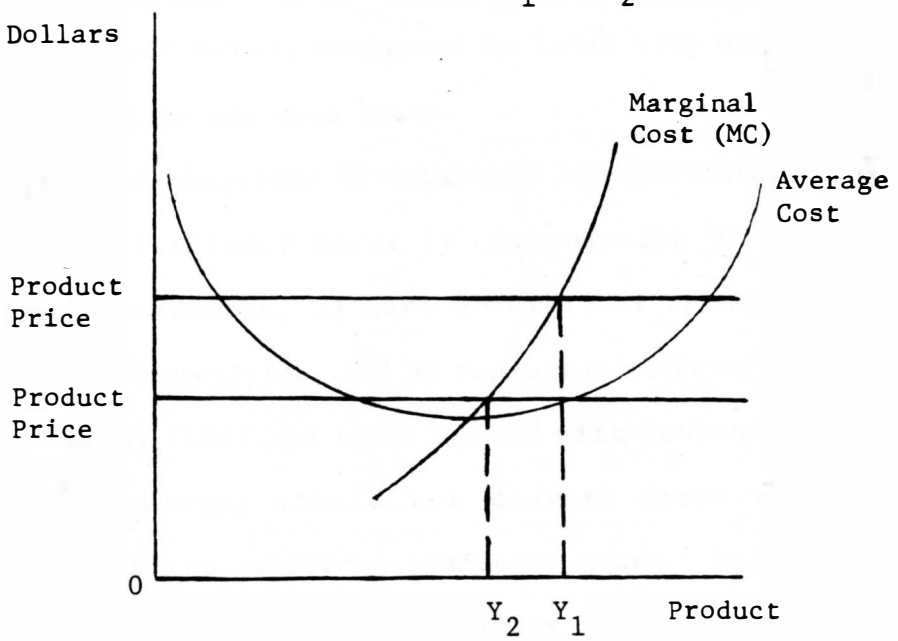

Figure 2.1b In terms of output, the rental share reduces the price of the product received by the tenant, and lowers the profit maximizing output level (MC= Product Price) from Y_1 to Y_2.

returns. The differing goals of the two parties impedes use of optimum combinations of the landlord's (durable) and the tenant's (non-durable) inputs.

A farm fully owned by the operator meets conditions for maximum efficiency described by classical analysis. If land is cash leased, unresolved conflicts between landlord and tenant may affect application of inputs. Share agreements are further complicated because the rental price is a function of yield, which reduces the profit maximizing output level below that of a cash rented farm. Tenant uncertainty about future occupancy of the land creates emphasis on short term production, and reduced investment in durable factors.

Schickele saw the effects of share rental in the U.S. being partially, but never fully, mitigated by lease term modifications such as sharing fertilizer and seed costs.

Adjustments suggested by Schickele to alleviate the effects of land rental on efficiency were: 1) compensation of the tenant for unexhausted improvements, 2) more security of tenure, but not completely removing competition, and 3) replacing share with cash leases.

Earl Heady (1947 and 1952) agreed with Schickele, concluding that rental agreements should not distort input allocations to production of society's preferred bundle of goods. Leases should also provide undistorted distribution of returns to factor inputs.

In the short run, cash rentals are a fixed cost, and don't affect efficiency. Share rental is a variable cost, lowering input

use and causing inefficiency. Long run analysis supported previous assertions that insecurity of tenure causes distortions. However, long term leases reduce the incentive for conscientious cultivation by the tenant.

Heady's suggestions for institutional adjustments are conceptualized in his "perfect lease". The perfect lease would: 1) provide for the division of the product so each resource owner receives the marginal product of that resource, 2) remove uncertainty of obtaining returns from long term investments by using long term agreements or providing compensation for unexhausted improvements, 3) in share agreements, the cost of variable factors should be shared between landlord and renter in the same proportion that output is shared, and 4) consider payment for land use separate from payment for capital improvements and consumer goods.

D. Gale Johnson (1950) developed a theoretical model, using production and income functions to analyze the impact of rental agreements on resource use. The first order conditions of these functions, maximizing with respect to land and labor, revealed that tenants will rent land until the marginal product of land is zero. At this point land is farmed less intensively, and the result is inefficiency.

Contrary to concerns of previous writers, Johnson felt annual leases could be used effectively to encourage renters to apply optimum input levels. Even with long term contracts however, Johnson believed

that traditional farm practices and implicit agreement on output levels would prompt the tenant to farm as intensively as an owner.

Hurlburt, (1954) put his suggestions for changes in lease terms into four incentive conditions. He then used survey results from 7 states to test for their presence in contemporary rental agreements in the Midwest.

The four incentive conditions are:

1. The share of variable input costs paid must equal the share of output received.

2. The share rental for all products must be the same.

3. Each resource owner must receive the full share of the product earned by each unit of resource contributed.

4. Each resource owner must have the opportunity to receive the return on investments made in one production period, but not available until a subsequent period.

The presence of these conditions does not guarantee efficient resource use, but their absence provides incentive for use of other than optimum combinations of inputs.

Cash leases automatically fulfill the first two incentive conditions. The resource owner must receive the full share of the product earned by fixed resources, to meet incentive condition three. Condition one must be fulfilled before condition three can be met. To meet condition three, cash rental rates must equal the rate land contributes to earnings.

Most leases reported in the survey lacked one or more of the incentive conditions. Sharing of variable input costs was uncommon, and shared costs were not likely to be shared in the same proportion as output was shared. Share rental proportions frequently differed between products, apparently to compensate for other lease problems. Crop share leases comply with condition three if additional payment is made for capital improvements. Provisions of this nature were not present in most share agreements.

Obtaining returns from investments can be ensured by matching the length of the agreement to that of the investment or providing adequate notice of termination. Few leases had terms to provide this assurance.

In a later publication, Hurlburt (1962) presented a theoretical method to be used to conclude an economically efficient lease. The problem is to decide what form and amount payment should be, and how long should the lease endure. These terms of payment will then encourage use of quantities and combinations of inputs required for efficiency.

A profit maximizing farm operator, equating marginal returns to marginal cost, determines appropriate rent by identifying the function and cost of each party's contributions. Payment of returns is proportional to the contributions of the resources. This process is complicated but should result in more complete knowledge of input and factor productivity and better decision making.

Modern General Equilibrium Approach to Rental Theory

Writers in this period used general equilibrium models to analyze the impact of rental on efficiency. Use of general equilibrium allowed impacts other than the marginal influences of rental terms on the firm to be included. Although the effect of lease terms on use of inputs is generally not disputed, other influences counteract these incentives. Equal efficiency theorists generally agree that share leases will be chosen when they are the least cost method of risk dispersion available.

Interest in the theory of farmland rental was renewed by Steven Cheung (1968 and 1969). Using a general equilibrium model, Cheung's theory of share rental disputed the assertion that share rents caused inefficiency. Wealth maximization by the landlord will lead to a share contract with a specified rental percentage and ratio of nonland to land input.

In this model, the landlord must offer a return to the tenant equal to the wage rate, but no higher due to competition among tenants. This equilibrium rental rate pays the landlord the value marginal product of land. Renters receive an amount equal to the value marginal product of labor. Inputs are applied with equal intensity, regardless of whether the land is owner operated, cash leased, or share leased. Cheung supports his hypothesis with data on tenure and rental practices in China circa 1930.

Share leases distribute the risk, making them preferable to cash leases, but they have higher transaction and enforcement costs. Of the

equally efficient tenure forms, share tenancy is chosen if the risk shifting benefits are worth the additional cost.

Not all economists accepted the equal efficiency hypothesis. Bardhan and Srinivasan (1971) determined that sharecroppers would stop short of equalizing the value marginal product of labor to the wage rate. Unlike Cheung, Bardhan and Srinivasan incorporated the demand side in their model with maximization behavior by the tenant. This prevents the landlord from proscribing the amount of tenant labor. Incorporation of land and labor augmenting technical change shows these improvements decrease the amount and percentage of land under share agreements.

Analysis of cross-sectional data from India shows that landlords have some market power and rental shares do not result from market competition. In addition, tenants preferred lower rental shares to sharing of input costs by landlords.

After Bardhan and Srinivasan's article, major contributions to rental theory have included risk. Sutinen (1975) extended Cheung's hypothesis using a theory of contractual choice with risk aversion. In the absence of transaction costs, share leases are preferred because they are more efficient than other forms of rental agreements.

As the least cost method of sharing risk, share leases lower the unit cost of production, implying higher input utilization and higher output levels. Nonshare leases will only be chosen when transaction costs of share leases exceed the cost of other risk dispersing methods.

The idea that share leases are actually more efficient than other lease forms was supported by Reid (1976), who included the conflicting interests of landlords and tenants into his model. In the absence of uncertainty, his model implies that share leasing is Pareto efficient. With uncertainty, share agreements will be chosen when they are the least costly method of risk reduction available. Share agreements are actually more efficient, due to their greater flexibility when adjusting to unexpected events.

Previous analysis on both sides of the question of (in)efficiency of farmland rental, is incomplete according to Ip and Stahl (1978). Inefficiency advocates made the mistake of using partial equilibrium analysis, ignoring the supply side of the rental market. Farm sector interaction with the rest of the economy must be considered in a general equilibrium framework.

Equal efficiency advocates are limited by their neglect of intersectoral resource allocation, which can be inhibited by institutions. Competition among farmers for rental land does not reduce the incentive to shirk. Equal efficiency outcomes ignore the cost of investing landlord resources to enforce the agreement. Only owner cultivation eliminates transaction and supervision costs which make share tenure less efficient than owner operation.

Empirical studies that support the equal efficiency concept actually represent the net result of two opposing tendencies: 1) sharecroppers' tendency to apply sub-optimum quantities of variable

inputs, and 2) reduced input application by owner operators attributable to risk levels higher than those faced by sharecroppers.

The analyses above assumed limited choices for laborer/tenants and landowners, including four tenure forms: 1) owner cultivation, 2) wage labor, 3) share rental, and 4) cash rental. Competitive markets, prices of commodities that reflect consumer preferences, and profit maximizing behavior by contracting parties are also part of the assumptions. Inputs are limited to land and labor in most cases to simplify the analysis.

Despite the increased scope and complexity of theoretical analysis of tenure forms and share rental, conflicting viewpoints persist. A sum of the work to date leaves no definitive conclusion about the impact of rental agreements on efficiency. The search for justification of land reform programs in less developed countries has stimulated most of the continuing discussion.

Empirical Studies and the U.S. Rental Market

Application of the theory above to the U.S. agricultural economy poses a few problems. Technological progress and global marketing have changed the structure of the agricultural sector. Farmland tenants must provide productive capital in addition to technical knowledge. Landlords and tenants have many investment and production options. Tenure forms have melded into points on a continuum, frequently blending renter and landlord roles. Federal farm programs violate the basic price assumptions.

mid-Atlantic states. Share tenants are more likely to grow cotton in the South, and corn in the Midwest. Share tenants are more often younger and poorer than farm operators in other tenure classes (Reid 1979).

A review of farmland rental practices in the U.S. in 1979 (Weisberger) shows the 1/3-2/3 landlord-tenant share rental agreements to be the most common. The landlord frequently contributes the land and a share of other inputs for one third of the crop. The 1/2-1/2 lease is the second most typical, occurring most frequently in the corn belt. Landlords typically share more input costs with 1/2-1/2 leases.

Some rental agreements have a 1/4-3/4 share, with the landlord providing only the land. These agreements exist primarily in the high risk wheat regions of western North and South Dakota. The 2/5-3/5 agreement exists in transitional areas, with cost sharing between that of one third and one half share agreements.

Higher quality land typically brings higher rental, and the landlord is less likely to share other input costs unless crop production costs are high. Crops that deplete the land to a greater degree require a higher rental than more benign crop production (Weisberger 1979). In large part, landlord share rents have been institutionalized at three levels: one half, two fifths, and one third (Scott 1983).

Cash rentals are more common when the operator has a steadier income or faces less risk from drought or other weather hazards

(Weisberger 1979). A trend toward increased use of cash agreements developed in some states during the 1970's (Scott 1983). The demand for land was greater than supply at the share price and farmers were willing to pay an amount greater than the share rental price. During the 1980's, land prices plummeted, crop production became less profitable,and many leases reverted to share (Scott 1985).

Crop price fluctuations have prompted increased use of flexible cash leases, especially in parts of the Midwest and Pacific Northwest. These agreements guarantee the landlord a minimum cash rental, plus an additional amount if the return from the crop is above a specified level (Weisberger 1979).

Rent is the economic return attributable to land. Actual rentals paid include costs of negotiating, enforcing, and managing the lease. It may also include an allowance for risk, and return on capital investments (Wunderlich 1983).

The cost of obtaining use of the land is the rent paid plus addition to land value paid by the renter. Erosion and depletion of fertility increase the landlords' cost (Scott 1983). The net rent received by a lessor depends upon rental paid and expenses incurred. This varies widely depending on the enforcement of the agreement, offsetting provisions, community conventions, and non-lease relationships (Wunderlich 1983).

Whether the rental paid the landlord is cash or share, it should adjust to reflect the value of the land's contribution to the crop enterprise. In the case of share rent, however, tradition pre-

vents this from happening. Land rent has historically been a leading indicator of land prices on the way up but a lagging indicator of land prices on the way down (Scott 1983).

Nonoperator landlords have been an increasing component of the farmland rental market in the U.S. since 1969 (Baron 1983). In 1978, nonoperator landlords rented over 87% of all rented land in farms in the U.S. Accompanying this trend has been an increase in the percentage of farmland rented by partowners, primarily in the Eastern and Cornbelt areas of the country.

Most nonoperator landlords are investors, without farm backgrounds, generally unwilling and unable to participate in farm management decisions. Partowner operators are likely to rent from several landlords, further decreasing contributions to management by landlords (Baron 1983).

The lack of involvement by landlords in the management of the farm operation makes them less willing to participate in a share lease. From 1970 to 1979, use of share agreements has decreased by about 8%, while the use of cash rental agreements has increased by approximately the same amount (Baron 1983).

The unwillingness of non-farm oriented landowners to make long term investments to maintain productivity has caused some concern. Over the time period specified above, it appears that the proportion of investments in land made by renters has increased relative to those made by landowners.

The partowner tenure class mixes tenure classes as well as occupations. This mixture of roles creates a form of managerial pluralism, and blurs class identity. Both renters and owners have alternatives in investing and using the land (Wunderlich 1983).

The 1979 Census of Agriculture Finance Survey reports most landlords, 85%, are individuals or families, ninety percent of whom rent to only one renter. Farm operators and retired farmers are 41% of individual landlords. A large majority, 80%, of farmland renters are organized as individual or family businesses (Wunderlich 1983).

The average size of partowner farms is 780 acres, compared to 205 acres for fullowner operator farms, and 396 acres for tenant farms. The modal age group for tenants is 25-34 years of age, part owners 45-54, and full owners 55-64 (Reid 1983).

Farmland rental in the United States is widespread but rental markets, where rental agreements are concluded, tend to be restricted in geographic area. To better understand the impact of farmland rental on resource control and income distribution, rental markets and rental agreements must be analyzed in a more localized framework.

Johnson (1972) conducted a study of the farmland rental market in Illinois and Michigan using case studies of individual farms. The market process in both areas was low-key and informal. Social acceptability discouraged competitive behavior by market participants.

Three fourths of the respondents owned as well as rented some land. Only 10-15% of the landlords were absentee, the rest resided

nearby and typically had an interest in farming. Most of the farm operators relied heavily upon land rental for expansion.

Most leases, 97% in Illinois and 52% in Michigan were share leases. Ninety percent of the leases were annual and 67% were verbal. Tenure was fairly secure, averaging 11 years in Michigan, and 14 years in Illinois.

Rapid change has been a constant feature of the agricultural production economy in the last 50 years. It is important to understand the scope and influence of farmland rental markets, as they adjust to these changes.

Some states have monitored their farmland rental market for many years. The University of Illinois has done a periodic analysis of farmland rental in that state for many years. Data for this effort come from records of farm operating units, collected from the Illinois Farm Business Farm Management Association (Scott 1981).

The agricultural economy has experienced financial upheaval in the 1980's, causing adjustments in the farmland rental market. From 1982 to 1986 cash rent on cropland in some areas of Illinois decreased by as much as 40% (Scott 1985). Although this is a steep decline, the value of land decreased in the range of 50 to 60%. Some renters are switching to share agreements, often at the insistence of lenders.

It is likely that operators who expanded most rapidly in the 1970's, as many partowner operators did, will be in the most serious financial trouble. A significant amount of foreclosure or liquidation

would make much more land available for rent, altering tenure patterns. This may promote use of custom farming to replace land rental (Scott 1985).

The last statewide survey of the farmland rental market in South Dakota was done in 1951 (See Hurlburt, 1954 above). Berry and Bau (1959) surveyed farmers in Moody County to determine their attitudes toward flexible cash rent. Almost all cropland leases, 90%, were share leases. Most landlords used annual leases to keep tenants accountable. Only 13% of share tenants would consider shifting to multi-year flexible cash leases, although 80% were interested in long term leases.

Since that time, the only published data on farmland rental in South Dakota has been South Dakota Agricultural Extension Service Newsletters. Madsen and Janssen (1985) conducted the most recent survey. Most leases reported in this survey were share leases, paying the landlord a rental of 1/3 of the crop. Cash agreements are widely used for pasture, hay and crop land.

Conclusions

Farmland rental has been and continues to be an important component of resource control in agriculture. Dramatic changes have occurred in agriculture over the last 50 years and economic turmoil has been the norm in recent years. To understand resource flows within agriculture, it is necessary to understand the impact of land rental practices and institutions on resource use and income distribution.

The extent and role of different tenure forms and the amount of land involved provide clues to the function of the rental market in modern agriculture. Terms of rental agreements can be examined for impacts on resource allocation and distribution of returns.

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Chapter 3

FARMLAND RENTAL MARKET CHARACTERISTICS AND SELECTED IMPACTS OF MARKET CHARACTERISTICS ON LEASING AGREEMENT TERMS

Agricultural land has many unique characteristics that affect the structure and functioning of the farmland rental market. Land is fixed in space, and is an essential resource necessary for agricultural production. Land also has social attributes that may influence participants' goals for land ownership and rental beyond strictly cost and return considerations. The background and goals of participants in the market can impact the functioning of the market.

This chapter consists of two sections. The first section describes some of the major structural characteristics of the farmland rental market in South Dakota. The second section contains an examination of the impact of various relationships between contracting parties on terms of rental agreements.

Data Sources and Limitations

Data in this chapter are from all 1155 respondents to the 1986 South Dakota State University Farmland Rental Survey. For the latter portion of this chapter, a subset of respondents that indicated only one type of landlord-tenant relationship in their leasing agreements was used for the analysis. Due to the nature of the questionnaire, this was the sole means to compare specific lease terms with the relationship between tenant and landlord.

Farmland Rental Market Characteristics

Some of the characteristics of the farmland rental market that will be examined in this chapter include: 1) the tenure types that exist; 2) the average number of acres per lease and number of leases for participants in these categories; 3) the geographic scope of the farmland rental market; 4) the ages of the participants in the rental market; 5) preferred types and formality of agreements; 6) the types of business organizations used by respondents; and 7) relationships between parties to rental agreements.

