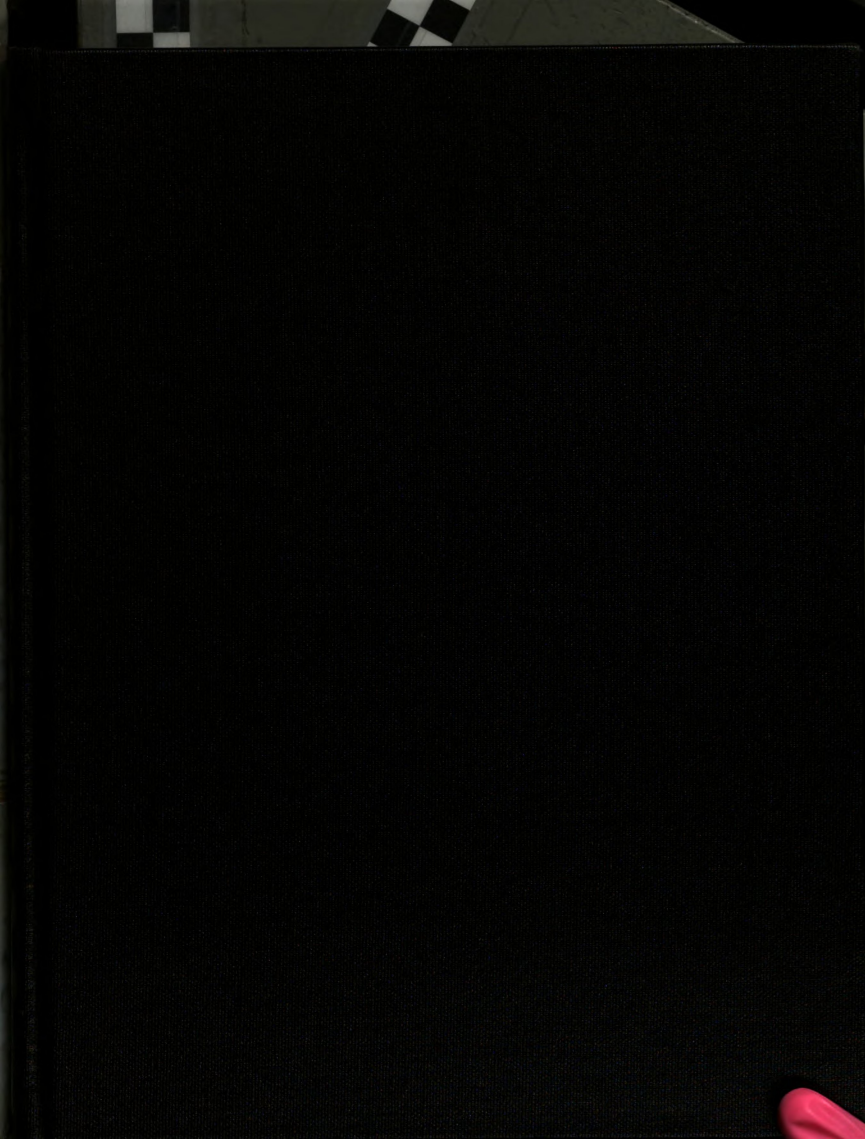






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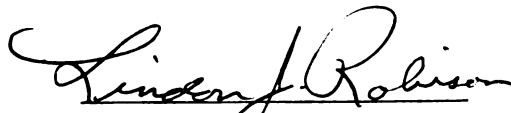
Landlords and Tenant's Contract Preferences
for Leasing Farmland in the
North Central United States

presented by

Brian J. Paterson

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**LANDLORDS AND TENANTS' CONTRACT PREFERENCES FOR LEASING
FARMLAND IN THE NORTH CENTRAL UNITED STATES**

BY

Brian J. Paterson

A THESIS

**Submitted to
Michigan State University
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ABSTRACT

LANDLORDS AND TENANTS' CONTRACT PREFERENCES FOR LEASING FARMLAND IN THE NORTH CENTRAL UNITED STATES

BY

Brian J. Paterson

This thesis contributed in two ways toward the efforts to explain the coexistence of cash rent and share contracts. The first contribution is a literature review which provides a background of existing leasing studies. The second contribution is to gather data on landlord and tenant leasing behavior across the North Central Region of the United States (NCR) which will help future researchers to better understand the leasing market.

Agricultural Extension Agents were interviewed in a telephone survey over the NCR. The questionnaire collected two kind of data: 1) quantitative data on characteristics of the local leasing markets across the NCR and 2) qualitative data on landlords and tenants' leasing behavior and contract choice preferences.

This study identifies many factors that influence landlord and tenant leasing behavior. This information will be useful for future research in designing and testing a contract choice model. Furthermore, this study finds relationships in participants contract preference are important and should be explored in future models of contract choice.

To my wife, Monica

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CHAPTER 1

INTRODUCTION

1.1. Why cash rent and share contracts coexist?

Economists have struggled over the years to explain why cash rent and share contracts coexist in the lease market. Some landlords lease farmland to tenants in exchange for cash. Other landlords lease farmland to tenants in exchange for a share of the output. Economists have proposed many theories to explain why landlords and tenants prefer one contract to the other. However, economists have not developed a consensus why the participants have different contract preferences. Some of the theories that have attempted to explain the different contract preferences are discussed in the literature review in chapter two.

Some economists believe they can explain the coexistence of cash rent and share contracts if more detailed data on leasing behavior and local leasing markets were collected. More data is needed to explain: a) why landlords and tenants decide to lease in a cash rent or share contracts, b) lack of data that explains how landlords and tenants determine the terms of input and output shares in a share contract, c) limited data explaining why landowners decide to lease and d) how do leasing practices vary across geographical areas.

1.2. Understanding contract preference

Collecting and reporting data on leasing behavior in a broad geographical area is one of the goals of this thesis. The analysis of the thesis intends to be the first of a series of studies which will aid to develop a more generally accepted theory that explains contract preferences.

The following two objectives are pursued in this study. First, the study reviews past theories of leasing behavior to show the diversity of theories in leasing behavior literature. Generally, this review shows that there is no consensus among economists to explain leasing behavior.

Second, this study collects primary data on landlords and tenants leasing behavior. This data explains four types of leasing behavior: 1) why landowners decide to lease, 2) why landlords who lease prefer a cash rent or share contract, 3) why tenants who lease prefer a cash rent or share contract, and 4) how landlords and tenants who lease in a share contract determine input and output shares. Data on the local leasing characteristics in each respondent's area was also collected.

1.3. Description of efforts to reach objectives

A literature review was completed to provide a general background to understand leasing behavior. The literature review discussed the views of many agricultural economists and economists on landlord and tenant contract preferences. Economists propose many different models to explain why cash rent and share contracts coexist, but they do not agree on one model to explain tenant and landlord contract preferences.

A telephone survey was done in the 12 states of the North Central Regions of the United States (NCR) to gather information on leasing behavior. The agricultural agents within the extension regions in each state were contacted. Agricultural agents were contacted because they were considered the most qualified source of information on leasing practices and leasing behavior. The NCR was the area the agricultural agents were selected from because of the areas high leasing activity and diversity of leasing practices.

The questionnaire for the interview used close and open-ended questions. Close ended quantitative questions collected information about the respondents local lease market characteristics. The characteristics that the respondents reported about their local lease market are: 1) the type of crops grown on leased land; 2) the percentages of farmland that landlords lease; 3) the percentages of leased farmland that landlords lease in a cash rent contract; 4) the percentages of leased farmland that landlords lease in a share contract; 5) the average cash rent landlords receive leasing in a cash rent contract, 6) the most common input and output shares landlords and tenants agree in a share contract.

Open ended qualitative questions collected information on landlord and tenant leasing behavior in the respondent's extension region. The information on leasing behavior that respondents reported for their extension is: 1) why landlords lease, 2) why landlords who lease prefer a cash rent or share contract, 3) why tenants who lease prefer a cash rent or share contract, and 4) how landlord and tenant who lease in a share contract determine the input and output shares.

The data was organized into in the following manner. Quantitative information on leasing characteristics was categorized into high, medium and low percentiles. Categories of leasing characteristics were shown in color coded maps. Each map showed how some leasing characteristics varied across the North Central United States. Data on the terms of share

contracts found across the North Central United States were presented in a table because of the great diversity of the data.

The qualitative data that the respondents reported on leasing behavior was organized into categories based on similar economic reasons of explaining. Separate tables were created for each qualitative question on leasing behavior. Each table shows the frequency each category was reported to influence leasing behavior in each state of the North Central United States.