Tenure status of farmland rental market participants. Five tenure categories were identified from responses to question three of the questionnaire (see Appendix). Nonoperator landlord, fullowner operator landlord, partowner operator landlord, partowner operator, and tenant are the classifications used. Classification was based on responses to questions about the number of acres a respondent owned, leased to others, leased from others, and the number of acres farmed themselves.

Nonoperator landlords are respondents who own farmland and rent all of it to someone else. Fullowner operator landlords are farmland owners who rent some of the land they own to others and farm the rest themselves. Partowner operator landlords own farmland, part of which they rent to others and farm the rest of the land they own as well as land they rent in from others. Partowner operators own farmland and rent farmland from others, and farm it all themselves. Tenants own no farmland and rent all of the land they farm from others.

Nonoperator landlord was the most frequent tenure classification of respondent (Table 3.1). Over half, 56%, of the respondents rent all of the land they own to others. Although nonoperator landlords are the largest group, individually they rent relatively small parcels of land. The average number of acres leased for this category is 462 acres and the mean number of leases per landlord is 2.1.

Fullowner operator landlords accounted for only 4.7% of the respondents. This was the lowest number of participants in any tenure class. Fullowner operator landlords leased an average of 438 acres and averaged 2 leases per participant.

The dominance of the lessee side of the market by partowner operators can be seen in Table 3.1. This classification represented 26% of the respondents, and another 5% of the respondents are partowner operators who also rent land to others. Together these two groups account for 80.3% of farmland renter respondents to the survey.

Partowner operators also rent more land individually than respondents of any other tenure class. Partowner operators lease an average of 1046 acres compared to an average 764 acres for full tenants. Partowner operator landlords lease an average of 1656 acres of land, including land rented in and rented out.

Respondents classified as partowner operators also report being involved in more leases per participant than other tenure classes. Partowners who only rent land from others average 3.2 leases per participant and partowners who rent land to others as well, average 3.7 agreements per participant.

Table 3.1 Tenure Classes of Respondents, Average Number of Acres Leased, and Leases per Respondent

Tenure Category	Number of Respondents		Average Number of Acres Leased	Average Number of Leases per Respondent
	No.	Percent		
Tenant	89	7.71	764	2.7
Part-owner Operator	301	26.06	1046	3.2
Part-owner Operator Landlord	62	5.37	1656	3.7
Full owner Operator Landlord	54	4.68	439	2.0
Non-Operator Landlord	649	56.19	462	2.1
All Respondents	1155	100.0	701	2.5

It is clear from these figures that partowner operators are the dominant tenure form in the market. Only nonoperator landlords control similar quantities of farmland as a group. The smaller size of individual tracts and the large number of participants in this class diffuses their power as individuals in the market.

Geographic extent of the market. The location of farmland rental market participants relative to the land covered in the agreement indicates the geographic scope of the market. An examination of data in Table 3.2 reveals that of all respondents, 65% lived in the county where the rented land is located.

A large majority of farm operators, almost 90%, live in the county where the land is located. By contrast, slightly less than half, 45.6%, of the nonoperator landlords lived in the same county. Almost one third of nonoperator landlords, 32.5%, reside in another state. Only 4% of the farm operators responding lived out of state; many of these reside in counties that border South Dakota.

The local nature of the market is further illustrated by data in Table 3.3. The rented land of almost 85% of the respondents is located within one county. Of those respondents who reported renting land in more than one county, most live in the same county as one of the rented tracts or in an adjacent county. It can be seen in these results that except for the out of state landlords, the rental market functions in a very limited geographic area.

Ages of market participants. Analysis of the ages of the landlords and renters in the market, reveals some support for the

Table 3.2 Residence of Rental Market Participants in Relation to the Rented Land

Location	Farm Operators	Nonoperator Landlords	Total
	-------- Percent of Respondents --------		
Same County	89.9	45.6	65.0
Adjacent County in S.D.	4.9	9.6	9.1
Other County in S.D.	1.2	12.3	5.9
Out of State	4.0	32.5	20.0
	100.0	100.0	100.0
	N=506	N=649	N=1155

Correlation between location of respondent and tenure status:

$X^2=252.685$
$P\leq.0001$
$DF=3$

Table 3.3 Incidence of Land Rental in One or More Counties by Residence of Rental Market Participant in Relation to Rented Land

Location of Residence	N	Rent Land In One County	Rent Land in Two Or More Counties
		- Percent in Residence Class -	
Same County	751	84.8	15.2
Adjacent County in S.D.	105	75.2	24.8
Other County in S.D.	68	86.8	13.2
Out of State	231	87.9	12.1
Totals	1155	84.7	15.3

Correlation between residence of participant and rental of land in one or more counties:

$X^2=9.274$ $P\leq.026$ DF=3

tenure ladder concept. Full tenants, who rent all the land they farm from others, were the only tenure group with a significant number, 16%, of participants less than 25 years of age (Table 3.4). Slightly more than 40% of tenant respondents are between the ages of 25 and 34.

The data in Table 3.4 reveal a pattern of increased frequency of older participants as they report owning and renting out land. Part-owner operators are almost entirely between the ages of 25 and 65. Slightly more than 74% of partowner operator landlords are between the ages of 35 and 65, and just over 20% are over 65 years of age.

Analysis of the age distributions of participants in the tenant and partowner operator categories indicates they lease farmland for different reasons. The younger tenants are likely to be people attempting to get started in farming. Partowners would appear to have expansion of their operation as their motivation for renting farmland.

Of respondents classified as fullowner operator landlords, two thirds are over the age of 55. Nonoperator landlords report the oldest distribution of ages, with almost 55% of respondents in this category over 65 years of age, and three fourths are over the age of 55. These distributions suggest most fullowner operator landlords are reducing the size of their operation as they look forward to retirement. The ages of nonoperator landlords indicate that many are retired, and may be retired farmers.

Male respondents as a group, were likely to be younger than female respondents. Almost three fourths of respondents were male,

Table 3.4 Age of Respondents by Tenure Class and Sex

Tenure Class	N	Reported Age Group: Less than 25 years	25-34	35-44	45-54	55-64	65 years and over	Total
		Percent of Those Responding						
Tenant	86	16.3	41.9	19.8	9.3	10.5	2.3	7.7
Partowner Operator	294	2.4	16.0	27.6	24.2	23.1	6.8	26.4
Partowner Operator Landlord	59	0	5.1	10.2	27.1	37.3	20.3	5.3
Fullowner Operator Landlord	54	0	3.7	18.5	11.1	33.3	33.3	4.9
Non-Operator Landlord	619	0	2.3	8.1	12.9	22.3	54.4	55.7
Totals	1112	1.9	9.2	14.8	16.3	22.9	35.0	100.0
Sex		Age of Respondent by Sex						
Male	817	2.6	11.5	17.1	17.4	23.3	28.2	73.7
Female	292	0	2.7	8.2	13.4	21.9	53.8	26.3
Totals	1109	1.9	9.2	14.8	16.3	22.9	34.9	100.0

Correlation between tenure class and age of respondent: $X^2=513.418$ $P\leq.0001$ DF=20

Correlation between age and sex of respondent: $X^2=79.8$ $P\leq.0001$ DF=5

over one fourth of whom were 65 years of age or older. Another fourth were between the ages of 55 and 64 years of age. A much larger proportion of female respondents, 54%, were age 65 or older. Just under 90% of female respondents were over 45 years of age.

Types and formality of agreements. Share agreements are the most frequently used type of rental contract for cropland. Data in Table 3.5 shows that 734 respondents are involved in a total of 1195 share leasing agreements. There were almost as many cropland cash agreements, 1030, reported as share agreements, but only 572 respondents reported involvement in leases of this type.

Verbal agreements are used with considerably more frequency than written agreements. Three fifths of the 2492 agreements for which this information was provided were verbal, and 40%, or 975 agreements were written. An even greater proportion of the leases, 64%, were annual agreements, with the remainder classified as multi-year. It is apparent from these numbers that the rental market remains a fairly informal market. Legally, verbal agreements are not binding for more than one year. The extent to which this is known may affect the length of lease selected.

The types of businesses in the rental market. A review of Table 3.6 indicates that 86.3% of leases reported by tenants, covering 75.7% of acres rented in, were with landlords who are individuals operating on their own behalf. State and federal government, financial institutions, and tribal governments were listed as landlords in only

Table 3.5 Characteristics of Farmland Rental Agreements

Lease Characteristic	Respondents Using		Number of Leases	Average Number of Leases Per Respondent
	No.	Percent*		
Share	734	64	1195	1.6
Cash	572	50	1030	1.8
Pasture	414	36	762	1.8
Verbal	806	70	1517	1.9
Written	474	41	975	2.1
Annual	812	70	1545	1.9
Multi-year	395	34	860	2.2

N= 1155
*Total percent is greater than 100 because some respondents have more than one type of lease.

Table 3.6 Incidence of Tenant Leasing From Type of Landlord*

Type of Landlord	Number of Leases	Acres Rented From
	---- Percent of Total ----	
Parents or In-Laws	16.3	17.1
Other Relatives	16.9	11.9
Unrelated Individuals	54.1	46.7
Financial Institutions	1.0	.8
State Government	1.8	3.0
Tribal Government	4.1	12.4
Federal Government	1.1	4.8
Other	4.7	3.3
Total	100.0	100.0

Total Leases = 1087 Number of Renters = 421
Total Acres = 408,400

*From SDSU Economics Department Staff Paper 86-8, Bruce Johnson, Larry Janssen, and Michael Lundeen, "Farmland Rental Markets: Current Issues, Practices, and Conditions", November, 1986.

8% of leases. However, these entities controlled a much larger proportion, 20%, of the acres tenants rented in.

In similar fashion, most farmers operate their farm enterprise as single proprietors. Despite the fact that many farmland renters have quite large farm operations, 94.7% of the leases reported by landlords were with single proprietorship farm operations. Leases to single proprietors cover 96.4% of the land reported to be rented out by landlords (Table 3.7).

A slightly smaller proportion, over three fourths, of tenant respondents indicated that they operated their farm as a single proprietorship. Almost 16% were organized in partnerships and 6% were non-family corporations. The 1982 Census of Agriculture reports 87.8% of the farm operators in South Dakota are organized as single proprietors, 9.8% as partnerships and 2.4% as corporations. It appears from landlord responses to the survey, that individual proprietors are more likely to rent farmland than partnerships or corporations.

Relationship between contracting parties. A significant majority of respondents are involved in leasing agreements with unrelated individuals (Table 3.8). Of respondents who rent farmland from others, 34% have agreements with unrelated individuals only. Another 31% reported having at least one lease with an unrelated party in addition to at least one lease with a relative. Renters having all their leases only with relatives was the only other leasing pattern that occurred with any significant frequency at 21%.

Table 3.7 Incidence of Landlord Leasing to Type of Tenant*

Type of Tenant	Number of Leases	Acres Rented To
	----- Percent of Total ----	
Children or In-Laws	9.6	13.8
Other Relatives	15.1	15.3
Unrelated Individuals	70.7	67.3
Non-family Partnership	1.6	2.0
Non-family Corporation	.3	.2
Other	2.7	1.4
Total	100.0	100.0

Number of Landlords = 650
Total Number of Leases = 1016
Total Number of Acres = 299,400

*From SDSU Economics Department Staff Paper 86-8, by Bruce Johnson, Larry Janssen, and Michael Lundeen, "Farmland Rental Markets: Current Issues, Practices, and Conditions", November, 1986.

Table 3.8 Tenant Leasing Patterns, Acres Leased, and Number of Leases Reported Each Pattern*

Renter Leases From	Respondents Leasing Patterns		Number of Leases Reported This Pattern		Average Number of Leases Per Respondent	Significant Difference in Average No. Leases**
	Number	Percent	Number	Percent		
Relatives Only	83	20.6	126	12.1	1.5	D
Unrelated Individuals Only	137	34.0	283	27.2	2.1	C,D
Business or Governments Only	18	4.5	29	2.8	1.6	D
Relatives and Unrelated Individuals	125	31.0	449	43.2	3.6	B
Relatives and Businesses or Government	8	2.0	23	2.2	2.9	C,B
Unrelated Individuals and Businesses or Government	18	4.5	63	6.1	3.5	B
Relatives, Unrelated Individuals & Businesses and Government	14	3.5	67	6.4	4.8	A
TOTALS	403	100.0	1040	100.0	2.6	

Table 3.8 continued

Renter Leases From	Acres Leased in These Patterns		Average Acres Leased Per Respondent	Significant Difference in Average Acres**
	Number (1000's)	Percent		
Relatives Only	49.5	12.6	596.3	C
Unrelated Individuals Only	115.8	29.4	845.6	C
Businesses or Governments Only	40.3	10.3	2241.3	A,B
Relatives and Unrelated Individuals	105.0	26.7	840.1	C
Relatives and Businesses or Government	25.7	6.6	3221.3	A
Unrelated Individuals and Businesses or Government	36.4	9.2	2019.6	B
Relatives, Unrelated Individuals & Businesses or Government	20.8	5.3	1498.0	B,C
TOTALS	393.7	100.0	976.8	

Correlation between type of landlord leased from and leasing pattern: X_2=143.4 P≤.000 DF=6

* Leasing patterns could be identified for only 1035 of the 1155 respondents.

**T tests used to compare means to detect significant differences. Different letters indicate significant differences, P=0.05.

An even greater proportion of the landlord respondents reported leasing agreements with unrelated individuals (Table 3.9). Almost two thirds, 62% of landlords reported leasing only to unrelated persons while 28% reported leasing to relatives only. Another 7.3% of landlords reported rental agreement(s) with an unrelated individual, and one rental agreement with a relative.

By contrast, only 15% of the renters indicated having leasing agreements with financial institutions, state, federal, or tribal governments, individually or with leases from other types of landlords. Only 3% of landlords reported leasing agreements with partnerships and/or non-family corporations. It appears that the incidence of other types of business organizations on both sides of the rental market is low.

The dominance of individuals in the rental market is further illustrated by the number of acres leased and the number of leases reported between unrelated parties. Of the total acres reported leased out by landlords, 61.1% are leased to unrelated individuals. Leasing agreements for these acres are 65% of all leases reported by landlords. Almost one fourth of the acres reported, under 20% of agreements, are leased to relatives. Landlords reporting leases with relatives and unrelated individuals rent out 10% of the leased acres reported. This land is covered by 7.3% of the agreements.

The proportion of acres leased by farm operators who lease only from unrelated individuals is smaller than that reported by landlords. However, it is still the largest proportion of total acres rented in by

Table 3.9 Landlord Leasing Patterns, Acres Leased and Number of Leases Reported Each Pattern*

Landlord Leases to	Respondents Leasing Patterns		Number of Leases Reported This Pattern		Average Number of Leases Per Respondent	Significant Difference in Average Acres**
	Number	Percent	Number	Percent		
Relatives Only	176	27.9	199	19.9	1.1	B
Unrelated Individuals	393	62.2	651	65.2	1.7	A,B
Partnership or Corporation	13	2.1	16	1.6	1.2	A,B
Relatives and Unrelated Individuals	46	7.3	121	12.1	2.6	A,B
Relatives and Partnerships or Corporations	0	0	0	0	0	
Unrelated Individuals and Partnerships/Corporations	3	.5	6	.6	2.0	A,B
Related, Unrelated Individuals & Partnership/Corp.	1	.2	5	.5	5.0	A
TOTALS	632	100.0	998	100.0	1.6	

Table 3.9 continued

Landlord Leases to	Acres Leased in These Patterns		Average Number Acres	Significant Difference in Average No. Leases*
	Number (1000's)	Percent		
Relatives Only	76.1	24.9	432.4	B
Unrelated Individuals	186.8	61.1	475.3	B
Partnership or Corporation	6.1	2.0	470.7	B
Relatives and Unrelated Individuals	29.5	9.6	640.3	B
Relatives and Partnerships or Corporations	0	0	0	
Unrelated Individuals and Partnerships/Corporations	6.6	2.2	2192.7	A
Related, Unrelated Individuals & Partnerships/Corporations	.8	.3	800.0	A,B
TOTALS	305.9	100.0	483.9	

Correlation between type of tenant(s) lease to and leasing pattern: $X^2=142.1$ $P\leq.000$ DF=5

* Leasing patterns could be identified for only 1035 of the 1155 respondents.

**T tests used to compare means to detect significant differences. Different letters indicate significant differences, P=.05.

respondents. Of all acres respondents rented in, 29.4% are leased from unrelated persons. These acres are covered by 27% of the leases reported. Renters leasing from unrelated persons and relatives reported that slightly over 26.5% of the acres were rented in this pattern, but involved 43.2% of the leases reported. Respondents leasing from relatives only leased 12.6% of the acres using 12% of the leases reported.

Almost two thirds of tenant respondents reported involvement in more than one lease (Table 3.10). Lessee respondents renting from relatives are most likely to have a lease with an unrelated person as well. Almost one third of tenant respondents reported this leasing pattern. Another third of the tenant respondents leased from unrelated persons only. Almost half of these, 47.5%, have multiple leases. Two thirds of respondents who lease from a financial institution or government have only one lease. Over 60% of tenants renting from relatives have only one lease.

Most landlord respondents, 70%, reported having only one leasing agreement. Few landlord respondents, 12.5%, who rented only to relatives reported having more than one leasing agreement. Landlords renting to partnerships or corporations and unrelated individuals reported slightly more instances of multiple leasing, 23% and 29.5% respectively. Landlords with multiple leases and renting to relatives reported leasing to an unrelated individual as well 7.3% of the time.

Table 3.10 Incidence of Multiple Leasing Patterns by Type of Party Leasing With

Tenant Leases From	N	Number of Leases		Percent of Tenant Respondents
		Single*	Multiple	
		--- Percent --- Each Pattern		
Relative Only	83	61.5	38.5	20.6
Unrelated Individuals Only	137	52.5	47.5	34.0
Bank or Government Only	18	66.7	33.3	4.5
Relative and Unrelated	125	--	100.0	31.0
Relative and Bank/Government	8	--	100.0	2.0
Unrelated and Bank/Government	18	--	100.0	4.5
Relative, Unrelated, and Bank/Government	14	--	100.0	3.5
TOTALS	403	33.5	66.5	100.0

Landlord Leases To	N	Number of Leases		Percent of Landlord Respondents
		Single*	Multiple	
		--- Percent --- Each Pattern		
Relative Only	176	87.5	12.5	27.9
Unrelated Individuals Only	393	70.5	29.5	62.2
Partnership or Corporation Only	13	76.9	23.1	2.1
Relative and Unrelated	46	--	100.0	7.3
Relative and Partnership/Corp.	0	--	0	0
Unrelated and Partnership/Corp.	3	--	100.0	.5
Relative, Unrelated, and Partnership/Corporation	1	--	100.0	.2
TOTALS	632	69.8	30.2	100.0

*This incidence is greater than that reported elsewhere due to the structure of the questionnaire. The figures in this table usually consider leases between one landlord and one tenant as one lease, even though it may be for a tract that includes both cropland and pasture or hayland. In other reports this was usually considered more than one lease.

Impact of relationship between tenant and landlord on rental agreement terms.

Parties to a leasing agreement may have differing objectives when leasing farmland. The terms of the agreement will vary, with a party's objectives. A landlord objective of land transfer to a son or daughter may produce lease terms more favorable to the tenant than a goal of maximizing the returns to the land investment.

In this section, the relationship between contracting parties and lease types and terms will be examined. Three categories of relationship will be used for this analysis. The categories are leases between immediate family members (family), leases between extended family members (relatives), and unrelated individuals. The incidence of persons leasing only to or from other categories of participants (corporations, banks, and government) was too low to be included in the analysis.

The issues examined include the impact of the type of relationship on existence of more favorable lease terms for the tenant and on the formality of the agreement.

Relationship between landlord and tenant and type of lease. Share leases are the most frequently used form of leasing agreement for cropland in all three relationship categories (Table 3.11). Leases between family members were most likely to be share leases. Just over half, 53% of the respondents in this category reported having only share leases with family members, and almost another 10% had both share and cash agreements.

Table 3.11 Type of Lease Used by Relationship Between Landlord and Tenant

Type of Relationship	N	Type of Lease			Total
		Cash	Share	Both	
		--- Percent of Those Responding ---			
Family	99	32.7	52.9	9.6	13.9
Relative	121	35.4	49.6	10.2	16.9
Unrelated	495	31.6	49.4	14.9	69.2
Total	715	33.8	52.2	14.0	100.0

Correlation between type of lease and relationship: $X^2=3.638$
$P \leq .457$
$DF=4$

Respondents having leases with relatives and unrelated individuals reported almost identical proportions, 49%-50%, using share leases only. A higher proportion of those having leases with unrelated parties reported using both cash and share leases. Only 10% of respondents having leases with relatives used both cash and share leases. Fifteen percent of respondents having leases with unrelated persons used both types of leases.

Written and oral agreements. Data in Table 3.12 reflects specific terms of share and cash agreements. It can be seen from the data that share leases are more informal than fixed cash rent leases among all types of participants. Both cash and share leases between unrelated individuals are more frequently written than leases between relatives or family members.

Leases between relatives are the most informal, with 72.7% of cash leases and 87.3% of share leases being verbal agreements (Table 3.12). Cash leases between unrelated individuals are the only group with more than half, 52.3%, of leases being written. By comparison, the highest frequency of written share leases is 30.8%, reported by those leasing with unrelated individuals.

It was expected that multi-year leases would be more likely to follow the same pattern as written leases. Only in the case of cash leases between relatives was this pattern evident. The proportion of written leases between relatives, 27.3%, is the same as those reporting multi-year leases. Of share agreements between family members, 74% are

Table 3.12 Formality of Leasing Agreements by Relationship Between Landlord and Tenant

Type of Relationship	Cash Leases			Share Leases		
	N	Verbal	Written	N	Verbal	Written
		- Percent of Respondents -			- Percent of Respondents -	
Family	38	76.3	23.7	53	81.1	18.9
Relative	55	72.7	27.3	71	87.3	12.7
Unrelated	237	47.7	52.3	302	69.2	30.8
Total	330	55.2	44.8	426	73.7	26.3

Correlation between formality of cash leases and relationship:

$X^2=19.1$
$P \leq .0001$
$DF=2$

Correlation between formality of share leases and relationship:

$X2=11.46$
$P \leq .003$
$DF=2$

annual. Cash leases between family members were reported to be annual agreements in 72% of the cases (Table 3.12).

The highest proportion of share agreements reported to be multi-year, 35.3%, were between relatives. About the same proportion, 34.7%, of cash agreements between unrelated parties were multi-year. Analysis of the data in Tables 3.12 and 3.13, indicate that oral multi-year agreements are not uncommon. It appears that some cash and share leases between family members and share leases between relatives are of this type.

It is clear that verbal, annual leases are the dominant form for all categories of participants. (Analysis of the few (12) agreements that could be identified as being managed by professional farm managers, 11 were annual and all were written.) Although almost three fourths of the leases are annual, the average length of tenure reported for renters was approximately 10 years. It would appear farmland renters are not frequently in danger of losing the right to farm the land each year, despite the high proportion of annual leases.

Relationship between parties and the schedule of payments. The payment schedule of cash rental affects the true (present value) cost of renting land. If partial payment must be made before the growing season begins, the cost of rental is higher because of the time value of money.

Data in Table 3.14 shows that cash leases between unrelated individuals are more likely to require a semi-annual payment schedule. Over 60% of the leases between unrelated individuals required semi-

Table 3.13 Length of Leasing Agreement by Relationship Between Landlord and Tenant

Type of Relationship	Cash Leases			Share Leases		
	N	Annual	Multi-Year	N	Annual	Multi-Year
		- Percent of Respondents -			- Percent of Respondents -	
Family	36	72.2	27.8	50	74.0	26.0
Relative	55	72.7	27.3	68	64.7	35.3
Unrelated	236	65.3	34.7	295	73.9	26.1
Total	327	67.3	32.7	413	72.4	27.6

Correlation between length of cash leases and relationship:

$X^2=1.581$
$P \leq .454$
$DF=2$

Correlation between formality of share leases and relationship:

$X^2=2.410$
$P \leq .300$
$DF=2$

Table 3.14 Cash Rental Payment Schedule by Relationship Between Tenant and Landlord

Type of Relationship	N	Payment Schedule		Total
		Annual	Semi-Annual	
		-Percent of Respondents-		
Family	34	73.5	26.5	10.6
Relative	52	55.8	44.2	16.2
Unrelated Individuals	235	38.3	61.7	73.2
Total	321	44.9	55.1	100.0

Correlation between payment schedule and relationship: $X^2=17.891$
$P \leq .000$
$DF=4$

annual payments. In leases between family members, only 23.7% of the leases had this requirement. In leases between relatives it was required in 41.5% of the lease agreements. Annual and semi-annual payment schedules are used almost exclusively by all categories of participants.

Relationship between landlord and tenant and use of flexible cash rental payments. Use of flexible cash agreements has been advocated by some as a means of providing some risk sharing benefits of share leases without the problems that can occur with share leases. Use of flexible cash leases may be preferred if inter-generational transfer is the goal of the landlord.

Cash rent agreements that vary the rental payment based on variations in yield and/or prices are not widely used. Only 10.1% of all cash agreements reported had cash rental prices that vary with variations in yield or price. Examination of data in Table 3.15 reveals that agreements between family members may be more likely to contain this feature but the difference was not significant.

Relationship between parties and share and cash rentals. Analysis of the impact of relationship between parties and the rental, cash or share, paid for use of the land revealed no significant price differences. It is apparent that other factors besides relationship have a greater influence on level of rental paid.

Other share lease terms and relationships between participants. Share rental agreements have other terms that can vary in ways other

than varying the share of output or number and share of inputs. After crops have been harvested, there is value in grazing the crop residue in the field. Almost two thirds of leases between family members and relatives provide forage benefits to the renter. Leases between unrelated individuals have this provision only 55.5% of the time. This benefit is provided without additional payment in almost all cases.

Relationship between parties and cash payment provisions in share leases. Share leases may include buildings or tracts of land that can only be used for hay or pasture, in addition to crop land. Payment for use of these additional features sometimes comes in the form of a cash payment in addition to the rental share. If competition for land exists, renters may offer to make a supplementary cash payment to secure the lease.

Very few, about 15% of the leases, have provisions for cash payments as part of the rental price. Relationship between leasing parties had no significant effect on the use of additional cash payments. This may indicate that few share agreements include buildings or hayland or that payment for these features is included in the rental share. Payment could be in the form of other considerations not specifically included in the lease.

Some characteristics of participants by relationship between contracting parties. Leases between family members, and perhaps to some extent relatives, may reflect the goal of transfer of the land to future generations. Examination of data in Tables 3.16 and 3.17 reveals that landlords leasing to family members are likely to be older than

Table 3.16 Age of Landlord by Relationship with Tenant

Type of Relationship	N	25-34	35-44	45-54	55-64	Over 65	Total
		------- Percent of those Responding -------					
Family	66	0	0	9.1	28.8	62.1	12.3
Relative	97	4.1	16.5	20.6	24.7	34.0	18.1
Unrelated	373	2.1	10.5	13.9	26.3	47.2	69.6
Total	536	2.2	10.3	14.6	26.3	46.6	100.0

Correlation between age of landlord and relationship: $X^2=24.36$
$P \leq .002$
$DF=12$

Table 3.17 Percent of Landlord's Income From Rented Land by Relationship With Tenant

Type of Relationship	N	Percent of Household Income: Less Than 30 %	30-50%	50-80%	Over 80%	Total
		----- Percent of Those Responding ------				
Family	59	40.7	18.6	25.4	15.3	11.8
Relative	86	74.4	16.3	5.8	3.5	17.3
Unrelated	353	70.8	17.6	6.2	5.4	70.9
Total	498	67.9	17.5	8.4	6.2	100.0

Correlation between percent of landlord's income and relationship:

$X^2=39.629$
$P\leq.0001$

other landlords. Family landlords are also more likely to rely upon income from the rented land for a greater proportion of their household income.

Of landlords who rent to family members, 28.8% are between the ages of 55 and 64 while 62.1% are 65 or older. Slightly more than one fourth of landlords who rent to family members get 50-80% of their income from their rented farmland. Another 15% rely on this source of income for over 80% of their income. By contrast, data in Table 3.17 show that 74.4% of landlords in agreements between relatives and 70.8% in leases between unrelated parties rely on farmland rental income for less than 30% of their household income.

From these two tables, it can be seen that landlords in leases between family members are more involved in farming activities. Getting their children started in farming, and land transfer to the next generation appears to be a major reason for farmland leasing by these respondents.

Conclusions

The farmland rental market in South Dakota is essentially a series of local markets. Participants in the rental market are predominantly individuals and are most likely to have agreements with unrelated people. The landlord side of the market is dominated by nonoperator landlords, one third of whom live out of state. The renter side of the market is dominated by partowner operators. Partowners are

involved in more leases, rent larger tracts, and are the largest group of renter participants.

Analysis of the ages of market participants reveals some support for the tenure ladder concept. Proceeding from renting all of the land farmed to eventual full ownership is still a motivation for a portion of the rental market. But it is not the major reason as it once may have been. The preeminence of partowner operators suggests that the primary reason for land rental is expansion of the farm enterprise.

The preference by respondents for verbal annual leases suggests that the market is fairly informal and traditional lease terms are relied upon to some extent. A significantly higher proportion of cash leases than share leases are written agreements, especially leases between unrelated individuals.

Leasing agreements between family members and relatives are more informal than those between unrelated parties. Non-price terms of leasing agreements between relatives and family members may be more favorable for tenants. However, the cash or share rental does not seem to be influenced to a significant degree by relationships.

Family member landlords are older and more reliant on rental income than unrelated or relative landlords. They are more likely to be retiring or retired farmers passing on the land.

Chapter 4

RENTAL MARKET CHARACTERISTICS AND MARKET PERFORMANCE UNDER VARYING CONDITIONS

Tradition has played an influential role in determining farmland rental prices and practices. For many years, economists have been concerned with the efficiency implications of tradition on rental terms (Mill 1851 and Hurlburt 1962).

Use of traditional agreements inhibits variation of rental terms to adjust to variations in soil productivity and economic environment. If rental terms and the accompanying resource mix do not respond to changing conditions, product prices do not reflect consumer preferences and inefficient use of resources is the result (Heady 1952). The magnitude and extent of rental market responses to changing conditions are examined in Chapter 4.

The cropland in South Dakota varies considerably in fertility and amount of rainfall received (Figure 4.1). The Southeast corner of the state has relatively more fertile soil and receives more rainfall than other areas of the state. Crop production in this area is predominantly corn and soybeans. The Western portions of the state, in contrast, are arid or semi-arid with land of considerably less fertility. Most land in the Western part of the state is range land and wheat land.

In this chapter, responsiveness of the farmland rental market in adjusting to these conditions will be analyzed. To accomplish this leasing agreements will be examined by: 1) testing for significant

Figure 4.1 Average annual precipitation and air temperature (Figure 4.1A), and average percentage rating per acre of unimproved land per county (Figure 4.1B) in South Dakota (1967-1974 sales data).*

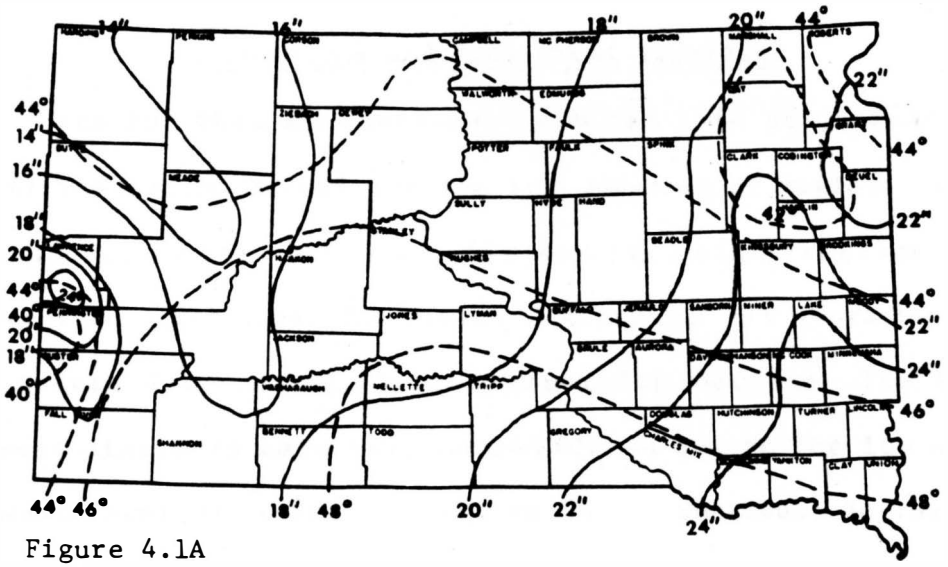

Figure 4.1A

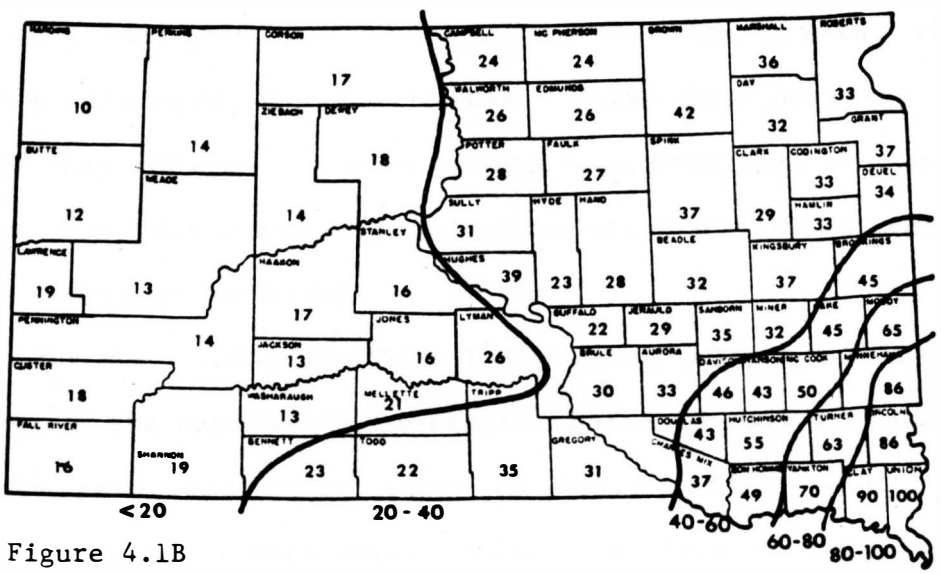

Figure 4.1B

*Source: Westin and Malo 1978

differences in leasing terms between regions of the state, and 2) testing for significant differences in lease terms by the type of crop grown on the land.

Data Source and Analytical Variables

Data for this analysis are from the 1986 South Dakota State University Farmland Rental Survey. For purposes of regional analysis, the responses to the survey are divided into eight regions based on crop reporting districts. The regional groupings are those used by the South Dakota Crop and Livestock Reporting Service. The West and Southwest districts have been consolidated due to the low number of respondent farmland owners and renters in the Southwest Region.

The cropping patterns used in the analysis were developed from respondents' lists of most important crops grown. Four cropping patterns that occurred most frequently, from the several that were possible, are used in the analysis. These four patterns are used because they reflect the most common crop rotations in the various regions of the state and provide a sequential scale that serves as a proxy for soil productivity.

For the ensuing analysis, the cropping pattern is labeled corn-soybeans if the respondent indicated that only corn and/or soybeans were the principal crops grown on their rented land. If corn, soybeans, and one or more small grains were grown the cropping pattern is corn, soybeans, and grain. Land that was used to produce corn, wheat and other types of small grain has a cropping pattern of corn,

wheat, and grain. A respondent's indication that only wheat and/or another small grain was grown, received a cropping pattern label of wheat and grain. One of these four cropping patterns are found in over 85% of cropland leases examined.

Regional Differences

Differences in crops grown on rented land. There is considerable variety in crops produced on rented land in South Dakota. Soil fertility and precipitation decrease steadily moving from the Southeast Region of the state to the Northwest Region. It is not unexpected then, that the greatest occurrence of soybean production occurs in the Southeast and East Central portions of the state. Corn is the crop most extensively produced in these areas and is regularly included in the cropping pattern in most areas of the state except in the West and Northwest Regions (Table 4.1).

Crop production in the Central regions includes considerably larger proportions of small grains (like oats and barley) grown in rotation with corn. Wheat is another crop, besides corn, that is produced in most areas of the state. However, it is grown on a much smaller proportion of the land in regions where corn and soybeans are grown. Crop production begins to shift more heavily to wheat in the Northeast Region where just over 70% of the respondents indicated it was grown in rotation with other crops. In the Central and Western regions of the state, wheat is regularly grown on virtually all cropland under rental agreements.

Table 4.1 Crops Grown On Rented Land By Crop Reporting District in South Dakota

Region	Number of Leases With These Crops Grown: Corn/Soybeans*		Corn, Soybeans & Other Grains		Corn, Wheat & Other Grains		Wheat and/or Other Grains		Totals	
	No. of Leases	Percent	No. of Leases	Percent	No. of Leases	Percent	No. of Leases	Percent	No. of Leases	Percent
Northwest	0	0	0	0	10	15.2	56	84.8	66	4.0
Western	0	0	0	0	10	12.8	68	87.2	78	4.7
South Central	0	0	2	1.4	60	42.9	78	55.7	140	8.4
Central	0	0	2	1.5	94	70.7	37	27.8	133	8.0
North Central	0	0	16	7.8	110	53.9	78	38.2	204	12.3
North East	2	.8	64	25.9	131	53.0	50	20.2	247	14.8
East Central	66	19.1	108	31.3	158	45.8	13	3.8	345	20.7
Southeast	150	33.3	140	31.0	154	34.2	7	1.5	451	27.1
Total	218	13.1	332	19.9	727	43.7	387	23.3	1664	100.0

N=1664

Correlation between cropping pattern and Crop Reporting District: $X^2=952.999$ $P\leq.0001$ DF=21

* Cropping patterns are combinations of major crops raised on the rented land. Only major cropping patterns are included. Explanation: Corn/Soybeans - corn and soybeans are the only major crops grown.
Corn/Soybeans/Grains - Corn, soybeans, and other grains (oats, barley, wheat, etc.) are grown.
Corn/Wheat/Grain - Corn, wheat, and other grains are grown. No soybeans are grown.
Wheat/Grain - Wheat and small grains are grown, but no corn or soybeans are grown.

Within each region the use of share or cash agreement is influenced by the principal crops grown on the land covered in the agreement. The higher variable production costs and increased risk to renters' income in corn and soybean production encourages the use of share agreements. Share agreements' risk sharing attributes and input cost sharing provisions costs make it attractive for these crops.