The survey data was limited in the following ways. First, the information about the leasing behavior was not directly taken from the landlords' and tenants' own perceptions because agricultural extension agents were selected to be the survey population instead of landlords and tenants. Second, the survey collected qualitative data that explain leasing behavior. Respondents only reported reasons why landlords and tenants displayed a certain type of leasing behavior, since the survey is only a first step towards collecting primary data about leasing behavior. Therefore, the probability of a type of leasing behavior occurring for a category reported to affect leasing behavior was not able to be reached with this type of data. Second, the survey collected aggregate data on leasing characteristics in each area. Therefore, the variability of the data within an area is unknown. In spite of these limitations, this data has identified many influences of the participant's leasing behavior that will give future researcher a better understanding of why cash rents and share contracts coexists in the NCR.

1.4. Organization of the study

The remainder of this study is organized into five chapters. Chapter II describes the literature on leasing behavior. The first section of Chapter II presents past theories on why cash rent and share contracts coexist. Economists in the past have questioned whether the cash rent

and share contracts could offer the tenant and landlord equal benefits in each contract. These economists also debate whether the tenant's use of inputs and production of outputs is the same in each contract. The second section of Chapter II reviews current studies on contract choice. In current studies, the focus is on the different influences that affect each participant's decision to choose between the cash rent and share contract.

Chapter III explains the questionnaire design and survey method used to collect data on landlord and tenant leasing behavior. The first and second sections of Chapter III discuss the design and implementation of the questionnaire and a description of the characteristics of the survey population. The third section of Chapter III explains the sampling process, rates of response, characteristics of respondents and non-respondents, and the geographic area included in this study from those surveyed. The fourth section of Chapter III explains how the qualitative data collected in the survey was organized and describes each category reported to affect the participants leasing behavior.

Chapter IV describes the leasing characteristics of extension regions in the North Central United States using color-coded maps. Chapter V shows the frequency the respondents reported a category to explain each of the four types of leasing behavior in their region. Again, the four types of leasing behavior the respondents reported information on are: 1) why landlords decide to lease, 2) why landlords who lease prefer a cash rent or share contract, 3) why tenants who lease prefer a cash rent or share contract, and 3) how tenants and landlords who share lease determine input and output shares. Chapter VI is a summary.

CHAPTER 2

LITERATURE REVIEW

2.1. General overview

Economists have conducted many studies attempting to explain why cash rent contracts and share contracts coexist in the farmland leasing market. So far no generally accepted explanation has been found though many interesting ones have been proposed. This chapter will review the contract choice literature that attempts to explain existing lease arrangements.

This chapter consists of two main sections. The first section explains earlier theories that question whether share contracts can offer tenants and landlords the same benefits as the cash rent contract. The second section discusses factors that influence the landlord and tenant's contract preference. The last section is a summary.

In describing the contract theories, many terms are used that may be difficult to understand. To help simplify the reading of this chapter, terms used in contract choice literature will be defined. The term "cash rent contract" defines a contract between the tenant and landowner in which the tenant pays the landlord a fixed dollar amount per acre as rent to use the land in one year's agricultural production. The term "cash rent" defines the fixed dollar amount per acre paid in the cash rent contract. The term "share contract" defines a contract between the tenant and landowner in which the tenant gives the landlord an agreed percentage of the crops produced as annual rent. The term "landlord's output share" will define the proportion of the

crops produced that the tenant gives to the landlord as rent. The term "tenant's output share" will define the proportion of the crops produced that the tenant has left after paying the landlord's output share. The term "landlord input share" will represent the proportion of input cost the landlord contributes toward crop production on leased land. The term "tenant input share" defines the proportion of inputs the tenant contributes toward crop production on leased land when the landlord shares input costs.

2.2. The share contract: an alternative to the cash rent contract?

In the past, economists have debated the question of whether or not a share contract can offer the same benefits as a cash rent contract. This section discusses economists' views on the share contract's ability to induce the participants to use the same inputs and produce the same outputs as would be used under a cash rent contract. This section also shows economists' views on whether tenants and landlords receive their same respective income in each contract.

2.2.1. The traditional contract choice model

In early contract choice models, economists described the tenant as one who maximized profits by his choice of inputs. In a share contract, the tenant receives less than his full marginal value product. The model predicted the tenant would maximize his income using a lower amount of inputs and produce a lower output level in a share contract than he would in a cash rent contract. The landlord in the traditional model is assumed only to receive a cash rent or output share but has no influence over the input use level. Thus, according to the early models, cash rent contracts resulted in higher input use and greater outputs than would share lease contracts.

Because of the theoretical benefits of cash leasing, the prevalence of share leases remained a question.

2.2.2. Input sharing contract choice model

Shickle (1941), Heady (1947) and Isawi (1982) criticized the traditional theory for failing to account for landlord sharing variable input costs. These economists suggested that sharing inputs and outputs would induce the tenant to apply the same input level as in a cash lease. Adams and Rask (1968) showed that this arrangement would, of course, increase the tenant's profits above a traditional share contract. Whether or not the landlord's profit position was increased compared with a traditional share contract, would depend on the increase in output resulting from increased inputs. While these economists suggested equal inputs and outputs are achieved in the input sharing share contract and the cash rent contract, the question of which contract the tenant and landlord would prefer remained unexplained.

2.2.3. Joint profit maximizing models of contract choice

Chueng (1968) examined contract choices and found conditions that maximized the tenants and landlord's income. Chueng explained that the tenant and landlord must receive their same respective incomes in both cash rent and share contract, if the contracts are to be equally agreeable for both participants. Chueng argued that three conditions are required to give the participants equal incomes in both contracts. First, the landlord contracts the tenant to apply the same amount of inputs in both contracts. Therefore, the landlord receives the same income in each contract since the same output is produced. Second, the tenant must receive a share of

output that allows him to receive his opportunity cost. Therefore, assuming labor is the only input, the landlord's output share must equal the total value product of labor less the total factor cost of labor that is the tenant's opportunity income divided by the total value product of labor. Third, the landlord must restrict how much land the tenant farms. Therefore, the tenant must apply all his labor on the landlord's land to receive his opportunity cost.

Chueng, therefore, showed that in a competitive market, cash and share leases could be arranged to provide the same benefits. Thus, both types of contracts could coexist. He failed to explain, however, how to choose between the contracts.

2.3. Factors that influence contract choice

Chueng showed that equal inputs, outputs, and participant incomes can occur in both contracts. Therefore, little question now exists if both contracts can offer the participants the same benefits. However, still little theoretical basis exists for why the tenant and landlord would prefer the cash rent contract to the share contract. Therefore, economists now search for an explanation of why one contract or the other is preferred.

Current contract choice theory now seeks factors that will create differences in incomes depending on the contract choice. These differences lead some landlords and tenants to prefer a cash rent contract and others to prefer a share contract. Economists have proposed to explain the tenant and landlord's contract choice decision using many factors: risk, tenant's opportunistic behavior, management ability, transaction costs, and a landlord's off farm income. Further, the participants lease land of different quality in areas of different climates. This section explains models that consider the influence of these different factors.

2.3.1. Including risk in contract choice models

Sutinen (1975), and Hiebert (1978), suggests risk is important in determining contract choice. The main difference between the Sutinen and Hiebert models is that Hiebert's model assumes the tenant chooses the input level while Sutinen's model assumes the landlord chooses the input level. These economists argue that the landlord and tenant may not receive the same utility of income in the cash rent and share contract because each contract offers a different potential distribution of income. If the participants' expected incomes are respectively the same in each contract, then, the participants jointly choose the contract commensurate with each participant's level of absolute risk aversion.

The tenant and landlord prefer a share contract when both have a positive level of absolute risk aversion. The tenant and landlord prefer a cash rent contract when the landlord has positive level of absolute risk aversion and the tenant has no risk aversion. Tenants and landlords prefer a fixed wage contract when the landlord has a neutral level of absolute risk aversion and the tenant has a positive level of absolute risk aversion. The tenant and landlord preferred contract choice is undefined when both participants are risk neutral (Robison and Barry, 1987).

The effect of risk on the efficiency of fixed rent and share arrangements has also been examined. Robison and Barry (1987) note that the landlord's input solution may be greater, equal to or less than that wanted by the tenant. The difference between the landlord's and tenant's desired input solutions depends on whether the rate of per unit loss of the landlord's land value is decreasing or increasing from the tenant extracting the services of land. Therefore, the efficiency question is incompletely resolved, even with risk in the analysis.

2.3.2. Including transaction cost in contract choice models

The transaction cost model is the most widely accepted theory of contract choice. Chueng (1969), Johnson and Meckling (1976), Roumasset and Uy (1980), Datta, O'Hara and Nugent (1986), and Allen and Lueck (1992) have all incorporated transaction costs in their models to explain landlord and tenant contract preference.

Transaction cost theorists argue that there are transaction costs in the leasing market. Transaction cost theorist state that the tenant can choose input levels that only maximize his income and not the landlord and tenant joint income. The tenant maximizes only his income because the landlord cannot perfectly monitor the tenants input levels. Transaction cost theorists argue the tenants choice of input level would maximize both his individual income and the landlords and tenants joint income without transaction costs. Yet transaction cost theorist state that because transaction cost exists, that the tenant will lower the landlord and tenant joint income when he maximizes his own individual income.