In five of the seven regions there were statistically significant differences (p=.05) in the cropping patterns grown on land rented under share and cash agreements. Only the Western and South Central Regions did not reveal a pattern of respondents shifting to cash leases as corn or soybeans became less important crops. In all five regions where differences were significant, the proportion of share leases is much higher for wheat-grain land than it is for corn-wheat-grain land.

In the Southeast and East Central regions share rental agreements are 83-86% of the rental agreements for corn-soybean land. Respondents in these two areas, as well as the Northeast and North Central regions, reported almost 80% of their leases on corn-soybean-grain land were share agreements.

The proportion of share agreements on corn-wheat-grain land decreased to less than half of leases reported in each region. North Central region respondents reported the highest proportion, 43%, of share leases for this type of land. The lowest proportion of share agreements for this type of land was approximately one third in the Southeast region.

Wheat-grain land is leased with share agreements in over half of the cases. Although this land is generally of lower quality and wheat production requires fewer variable inputs, the use of share agreements is quite high. Over three fourths of respondents in the East Central region and two thirds of respondents in the Northeast and Northwest regions used share leases for wheat-grain land. The North Central region had the lowest proportion of share agreements for wheat-grain land, at 55% of the rental agreements.

Differences in cash rental prices. Cash rental prices should reflect the net value of the land's contribution to crop production. Cropland in the East Central and Southeast regions of the state are capable of producing greater yields of higher valued produce than land in other areas of the state. Land in these regions should earn a higher cash rental than land elsewhere in the state. As land productivity progressively decreases across the state, the rental price should decrease as well.

Data in Table 4.2 show average cash rental prices and significant differences in cropland cash rents between regions of the state. The table contains the number of cash leases for which prices were reported in each region, and the mean cash rental price for each region. Letters in the right column indicate whether significant differences exist. Regions with different letters have significantly different (p=.05) cashrent prices, while those with the same letter do not. Testing for differences was done using the Waller/Duncan multiple t test. This procedure tests for significant differences between means

Table 4.2 Regional Differences in Cash Rent Levels

Region	Average Cash Rental Price	N	Significant Difference Indicated by Different Letters -
Southeast	41.96	73	A
East Central	34.34	79	B
Northeast	32.30	68	B
North Central	22.49	68	C
Central	18.50	38	C D
South Central	14.03	27	D E
Western	11.45	15	E
Northwest	10.94	18	E

Dependent Variable Cash Price

Source:	DF	Sum of Sq.	Mean Sq.	F Value	PR. F	R^2	C.V.
MODEL	7	38938	5562	38.76	.0001	.416	42.1479
ERROR	378	54539	143				
Corrected Total	385	93478					

Root MSE	Cash Price Mean
11.9802	28.42

of more than two classes of observations. The test is accomplished by comparing the mean of each class to each of the other class means, and groups them according to detected significant differences (Kirk 1968, SAS User's Guide 1985).

As expected, the highest amount of cash rental was paid in the Southeast region. Cash rentals decreased steadily for land farther west across South Dakota. The average price per acre rental in this region was almost $42.00, about 20% higher than the second highest average, $34.34, in the East Central region. The average rental paid in the Northeast region was $32.30, essentially the same as that paid in the East Central region.

In the central portion of the state the North Central region had the highest average rental, $22.49. The average cash rental in the Central region, $18.50, was not significantly different from either the North Central's or South Central's, $14.05, regional averages. Average rentals in the South Central, Western, and Northwest regions were not significantly different. Rentals in this group ranged from $14 in the South Central region to about $11 in the Northwest region.

Cash rental prices also vary according to the crop production pattern on the rented land. Variation in cash rental between land with various cropping patterns was expected for the same reasons regional variation was expected. The cropping patterns developed follow a regional pattern as discussed earlier. The differences in cash rentals between cropping patterns suggest that crops produced have a stronger

Table 4.3 Variation in Cropland Cash Rental Prices by Cropping Pattern

Cropping Pattern	N	Mean Cash Rental Price	Significant Difference Indicated by Different Letter
Corn and/or Soybeans	47	47.12	A
Corn, Soybeans, Other Grain	75	37.52	B
Corn, Wheat, or Other Grain	150	27.68	C
Wheat and/or Other Grain	68	16.80	D

Dependent Variable Cash Price

Source:	DF	Sum of Sq.	Mean Sq.	F Value	PR. F	R^2	C.V.
MODEL	3	33782	11260	77.03	.0001	.4075	41.6383
ERROR	336	49118	146				
Corrected Total	339	82900					

Root MSE	Cash Price Mean
12.0908	29.038

influence on the rental paid than does location. Region or cropping pattern variables explained about 41% of variation in cash rental prices across South Dakota.

Mean cash rentals paid in each cropping pattern category are significantly different from the others. Land where corn or soybeans are grown earns $47.12 per acre. The price decreases to $37.52 per acre on land where small grain is also grown and drops another $10.00 to $27.68, on corn-wheat-grain land. Wheat-grain land earns only a third of the cash rent received on corn-soybean land, $16.80 per acre.

Differences in gross rent to value ratios. The ratio of cash rent to value of the land shows the return on investment in land. Rent to value ratios are calculated by dividing the cash rental amount by the market value of the land. The rent to value ratios reported in this chapter are based on gross rental prices which include property taxes and other landlord costs of ownership and maintenance. The net return to the landlord's investment in land is the rental price minus these costs of ownership. Rent to value ratios calculated using net returns more accurately depict the landlord's rate of return. However, these net amounts are not available and the gross return is used as a proxy for net return.

Returns to land are influenced by earning potential of other types of investments and rentals rise and fall with the value of land. Rent to value ratios may fluctuate over time as economic conditions change, but should be fairly constant across all regions at a given point in time. The rent to value ratios used in this analysis were

calculated using the per acre cash rental for 1986 and respondents' estimates of the land's value.

The ratios in the sample differ by as much as 3.5%, but do not follow a pattern that reflects land fertility, land prices or crops produced. A review of data in Table 4.4 reveals that significant differences exist between the Northeast and South Central regions only.

Crop land in the Northeast Region earns the highest percentage return with an estimated rent to value ratio of 10.6%. The lowest average return of rent to crop land was reported in the South Central Region, at 7.3%. All other regions of the state have mean rent to value ratios that are not statistically different. An analysis of rent to value ratios by cropping pattern revealed differences so small that the attempt to calculate the test statistic failed. It appears that cropping pattern does not explain variation in rent to value ratios.

Regional variation in share rental proportions. Share rental payments should generally reflect the value of the land's contribution to crop production. The mean tenants' share of crops produced on rented land is shown in Table 4.5. It can be seen that the landlords' share is generally significantly higher in areas of more fertile land. In the Southeast CRD, where corn and soybeans are most frequently grown, the mean tenants' share is 60%. The Northwest CRD, where wheat is the primary crop, has a mean tenants' share slightly over 67%.

The average share in the Western CRD is the only one that appears out of place, at 64%. The reason for this relatively low share

Table 4.4 Variation in Rent to Value Ratio by Crop Reporting District

Region	N	Mean Rent/Value	Significant Difference Indicated by Different Letters	
Northeast	47	10.6	A	
East Central	61	10.4	A	B
Central	28	9.2	A	B
Western	8	8.9	A	B
Southeast	51	8.5	A	B
North Central	44	8.4	A	B
Northwest	11	8.1	A	B
South Central	17	7.2		B

Dependent Variable Rent to Value Ratio

Source:	DF	Sum of Sq.	Mean Sq.	F Value	PR. F	R^2	C.V.
MODEL	7	.0307	.0044	2.28	.029	.0579	47.14
ERROR	259	.4985	.0019				
Corrected Total	266	.5292					

Root MSE	Rent to Value Mean
.04387	.0931

Table 4.5 Variation in Share Rental Payment by Crop Reporting District

Region	N	Mean Share Rental Proportion	Significant Difference Indicated by Different Letters
Northwest	24	67.9	A
North Central	75	66.0	A B
South Central	56	65.1	B C
Central	45	65.0	B C
Northeast	98	65.0	B C
Western	32	63.7	C D
East Central	130	61.7	D E
Southeast	170	60.8	E

Dependent Variable Share Rental Proportion

Source:	DF	Sum of Sq.	Mean Sq.	F Value	PR. F	R^2	C.V.
MODEL	7	3095	442	10.67	.0001	.10718	10.1635
ERROR	622	25788	41				
Corrected Total	629	28884					

Root MSE	Mean Share
6.44	63.35

is that a few respondents from this region reported agreement terms that paid the landlord over half of the crop. In this situation the landlord also paid most of the variable input costs and the tenant only provided labor and some machinery.

Share agreements with the landlord receiving one third of the crop is the most frequently used arrangement in the state, except in the Northwest and Southeast regions. Agreements that pay only a 25% share to the landlord are commonly used in the Northwest region. The Southeast and East Central Region have the highest incidence of rental agreements that share the produce 40-60 and some in the Southeast Region use a 50-50 landlord-tenant share arrangement.

Although the share proportions do vary between regions, it is still evident that tradition has an influence in determining which share is used. There are only four tenant-landlord share percentages that are used extensively. The 1/2-1/2, 3/5-2/5, 2/3-1/3, and 3/4-1/4 tenant-landlord shares are chosen almost exclusively, from all available possibilities. Only 3.4% of respondents with share leases reported share proportions other than these.

Differences in number of inputs shared. The value of the share rental payment can be adjusted by varying the number of input costs shared by the landlord and tenant. Higher valued crops often require greater outlay for variable inputs than do less intensively cultivated crops.

Seven input costs are considered: seed, fertilizer, herbicide, insecticide, chemical application, harvesting, and drying. Fertilizer

was reported as shared most frequently in all regions. Herbicide and insecticide respectively, were the next most frequently shared input, except in the Western Region. Seed costs were frequently shared in all CRDs, except for the western regions. Further discussion of specific input sharing patterns is deferred until Chapter 6.

Rental agreements in the Eastern regions of the state have a higher average number of input costs shared than other areas. The Eastern regions have, on average, about two and a half inputs shared per agreement (Table 4.6). Share agreements in the central regions of the state have an average of just under 2 input costs shared per agreement. Respondents with share leases in the Western CRD report an average of just over one, 1.2, input costs shared. Leases in the Northwest CRD have the lowest number of inputs shared, an average of less than one (.75) per agreement.

The relationships between the types of crop grown, land productivity, and the number of inputs shared is even more evident in Table 4.7. The data show that significant differences exist in the average number of inputs shared between leases covering land with all four cropping patterns.

Share rental agreements for land that produces corn and soybeans, two major crops grown in the Southeast and East Central Regions, have an average of almost three inputs shared. Leases for land where small grain is grown in the rotation average just over two and a half inputs shared per agreement. The average continues to drop,

Table 4.6 Variation in the Number of Inputs Shared by Crop Reporting District*

Region	N	Mean No. of Inputs Shared	Significant Difference Indicated by Different Letters
East Central	130	2.64	A
Southeast	170	2.54	A
Northeast	98	2.36	A B
North Central	75	1.92	B C
South Central	56	1.80	B C
Central	45	1.80	C
Western	32	1.16	D
Northwest	24	.75	D

Dependent Variable: Number of Inputs Shared

Source:	DF	Sum of Sq.	Mean Sq.	F Value	PR. F	R^2	C.V.
MODEL	7	153	21.96	9.05	.0001	.0925	70.8007
ERROR	622	1509	2.426				
Corrected Total	629	1662					

Root MSE	Mean No. of Inputs
1.5576	2.2

*Inputs considered are seed, fertilizer, herbicide, insecticide, chemical application, harvesting, and grain drying.

Table 4.7 Variation in Number of Inputs Shared by Type of Crops Grown on Rented Land

Crops Grown	N	Mean No. of Inputs Shared	Significant Difference Indicated by Different Letters
Corn and/or Soybeans	104	2.98	A
Corn, Soybeans & Other Grain	161	2.59	B
Corn, Wheat, and Other Grain	175	2.25	C
Wheat and/or Other Grain	129	1.26	D

Dependent Variable: Number of Inputs Shared

Source:	DF	Sum of Sq.	Mean Sq.	F Value	PR. F	R^2	C.V.
MODEL	3	201	67	29.81	.0001	.1362	66.6450
ERROR	565	1273	2.26				
Corrected Total	568	1475					

Root MSE	Mean No. of Inputs
1.5016	2.253

to 2.25 inputs shared per agreement, for land where wheat is grown with corn and other small grain. Agreements for land with a cropping pattern of wheat and grain have the lowest average number of inputs shared at 1.26.

Table 4.7 contains data that show the number of inputs shared decreases as small grain and wheat become more important crop options. Further examination of Table 4.6 reveals that this pattern holds as well by regions. The central areas of the state have an average of almost two inputs shared per rental agreement. Production of wheat and small grain is increasingly important in these areas. The lowest average number of inputs shared is .75 in the Northwestern Region where crop production is almost entirely in the form of wheat.

Differences in number of leases per rental market participant. Variations in crop enterprises between regions of the state do not appear to affect the number of leases that market participants are involved in. The average number of leases landlords and tenants reported using was 1.8. The Central CRD had the highest average at 2.1. Tenure status is the most influential factor in the number of leases a respondent is involved in. Partowner operator landlords report the highest average number of leases at 3.7. Nonoperator landlords report the lowest average number of leases, at 1.4 (See Table 3.1).

Differences in number of acres per lease. Variations in fertility and precipitation also affect the number of acres required for a successful crop enterprise. The number of acres covered by a leasing

agreement reflect the acreage requirements for the conditions and crops produced in different regions.

Respondents in the Southeast CRD reported the smallest average number of acres per agreement at 150 acres (Table 4.8). The average number of acres per agreement increases in each region to the north and increases even more in the Central and Western parts of the state. The largest average tract size was reported in the Northwest Region. The average number of acres per lease in the Northwest CRD, 1048 acres, is almost seven times the size of rented tracts in the Southeast Region.

The use of land rental for expansion and the influence of crop enterprise on tract size is reinforced by comparing the average sale tract size to rental tract size. With the exception of the Western Regions, tract size patterns for land sold follows that of rented tracts fairly closely (Swinson and Janssen 1984).

Conclusion

The fertility of farmland in South Dakota varies considerably between regions and the crops produced reflect land fertility. Corn is grown in most of the state, with soybeans in the east, and small grain in the north and west. Wheat is the predominant crop in the West and Northwestern regions. The rental market and rental agreement terms adjust fairly well to these variations in land fertility and crop production.

The risk and cost sharing attributes of share leases apparently make them preferable for renting land where high variable cost crops,

Table 4.8 Variation in Number of Acres Per Lease Agreement by Crop Reporting District

Region	N	Mean No. of Acres Per Lease	Significant Difference Indicated by Different Letters
Northwest	79	1048.6	A
Western	85	915.3	A
South Central	117	573.0	B
Central	129	384.1	C
North Central	188	295.3	C D
Northeast	191	237.2	D E
East Central	241	205.9	D E
South East	309	150.4	E

Dependent Variable: Acres Per Leasing Agreement

Source:	DF	Sum of Sq.	Mean Sq.	F Value	PR.>F	R^2	C.V.
MODEL	7	91970219	13138602	29.04	.0001	.13248	189.957
ERROR	1331	602245734	452476				
Corrected Total	1338	694215954					

Root MSE	Mean Acres Per Lease
672.663	354.113

like corn, are grown. Use of share leases decreases as more small grains are included with corn in the cropping pattern. The higher risk of crop failure in western wheat production areas may be responsible for the high percentage of share leases for predominantly wheat producing land.

Rental shares paid the landlord vary with the fertility of the land and the type of crop grown. However the almost exclusive use of four rental shares reflects the influence of tradition on share leases. The number of inputs shared is influenced most by the type of crop produced on the rented land.

Cash rental prices appear to adapt quite well to variations in regional and crop production conditions. The analysis by cropping pattern revealed however, that variations in cash rental ratesare attributable more to the productivity of individual tracts. Rent to value ratios were fairly consistent across regions.

The number of leases does not vary by region or cropping pattern. The size of the rental tract varies considerably depending on the region and type of crop produced. Average tract sizes in the corn producing areas of eastern South Dakota are only about one fifth the size of wheat producing tracts in the western areas.

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Chapter 5

FARMLAND RENTAL MARKET RESPONSES TO FINANCIAL STRESS: CHANGES IN RENTAL AGREEMENT TERMS IN THE LAST FIVE YEARS

The agricultural economy has experienced substantial financial difficulty in recent years. Cropland prices have decreased, crop prices have been depressed, and interest rates have been unusually high. For many years, economists thought rental agreement terms have too often been determined by tradition to respond to changes in conditions in the agricultural economy. To obtain efficient combinations of resources under changing conditions, terms of rental agreements should respond to these changes in the economic environment.

In this chapter, changes in the rental market and rental agreement terms will be analyzed. The five years preceding 1986 was deemed the appropriate time frame for analyzing most of the changes in rental agreement terms. This time period (1981-1986) was chosen because of the major changes experienced by the farm economy during this period. Analysis of changes in cash rental prices was limited to changes occurring between the 1985 and 1986 crop years. This was done to increase the reliability of the information and because of rapidly decreasing land prices during this time.

The occurrence of changes in rental agreement types and terms will be analyzed for the incidence of changes in the market as a whole. In addition, the impacts of 1) regional location, 2) cropping pattern, 3) tenure status of respondents, and 4) relationship between contracting parties on changes in lease terms are analyzed. The latter

analysis will be accomplished using the subset of observations used for analysis of landlord-renter relationship and lease terms in Chapter 3.

Data Source

Data for analyses in this chapter are from the 1986 South Dakota State Farmland Rental Survey. The region, cropping pattern, relationship, and tenure categories are the same as those defined and used in the previous chapters.

Rental Market Responses

Changes in formality of rental agreements. Respondents to the survey reported little change in the form or length of their leasing agreements during the last five years. Data in Table 5.1 show slightly more agreements changing from written to verbal than verbal to written agreements. Changes in either direction were reported occurring by only about 7% of the market participants responding.

A similar pattern appears in the length of time for which rental agreements are concluded. Approximately five percent of the leases reported changing from annual to multi-year, and 4.5% changed from multi-year to annual.

Although the differences were not significant, there was some variation in responses between regions. The highest reported frequency of any change in all regions was 10-12%. Respondents changed from written to verbal leases most often in the East Central CRD. Changes from verbal to written and from annual to multi-year were reported most often in the Northwest CRD.

Table 5.1 Incidence of Change in Form and Length of Rental Agreements in South Dakota in Last Five Years (1981-1986)

	Lease Changed From: Written to Verbal	Verbal to Written	Annual to Multi-year	Multi-year to Annual
	Percent of Those Responding			
By Region:				
Northwest	9.3	11.3	12.0	2.0
Western	6.7	9.1	4.8	0.0
South Central	6.7	5.3	6.8	9.7
Central	7.0	5.1	2.9	4.2
North Central	4.7	8.2	7.6	7.0
Northeast	7.0	7.4	3.7	4.5
East Central	9.8	5.7	4.6	5.2
Southeast	7.0	5.1	3.3	2.4
Total	7.3	6.6	5.0	4.5
N=	958	882	854	841
Correlation between Region and:	Change from Written to Verbal	Change from Verbal to Written	Change from Annual to Multi-year	Change from Multi-year to Annual
	X^2=3.514 P≤.834 DF=7	X^2=4.478 P≤.723 DF=7	X^2=9.776 P≤.202 DF=7	X^2=11.17 P≤.131 DF=7
By Cropping Pattern:				
Corn/Soybeans	7.9	5.7	2.4	6.0
Corn/Soybeans/Grain	8.2	6.1	3.1	4.7
Corn/Wheat/Grain	3.7	6.1	2.8	4.8
Wheat/Grain	9.7	8.1	9.8	5.3
Correlation between Cropping Pattern and:	Change from Written to Verbal	Change from Verbal to Written	Change from Annual to Multi-year	Change from Multi-year to Annual
	X^2=5.584 P≤.134 DF=3	X^2=1.3 P≤.729 DF=3	X^2=15.262 P≤.002 DF=3	X^2=.209 P≤.976 DF=3

Table 5.1 (continued)

	Lease Changed From: Written to Verbal	Verbal to Written	Annual to Multi-year	Multi-year to Annual
	Percent of Those Responding			
By Tenure Class:				
Tenant	2.6	2.7	0.0	1.4
Partowner operator	7.4	7.8	7.3	4.6
Partowner operator landlord	10.9	12.0	8.3	6.4
Fullowner operator landlord	4.4	0.0	2.5	7.1
Non-operator landlord	7.9	6.5	4.4	4.5
Correlation between Tenure Class and:	Change from Written to Verbal	Change from Verbal to Written	Change from Annual to Multi-year	Change from Multi-year to Annual
	X^2=4.4 P≤.354 DF=4	*	*	*
By Relationship:				
Family	5.9	2.6	2.6	2.6
Relative	5.6	3.0	2.1	4.2
Unrelated	8.2	6.5	4.4	4.2
N=	631	577	561	552
Correlation between Relationship and:	Change from Written to Verbal	Change from Verbal to Written	Change from Annual to Multi-year	Change from Multi-year to Annual
	X^2=1.24 P≤.538 DF=2	*	*	X^2=.422 P≤.81 DF=2

*Cell frequencies too low to calculate reliable X^2 statistic.

Changes from written to verbal were reported by 8-9% of respondents with three of the four cropping patterns. Only 3.7% of corn, wheat, and grain land renters made this change. None of the regional differences were statistically significant. The highest incidence of leases changing from verbal to written, 7.8%, was reported on wheat-grain land and the lowest, 5.7% on corn-soybean land.

Leases for wheat and grain land were reported to have the highest incidence of change from annual to multi-year lease agreements at 9.8%. This was more than three times as high as the frequency for any other cropping pattern.

Analysis of changes in formality of agreements by tenure classification of the respondent did not reveal any significant differences in changes between classes. Partowner operator landlords reported change from written to verbal, verbal to written, and annual to multi-year agreements more often, 11, 12 and 8% respectively, than any other class. Tenants reported the least amount of change, with frequencies ranging from 0 to 2.7%, in form or length of agreement. Fullowner operator landlords reported change from multiyear to annual most often at 7%. Changes from verbal to written and written to verbal as well as changes from annual to multi-year and vice versa, were fairly evenly distributed across all relationship categories.

Probably the most significant result of the analysis of changes in formality of rental agreements is the lack of changes occurring. Despite the increased instability and financial stress in the farm

sector, changes in lease terms that would alleviate some risk did not occur with significant frequency. Tenants are not getting greater formal security of tenure nor are landlords getting greater protection against default on rental payments.

Changes in type of agreement used. It was hypothesized that financial difficulties of farm operators in recent years would encourage a shift to share leases (Scott 1985). This change would reduce the financial risk from unfavorable weather or price changes faced by farm operators. It would, however, increase the risk faced by the landlord. Examination of the data in Table 5.2 reveals that, quite to the contrary, twice as many share agreements changed to cash than changed from cash to share. Just slightly more than 6% of share lease holders reported a change from cash to share. Almost 13% of respondents with cash leases reported that it had previously been a share lease (Table 5.2).

Analysis of changes in lease types by region did not reveal any significant differences in changes occurring between regions. However, there was a somewhat higher incidence of change from share to cash reported in the cash grain regions in the Eastern part of the state.

The proportion of respondents who reported leases changing from share to cash did not differ significantly between cropping patterns either. There is however, a more distinct range of variation between categories than was evident in the regional analysis.

The highest proportion of respondents reporting changes from share to cash, almost 20%, leased corn-soybean land. The opposite

Table 5.2 Reported Incidence of Change in Type of Rental Agreement in South Dakota in Last Five Years (1981-1986)

	Change from Share to Cash		Change from Cash to Share	
	Number of Those Responding	Percent Indicating Change	Number of Those Responding	Percent Indicating Change
By Cropping Pattern:				
Corn/Soybeans	51	19.6	93	6.5
Corn/Soybeans/Grain	82	17.1	144	6.9
Corn/Wheat/Grain	172	16.3	172	5.8
Wheat/Grain	77	6.5	127	7.1
Total	382	14.9	536	6.5
Correlation between Cropping Pattern and:	Change from Share to Cash		Change from Cash to Share	
	X^2=5.739 P≤.125 DF=3		X^2=.25 P≤.969 DF=3	
By Tenure Class:				
Tenant	46	8.7	55	7.3
Partowner operator	164	9.2	144	4.2
Partowner operator landlord	37	21.6	37	2.7
Fullowner operator landlord	25	4.0	29	17.2
Non-operator landlord	239	15.1	338	6.2
Total	511	12.5	603	6.1
Correlation between Tenure Class and:	Change from Share to Cash		Change from Cash to Share	
	X^2=8.182 P≤.085 DF=4		X^2=8.064 P≤.084 DF=4	
By Relationship:				
Family	35	28.6	55	7.3
Relative	49	12.2	64	4.7
Unrelated	218	13.8	263	2.7
Total	302	15.2	382	3.7
Correlation between Relationship and:	Change from Share to Cash		Change from Cash to Share	
	X^2=5.527 P≤.063 DF=2		X^2=2.967 P≤.227 DF=2	
All Respondents	511	12.5	603	6.1

change, from cash to share, was reported only about one third as often by 6.5-7% of respondents renting corn-soybean land. Respondents growing wheat and grain reported the smallest proportion, 6.5%, of share leases changing to cash. Approximately an equal proportion of this group of respondents reported changing from cash to share.

Fullowner operator landlords reported leases changing from cash to share in 17% of the cases, more than twice as often as any other tenure class. Only 2.7% of partowner operator landlord respondents reported this change occurring, the lowest proportion of any tenure group.

Partowner operator landlords reported changing their leases from share to cash most frequently with 21.6% reportingthis change. Over 15% of nonoperator landlords reported making similar changes. Only 4 - 8.7% of full owner operator landlords and tenants respectively reported changing from share to cash.

Analysis of changes in lease type by relationship between the contracting parties revealed perhaps the most surprising result of this analysis. Close to 29% of respondents having leases with family members reported changing from share to cash leases. This was more than twice the frequency reported by any other relationship group. By contrast, only 7% of respondents leasing with family members changed from cash to share agreements. It was expected that family members would be more likely to change from cash to share to alleviate risk and help ensure the survival of the farm enterprise.

Changes in number of input costs shared by the landlord in the last five years. The rental price of share rented land can be adjusted by varying the number of inputs shared or the proportion of the input cost to be shared. If crop prices and farmland values are low, rental agreements may be adjusted to reflect this decreased value of their contribution to crop production.

Analysis of the data in Table 5.3 shows very little adjustment of this type occurring in share agreements. Changes in the proportion of inputs shared were reported by 5.1% of the respondents. Only 3.2% of share lease holders reported a change in the number of inputs shared. The data does not include any information on whether the changes were an increase or a decrease in landlords' sharing of costs, because respondents were not asked to provide this information.

Regional location of the land does not have a significant impact on changes in input cost sharing. The highest proportion of respondents reporting a change in the landlords' share of input costs, almost 13%, was reported in the Northwest Region. Slightly more than 6% of the respondents in the Western Region indicated a change in the number of input costs shared by landlords.

Leases on corn, soybean and grain land experienced the highest frequency, 7.4%, of change in the landlords' proportion of input costs shared. Respondents with rental agreements for both corn-soybean and wheat-grain land reported a change in the landlords' proportion in about 6.5% of the cases. Rental agreements for corn, wheat, and grain

Table 5.3 Incidence of Change in Landlords' Output and Input Shares in South Dakota in Last Five Years (1981-1986)

	Change in Landlord's			
	Shared Proportion of Input Costs	Number of Shared Inputs	Increase in Output Share	Decrease in Output Share
	Percent of Those Responding			
All Respondents	5.1 N=575	3.2 N=569	3.3 N=586	1.7 N=577
Cropping Pattern:				
Corn/Soybeans	6.4	6.5	3.2	2.2
Corn/Soybeans/Grain	7.4	4.2	6.8	2.2
Corn/Wheat/Grain	1.8	1.2	1.2	0.6
Wheat/Grain	6.5	5.0	2.4	1.7
Total	5.2 N=538	3.8 N=521	3.4 N=520	1.53 N=522
Correlation between Cropping Pattern and:	Change in Input Share X^2=6.204 P≤.102 DF=	Change in Number of Inputs Shared X^2=5.338 P≤.149 DF=	*	*
Relationship:				
Family	1.8	0.0	0.0	3.8
Relative	4.7	1.6	1.5	1.6
Unrelated	6.7 N=387	3.4 N=378	3.4 N=389	1.6 N=375
Correlation:	*	*	*	*

*Cell frequencies were too low to calculate valid X^2 statistic.

land were reported changing the landlords' share of input costs the least often, with 1.8%.

Rented land with corn and soybeans as principal crops had leases that changed the number of input costs shared by the landlord 6.5% of the time. Only 1.2% of the leases for corn- wheat-grain land were reported to have a change in the number of inputs shared.

The frequency of change in the landlords' share of input costs and the number of input costs shared did not show much variation between tenure classes. Changes occurred in a fairly uniform fashion, revealing no perceptible patterns.

It is not possible to determine whether relationship between contracting parties influences changes in landlords' cost sharing. The incidence of changes in this subset were too low to generate any statistically reliable findings. What responses there were revealed a higher frequency of changes in landlords' sharing of input costs when the contracting parties were unrelated.

Change in share rental proportion in last five years. Land prices have fallen dramatically in recent years, and rent as payment for land use could be expected to reflect this occurrence. However, according to the survey results, share rental payments have not changed to any significant degree in response to economic fluctuations. Only 3.3% of respondents reported an increase in the landlords' share and a mere 1.7% reported a decrease in the landlords' share of the crop. No significant differences in share rentals changes between any of the categories could be identified (Table 5.3).

Analysis of the adjustments in landlords' share by region showed changes occurring most frequently in the East Central and Northwest Regions. Respondents in those areas reported a landlord share increase about 6% of the time. Respondents renting corn, soybean, and grain producing land reported an increase in the landlords' share in 6.8% of their agreements. This was the only notable proportion of any cropping pattern group reporting changes in the landlords' share payment.

Almost 7% of fullowner operator landlords reported an increase in their output share. Just over 5% of partowner operator landlords indicated their share increasing. Only 2-3% of respondents in all tenure categories reported a decrease in the landlords' share of output.

None of the respondents who had leases with family members reported an increase in the landlords' share. Slightly less than 4% of respondents having leases with family members reported a decrease in the landlords' rental share. The most frequent incidence of an increase in the landlords' share was reported by 3.4% of those leasing with an unrelated party. There were very few responses in any relationship group reporting a decrease in the landlords' share.

Changes in cash rental prices. Cash rental prices for cropland were analyzed for changes occurring between 1985 and 1986. Of respondents who reported both years' cash rental prices, 21.5% reported a price decrease (Table 5.4). Only 2.2% reported an increase in cash rental prices, with the balance reporting no change.

Table 5.4 Change in Cash Rental Prices in South Dakota From 1985 to 1986

	Respondents indicating[a]			Average Price Change	Significant Difference Indicated by Different Letters	Average Percentage Change in Price	Significant Difference Indicated by Different Letters
	Number	Decrease	No Change				
		--- Percent ---					
By Region:							
Northwest	16	12.5	87.5	-2.00	A	-16.5	B,C
Western	11	0.0	100.0	2.00	A	29.0	A
South Central	25	8.0	92.0	-7.25	A	-41.7	C
Central	36	19.4	80.6	-2.77	A	- 9.8	B,C
North Central	58	13.8	86.2	-1.31	A	- 3.4	A,B
Northeast	66	30.3	69.7	-7.10	A	-16.6	B,C
East Central	74	29.7	70.3	-6.09	A	-12.7	B,C
Southeast	68	23.5	76.5	-7.03	A	-12.4	B,C
Total	353	21.5	78.5	-5.43	A	-11.5	
Correlation between Region and Decrease in Cash Price: $X^2=14.6$ $P\leq.041$ DF=7							
By Cropping Pattern:							
Corn/Soybeans	44	36.4	63.6	-6.75	A	-11.4	C
Corn/Soybeans/Grain	70	27.1	72.9	-7.91	A	-16.4	
Corn/Wheat/Grain	143	18.2	81.8	-5.10	A,B	-14.6	
Wheat/Grain	56	12.5	87.5	- .74	B	- 1.3	
Total	313	21.7	78.3	-5.57		-11.9	
Correlation between Cropping Pattern and Decrease in Cash Price: $X^2=10.611$ $P\leq.014$ DF=3							

Table 5.4 (continued)

	Respondents indicating[a]			Average Price Change	Significant Difference Indicated by Different Letters	Average Percentage Change in Price	Significant Difference Indicated by Different Letters
	Number	Decrease	No Change				
		--- Percent ---					
By Tenure Class:							
Tenant	28	32.5	67.9	-9.33	c	-17.8	c
Partowner Operator	126	12.7	87.3	-4.48		-11.3	
Partowner Operator Landlord	24	29.2	70.8	-5.00		-10.9	
Fullowner Operator Landlord	18	27.8	72.2	-8.70		-20.6	
Non-operator Landlord	154	25.3	74.7	-4.75		- 9.5	
Total	354	21.8	78.3				
Correlation between Tenure Class and Decrease in Cash Price: X^2=10.18 P≤.037 DF=4							
By Relationship:							
Family	21	19.1	80.9	-9.08	c	-17.5	c
Relative	27	18.5	81.5	-7.38		-15.6	
Unrelated	155	22.6	77.4	-4.28		- 8.0	
Total	203	21.7	78.3	-4.99		- 9.5	
Correlation between Relationship and Decrease in Cash Price: X^2=.319 P≤.853 DF=2							

[a]Only eight respondents indicated a price increase, only price decreases are considered here to allow computation of a X^2

[b]One respondent in this region reported a price increase.

[c]Test statistic too small for valid test.

The pattern of price decreases shown by data in Table 5.4 indicates that most of the cash rental reductions occurred in the Eastern regions of the state. Respondents in the Northeast Region reported the highest incidence, 30.3%, of cash lease prices decreasing from 1985 to 1986. Cash leases in the Western areas of the state had the lowest incidence of change with the Western region having no price decreases reported. This pattern of changes reflects, to some extent, the pattern of fluctuation that has occurred in cropland market values (Janssen 1986).

Average cash rental price decreases varied considerably between regions. The nominal changes were not significantly different, but some of the differences in price changes as a percentage of the 1985 rental price were significant (Table 5.4). Price decreases were greatest in the South Central region, averaging $7.25 or 41.7%. Respondents in the Eastern regions experienced price declines almost as high in dollar terms, ranging from $6.09 in the East Central region to $7.10 in the Northeast region. Percentage decreases were much smaller however, only 12.4% in the Southeast region to 16.6% in the Northeast region.

Examining the rental price changes by cropping pattern shows 36% of respondents'leases covering corn-soybean producing land had price decreases. This is the highest incidence of price decreases occurring on any category of land. Only 12.5% of the leases for land where wheat is produced as the primary crop, experienced price decreases.

Corn-soybean-grain land leases had the highest average decrease in cash rental price at $7.91, or a 16.4% decrease from 1985. Respondents leasing corn-soybean land had price decreases of $6.75, an 11.4 % decrease. Leases for wheat-grain land had the smallest average price decrease, only $.74. The average percentage price change on leases for this land was 1.3%, indicating that price increases were of greater proportional magnitude than price decreases.

Tenant respondents reported the highest incidence of price reductions in cash leases of any tenure class. Almost one third of tenants reported a decrease in cash rentals paid. Only 12.7% of part-owner operator landlords reported a decrease in their cash rentals, the only tenure class to report a decrease in less than 25% of their leases.

Tests for significant differences in cash rental price decreases between tenure groups, in nominal and percentage terms, were inconclusive. However, tenant and fullowner operator landlord respondents reported decreases substantially larger than other classes. Tenants reported the greatest dollar decline, $9.33, a 17.8% decrease from 1985. Fullowner operator landlords' cash rental prices decreased $8.70, or 20.6%. Changes in the other tenure classes ranged from $4.50 to $5.00, and from 9.5% to 11.3% of the 1985 rental price.

It appears that perhaps the pattern of changes by tenants and fullowner operator landlords differed from that of the other tenure groups. This may have occurred because of the greater number of

younger, beginning farmers in the tenant class and fullowner operator landlords rent to tenants of this type more often.

Analysis of cash rental adjustments by relationship between the parties to the agreement did not reveal any significant differences in adjustments between groups (Table 5.4). Three percentage points is all that separates the highest from the lowest frequency of change occurring. Unrelated parties were slightly more likely to change their rental price than those who leased with relatives.

Significant differences in average price decreases between relationship categories could not be determined either. It does appear, however, that leases between family members and relatives had the largest price decreases. Cash rental prices decreased $9.08 on leases between family members and $7.38 on leases between relatives. These are percentage declines of 17.5 and 15.6% respectively. Leases between unrelated parties had price decreases of $4.99, or 8%.

Stability of landownership and tenants. The length of time a landlord or tenant has rented a tract of land gives an indication of stability in landownership and tenure in the farmland rental market. Although the average length of time participants rent a tract of land is over ten years, it is possible that many individuals experienced loss of tenure or ownership. The data in Table 5.5 are based on the length of time respondents indicated renting the tract of land, and not on responses to the questions that asked whether change had occurred in the last five years.