Transaction cost theorists believe the tenant lowers joint income because at his chosen input level, the landlord's loss of income is greater than the tenant's gain or the tenants loss of individual income is less than the landlord's gain. Therefore, joint income would increase if the tenant choose an input level to maximize joint income instead of only his own income.

Transaction cost theorists argue that the tenant chooses an input level that allows joint income to be closer to its maximum level when there are less transaction costs. Therefore, these theorists argue that the participants will enter the contract that has the lowest transaction cost.

Allen and Lueck (1992) developed one of the most current contract choice models that incorporates transaction cost. Allen and Lueck predict the tenant and landlord are more likely to prefer a share contract as the value of land increases. In contrast, Allen and Lueck predict the

tenant and landlord are more likely to prefer a cash rent contract as the cost of dividing output increases. Allen and Lueck explain their predictions based on the contract that has the highest tenant and landlord joint income after the tenant chooses the input levels.

Allen and Lueck argue that the land is filled with soil nutrients. The tenant pays for some of these nutrients. Landlords absorb the full cost of replacing other nutrients. In both the cash rent and share contracts, tenants deplete the soil nutrients because they do not pay the full marginal cost of the land's soil nutrients. The tenant receives the full marginal value product of these nutrients in a cash rent contract, but less than their full marginal value product in a share contract. Thus, the tenant maximizes his income by depleting a higher amount of soil nutrients in the cash rent than in the share contract. Also with this behavior, the tenant lowers joint income because the landlord's cost of replacing these nutrients is higher than the tenant's total benefit from depleting them.

Allen and Lueck also argue that the tenant's different incentives to apply labor in each contract influence the landlord and tenant's joint income in each contract. Under a cash rent contract, the tenant applies an amount of labor that maximizes both his income and the joint income. In contrast, the tenant's allocation of labor in a share contract maximizes his income but does not maximize the tenant and landlord's joint income. The tenant applies less labor in the share contract because he receives less than his full marginal value product of labor. Thus, the joint income of the tenant and landlord in a share contract is lower because, at the tenant's chosen allocation of labor, the tenant's cost of applying additional labor is less than the landlord's and tenant's joint benefit from a higher labor input. Allen and Lueck also suggest the cost of dividing the output as an additional transaction cost in the share contract.

Therefore, Allen and Lueck argue that the tenant and landlord prefer the contract that offers them the highest joint income. High quality land gives the tenant more incentive to

deplete the soil inputs than low quality land. Soil depletion is costly to the landlord. Therefore, the tenant and landlord are more likely to enter a share contract as land quality increases. Output division cost is only present in the share contract and not in the cash rent contract. Therefore, the tenant and landlord are more likely to enter a cash rent contract as the cost of output division increases.

2.3.3. Including tenant and landlord management skill in contract choice models

Ely and Galpin (1919), Samuelson (1973), Roa (1977), Hallagen (1978), and Kloppenburg and Geisler (1985) have shown that tenants and landlords' management skills or entrepreneurial abilities are important factors in influencing the contract choice.

In Ely and Galpin's agricultural ladder theory, the age of the farmers was considered correlated with his management skill and wealth. This theory dominated leasing literature between 1920 and 1950. The aging tenant was believed to move through five various stages of land tenure: 1) unpaid family laborer, 2) hired laborer, 3) share-cropper, 4) tenant under fixed rent and 5) landlord. Each stage was seen as a way to increase skills and assets on his way to becoming a full owner. However, the theory was more of a story than an actual explanation of land tenure. Only some tenants have upward mobility.

Roa observed that tenant and landlord's managerial abilities influences contract choice. Under uncertainty, the tenant and landlord must make management decisions based on subjective judgements or opinions rather than facts. Tenants are compensated for making good managerial decisions. Under certainty, no subjective judgement is needed. Roa argued high skilled tenants will cash rent when farming is highly uncertain, since the potential gain from good management decisions is high. In contrast, high skilled tenants' enter a share contract in a certain farming

environment because his decision making is not rewarded.

Hallagen (1978) noted that the landlord offers the tenant different contracts to gather information about the tenant's entrepreneurial ability because information is asymmetrical. Hallagen assumes that continuous monitoring of the tenant's behavior has a high cost. Thus, the landlord is unable to learn the tenant's entrepreneurial ability until after harvest. Tenants and landlords enter contracts that brings both of them the highest income based on their management ability. Landlords must provide entrepreneurial inputs when the tenant is unable to earn the market return, which means landlords have to pay supervision cost. In addition, the tenant's entrepreneurial talents are not displayed unless compensated.

Hallagen argues that high skilled tenant's earn more than their off farm income in a cash rent contract. Tenants pay all production cost and a cash rent to the landlord in a cash rent contract. Tenants also provide the entrepreneurial input. High skilled tenant pay all expenditures in a cash rent contract and still earn more than their off farm income. The income of a highly skilled tenant above his off farm wage is the payment of providing the entrepreneurial input. The landlord only receives the cash rent but pays no supervision cost in a cash rent contract. The landlord also only receives the market return because he provides no entrepreneurial input.

Hallagen also argues that medium skilled tenants earn more than their off farm income in a share contract. All tenants must give the landlord a share of output as annual rent for the land. The landlord will only accept this share if it allows a rent above the market return. A tenant will only accept his share if he earns at least his off farm income. The medium skill tenant has some entrepreneurial skill. Yet the medium skill tenant lacks talent to decide all the management decisions in a cash rent contract and still earn his off farm income. The medium skilled tenant has enough skill to decide some management decisions without always needing supervision. Therefore, landlords must make some management decisions. The landlord earns

a return higher than the market return for providing some entrepreneurial input. The tenant also receives a higher income than off the farm for lowering the landlords supervision cost in a share contract than would be necessary in a fixed wage contract.

Hallagen also suggests that low skilled tenants have no management skill and need supervision to earn their off farm income leasing land. In addition, the landlord must make management decisions and supervise low skilled tenants to earn at least the market return on his land. Low skilled tenants refuse to enter a cash rent or share contract because they are afraid of earning less than their off farm income. Landlords do not want low skilled tenants in a share or cash rent contract because the landlord fears not receiving the market return. Low skilled tenants enter a fixed wage contract to receive their opportunity cost. The landlord with high management skill enters a fixed wage contract because they provides the entrepreneurial input and are compensated for their managerial skill. These landlords are unable to earn the market rent in the cash rent or share contracts with these low skilled tenants.

The landlord offers different contracts for a short term as a low cost method to gather information on the tenant's entrepreneurial input. The tenant will not display higher managerial ability unless he is compensated. The landlord makes fewer management decisions and spends lowers supervision cost when the tenant has some entrepreneurial ability. Therefore, the landlord and tenant maximize incomes entering a contract that matches the tenant's skill.

2.3.4. Including the landlord's off farm income opportunities in contract choice models

Ip and Stahl (1978) explain that the opportunity cost of the landlord is an important factor in considering contract choice. They state that a landlord has an opportunity cost associated with each hour he supervises. A landlord loses his off farm income for each hour supervises the

tenant. Ip and Stahl state landlord spends more hours supervising the tenant in a fixed wage than a share contract, and he supervises the tenant more hours in a share contract than a cash rent contract. Ip and Stahl assume the tenant shirks to increase his income. Therefore, a landlord increases rental income for each hour he supervises because he lowers tenant labor shirking. In addition, Ip and Stahl also assume the landlord has a constant off farm wage and his increase in rental income from supervising decreases when he supervises additional hours. Therefore, Ip and Stahl argue that the landlord chooses the contract that maximizes his rental income and his off farm income.

Ip and Stahl suggest that a landlord with a high off farm income prefers a cash rent contract to maximize the total of his rental and off farm income. The landlord with a high off farm income increases his total income by spending all his time working off the farm and leaving the tenant to farm unsupervised in a cash rent contract. This landlord increases his total income in a cash rent contract because his gain from working each hour off the farm is greater than the increase in rental income he would receive per hour supervising the tenant in a share or fixed wage contract.

Ip and Stahl argue that a landlord with a medium off farm income prefers a share contract to maximize his total income. This landlord with a medium off farm income supervises for the hours when his gain in rental income from lowering tenant shirking is higher than his per hour off farm income. This landlord with a medium off farm income works hours off the farm when his gain from supervising per hour is less than his off farm income per hour.

Lastly, Ip and Stahl argue that a landlord with a low off farm income prefers a fixed wage contract to maximize his total income. This landlord receives a higher income per hour supervising the tenant than he could earn per hour working off the farm for all his available labor hours.