Table 5.5 Change in Landlord or Tenant in South Dakota in Last Five Years (1981-1986)

	Number of Leases	Less Than Five Years	Five Years or More
		--- Percent of Leases Reported ---	
By Type of Lease			
Cash	558	22.2	77.8
Share	1052	19.9	80.1
Total	1610	20.7	79.3

Correlation between Type of Lease and Change in Landlord or Tenant:

$X^2=1.23$ $P\leq.267$ DF=1

By Crop Reporting District:			
Southeast	409	21.0	79.0
East Central	315	26.0	73.0
Northeast	247	27.5	72.5
North Central	215	14.4	85.6
Central	130	13.1	86.9
South Central	81	12.6	86.4
Western	77	23.4	76.6
Northwest	81	17.3	82.7
Total	1614	20.8	79.2

Correlation between Crop Reporting District and Change in Landlord or Tenant:

$X^2=27.46$ $P\leq.000$ DF=7

By Cropping Pattern:			
Corn/Soybean	210	23.3	76.7
Corn/Soybean/Grain	312	26.9	73.1
Corn/Wheat/Grain	682	29.8	70.2
Wheat/Grain	366	25.1	74.9
Total	1570	27.3	72.7

Correlation between Cropping Pattern and Change in Landlord or Tenant:

$X^2=4.64$ $P\leq.20$ DF=3

Table 5.5 (continued)

	Number of Leases	Less Than Five Years	Five Years or More
		--- Percent of Leases Reported ---	
By Tenure:			
Tenant	134	38.8	61.2
Partowner Operator	401	23.9	76.1
Partowner Operator Landlord	92	25.0	75.0
Fullowner Operator Landlord	78	38.5	61.5
Non-Operator Landlord	909	14.7	85.3

Correlation between Tenure and Change in Landlord or Tenant:

$X^2=64.881$ $P\leq.000$ DF=4

By Relationship:			
Family	65	27.7	72.3
Relative	84	17.9	82.1
Unrelated	362	22.9	77.1
Total	511	22.7	77.3

Correlation between Relationship and Change in Landlord or Tenant:

$X^2=2.057$ $P\leq.358$ DF=2

Data in Table 5.5 show that 20.7% of respondents with cash and share leases for cropland have rented the tract of land for less than five years. Cash leases show a slightly higher, though not significantly different, incidence of change in this period than were reported by share lease holders. When the period of change is lengthened by one year, however, to less than six years, the discrepancy becomes much greater. Over 37% of landlords or tenants with cash leases changed in less than six years, while share lease holders reported change in only 28.5% of the cases.

Respondents in the Northeast CRD reported the highest frequency, 27.5%, of participants who have leased a tract for less than five years. Generally, respondents in the Eastern areas of the state were more likely to have leased their most important tract for less than five years. Over 20% of respondents in the three eastern regions indicated they had leased the land for less than five years. The Western Region also had a high incidence of respondents renting the land for less than five years at 23.4%. The three central regions had the lowest incidence of respondents, 13 - 14%, leasing a tract for less than five years.

Cropping pattern has no significant effect on the proportion of respondents renting land for less than five years. Almost 30% of the renters of corn, wheat, and grain land have leased the tract for less than five years. Only 23% of respondents leasing corn-soybean land reported leasing the land for less than five years.

Almost 40% of fullowner operator landlords and tenants leased the land for less than five years, more than any other tenure class. Partowner operator landlords, 25% of whom had leased the land for less than five years, were in the middle of the frequency range. Almost 15% of nonoperator landlords belong to the less than five year group, the lowest frequency of any tenure group.

Tenure or ownership of the land for less than five years does not vary significantly with different types of relationship between contracting parties. Almost 28% of respondents having a lease agreement with a family member had leased for less than five years while 18% of those having agreements with relatives fell into this category.

Conclusions

The most significant result of the above analysis is that despite major fluctuations in the economic environment few changes occurred in rental agreements. Of all the rental terms examined, only cash rental prices adjusted with any substantial degree of frequency.

Some of the changes that occurred, such as change from written to verbal agreements and share to cash rental leases, were contrary to what had been expected. The latter result could be attributable to a carryover effect of rising land prices during the late 1970's. The reductions in cash rentals and their relationship to land productivity and cropping patterns were as expected. The relationship between contracting parties apparently did not influence lease adjustments except for changes from share to cash leases.

Although not statistically significant, the pattern of adjustment in cash rental prices and length of time a respondent had rented the land seemed to indicate a relationship between adjustments being made by fullowner operators and tenants. The pattern of few changes to cash agreements and relatively high incidence of change to share leases by these two tenure categories supports this assertion. What can be inferred from this is somewhat confounded however, by the relatively high frequency of leases between family members changing from share to cash.

It is possible that leases reported by fullowner operator landlords reflect terms to assist a new farmer get started. Landlords in this category may be family members not yet ready to retire but reducing the size of their operation. The change to cash leases reported by family members may reflect tax and social security concerns of retired or retiring farm operators with more established offspring.

Cash rental agreements appear, in general, to be much more responsive than share agreements to changes in economic conditions over a relatively short period of time .

ENDNOTES

Janssen, Larry. September 1986. "Continued Declines in South Dakota Farmland Prices", Economics Newsletter No. 241, South Dakota State University, Brookings, South Dakota.

Scott, John T., Jr. October 1985. Implications of Current Conditions on Land Rent and Tenure Patterns in the Years Ahead, Agricultural Economics Publication No. 4604, University of Illinois, Urbana-Champaign, Illinois.

Chapter 6

PRESENCE OF CONDITIONS FOR EFFICIENT PRODUCTION AND DISTRIBUTION OF RETURNS

The marginal incentives for use of non-optimum combinations of resources created by rental agreements suggested by the partial equilibrium theories remain valid. Equal efficiency theories required the influence of exogenous factors to offset these marginal influences. The lease modifications proposed by Heady (1952) and Hurlburt (1954) remove the incentives for inefficient production practices. Four basic incentive conditions must be present in a leasing agreement to remove a farmland tenant's incentive to apply inefficient combinations of inputs.

The incentive conditions are:

1. The share of variable input costs shared must equal the share of output received.

2. The share rental for all products must be the same.

3. Each resource owner must receive the full share of the product earned by each unit of resource contributed.

4. Each resource owner must have the opportunity to receive the return on investments made in one production period, but not available until a subsequent period.

Hurlburt (1962) later outlined a process for extension agents and contracting parties to use to conclude a lease free of imperfections.

In this chapter, lease terms reported in the survey are examined for the presence of these incentive conditions. Cost sharing provisions of share leases will be examined in greater detail because it is the most important condition for seasonal production decisions.

If cost sharing provisions are not generally terms of share leases reported, then existing terms will be examined for the proportion of production costs each party contributes. This proportion will then be compared to the share of output each party receives to determine if the share of costs approximate the share of output received. The dollar value of returns to both parties to the lease will be estimated for crops sold in the market and for participants in the 1986 Federal Farm Program.

Data Source

Data for the analysis in this chapter is from the 1986 SDSU Farmland Rental Survey. The input cost combinations used for the analysis of cost sharing were the most typical cost sharing terms in the share leases reported. This procedure resulted in the deletion of 28 out of over 600 observations and improved the clarity of the analysis while preserving the essential components. The cropping pattern variable used in this chapter is the same as that used in preceding chapters.

Crop enterprise budgets used for the analysis in the latter part of the chapter were developed using the SDSU farm enterprise budget generator. The budget generator program is used to develop per

acre enterprise cost projections for land of varying productive capabilities in specific areas of the state.

The regions used to calculate the budgets correspond to South Dakota farm management regions (Figure 6.1), which are geographically smaller and more homogeneous than Crop Reporting Districts. Additional information on the 1986 federal farm program and 1986 crop prices was obtained from the Cooperative Extension Service at SDSU.

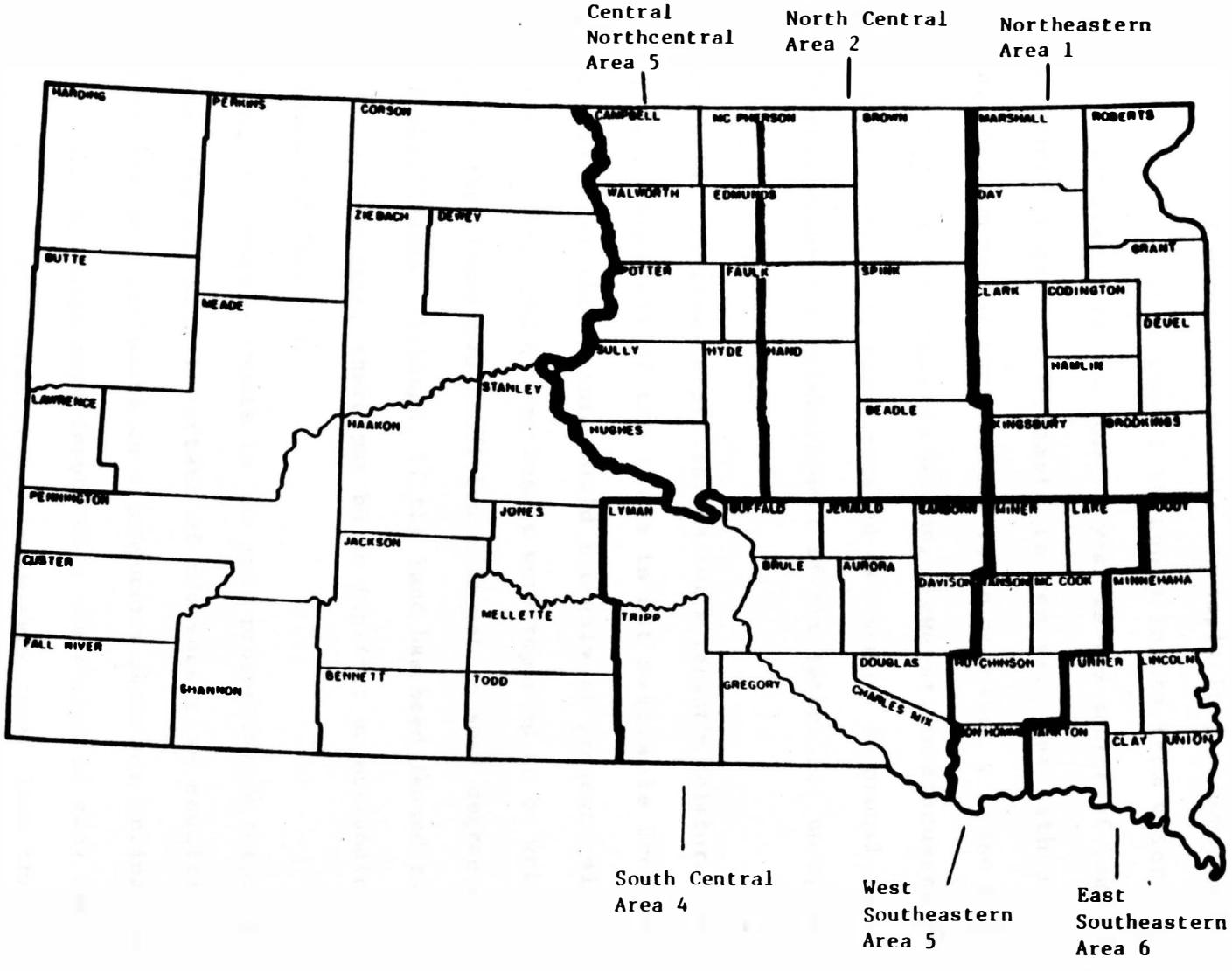
Presence of Incentive Conditions

Incentive condition two is present in more of the reported leases in the survey than any other lease "perfection". Only 9 respondents (2% of respondents with share leases) reported differing shares for different crops under the same lease.

Meeting incentive condition three requires first that incentive condition one, the share of variable inputs is proportional to the output share, be met. If this condition is satisfied, the presence of incentive condition three is determined by the frequency of cash payments in addition to share rental (Hurlburt 1954). Only 15% of the respondents made cash payments in addition to their share rental. Two thirds of those who made extra cash payments, indicated that it was for hay and/or pasture land in the rental tract. About one fifth (18%) indicated the payment was for use of buildings provided under the share lease.

Unfortunately, the construction of the survey makes it impossible to determine the extent to which capital improvements are

Figure 6.1 Farm Management Regions in South Dakota



included in share leases. Consequently there is no way to determine how often buildings or other improvements are implicitly reimbursed.

The reluctance of a tenant to apply inputs from which all returns are not available in the current year is the source of inefficiency the fourth incentive attempts to remove. One method for alleviating this source of uncertainty is to conclude a lease that lasts for more than one production season. However, as discussed in Chapter 3, most leases, 64%, were reported as annual. An annual lease must contain provisions for reimbursement of the tenant for unexpired benefits of long term investments.

Information relative to provisions for a tenant's reimbursement upon premature termination of the lease is not available from the survey. Provisions of this nature would probably be present only in written leases, but only 39% of the leases were reported to be written. It would appear that incentive condition 4 is met to some degree only in the multi-year leases. Although, if the land has been leased by the same party for a long time, there may be an implicit understanding to extend the lease indefinitely.

Sharing of variable inputs in the same proportion as output is shared is probably the most important of the incentive conditions. This condition has more influence on a producer's decisions during the production period. Although some input costs are shared in many lease agreements, sharing of all variable inputs is very rare. Less than 6% of share agreements were reported to share all variable costs, which most frequently occurs in 50-50 share arrangements. Only 4.3% of all

share leases reported shared input costs in proportions other than reported output shares.

Fertilizer expenses were shared more frequently than any other input. Fertilizer costs were shared in 75.4% of the share leases, 20 percentage points higher than any other expense was reported to be shared (Table 6.1). Herbicide was shared in 55% of share leases and insecticide was shared almost as often, in 46% of share leases. Chemical application and grain drying were shared in about equal numbers, 27% and 31% respectively, of the share leases reported. Seed costs were shared only 12.4% of the time and harvesting costs were shared in 6% of share leases. Some of these inputs, like grain drying, are not shared as often because they are not required for production of all crops.

The input cost sharing patterns selected for the following analysis include the combinations reported in all but 28 share leases. These inputs have the most significant impact on yield making them most relevant to the issue of reduced output levels due to reduced input application.

Analysis of the data in Table 6.2 reveals a clear pattern of relationship between input sharing and output share received by the landlord. Slightly over 77% of respondents' 1/4-3/4 landlord-tenant share agreements contain no provisions for sharing of any input costs. Almost 16% of the 1/4-3/4 share leases shared fertilizer costs only.

Respondents with 1/3-2/3 share leases reported the most diverse pattern of inputs shared. The most frequently reported arrangement, by

Table 6.1 Frequency of Landlords Sharing Individual Input Costs in South Dakota

Input	Number of Leases	Percent of Leases
Seed	78	12.4
Fertilizer	475	75.4
Herbicide	346	54.9
Insecticide	288	45.7
Application	173	27.5
Harvesting	39	6.3
Drying	194	30.7
Total	630	100.0

Table 6.2 Input Cost Sharing Patterns in South Dakota by Output Share of Landlord and Tenant

Tenant's Output Share	Number of Leases	None	Fertilizer	Two of Three: Fertilizer, Herbicide, Insecticide	Fertilizer, Herbicide, Insecticide	Fertilizer, Herbicide, Insecticide, & Application	Total
		Percent of Share Leases Reported					
50	60	10.0	3.3	11.7	38.3	36.7	10.0
60	152	11.8	13.8	15.1	34.9	24.3	25.3
67	368	29.6	23.4	15.8	14.95	16.3	61.1
75	22	77.3	16.4	0.0	0.0	9.1	3.6
Total	602	24.9	18.6	14.6	21.76	20.1	100.0

Correlation between Output Share and Input Cost Sharing: $X^2=107.1$ $P\leq.0000$ DF=12

29.6% of respondents, had no provisions for sharing variable input costs with the landlord. Almost as many, 23.4%, shared fertilizer costs only. The remainder of the leases with this output share arrangement were fairly evenly distributed across the other three cost sharing patterns in the table. Almost 16% shared two of three inputs; fertilizer, herbicide, and/or insecticide, while the rest shared all three, or all three plus chemical application costs.

Lease holders that share output 50-50 are most likely to share input costs. Almost 37% share all four of the inputs in the table and another 38% share all except chemical application. Just 3% of the 50-50 leases contain terms that share fertilizer only, and the landlord pays none of the input costs in 10% of these leases.

Landlords with 40-60 share agreements share fertilizer, herbicide, and insecticide costs most often. Over a third, 35%, of respondents with these leases used this cost share pattern. Almost 25% share these three expenses plus the cost of application. The remaining 40-60 leases were distributed across the other three sharing patterns, decreasing in frequency as the number of costs shared decreased.

Analysis of cost sharing by cropping pattern reveals a relationship between crop produced, landlords' share of the output, and input sharing practices (Table 6.3). Leases for more fertile land and crops with higher production costs are more likely to include landlord sharing of variable costs.

Leases for corn-soybean and corn-soybean-grain land were reported to contain variable cost sharing provisions more frequently

than leases for land with other cropping patterns. Leases for corn-soybean land had the highest proportion, 39.2%, of reported sharing of the three primary chemical inputs (fertilizer, herbicide, and insecticide). Leases for corn, soybean, and grain land were most frequently, 26%, reported to contain terms for sharing all four expenses in the table.

Land upon which wheat is one of the most important crops grown is typically covered by leases with no cost sharing. Respondents renting corn, wheat, and grain land were distributed across all five input sharing categories. About the same number, 20%, reported sharing no input costs as reported sharing all four of the inputs. Just over one fourth (27%) reported sharing fertilizer costs only. The majority, 53%, of landlords with leases for wheat-grain land were not required to share any variable expenses.

Analyzing input cost sharing by cropping pattern and landlord's share further substantiates their interrelationship. Leases with higher landlord shares were reported to share more input costs in all cropping pattern categories. One hundred percent of 50-50 corn-soybean leases were reported to share at least the three chemical inputs, while 92% of 25-75 wheat-grain leases shared no input costs.

It appears from the above analysis that input sharing patterns are varied to adjust the value of the rental paid. Land of higher fertility generally has a lease that pays the landlord a higher share of the crop. Shares of variable costs are varied in an attempt to bring the landlord's contribution in line with the rental received.

Table 6.4 Landlord Input Cost Sharing Patterns in South Dakota Share Leases by Cropping Pattern and Output Share of Landlord and Tenant

Cropping Pattern Tenants Output Share	Number of Leases	None	Fertilizer Only	Two or three: Fertilizer, Herbicide, Insecticide	Fertilizer, Herbicide, & Insecticide	Fertilizer, Herbicide, Insecticide & Application	Total
		Percent of Share Leases Reported					
Corn/Soybeans							
50	21	0.0	0.0	0.0	66.7	33.3	20.6
60	62	9.7	19.4	17.7	30.7	22.6	60.8
67	29	26.3	15.8	15.8	36.8	5.3	18.6
Total	102	10.8	14.7	13.7	39.2	21.6	100.0
Corn/Soybeans/Grain							
50	15	0.0	0.0	20.0	46.7	33.3	9.5
60	72	9.7	12.5	11.1	37.5	29.2	45.9
67	69	17.4	29.0	18.8	14.5	20.3	44.0
75	1	0.0	0.0	0.0	0.0	100.0	0.6
Total	157	12.1	18.5	15.3	28.0	26.1	100.0
Corn/Wheat/Grain							
50	11	9.1	18.2	27.3	18.2	27.3	6.6
60	12	33.3	0.0	25.0	33.3	8.3	7.2
67	141	17.7	30.5	12.1	19.9	19.9	84.4
75	3	100.0	0.0	0.0	0.0	0.0	1.8
Total	167	19.7	27.0	13.8	20.4	19.2	100.0
Wheat/Grain							
50	8	37.5	0.0	12.5	0.0	50.0	6.8
67	98	50.0	17.4	16.3	5.1	11.2	83.0
75	12	91.7	0.0	0.0	0.0	8.3	10.2
Total	118	53.4	14.4	14.4	4.2	13.6	100.0

The institutionalization of share rentals at essentially four (1/2, 2/5, 1/3, and 1/4) levels make this a very important aspect of the lease agreement.

Comparison of estimated contributions to crop production expenses to share of product received.

It has been shown above that cost sharing provisions of share leases generally are not consistent with theoretical lease perfections. It is possible that in practice the relative contributions of each party approximates their crop share. If the contributions of each party are equal to the output share and the share of returns, it may eliminate some of the inefficiency incentives. To determine whether this does occur in practice, crop enterprise cost budgets and returns were estimated.