2.3.5. Including relationships in contract choice models

Many studies have shown the importance of relationships on terms of trade. Sen (1977), Siles (1992), and Robison and Hanson (1995) show how relationships influence labor incentives, credit, and risk aversion. Sen's (1977) study of China showed that commitment enhancing rewards can increase work motivation and production performance instead of an increased wage or bonus. Siles (1992) showed the effect of relationships on the credit market. His study showed that bankers are more likely to lend to farmers they have a close relationship, or they will lend to farmers they have a close relation at a lower interest rate. Robison and Hanson (1995) showed the effect relationships have on decisions with catastrophic risk consequences. Their study concluded that individuals' decisions to accept the possibility of a catastrophic risk, the event of a large loss, are influenced by relationships.

Economists have also shown a high incidence of leasing between relatives. Ely and Galpin (1919), Boehlje (1973), Bratton and Berkwitz (1976), and Carlston and Dillman (1983) all have reported many cases of related individuals leasing. Carlston and Dillman (1983) observed tenants were related to 50 percent of the absentee landlords and 60 percent of the local landlords in Western Washington and Northern Idaho. Further, 72 percent of the absentee landlords attained land ownership from a relative. In addition, Carlston and Dillman observed farmers make small land and machinery investments when they plan to sell their farms to non relatives. In contrast, farmers make large land and machinery investments when they plan to transfer ownership to their children. Further, tenants depleted the land less or used stronger erosion control techniques when they were related to the landlord than when they were not related.

Ely and Galpin concluded the primary motivation of landlords to lease was to transfer the

land as inheritance to relatives. Ely and Galpin also argue regions with older retired farmers have more leasing than areas new to farming with younger landlords. Regions with older landlords lease more than regions with younger farmers because leasing is used to transfer ownership to relatives. Therefore, regions with farmers will lease less because younger farmers are not ready to transfer ownership.

These studies on related individuals leasing suggests relationships also play a role in the leasing market. However, landlord and tenant relationships have not been incorporated into leasing or contract choice models. Gwilliams (1993) was one of the only contract choice models to have incorporated relationships. Gwilliams argued that landlords and tenants had a higher tendency to share lease when they had a close rather than a distant relationship. Furthermore, the subject matters of these relationship studies are important considerations in current contract choice models. Each participant's level of risk aversion, a tenant's incentive to apply inputs, and a landlord's return for helping finance the tenant's production, are all important issues considered in the participant's choice of a contract. Therefore, insight into how relationships affect contract choice may be found by examining how relationships affect terms of trade on subjects important to contract choice literature.

2.4. Summary

Economists have developed many interesting models of contract choice. In early models, economists questioned if share contracts were inferior because the tenant applies fewer inputs and produces fewer outputs. In latter models, economists view that the tenant and landlord would have equal incomes, use the same amount of inputs, and produce the same level of output in both the cash rent and share contracts. However, why one contract was preferred to the other was not

explained.

Economists now search for factors that influence the tenant and landlord to prefer one contract to another. In current models, economists have included, risk aversion, land quality, output division costs, the tenant's management skill, and the landlord's opportunity cost as a factor that affects contract choice. In addition, relationship studies have shown that relationships may play a role in contract choice. However, relationships have not yet been included in contract choice models. Therefore, the last section of this chapter displayed findings of studies on relationships in the leasing market and related studies on subjects important to contract choice literature.

CHAPTER 3

METHODOLOGY

3.1. Introduction to survey

Economists have presented many different and sometimes conflicting theories of leasing behavior. To contribute to existing leasing studies, this research will investigate the current lease market for farmland and identify factors that influence the participants leasing behavior. This information is intended to aid in future development of a contract choice model that is consistent with empirical data.

This chapter explains the questionnaire design and survey method used to collect data on farmland leasing behavior. The first section describes the questionnaire. The second section describes the survey population. The second section also explains why the survey population used was chosen. The third section explains the sampling process, the respondents rate of response, characteristics of respondents and non-respondents, and the geographical area included in this study. The fourth section explains how the qualitative data collected in the survey was organized into factor categories. The fourth section also describes each of the category the respondent's reported influenced their lease decisions including: why landlord's decide to lease; why landlords who lease prefer a cash rent or share contract; why tenants who lease prefer a cash rent or share contract; and how tenants and landlords who lease in a share contract determine input and output shares. The last section is a summary.

3.2. The design of the questionnaire and its implementation

The survey objectives call for finding out both quantitative data on current characteristics of the leasing market and qualitative information on factors that relate to more complex leasing issues. Therefore, the design of the questionnaire must get both qualitative and quantitative data.

A telephone interview was used to collect data because of its ability to explain better and interpret the survey to the respondents. The questionnaire and the phone script were written for a 10-15 minute survey. A pre-survey of Michigan county agents provided feed back on the questionnaire and interview process. This feedback was used to revise the questionnaire and phone script. The final questionnaire collected quantitative data on: a) the percentage of leased farmland; b) percentages of leased farmland that is cash rented or share leased; c) levels of cash rents; and d) landlord and tenant's input and output shares in a share contract.

The interviewer used open-ended questions to gather qualitative information on: a) factors that influence the landlords' decision to lease; b) factors that influence landlords who lease to prefer either cash rent or a share contract; c) factors that influence tenants who lease to prefer either a cash rent or a share contract; and d) factors that influence how tenants and landlords who share lease determine input and output shares. The questionnaire used in the survey is included in Appendix A.

3.3 Description of the survey population

The geographic area covered in the survey was chosen to be large enough to differentiate between general factors that affect leasing practices and local anomalies. The geographic region selected for the survey with the required variability was the North Central Region of the United

States (NCR). This area includes the highest amount of leased farmland and the greatest number of landlords and tenants in the United States according to the 1987 U.S. Census. The NCR, according to the USDA Extension Designation includes 12 states: North Dakota, South Dakota, Nebraska, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan and Ohio.

The survey population most qualified to respond to our survey was determined to be the agricultural extension agents in the NCR. Therefore, the survey population was selected from the agricultural extension agents listed in the Extension Department Directories of the NCR. Postcards explaining the objective of the survey and a notice that the agent would be contacted by phone were then mailed to the agents included in the sample.

3.4 Sampling process

Each agricultural extension (AE) agent is responsible for extension activities within his extension area. The size of an AE agent's extension area varies across the NCR states. Each state contains between four and nine extension regions. An extension region includes between 13 and 23 counties. Sometimes extension regions are organized into two to four districts, although infrequently districts may overlap into two or three extension regions. A district contains between five and 15 counties. Extension regions may also consist of five to 10 county clusters. Clusters contain between two to four counties.

The survey population consisted of four types of AE agents: 1) county agents who are responsible for the extension activities of one county; 2) cluster agents who are responsible for the extension activities in a county cluster; 3) district agents who are responsible for the extension activities in a district; and d) regional agents who are responsible for the extension activities in the region.

Since each state contains extension regions, the extension region is the unit of observation. To understand the leasing conditions of each region, different numbers of AE agents were contacted in each region because the size of an AE agent's extension area varied across the NCR. Each AE agent explained in the interview the leasing conditions in their entire extension area. Fewer agricultural agents were sampled in a region when the extension area of an AE agent was large because of fewer AE agents to sample.

Only a few district agents or one regional agent is found in an extension region. Therefore, all of the district and regional AE agents were included in the sample to make sure all extension regions in the NCR were included in the study. Many cluster or county agents are found in an extension region. Therefore, a target number of 20 responses per state were established when a state had only county or cluster agents in order adequately to represent each region in the research. Table 3.1 shows the total number of AE agents in each state of the NCR asked to participate in the study and the respective extension area of each AE agent asked to participate.

Table 3.1 **Number of AE agents asked to participate in the study (by extension area and state)**

State	Agents in sample	Number of agents by extension area			
		County agent 1 county	Cluster agent 2-4 counties	District agent	Regional agent
Illinois	6	0	0	0	6
Michigan	7	0	0	2	5
North Dakota	29	28	1	0	0
Minnesota	31	31	0	0	0
Nebraska	32	22	10	0	0
Kansas	37	27	8	1	1
Iowa	48	36	0	12	0
South Dakota	54	44	6	2	2
Wisconsin	54	51	3	0	0
Indiana	55	55	0	0	0
Ohio	59	55	4	0	0
Missouri	25	n/a	n/a	n/a	n/a
Total	437	349	32	17	14

As shown in table 3.1, 426 AE agents in 69 extension regions of the NCR were asked to participate in the study. The number of agents sampled in each state was inversely related to the size of the agent's extension area. The agents with the most counties in their extension area, Illinois and Michigan, had the lowest number of agents asked to be in the study. In contrast, the agents in Indiana, Ohio and Wisconsin, with the fewest number of counties in their extension areas had the highest number of agents who were asked to participate in the study. The extension areas of the AE agents who were asked to participate in Missouri were not listed in the state's extension directory.

3.5. Survey implementation and response

AE agents were contacted and interviewed over a 4-week period. The respondents were asked to participate at the time of the phone-call or to reschedule a more convenient time. An

agent who completed the interview was counted as a response. The agent's responses were recorded on the questionnaire sheet during each interview.

As mentioned previously, each state extension department is organized differently. Usually, a district or regional agent was called upon often to be interviewed because fewer agents are in an extension region. In contrasts, county or cluster agents were called upon a maximum of two or three times, then a different agent was contacted because many AE agents are in the extension region. Consequently, regions with few AE agents had a higher response rate than regions with many counties or cluster agents.

When only districts or regional agents were found in the regions of a state, a 100% response rate was attempted to ensure the region was represented in the study. When many counties or cluster agents were available in the region of a state, a target number of 20 responses per state were established to ensure the region is represented in the survey. However, no specific response rate was targeted. Therefore, a new county or cluster agent was included in the sample to save time and phone costs when these AE agents were not available after two or three call-backs. Table 3.2 displays the number of AE agents who were asked to participate and the number of AE agents who responded in the NCR.

Table 3.2 **Number of AE agents asked to participate and who responded by state**

State	Number of agents asked	Number of agents who responded	Response rate
Illinois	6	6	100%
Michigan	7	7	100%
North Dakota	29	18	62%
Minnesota	31	17	55%
Nebraska	32	20	63%
Kansas	37	23	62%
Iowa	48	23	48%
South Dakota	54	23	43%
Wisconsin	54	17	31%
Indiana	55	20	36%
Ohio	59	23	39%
Missouri	25	14	56%
Total	437	211	48%

As shown in the table, a total of 211 agricultural agents responded out of 437 agents asked to participate in the study representing a 48 percent response rate. Illinois and Michigan, the states with the lowest number of agents asked to participate, had the highest response rates of 100 percent. The states with the highest number of agents in each extension region had the lowest response rates such as Ohio (39 percent), Indiana (34 percent) and Wisconsin (32 percent).

3.6. Characteristics of respondents and non-respondents

The agents responded for their entire extension area. Therefore, the quality of response may vary because agents responded for areas of different sizes. Usually, the regional agents were very experienced and many had conducted their own studies of local leasing practices and rental rates. These agents had little trouble responding for their extension region though some regions contained as many as 23 counties. However, the variation remains unknown within an extension region because the respondent only gave one average response for the entire region.

The district agents were very experienced and had little trouble responding for their extension district. Most of these agents were farm specialists. These district agents were very familiar with the local leasing practices, rental rates, and the input costs and farming practices in their extension area. Since the unit of observation is an extension region, the responses of district agents within an extension region were averaged to generate regional results for the analysis. Although, similar to the regional agents, the variation of the agents response within an extension district is unknown.

The county and cluster agents were also very familiar with the local leasing practices and rental rates in their county or counties. Since the unit of observation is an extension region, the responses of county and cluster agents within an extension region were averaged to generate regional results for the analysis. Therefore, the reliability of these averages to the true mean is unknown since only a few counties or cluster agents responded per region.

Table 3.3 shows the number of counties the AE agents described in their responses for the survey, the average number of counties described per responding AE agent, and the types of AE agent responding in each state of the NCR.

Table 3.3 **Number of agents who responded according to their extension area and average number of counties covered by responding agent**

State	Number of counties described by respondents	Average number of counties described per respondent	Number of responding agents	Number of each type of agent			
				County agents	Cluster agents	District agents	Regional agents
Illinois	102	17	6	0	0	0	6
Michigan	84	12	7	0	0	2	5
North Dakota	19	1	18	17	1	0	0
Minnesota	17	1	17	17	0	0	0
Nebraska	31	2	20	14	6	0	0
Kansas	62	3	23	14	7	1	1
Iowa	86	4	23	13	0	10	0
South Dakota	25	1	23	19	2	0	2
Wisconsin	53	3	17	14	3	0	0
Indiana	20	1	20	20	0	0	0
Ohio	24	1	23	21	2	0	0
Missouri	61	4	14	2	11	1	0
Total	584	3	211	151	32	14	14

The two hundred eleven agents completing the survey included: 151 county agents, 32 cluster agents, 14 district agents, and 14 regional agents. These agents described leasing conditions in 584 counties of the NCR. The average number of counties described per AE agent in the NCR was three counties. The average number of counties per agent varied considerably among states because of the different types of agents. The respondent's average extension area ranged from a low of one county per agent in Ohio, Indiana, South Dakota, Minnesota, and North Dakota to a high of 17 counties per agent in Illinois. The states with small average extension areas per agent were composed of mainly county agents, while the states with large extension areas per agents consisted of districts or regional agents.

The two hundred twenty six AE agents not responding to the survey included: 200 county agents, 11 cluster agents, and 4 district agents. The types of the eleven AE agents in Missouri were unknown because of limitations in the states extension directory. Non-respondents were typically county or cluster agents although a few district and regional agents failed to respond.

In contrast, more regional or district agents responded because a 100 percent response rate was targeted since so few of these agents are in an extension region.

3.7. Geographical representation of the sample

The extension region is the unit of observation. The number of agents reporting in an extension region varied with the agent's extension area. In table 3.4, column 1 shows the number of extension regions in each state of the NCR. Column 2 shows the number of regions in each state described in full or part by a responding agent or agents. Column 3 shows the percentage of regions in each state that agents described in the study. Column 4 describes the total number of counties in each state. Column 5 shows the number of counties in each state that respondents described leasing conditions. Column 6 shows the percentage of counties in each state described by the respondents in the study.

Table 3.4 **Number of counties covered by the responding agents extension areas compared with the total number of counties per state**

State	Number of regions per state	Number of regions included	Percentage of regions covered	Total number of counties	Number of counties covered by responding agent	Percentage of counties covered by responding agent
Illinois	6	6	100%	102	102	100%
Michigan	6	6	100%	84	84	100%
North Dakota	4	4	100%	54	19	35%
Minnesota	6	5	83%	89	17	19%
Nebraska	5	5	100%	93	31	33%
Kansas	5	5	100%	105	62	59%
Iowa	9	9	100%	99	86	87%
South Dakota	4	4	100%	67	25	37%
Wisconsin	6	6	100%	68	53	78%
Indiana	5	5	100%	92	20	22%
Ohio	5	5	100%	88	24	27%
Missouri	8	8	100%	115	61	53%
Total	69	68	99%	1056	584	55%

The agents described leasing conditions in 584 of the 1056 counties in the NCR that represented 55% of the counties in the NCR. In addition, the respondents described extension areas in 68 of the 69 extension regions of the NCR. Only the region in Northern Minnesota was not represented in the survey because it did not have any agricultural agents. This is presumably from the low agricultural production in the region. The percentage of counties covered by the agents' responses varied from a low of 19 percent in Minnesota to a high of 100 percent in Michigan and Illinois.

3.8. Organization of the factor groupings

The survey collected quantitative and qualitative data of the lease market in the NCR. Quantitative data collected from each agent within an extension region was averaged to provide a single figure for the region. However, the qualitative data needed to be grouped into major categories to report the results.

First, the qualitative responses were recorded exactly as reported by the respondents. Then, the responses were grouped into categories with similar characteristics. Finally, the factors with similar economic interpretations were grouped. Table 3.5 describes the factor categories that influence the landowner decision to lease.

Table 3.5 Factors influencing the landlords' decision to lease

Factor	Interpretation
1. Landowners' age	Landowners tend to lease more often as they grow older. Older landowners lease because of health problems, loss of spouse, or a desire to retire.
2. Landowners' farming experience or distance from farm	Landowners tend to lease more often as they have less experience or live further away from their farm. Inexperienced landowners lease because they do not have the skills or equipment to farm.
3. Landowners' motivation to purchase farmland for an investment	Landowners who purchase land as investments often have no desire to farm. More investors purchase farmland to lease as the return from leasing and selling farmland increases compared with other investments.
4. Landowners' off-farm income opportunities	Landowners tend to lease more often as they have better off farm opportunities. These landowners may be experienced or inexperienced. However, experienced landowners must have a higher off farm opportunity cost to induce them to lease since they earn a higher farming income.
5. Landowners' cost structure	Experienced landowners tend to lease more often as their cost of farming increases. Landowners who have small land bases or older equipment often lease because they have high cost per acre and low farming incomes.
6. Landowners' motivation to purchase farmland for a hobby or recreation	Landowners who purchase land for a hobby or recreation are more likely to lease as their benefits from farming or recreation decrease or the available rent in the area increases.

Table 3.6 describes the factors influencing landlords and tenants who lease to prefer a cash rent or a share contract.