Cost budgets were estimated using a basic set developed primarily by Dr. Herb Allen, and the Economics Department at SDSU. These budgets were updated for 1986 cost conditions by Extension Specialist Burton Pflueger. Further modifications were made to incorporate chemical application recommendations of the SDSU Plant Science Dept. by Dr. Larry Janssen in the autumn of 1986. A set-aside budget was also developed for farm program participation in 1986 (Johnson, Janssen, Lundeen, and Aiken 1987). Six specific crop enterprise budgets were selected for use, to demonstrate distribution of costs and returns for program and non-program participation.

The costs estimated in the budgets were shared according to the most common agreement reported for that crop, output share, and region.

Shared costs were shared in the same proportion as output is shared in all budgets. If more than one level of share rent was common in one region, budgets for each type of agreement were estimated.

Per acre revenues for the crop enterprise were calculated two ways: 1) using estimated yields for that area and October 1986 crop prices, and 2) the benefits for Federal Farm Program participants including set aside requirements (20% for corn, barley, and oats, 25% and 35% for winter wheat). It was assumed that actual yield and ASCS yield on the tract were equal.

The comparison of costs with returns was conducted by determining the share of total production costs for both the landlord and the tenant. Each party's proportionate share was compared to the proportion of the crop that each would receive. The landlord's and tenant's costs were deducted from their share of the revenue to determine the residual each would receive. How much profit each party received varied considerably between revenue options. All non-program enterprises except soybeans lost money.

Budgets were calculated for 1/2-1/2, 2/5-3/5, and 1/3-2/3 corn share leases; and 1/2-1/2 and 2/5-3/5 soybean share leases for the East Southeast Region. For the Northeast Region, net returns were estimated for 2/5-3/5 and 1/3-2/3 corn share leases, 1/3-2/3 barley and 1/3-2/3 oat share leases. A budget for 1/3-2/3 winter wheat share leases in the Southwest Region was also estimated (Table 6.5).

Table 6.5 Estimated Costs per Acre for Selected Crop Enterprises in South Dakota

Item	East Southeast Region Soybeans 35 bu/acre	East Southeast Region Corn 95 bu/acre	Northeast Region Corn 80 bu/acre	Northeast Region Barley 70 bu/acre	Northeast Region Oats 65 bu/acre	Southwest Region Winter Wheat 35 bu/acre	All Regions Set Aside
Fixed Costs:							
Land Charge[a]	$51.00	$51.00	$31.20	$31.20	$31.20	$24.00	(b)
Depreciation/Insurance	16.64	18.75	21.50	18.60	18.60	17.75	$1.75
Interest Operating Capital	1.57	2.32	2.16	.70	1.75	2.55	
Interest on Tractor	2.48	2.36	3.27	1.31	1.31	*	*
Interest on Equipment	7.75	9.06	9.93	9.78	9.78	13.00*	1.85*
Labor	9.00	9.35	11.65	6.80	6.80	8.50	2.17
Crop Overhead	4.50	4.70	4.50	4.50	4.50	4.50	2.50
Management Contribution	10.50	9.50	8.00	7.00	5.20	5.25	
Cash Costs:							
Repairs	11.61	11.98	14.56	8.24	8.24	9.10	1.00
Fertilizer	5.00	20.50	15.00	16.80	16.80	7.50	
Seed	12.60	11.70	9.74	5.30	7.50	5.15	
Fuel and lubricants	6.05	5.90	7.16	4.73	4.73	8.50	1.12
Herbicide	10.94	15.75	15.75	.61	.90	6.50	4.15
Insecticide		10.17	10.17			1.20	
Grain Drying		15.20	12.80				
Total	149.64	198.24	177.42	115.57	116.31	113.50	14.53[b]

a) Eight percent of estimated land value.

b) Varies with the value of land set aside.

* Incorporated into one figure in each column.

Soybean Leases

Soybeans were the only crop in the analysis that was not covered by the 1986 Federal Farm Program. For this reason, revenues and costs were estimated only for full production and sale of the commodity at market price. The estimated budget for a 50-50 lease on land producing soybeans assumes fertilizer, seed, and herbicide costs are shared. Yield on this land is set at 35 bushels per acre (Table 6.6).

Using these assumptions, the landlord makes all of the profit under a 50-50 lease. With a 40-60 lease however, both pay a share of costs close to their output share, and the tenant receives some of the residual.

The landlord paid 45.7% of the production costs ($68.38 of a total $149.64) with a 50-50 lease and the tenant paid 54.3%. Using a price of $4.60 per bushel total revenue for an acre of this land was $161. Total profit after all costs have been paid, including return to land, labor, and management, is $11.36 per acre. The landlord and tenant each receive $80.50 in revenue, providing the landlord with profit of $12.12, and the tenant with a loss of $.76.

A 40-60 lease agreement for a similar acre of soybean production produces dramatically different results. In this budget only fertilizer expense is shared. The landlord pays 41.3% ($61.80) of the production cost, closer to the share of output received than under the 50-50 lease. Division of returns among the two parties provides the landlord with a per acre profit of $2.60 (23% of total profit), and the tenant $8.76.

Table 6.6 Estimated Costs and Returns to Share Tenants and Landlords

Region	Crop	Per Acre Yield	Output Share	In Farm Prog	Total Production Cost/Acre*	Landlord's Share of Cost**		Tenant's Share of Cost		Landlord's Share of Profit		Tenant's Share of Profit	
						Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
ESE	Soybeans	35	1/2-1/2	N	$149.64	$68.38	45.7	$81.26	54.3	12.12	10.7	- .76	-7.0
	Soybeans	35	2/5-3/5	N	149.64	61.80	41.3	87.84	58.7	2.60	22.9	8.76	77.1
	Corn	95	1/2-1/2	N	198.24	90.70	45.8	107.54	54.2	-12.33	29.7	-29.16	70.3
	Corn	95	1/2-1/2	Y	171.70	83.17	48.4	88.53	51.6	29.74	54.9	24.44	45.1
	Corn	95	2/5-3/5	N	198.24	78.66	39.7	119.58	60.3	-15.96	38.5	-25.53	61.5
	Corn	95	2/5-3/5	Y	171.70	73.46	42.8	98.24	57.2	16.91	35.0	37.32	65.0
	Corn	95	1/3-2/3	N	198.24	69.48	35.0	128.76	65.0	-17.23	41.5	-24.26	58.5
	Corn	95	1/3-2/3	Y	171.70	66.06	38.5	105.64	61.5	9.25	17.0	44.98	83.0
NE	Corn	80	2/5-3/5	N	177.42	55.57	31.3	121.85	68.7	- 2.77	6.1	-42.65	93.9
	Corn	80	2/5-3/5	Y	151.09	51.03	33.8	100.06	66.2	25.07	64.0	14.10	36.0
	Corn	80	1/3-2/3	N	177.42	47.72	26.9	129.70	73.1	- 3.72	8.2	-41.70	91.8
	Corn	80	1/2-2/3	Y	151.09	44.70	29.6	106.39	70.4	18.72	47.8	20.45	52.2
	Barley	70	1/3-2/3	N	115.57	38.85	33.6	76.72	66.4	- 7.35	34.8	-13.72	65.2
	Barley	70	1/3-2/3	Y	101.61	37.60	37.0	64.01	63.0	9.59	35.0	30.36	65.0
	Oats	65	1/3-2/3	N	116.31	38.52	33.1	77.79	66.9	-13.60	33.0	-27.96	67.0
	Oats	65	1/3-2/3	Y	102.20	37.34	36.5	64.86	63.5	- 9.41	51.1	- 9.00	48.9
SW	Winter Wheat (25%SA)	35	1/3-2/3	Y	91.77	23.99	26.2	67.78	73.9	21.69	61.1	13.81	38.9
	Winter Wheat (35%SA)	35	1/3-2/3	Y	83.07	22.39	26.7	60.68	73.3	24.02	56.5	18.48	43.5

*Costs estimated from a set of budgets used for farm management in the Economics Dept. at S.D.S.U. These budgets were developed and updated by Drs. Allen, Janssen, and Pflueger, 1986.

**In the 1/2-1/2 soybean share lease the landlord shares fertilizer, seed, and herbicide costs.
In the 2/5-3/5 soybean share lease the landlord shares fertilizer costs only.
In the 1/2-1/2 corn share lease the landlord shares fertilizer, seed, herbicide, insecticide, and drying costs.
In the 2/5-3/5 corn share lease the landlord shares fertilizer, herbicide, insecticide, and drying costs.
In the 1/3-2/3 corn share lease the landlord shares fertilizer, herbicide, and insecticide costs.
In the 1/3-2/3 barley lease the landlord shares fertilizer and insecticide costs.
In the 1/3-2/3 oats lease the landlord shares fertilizer and insecticide costs.
In the 1/3-2/3 winter wheat lease the landlord shares fertilizer costs only.
In the Set Aside budget the landlord shares the input costs that are shared for the crop produced.

Corn Leases

Corn budgets estimated in the East Southeast Region were based on a per acre yield of 95 bushels per acre. With the 50-50 share lease landlord and tenat were assumed to share fertilizer, seed, herbicide, insecticide, and drying costs equally.

Total production costs for corn were estimated to be $198.24. The landlord's share of $90.70, or 45.8%, is below the share of output received. A corn price of $1.65 per bushel earns this enterprise revenue of $156.75 when the product is sold on the market and a net loss of $41.49. In this situation the landlord suffers a loss of $12.33, 29% of the total loss and the tenant loses $29.16.

If the producers were enrolled in the farm program, total production costs per acre decrease to $171.70 because of the set aside. The landlord's proportion of costs increases to 48.4%, ($83.17), because the largest cost of set aside is the charge to land. The tenant's share of costs drops to $88.53, 51.6% of the total. Per acre revenue under the farm program rose to $225.93 per acre, providing a profit of $54.23. The landlord in this arrangement then earns a net profit of $29.79, 54.9% of the total, and the tenant receives $24.44, or 45.1%.

A 40-60 lease, using the same assumptions used for the 50-50 lease except that only fertilizer, herbicide, insecticide, and drying costs are considered to be shared. Again the total production cost per acre was $198.24. However, the landlord's contribution drops to $78.66, or 39.7%, very close to the share of ouput received. The

tenant pays $119.58, or 60.3%. Both parties would suffer a loss with $156.75 in revenue. Of the total loss of $41.49, 38.5% ($15.96) is suffered by the landlord and 61.5% ($25.53) by the tenant.

With enrollment in the farm program the distribution of costs does not change much and the tenant receives almost two thirds of the residual. Total costs per acre are again $171.70, of which the landlord bears $73.46, or 42.8%, and the tenant pays $98.24, 57.2%. Program benefits provide a return of $225.93 and total profit of $54.23, the same as for the 50-50 lease. The landlord's share of the profit is $16.91, 35% of the total, and the tenant receives $37.32, or 64.9%.

The budget for the 1/3-2/3 corn budget for a similar acre uses the same assumptions as above except that only fertilizer, herbicide, and insecticide costs are shared. With this agreement, the landlord contributes $69.48 in production costs, 35% of the total. The tenant contributes $128.76, or 65%, very close to their respective output proportions. The landlord bears a larger proportion of the loss, 41.5%, $17.23, of the total loss, and the tenant's reduces to 58.5% ($24.26).

When enrolled in the farm program, the landlord pays a slightly higher proportion of the total costs, 38.5%, the tenant's share dropping to 61.5%. Distribution of the $54.23 profit earned in the program provides the tenant with the largest proportion, 82.9% ($44.98) and the landlord with 17.1%, or $9.25.

Land in the Northeast Region is not as productive as that in

the East Southeast Region, producing an estimated 80 bushels of corn per acre. The estimated budget for a 40-60 lease for corn land in this region includes sharing fertilizer, herbicide, insecticide, and drying.

Total production costs for corn production are $177.42. The landlord's contribution to production costs is 31.3%, $55.57, considerably less than the rental share. The tenant contributes $121.85, 68.7%, to the enterprise. Sale of the corn on the market provides $132.00 in revenue, and a loss of $45.42. The tenant bears most of the loss 93.9%, $42.65, while the landlord's share of the loss is 6.1%, only $2.77.

Corn production on this land, when enrolled in the program, would cost an estimated $151.09, and earn revenue of $190.26. The landlord's share of the cost rises marginally to 33.8% ($51.03), but the share of profit received is 64% $25.07. The tenant on the other hand pays 66.2% of the costs, reducing the share of the profit to $14.10, 36% of the total profit available.

The budget for a 1/3-2/3 lease in this region has all the assumptions of the 2/5-3/5 lease, except grain drying costs are not shared. A landlord with this lease pays $47.72 in production costs, 26.9%, and the tenant contributes 73.1%. Both would again lose money by selling the corn on the market where it would return only $132. Of the $45.42 loss, the landlord would bear $3.72, 8.2%, and the tenant would lose $41.70, 91.8% of the total.

When the land is in the farm program, total production costs are $151.09. The landlord's contribution increases to 29.6% ($44.70)

and the tenant's drops to 70.4% ($106.39) Program benefits would pay $190.26, providing a profit of $18.72, 47.8% of the total profit to the landlord, and 52.2% or $20.45 to the tenant.

Small Grain Leases

Barley production in the Northeast Region is an estimated 70 bushels per acre and grown under a 1/3-2/3 lease. With a 1/3-2/3 lease, only fertilizer and herbicide costs are shared. Total production costs are estimated to be $115.57 per acre. A landlord with this lease contributes 33.6%, $38.85, toward production costs, very close to the share rental proportion. The tenant would pay $76.72, or 66.4%. Both parties would suffer a loss by selling on the market with a price of $1.35 per bushel returning only $94.50 per acre in revenue. The landlord would lose $7.35 (35%), and the tenant $13.72 (65%).

Enrollment in the farm program would reduce per acre costs to $101.61. The landlord's share of costs would increase to 36% ($37.60), and the tenant would contribute $64.01 (64%). Revenue from program benefits would provide $141.56 in revenue, leaving a profit of $39.95 per acre after costs. A landlord in this situation would make a profit of $9.59 (24% of the total) while the tenant would receive a profit of $30.36 (76%).

Oats production in the Northeast region usually occurs under a 1/3-2/3 lease with fertilizer and herbicide costs shared. Oats production is the only enterprise that earned a loss under the farm program. Total per acre production costs for 65 bushels of oats were

estimated to be $116.31. The share of total production costs paid by each party matches their output share, the landlord paying $38.52, or 33%, and the tenant $77.79, or 67%. A market price for oats of $1.15 per bushel returns only $74.75, leaving a net loss of $41.56. The loss is shared by each party exactly as output is shared, 1/3 by the landlord, 2/3 by the tenant.

Enrollment in the farm program does not make oats production a profitable enterprise but it does decrease the size of the loss. Cost per acre of oats production decreases to a total of $102.20 under the program. The landlord's share increases to 37% ($37.34) and the tenant pays 63% ($64.86). Program revenue totals only $83.79, resulting in a loss of $18.41. Both parties lose less per acre, but the landlord's share increases to 51%, $9.41 while the tenant's share of the loss drops to 49%, or $9.00.

Winter Wheat Lease

Winter wheat producers in the Southwest Region typically leave half of their cropland fallow each year to maintain soil moisture and fertility. For this reason, enrollment in the farm program only increases revenue, because the set aside requirement does not reduce production volume or cost. Two winter wheat budgets were estimated, assuming enrollment in the farm program, with a 25% and a 35% set aside, 35 bushels per acre and a 1/3-2/3 share lease. Fertilizer is the only variable cost shared by the landlord.

Total per acre winter wheat production costs for this region were estimated to be $113.50. Tenants bear a proportion of the cost

with this agreement, 75% ($85.52), much larger than their share of the output. Landlords contribute only 25%, $27.98.

With a 25% set aside, total revenue is $149.00, which provides the landlord with most, 61% ($21.69) of the profit. The tenant earns only $13.81, 39% of the total. Program benefits with a 35% set aside are $156.00. The distribution of profits between tenant and landlord is equalized slightly, although the landlord still receives most, 57% ($24.02) of the profit. The tenant receives only 43% ($18.48).

Conclusions

The responses to the South Dakota Farmland Rental survey suggest that some of the suggestions for lease improvements made by Heady and Hurlburt have been accepted. Lease terms that share output of all products in the same proportion have been widely adopted. However, annual leases are still the most popular, and very few share leases provide cash payments in addition to the share rental.

Although a majority of leases do contain provisions for some sharing of input costs, very few landlords share all of the variable costs. Sharing of all variable input costs is most frequent in a 50-50 share lease. The inputs that are most likely to be shared, are the ones that have the most intra-period influence on output levels. Sharing of fertilizer costs was reported most often, with herbicide and insecticide also shared by a significant number of landlords.

Sharing of input costs is a method for adjusting the share rental to an appropriate level for an individual tract. It is also

used to reduce the tenants' outlay and risk when producing crops with higher variable costs.

Analysis of the estimated crop budgets revealed that the costs of production are rarely in proportion with the share of output received by each party. In addition to providing profitability, enrollment in the farm program moved the cost distributions toward the appropriate proportions in most cases. The distribution of the residual profits varied considerably depending on the type of lease used. The 1/3-2/3 barley lease was the only agreement where both costs and profits were shared in approximately the same proportion as output is shared.

Use of a 1/3-2/3 lease for winter wheat production causes the widest deviation in share of costs and returns from the specified output share. Regardless of set aside level, the tenant paid 75% of production costs but the landlord received approximately 60% of the profit.

The parties to the soybean leases examined shared costs in close approximation to the output share, but use of a 60-40 lease provides the tenant with most of the profit. All three corn leases in the East Southeast region have terms that distribute costs within 5% of output shares. Only 40-60 corn leases, allow landlords and tenants to share profit in the same proportion as output is shared. The tenant paid a higher proportion of the costs and received less of the profit under both corn leases in the Northeast region of South Dakota.

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Chapter 7

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The overall objective of this research project was to discover the major characteristics of farmland rental markets and rental agreements in S.D. Specific objectives were to:

1. Examine the structural characteristics of the farmland rental market in South Dakota, including the characteristics of landlords and tenants.

2. Examine the relationship of characteristics of farmland rental market participants to rental agreement terms.

3. Test for significant differences in lease terms by region and by cropping pattern in South Dakota.

4. Examine the ability of the farmland rental market to respond to short term changes in uncertainty and financial conditions and the types of adjustments that are occurring.

5. Examine terms of rental agreements for: a) presence of conditions for efficient use of resources, and b) to determine if rental agreements distribute costs and returns approximately as output is shared.

Data for this effort are from the 1986 SDSU Farmland Rental Survey, completed by 1155 lessors and lessees of South Dakota farmland. Descriptive statistics, cross tabulation, chi square tests and analysis of variance were used to analyze the survey responses.

Summary

The farmland rental market in South Dakota is predominantly local in nature. Most respondents lived in the same county or a county adjoining the location of the rented land. However, almost one third of nonoperator landlord respondents lived in another state.

There are five identifiable tenure classes: 1) nonoperator landlords (56% of respondents), 2) fullowner operator landlords (5%), 3) partowner operator landlords (5%), 4)partowner operators (26%), 5) tenants (8%). Nonoperator landlords rented smaller tracts and were involved in fewer leases than respondents in other tenure categories. In addition to being the largest group of respondents renting in farmland, partowner operators were involved in more leases, covering more acres than other respondents.