Table 3.6 Factors influencing landlords and tenants' who lease to prefer a cash rent or share contract

Factor	Interpretation
1. Landlords' and tenant's farming experience	Landlords are more likely to prefer a cash rent contract as they or their tenants have less farming experience. Tenants are more likely to prefer a cash rent contract as they have more farming experience. Landlords and tenants prefer a share contract as they have less farming experience.
2. A landlord's and a tenant's level of absolute risk aversion and expected income variance	Landlords with high risk aversion tend to cash lease more often as their level of positive risk aversion or expectation of income variance increases. Tenants with high risk aversion tend to share lease more often as their level of positive risk aversion or expectation of income variance increases. In the opposite case, landlords and tenants prefer the other contract.
3. Landlords' and tenant's financial security	Landlords are more likely to prefer a cash rent contract as they are less financially secure. Tenants are more likely to prefer a share contract as they are less financially secure. Landlords prefer a share contract as they are more financially secure, and more financially secure prefer a cash rent contract.
6. Relationship between the landlord and tenant	Landlords and tenants tend to lease more often in a share contract when they have a close relationship. Landlords and tenant tend to lease more often in a cash rent contract when they have a distant relationship.
7. Land quality	Land quality influences the tenants and landlords choice of a contract. However, the effect land quality has on the participants contract preference varies over areas.

The factors that influence how landlords and tenants who share lease determine input and output shares are shown in table 3.7 along with a brief interpretation of each factor.

Table 3.7 Factors determining landlord and tenant input/output shares in a share contract

Factor	Interpretation
1. Landlord and tenant contributions of inputs	Landlord and tenants agree to output shares based on the value of the inputs each contributes toward production. The landlord receives a higher output share as the value of his land increases compared with the tenants equipment and labor cost. The split of the other variable input costs (seed, fertilizer and agrochemicals) is usually based at the output share.
2. Tradition	Landlord and tenants agree to input and output shares consistent with local tradition. These input and output shares are based on past rules of thumb that have evolved from historical farming practices, productivity levels, and input cost.
3. Land productivity	Landlord and tenants agree to output shares based on the land's past productivity levels. The landlord receives a higher output share as the average of his past yields increases.
4. Fixed input and output shares with side arrangements	Landlord and tenants agree to fixed input and output shares but the share contract is altered by side arrangements. The landlord receives more beneficial side arrangements as more tenants compete for the land. Side arrangements include mowing the yard, mending fences, and privilege rents.

A more detailed explanation of each factor and the frequencies each factor was reported in each state will be described in Chapter 5.

3.9. Summary

This research conducted a telephone interview to collect quantitative and qualitative data. A telephone survey was chosen because it allowed more detailed data to be collected than would be a mail survey. A telephone survey allows more complex qualitative data to be collected in a short length of time. The NCR was selected to be the area for the study. The NCR was selected because of its importance in agricultural production and the large amount and diversity

of leasing activity. AE agents were chosen for the study because of their knowledge of local leasing conditions and leasing behavior. The sampling method used both target response rates and a target number of responses because of the differences in state extension organizations. Response rates varied in relation to the targeted goal of either high response or a specific number of responses. The agents described local leasing conditions within 68 of the 69 extension regions and 55% of the counties in the NCR. The quantitative data was averaged per extension region to show regional results. Qualitative data was organized into factor categories based on the similarities of responses within in each factor category. A detailed description of each factor and the frequency each factor was listed for each state is reported in Chapter 5.

CHAPTER 4

DESCRIPTION OF THE LEASING MARKET IN THE NCR

4.1. Introduction

This study collected data on tenant and landlord leasing behavior to help answer the question of why cash rent and share contracts coexist. Landlords and tenants contract preference partly depends on the terms of the cash rent and share contracts. Therefore, this study also collected data on the characteristics of the local leasing markets within which the tenant and landlord make their contract choice.

In this chapter, the data about the leasing characteristics of the extension regions in the NCR is reported. The local leasing characteristics reported for the extension regions of the NCR are shown in color-coded maps or tables. This chapter is organized in two main sections. The first section of this chapter describes leasing characteristics found across the extension regions of the NCR. Discussed in section one: 1) the crops tenants grow; 2) the percentages of farmland that landlords lease; 3) the percentage of leased farmland that landlords lease in a cash rent contract; 4) the cash rent a landlords receives in a cash rent contract; 5) the input and output shares accepted by landlords and tenants in a share contract.

The second section of this chapter examines the correlation between different leasing characteristics across the regions of the NCR. Section two also discusses: 1) the correlation between cash rents and output shares; 2) the correlation between cash rents, output shares, and the percentage of farmland cash leased and; 3) the correlation between cash rents, output shares,

and the percentage of farmland leased.

Each agent who responded to a telephone survey reported the characteristics of leasing markets found in his or her local extension area. In this chapter, the data about the leasing characteristics is reported by extension region because the number of agricultural extension (AE) agents are found in each extension and the number of AE region who responded in each extension region varies in the extension regions of the North Central Region (NCR). The data presented for each extension region is constructed in two ways. The data for each extension region is an average of all the responding AE agents' responses within the extension region when the data collected is a numerical figure. In contrast, the data for each extension is the most frequently reported response of all the responding AE agents' within an extension region when the response was a non quantitative response.

4.2. Leasing characteristics of extension regions of the NCR

4.2.1. Crops grown on leased land in extension regions of the NCR

The respondents reported that tenants grow different crops on leased farmland in extension regions of the NCR. The crops that tenants grow most often on leased farmland in the extension regions of the NCR are shown in Figure 4.1.

Each extension region was categorized by the types of crops that the tenant grows on leased land within the extension region. Each extension region is categorized as: 1) an extension regions where tenants grow sugar beets (brown area); 2) an extension region where tenants grow corn, or soybeans (blue area); 3) an extension region where tenants grow wheat, barley, or sorghum (red area); and 4) an extension region where tenants grow hay (yellow area).

Extension regions that have more than one category of crops being grown most often on leased farmland within the extension region were given more than one color classification. In cases where the respondents failed to report crop type, the USDA's agricultural statistics report (1994) was used to decide the crops most often grown in the extension region.

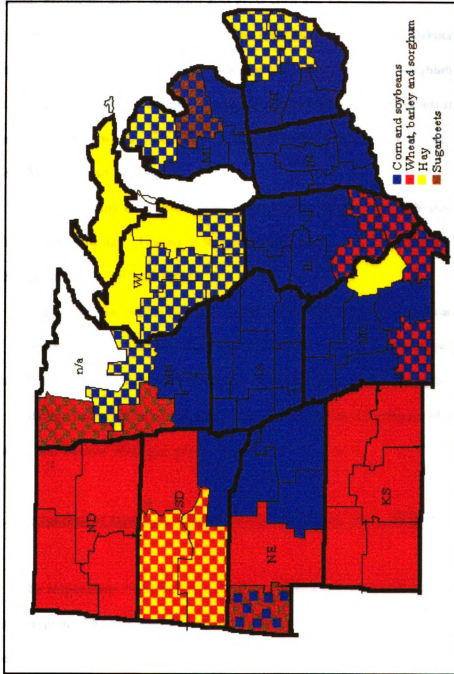


Figure 4.1 Crops grown in the Extension Regions of the NCR

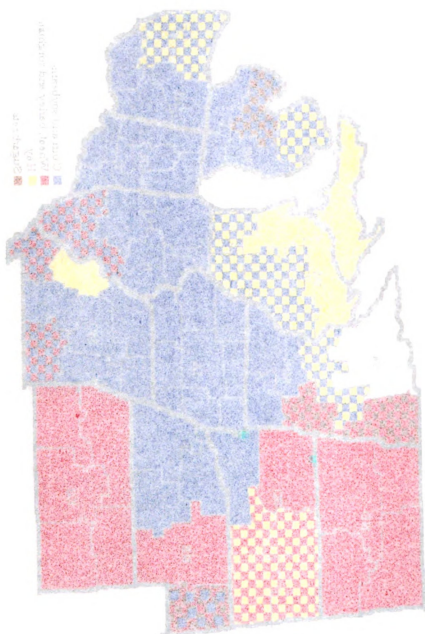


Figure 4.1 shows that tenants in the extension regions of the corn belt states (Iowa, Illinois, and Indiana) grow corn and soy beans. Figure 4.1 also shows that tenants in some of the extension regions bordering the corn belt States (Missouri, Ohio, Nebraska, South Dakota, Minnesota, Michigan, and Wisconsin) also grow corn and soy beans.

Tenants in the extension regions of the great plains state (North Dakota, South Dakota, Nebraska, and Kansas) most often grow wheat and either barley or sorghum. In addition, extension regions directly bordering the great plains states in Southern Missouri and Northwestern Minnesota also grow wheat. Extension regions in Southern Illinois next to extension regions of southern Missouri also grow wheat.

Tenants in many extension regions of the lake states (Minnesota, Wisconsin, Michigan, and Ohio) often grow hay. Tenants in western South Dakota and eastern Missouri also grow hay though they are not in the lake states.

Tenants in some extension regions grow more than one crop classification. Tenants in many extension regions of the lake states that border the corn belt grow corn, soybeans, and hay. Tenants in Southern Missouri and southern Illinois grow both wheat and corn.

Finally, tenants in a few scattered extension regions of western Minnesota, western Nebraska, and Eastern Michigan grow sugar beets.