Full tenant respondents had the youngest age distribution of all tenure classes, suggesting that many are relatively new farmers. Nonoperator landlord respondents had the oldest age distribution, indicating a significant proportion were probably retired, possibly retired farmers. The vast majority (75%) of respondents were men. Of women respondents, over half were 65 years of age or older.

The incidence of involvement in the rental market by banks, governments, partnerships, or corporations was low, less than 8% of respondents. However, tracts leased by governments were mostly pasture and were considerably larger than tracts rented by other landlords. Over three fifths of respondents had at least one lease with unrelated

individuals. Respondents leased with relatives were less often than with unrelated parties, but rented larger tracts. Those who leased to or from unrelated individuals were most likely to have multiple leases.

Relationship between leasing parties has more impact on the form of agreement than on the land rental price. Leases between family members and relatives were overwhelmingly verbal, annual agreements. Only cash leases between unrelated parties were written more than half the time. The level of share or cash rental paid was not discernibly affected by relationship.

Leases between family members and relatives are more likely to provide non-price concessions to renters. The cash rental payment schedule wasannual more often in leases between family members and relatives than in leases between unrelated parties. Share leases between relatives were more likely to provide forage use of crop residue than were leases with unrelated parties.

Respondent landlords leasing to family members were older and more reliant on income from the rented land than landlords leasing to relatives or unrelated persons.

Regional variation. In completing the third objective, rental agreement terms were tested to identify significant differences in rental markets between regions in South Dakota. Soil fertility and the type of crop grown, from corn and soybeans in the Southeast to wheat in the West, varies considerably across the state.

Share leases were more likely to be found on corn-soybean land and wheat-grain land than other cropland.

Cash rental payments were highest in the predominantly corn and soybean regions. Cropping pattern on the rented land also had a major influence on rental price. Together they explain a large proportion of the variation in cash rental prices. Rent to value ratios did not reveal many significant differences between regions or cropping pattern.

Share leases are institutionalized at four landlord-tenant share percentages (1/2-1/2, 2/5-3/5, 1/3-2/3, 1/4-3/4). Rental shares vary by region and cropping pattern. The highest landlord rental shares are paid in the Eastern corn growing regions and decrease as small grain and wheat production become more prominent. However, the 1/3-2/3 landlord-tenant share lease is used extensively in all areas of the state. Share leases generally use only four rental share percentages.

Respondents reporting higher rental shares and production of crops with higher per acre cost shared more input costs than respondents with smaller rental shares or lower crop production costs.

The size of the rental tract varies considerably by the region of the state and crop produced. The average size of rented tracts in the wheat producing Northwest region is almost seven times that of rented tracts in the predominantly corn and soybean producing Southeast region.

Changes in rental agreements. Cash rental prices changed more often, in a shorter time span (1985-1986 compared to 1981 to 1986 for

other lease terms), than any other lease term examined. The greatest incidence and magnitude of change in cash rental prices occurred in the eastern regions of the state, and on land where corn and soybeans are the most important crops.

Very few changes in share lease terms were reported. Changes from annual to multi-year, and verbal to written agreements were offset by nearly equal amounts of changes in the other direction.

Respondents changed from share to cash leases more often than the reverse, the opposite direction of change anticipated. Fullowner operator landlords were the only category of respondents with significant change from cash to share leases. Respondents leasing with family members and nonoperator landlords changed from share to cash with the greatest frequency.

Efficiency conditions and sharing of costs and returns. Examination of rental agreements revealed that few contained all of Heady's or Hurlburt's conditions necessary for an efficient (perfect) lease. Almost all rental share agreements share the output of different crops in the same proportion. However, few agreements provide a cash payment in addition to the rental share, and most leases are annual. Sharing of variable costs occurs to some degree in many share leases, but only 50-50 share leases share all variable costs with any frequency.

Input cost sharing provisions are influenced most by the size of the output share and the type of crop grown. The greater the landlord's rental share and the higher the variable cost of crop

production, the more likely it is that variable costs will be shared. The costs that are shared are the ones that influence seasonal output levels most significantly (fertilizer, herbicide, and insecticide).

Of the 11 types of share leases examined, only the 1/3-2/3 share leases for barley and oats distribute costs and returns in close approximation to output share. Costs are shared proportionately in only two of the other nine leases examined. None of the other leases distribute returns as well, however, providing widely divergent distributions of costs and returns. Six of the leases examined provide landlords with a share of the return larger than their rental crop share and a share of production costs smaller than their output share.

Conclusions

Farmland rental in South Dakota is a very important component of resource control in the agricultural economy covering about 38% of the agricultural land. Except for the large proportion (33%) of nonoperator landlords who live out-of-state, the market is essentially a series of local markets where leases are between neighbors, friends, or relatives.

Rental agreements, especially share agreements, are generally informal annual leases, terms of which are influenced by tradition and customary practice. Rental agreement terms do vary with variations in crop production conditions, but most lease terms do not vary with fluctuations in input and output prices. Cash agreements, especially cash

rental prices, change more frequently than share leases, but do not change as rapidly or as dramatically as the economic environment changes.

Analysis of characteristics of tenure classes suggests that the tenure ladder concept is still applicable to a minority of market participants. However, the characteristics of partowner operators and their dominance of the market suggests that most lessees rent land to expand their farming operation.

The widespread incidence of multiple leasing adds complexity that may strain the informal processes of the farmland rental market in the future.

Incentives for efficient use of resources have not been widely adopted in most rental agreements. In practice, it appears that except for 1/3-2/3 small grain leases in South Dakota rental share and input cost sharing provisions should be adjusted to provide a more equitable division of costs and returns.

Implications

This research effort provides a fairly clear picture of the structure of the farmland rental market and terms of rental agreements used in South Dakota. It also reveals some of the impacts of factors such as region, crop produced, tenure classification, and relationship between leasing parties on the rental market and rental agreements.

Producers, landowners, and lenders can use this information to guide them when considering terms of land rental in their area. Future

decrease in competition for rental land, lowering rent levels. The trend toward fewer and larger producing farms could promote further concentration in this area. A shortage of farm operators to rent the land may cause an increase in the use of custom hire.

The effects of the lack of incentive conditions in share leases is still unknown. Case studies could reveal whether inputs are applied in equal intensities across tenure types. Results of the analysis of individual share leases suggests that further investigation into the income transfer effects of share leases could be beneficial. Exploration of potential modifications of share lease terms should be pursued.

Expanded use of flexible cash agreements could provide the risk sharing advantages of share agreements, without the inequities that appear to be present in the share leases examined. The greater flexibility of fixed cash leases to adjust to changing economic conditions, is an advantage that cannot be overlooked. The benefits of this flexibility in cash leases may outweigh the increase in risk from using them instead of share leases.

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APPENDIX

1986 SOUTH DAKOTA STATE UNIVERSITY FARMLAND LEASING SURVEY

Farmland leasing is an important part of today's production agriculture. Yet, it is often difficult for tenants and landlords to gain a clear understanding of leasing practices within their locality and the state. By completing this questionnaire, you will be helping to compile that market information for 1986.

This survey is being sent to a random sample of both tenants and landlords. Some questions may not apply to you but please respond as completely as possible. Your answers will be kept confidential and used only in compiling total and average responses.

GENERAL INFORMATION

1. Are you a farm or ranch operator in South Dakota in 1986?
   - ☐ Yes
   - ☐ No

2. Are you a landowner leasing farmland to others in 1986?
   - ☐ Yes
   - ☐ No

3. How many acres of farmland, if any, do you:
   - a. own? _____ acres
   - b. lease to others? _____ acres
   - c. lease from others? _____ acres
   - d. farm yourself? _____ acres

4. In what county or counties is your leased land located?
   - a. _____
   - b. _____

5. The number and total acres of all your leases by type are:

	Number	Acres
a. crop share		
b. cash rent (crop or hay)		
c. cash rent (pasture only)		
d. livestock share		
e. other _____		

6. How many of your leases are:
   - a. written _____
   - b. oral _____

7. How many of your leases are:
   - a. annual? _____
   - b. multi-year? _____

8. Over the past five years, have any of your leases changed:

	Yes	No	If "Yes," Number
a. from written to verbal?	(1) ☐	(2) ☐	
b. from verbal to written?	(1) ☐	(2) ☐	
c. from annual to multi-year?	(1) ☐	(2) ☐	
d. from multi-year to annual?	(1) ☐	(2) ☐	

CROP SHARE LEASE SECTION

9. Are you a tenant or landlord in any **CROP SHARE** leases for cropland or hayland?
   - ☐ (1) Yes If "Yes," go to Question 10.
   - ☐ (2) No If "No," go to Question 21.

10. What are your:
    - a. number of crop share leases? _____
    - b. total cropland acres share leased? _____ acres
    - c. total hayland acres share leased? _____ acres
    - d. total irrigated acres share leased? _____ acres
    - e. total dryland acres share leased? _____ acres

Even though you may have more than one lease, please answer Questions 11 to 20 for just one crop share lease agreement – either your **MOST IMPORTANT OR MOST TYPICAL** crop share lease.

11. How many acres are under this lease agreement? _____

12. How many years have you leased these acres? _____

13. For this agreement, (check one for each question)
    - a. you are? (1) tenant ☐ (2) landlord ☐
    - b. the lease is? (1) oral ☐ (2) written ☐
    - c. the lease is? (1) annual ☐ (2) multi-year ☐

14. The tenant's share of the output is? (complete all that apply)

	Tenant's Share of Total
Cropland:	
a. dryland	
b. irrigated	
Hayland:	
c. alfalfa	
d. tame hay (brome)	
e. native hay	

15. Is there a cash payment in addition to this share rent?
    - ☐ (1) Yes If "Yes," go to Question 15a.
    - ☐ (2) No If "No," go to Question 16.
    - a. How much is that added rent?
      - $ _____ total
      - or
      - $ _____ per acre

16. The major income-producing crop(s) grown on these acres is(are)? (check all that apply)
    - ☐ a. corn
    - ☐ b. soybeans
    - ☐ c. sorghum
    - ☐ d. wheat
    - ☐ e. oats
    - ☐ f. barley
    - ☐ g. other (specify) _____

17. For this lease, does the tenant have forage use (grazing on stocks or harvesting hay) after the grain is harvested?

☐ (1) Yes If "Yes," go to Question 17a.
☐ (2) No If "No," go to Question 18.

a. Does the tenant pay an additional fee?

☐ (1) Yes
☐ (2) No

18. Of any **CROP INPUT** costs that are shared, what are the tenant's and landlord's shares? (complete all that apply)

	Tenant's (Share of Total)	Landlord's (Share of Total)
a. seed		
b. fertilizer		
c. herbicide		
d. insecticide		
e. application of chemicals		
f. irrigation energy		
g. harvesting		
h. drying		
i. other (specify) _____		

19. Of any **HAY PRODUCTION INPUT** costs that are shared, what are the tenant's and landlord's shares? (complete all that apply)

	Tenant's (Share of Total)	Landlord's (Share of Total)
a. seed		
b. fertilizer		
c. baling		
d. hauling		
e. other (specify) _____		

20. During the last five years (or the time you have leased this tract, if shorter), has:

	Yes	No
a. land ownership changed?	(1) ☐	(2) ☐
b. there been a different tenant?	(1) ☐	(2) ☐
c. the share of inputs changed?	(1) ☐	(2) ☐
d. the number of shared inputs changed?	(1) ☐	(2) ☐
e. the lease changed from cash to share rent?	(1) ☐	(2) ☐
f. the landlord's crop share increased?	(1) ☐	(2) ☐
g. the landlord's crop share decreased?	(1) ☐	(2) ☐

CASH LEASE SECTION

21. Are you a tenant or landlord in any **CASH** lease agreements for cropland or hayland?

☐ (1) Yes If "Yes," go to Question 22.
☐ (2) No If "No," go to Question 31.

22. What are your:

a. number of cash leases? _____
b. total crop acres cash leased? _____ acres
c. total hayland acres cash leased? _____ acres
d. total irrigated acres cash leased? _____ acres
e. total dryland acres cash leased? _____ acres

Even though you may have more than one lease, please answer Questions 23 to 30 for just one cash lease agreement – either your **MOST IMPORTANT OR MOST TYPICAL** cash lease.

23. How many acres under this lease agreement? _____

24. How many years have you leased these acres? _____

25. For this agreement, (check one for each question)

a. you are?	(1) tenant ☐	(2) landlord ☐
b. the lease is?	(1) oral ☐	(2) written ☐
c. the lease is?	(1) annual ☐	(2) multi-year ☐

26. What were/are the 1985 and 1986 per acre cash rent and your estimate of the 1986 per acre market value of this leased land?

Crop Type	Cash Rent 1985	Cash Rent 1986	Estimated Market Value
a. irrigated crops/ grains	$_____	$_____	$_____
b. dryland crops/ grains	_____	_____	_____
c. alfalfa	_____	_____	_____
d. tame hay (brome)	_____	_____	_____
e. native hay	_____	_____	_____

27. The major income-producing crop(s) grown on these acres is(are)? (check all that apply)

☐ a. corn
☐ b. soybeans
☐ c. sorghum
☐ d. wheat
☐ e. oats
☐ f. barley
☐ g. other (specify) _____

28. Payments on this cash lease are made? (check one)

☐ (1) annually
☐ (2) twice yearly
☐ (3) quarterly
☐ (4) other

29. Are there lease provisions that vary the amount of cash rent due to changes in yields or prices?

☐ (1) Yes If "Yes," go to Question 29a.
☐ (2) No If "No," go to Question 30.

a. Is rent adjusted for changes in: (check one)

☐ (1) yields?
☐ (2) prices?
☐ (3) both?

30. During the last five years (or the time you have leased this tract, if shorter), has:

	Yes	No
a. land ownership changed?	(1) ☐	(2) ☐
b. there been a different tenant?	(1) ☐	(2) ☐
c. the lease changed from share to cash rent?	(1) ☐	(2) ☐

PASTURE/RANGE LEASE SECTION

31. Are you a tenant or landlord in any leases for permanent **PASTURE or RANGE?**

☐ (1) Yes If "Yes," go to Question 32.
☐ (2) No If "No," go to Question 43.

32. What are your total:

a. number of pasture/range leases? _____
b. acres pasture/range leased? _____ acres

Even though you may have more than one lease, please answers Questions 33 to 42 for just one pasture/range lease agreement – either your **MOST IMPORTANT OR MOST TYPICAL** pasture/range lease.

33. How many acres under this agreement? _____

34. How many years have you leased these acres? _____

35. For this agreement, (check one for each question)

a. you are?	(1) tenant ☐	(2) landlord ☐
b. the lease is?	(1) oral ☐	(2) written ☐
c. the lease is?	(1) annual ☐	(2) multi-year ☐

36. The rental price for this tract in 1985 and 1986 was/is:

	1985	1986
a. per acre	$_____	$_____
or		
b. per animal unit month	_____	_____

37. What is the 1986 stocking rate? _____ acres per animal unit

38. What is the usual grazing season length in months? _____

39. You are leasing this pasture/range from or to: (check one)

☐ (1) individual, partnership, or corporation
☐ (2) government agency
☐ (3) tribal government
☐ (4) other (specify) _____

40. Which party is responsible for: (check all that apply)

	Tenant	Landlord	Both
a. checking livestock	(1) ☐	(2) ☐	(3) ☐
b. salt and minerals	(1) ☐	(2) ☐	(3) ☐
c. fencing materials	(1) ☐	(2) ☐	(3) ☐
d. fencing labor	(1) ☐	(2) ☐	(3) ☐
e. livestock damage liability insurance	(1) ☐	(2) ☐	(3) ☐
f. fertilizer cost	(1) ☐	(2) ☐	(3) ☐
g. other (specify) _____	____	_____	____

41. The water source(s) is (are): (check all that apply)

☐ a. stream
☐ b. pond
☐ c. well
☐ d. rural water system
☐ e. other (explain) _____

42. During the last five years or the time you have leased this tract if shorter, has:

	Yes	No
a. land ownership changed?	(1) ☐	(2) ☐
b. there been a different tenant?	(1) ☐	(2) ☐

GENERAL RENTAL MARKET AND RESPONDENT INFORMATION

This last section contains three sets of questions, please answer only those that apply to you.

IF YOU LEASE FROM OTHERS, answer Questions 43 through 49. If not, go to Question 50.

43. Please indicate the number and total acres you lease from each of the following landlords.

	Number	Acres
a. Parents or in-laws	_____	_____
b. Other relative	_____	_____
c. Unrelated individual	_____	_____
d. Financial institution	_____	_____
e. State government	_____	_____
f. Tribal government	_____	_____
g. Federal government	_____	_____
h. Other	_____	_____

44. How did you typically first learn your leased land was available to rent? (check one)

☐ (1) From landowner directly.
☐ (2) From a relative.
☐ (3) From neighbor or other individual.
☐ (4) From newspaper or other media ad.
☐ (5) Other (explain) _____

45. At the time of your original agreement(s), were you aware of competition from others?

☐ (1) Yes
☐ (2) No

46. When you renew leases, are you usually in competition with others?

☐ (1) Yes
☐ (2) No

47. How would you evaluate the opportunity for continuing to lease your most important tract for the next five years? (circle one)

1	2	3	4
Very Uncertain	Uncertain	Reasonably Certain	Very Certain

48. Do you operate your farm business as: (check one)

☐ (1) an individual proprietorship?
☐ (2) a partnership?
☐ (3) a corporation?

49. Your annual gross receipts from farming average? (check one)

- ☐ (1) Less than $39,999
- ☐ (2) $40,000 to $99,999
- ☐ (3) $100,000 to $249,999
- ☐ (4) $250,000 or more

IF YOU LEASE TO OTHERS, answers Questions 50 through 52. If not, go to Question 53.

50. Please indicate the number and total acres you lease to each of the following tenants.

	Number	Acres
a. Son, daughter, or in-laws		
b. Other relative		
c. Unrelated individual		
d. Non-family partnership		
e. Non-family corporation		
f. Other		

51. Securing acceptable tenants is: (circle one)

1	2	3	4
Quite Difficult	Somewhat Difficult	Generally Easy	Very Easy

52. Who handles the management of your leases? (check one or more)

- ☐ a. Myself
- ☐ b. Relative
- ☐ c. Estate executor
- ☐ d. Professional farm manager
- ☐ e. Other (specify) _____

Questions 53 through 58 are for **ALL RESPONDENTS.**

53. From the standpoint of fairness, how would you classify your leasing arrangement(s)? (circle one)

1	2	3	4	5
Poor	Fair	Adequate	Good	Excellent

54. On average, net income from crop and livestock production or farmland rental contributes what percentage of your total household income? (check one)

- ☐ (1) Less than 30%
- ☐ (2) 30% to 49%
- ☐ (3) 50% to 80%
- ☐ (4) More than 80%

55. Your age is? (check one)

- ☐ (1) Less than 25 years
- ☐ (2) 25 to 34 years
- ☐ (3) 35 to 44 years
- ☐ (4) 45 to 54 years
- ☐ (5) 55 to 64 years
- ☐ (6) 65 or more years

56. Your sex is?

- ☐ (1) Male
- ☐ (2) Female

57. Your residence is:

a. _____ county

b. _____ state

58. We thank you for completing this questionnaire. If you have any additional comments, please provide them below.

_____

_____

_____

_____