4.2.2. Percentage of farmland leased in extension regions of the NCR

The respondents reported the percentage of farmland acres that landlords lease in their extension region. The percentage of farmland acres that landlords lease in each extension region of the NCR is shown in Figure 4.2. Leased land includes all land leased for agricultural production such as dry land, pasture, irrigated, and any other agricultural land.

Each extension region was ranked from lowest to highest by the percentage of farmland acres that landowners lease in the extension region. Then each region was classified into one of three percentile groups: 1) an extension region that has high leasing activity, where landlords lease from 51% to 78% of the farmland acres (blue area); 2) an extension region that has medium leasing activity, where landlords lease 39% to 50% of the farmland acres; and 3) an extension region that has low leasing activity, where landlords lease 10% to 38% of the farmland acres (yellow area). The actual percentage of farmland leased in each extension region is shown in Appendix B.

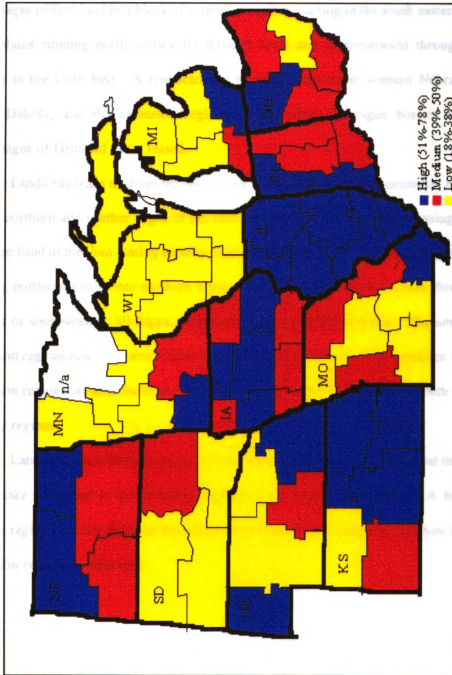


Figure 4.2 Percentage of farmland leased in the Extension Regions of the NCR

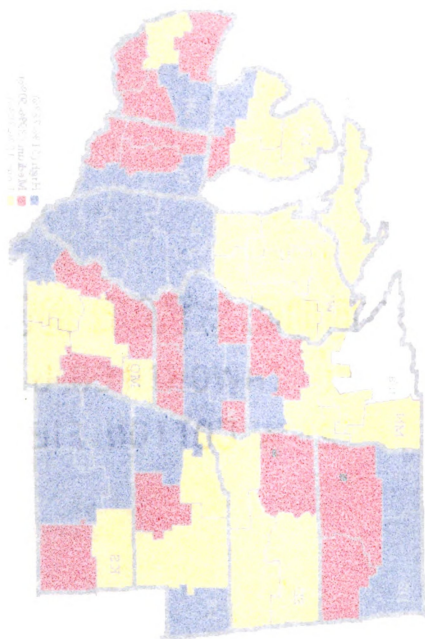


Figure 4.2 shows the percentages of farmland acres that landowners lease in the extension regions of the NCR. This figure shows that each of the three categories of extension regions' leasing activity is found in a distinctive location of the NCR. Landlords lease the highest percentages of farmland in a block of extension regions starting in the south eastern corner of the great plains running north eastwardly through Iowa and southeastward through Illinois and Indiana in the Corn Belt. A few scattered extension regions in western Nebraska, Northern North Dakota, and the extension regions on the Ohio/ Michigan border also have high percentages of farmland acres leased.

Landlords lease medium percentages of farmland in a band of extension regions running on the northern and southern edges of the extension regions that have high leasing activity. The northern band of medium leasing activity extension regions starts in the southwestern great Plains running northeastwardly into northern Iowa and southern Minnesota and then through extension regions of southwestern Michigan, western Indiana, and eastern Ohio. The southern band of extension regions runs in a semicircular pattern through Missouri. A few medium leasing activity extension regions are also found in North Dakota and South Dakota directly south of high leasing activity regions.

Landlords lease low percentages of farmland in extension regions found throughout most of the lake states and in the extension regions of the central great Plains. A few low leasing activity regions are also found in the center of the semicircular pattern of medium leasing activity extension regions in Missouri.

4.2.3. The percentage of leased acres that are cash leased in extension regions of the NCR

The respondents reported the percentages of leased land that landlords lease in a cash rent contract or a share contract in their extension regions. The percentage of leased land that landlords cash lease in each region of the NCR are displayed in Figure 4.3. The percentage of leased land that is share leased in each region of the NCR is simply the residual fraction of the percentage of leased land that is cash leased.

Each extension region was ranked from lowest to highest by the percentage of leased acres that landowners lease in a cash rent contract in the extension region. Then each region was classified into one of three percentile groups: 1) an extension region that has a high proportion of cash rent contracts, where landlords lease 71% to 99% of the leased land acres in the extension region in a cash rent contract (yellow area); 2) an extension region that has a medium proportion of cash rent contracts, where landlords lease 50% to 70% of the leased land acres in the extension region in a cash rent contract (red area); and 3) an extension region that has a low proportion of cash rent contracts, where landlords lease 12% to 49% of the leased land acres in the extension region in a cash rent contract (blue area). The actual percentage of leased farmland that is cash leased in each extension region is shown in Appendix B.

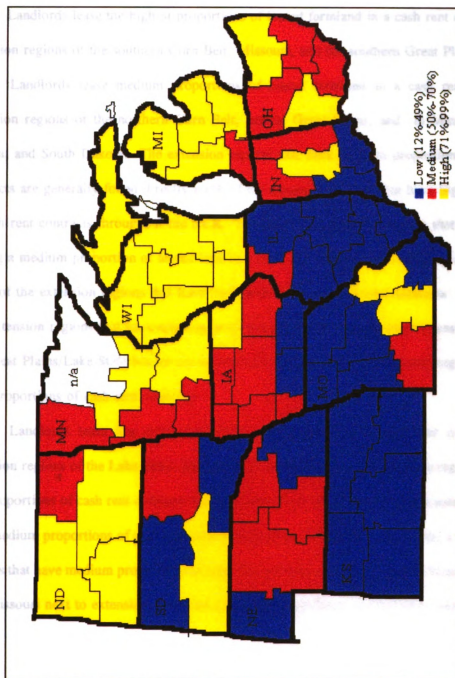


Figure 4.3 Percentage of farmland leased in a cash rent contract in the Extension Regions of the NCR

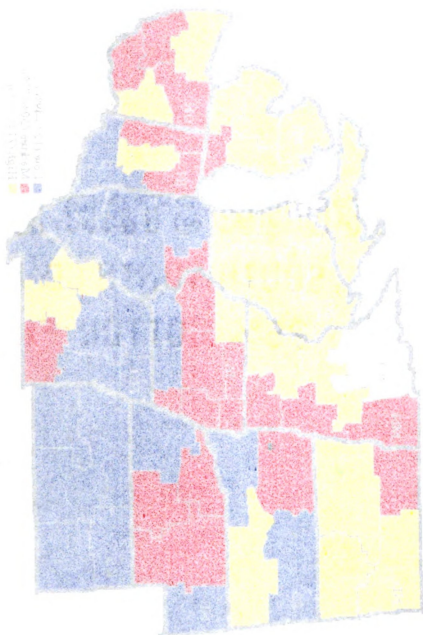


Figure 4.3 shows the percentages of farmland acres that landowners lease in a cash rent contract in the extension regions of the NCR. The figure shows that each of the three categories of extension regions' proportions of cash rent contracts is found in a distinctive location of the NCR. Landlords lease the highest proportions of leased farmland in a cash rent contract in the extension regions of the southern Corn Belt, Missouri, and the southern Great Plains.

Landlords lease medium proportions of leased farmland in a cash rent contract in extension regions of the northern Corn Belt, central Great Plains, and in Minnesota, North Dakota, and South Dakota. The extension regions that have medium proportions of cash rent contracts are generally found directly north of the extension regions that have high proportions of cash rent contracts throughout the NCR. However, one extension region that has landlords leasing a medium proportion of leased land in a cash rent contract is found in southern Missouri south of the extension regions that have high proportions of cash rent contracts. In addition a few extension regions that have medium proportions of cash rent contracts in eastern Ohio and the Great Plains/Lake State border are not directly located north of extension regions that have high proportions of cash rent contracts.

Landlords lease low proportions of leased farmland in a cash rent contract in the extension regions of the Lake States and northern Great Plains. The extension regions that have low proportions of cash rent contracts are generally found directly north of the extension regions with medium proportions of cash rent contracts throughout the NCR. However, a few extension regions that have medium proportions of cash rent contracts are found in Ohio, Illinois, Nebraska, and Missouri next to extension areas that have high proportions of cash rent contracts.

4.2.4. Cash rent of leased land in a cash rent contract in extension regions of the NCR

The respondents reported the average cash rent per acre that landlords receive for leasing land in a cash rent contract in their extension area. The average cash rent that landlords receive cash leasing an acre of non-irrigated farmland in the extension regions of the NCR are displayed in Figure 4.4.

Each extension region was ranked from lowest to highest by the average cash rent landlords received for cash leasing within the extension region. Then each region was classified into one of three percentile groups: 1) extension regions that have high cash rents, where landlords receive \$75 to \$113 per acre in a cash rent contract (blue area); 2) extension regions that have medium cash rents, where landlords receive \$46 to \$74 per acre in a cash rent contract (red area); and 3) extension regions that have low cash rents, where landlords receive \$11 to \$45 per acre in a cash rent contract (yellow area). The average cash rent that landlords receive leasing in a cash rent contract in each region is listed in Appendix B.

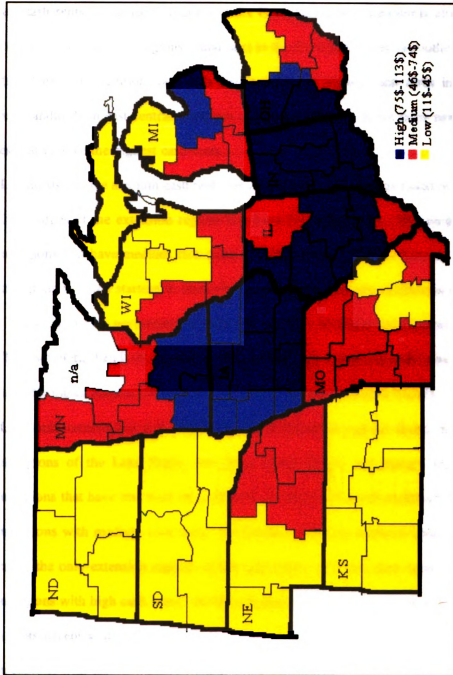


Figure 4.4 Cash rent levels that landlords receive in cash rent contracts in the Extension Regions of the NCR

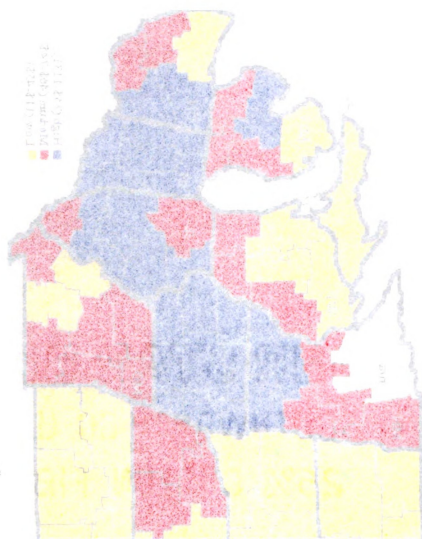


Figure 4.4 shows the average cash rent per acre that landlords receive cash leasing in the extension regions of the NCR. The figure shows that each category of extension region's cash rents on cash leased farmland are found in a distinctive location of the NCR. Landlords receive the highest cash rents in extension regions of the Corn Belt States. Landlords also receive the highest cash rents in extension regions found next to the Corn Belt States in southern Minnesota and Eastern Ohio. In addition, landlords also receive the highest cash rents in east central Michigan. Landlords in east central Michigan are the only landlords not in or next to the corn belt states that receive the highest cash rents.

Landlords receive medium cash rents per acre in extension regions found on the northern and southern edges of the extension regions that have high cash rents. The northern band of extension regions that have medium cash rents runs throughout the Lake States. This band of extension regions is found starting in northwestern Minnesota moving southeastwardly through southern Wisconsin across northeastern Illinois and southern Michigan and down to Southeastern Ohio. The southern band of extension regions that have medium cash rents runs from southeastern Nebraska southeasterly through Missouri and into southern Illinois.

Landlords receive low cash rents per acre in extension regions found in the northern extension regions of the Lake States, the Great Plains States, and eastern Missouri. The extension regions that have low cash rents in the Lake states are found northeast of the band of extension regions with medium cash rents. Extension regions in northern Ohio, and northern Michigan are the only extension regions of the Lake States with low cash rents that are beside extension regions with high cash rents. All the extension regions of the Great plains States have low cash rents except southeastern Nebraska. These extension regions are all directly west of extension regions with medium cash rent levels except extension regions in southeastern South Dakota that border northwestern Iowa.

4.2.5. Input and output shares of share contracts in the extension regions of the NCR

The respondents reported the terms of the input and output shares accepted by landlords and tenants in a share contract in their extension region. The terms most often used in share contracts in each state in the NCR are shown in Table 4.1.

Table 4.1 has eight columns. The first column shows the number of extension regions in each state. Columns two through eight describe share contracts with seven different variable input arrangements: 1) landlords pay the same share of seed, fertilizer, and chemical as the share of output they receive; 2) landlords pays the same share of fertilizer and chemical as they receive in output but tenants pay all seed cost; 3) landlords pay the same share of seed and chemical as their output share but tenants pay all fertilizer cost; 4) landlords pay the same share of fertilizer as the share they receive in output but tenants pay all seed and chemical cost; 5) landlords pay the same share of seed as the share they receive in output but tenants pay all fertilizer and chemical cost; 6) landlords pay all the chemical cost but tenants pay all fertilizer and seed cost; and 7) landlords pay no variable inputs but tenants pay all seed, fertilizer, and chemical cost.

Under each column of input arrangements (columns 2-8), the terms of the share contracts are shown in parenthesis for each state. The first element in the parenthesis shows the type of crop the tenant must grow on the share leased land. The second element shows the share of output that the landlord receives. The third element shows the share of variable inputs the landlord pays. The fourth element shows the number of extension regions with the same most common share contract. The tenant's share of variable inputs and output are simply one hundred percent minus the landlord's share.

A state may have more share contracts shown in the table than the number of extension regions in the state because respondents may report more than one share contract to be most

common in an extension region. Appendix B lists the most common share contracts that respondents reported for each extension region.

Table 4.1 The terms of the most common share contracts: crops tenants grow^{a/}; landlord's output share; landlord's input arrangement(share of seed, fertilizer, and chemicals); and the number of extension regions in each state with the same most common share contracts^{b/}

State /region	Landlord pays a share of seed, fertilizer, and chemicals equal to his output share	Landlord pays a share of fertilizer and chemicals equal to his output share	Landlord pays a share of seed and chem equal to his output share	Landlord pays a share of fertilizer equal to his output share	Landlord pays a share of seed equal to his output share	Landlord pays all chemical cost and tenant pays all seed and fertilizer	Landlord pays no variable inputs and tenant pays all seed, fert., and chemicals
IA(9)	(CS,50,50,9)						
IN(5)	(CS,50,50,5)						
IL(6)	(CS,50,50,4)	(CW,33,33,2)					
OH(5)	(CS,50,50,3)						(H,50,0,2)
	(CS,40,40,1)						(CS,33,0,1)
	(CS,33,33,2)						
WI(6)	(CS,50,50,2)						(H,50,0,6)
	(CS,40,40,1)						(CS,33,0,1)
							(CS,25,0,1)
MN(5)	(CS,50,50,1)						(CS,33,0,2)
	(WSG,40,40,2)	(WB,33,33,1)	(WB,33,33,1)				(H,50,0,1)
MI(6)	(CS,50,50,1)						(SG,20,0,1)
	(CS,33,33,1)						(CS,33,0,4)
							(H,50,0,1)
MO(8)	(CS,50,50,4)			(CW,33,33,2)		(CS,33,100,1)	(CS,33,0,1)
NE(5)	(CS,40,40,3)				(CS,40,40,1)		(CS,40,0,1)
	(WG,30,30,1)						(CS,33,0,1)
	(CSG,30,30,1)						(WG,33,0,1)
SD(4)	(CS,40,40,1)	(WB,33,33,1)		(WB,33,33,1)			(WB,33,0,2)
							(H,50,0,1)
							(H,40,0,1)
ND(4)							(WB,33,0,4)
KS(5)	(WG,33,33,1)	(WG,33,33,3)		(WG,33,33,1)			

note ^{a/} Crops C-corn, S-soybean, W-wheat, B-barley, G-sorghum, H-hay, SG-sugar beets

note ^{b/} example: (CS,50,50,9) tenant grows corn and soybean, landlord receives 50% of output, landlord pays 50% of seed, fertilizer, and chemicals, in 9 extension regions of Iowa.

Table 4.1 shows the terms of the most common share contracts that the respondents reported in the extension regions of the NCR. The table generally shows that the terms of the share contracts vary depending on where the tenant and landlords share lease in the NCR.

Landlords and tenants agree to the same input and output shares when they share lease in almost all the extension regions of the Corn Belt States. In the Corn belt States (Iowa, Indiana, and Illinois), landlords receive 50% of output and pay 50% of all variable inputs when the tenant grows corn and soybeans. Extension regions in southern Illinois are the only extension regions in the Corn Belt States to have different terms in a share contract. In Southern Illinois, the tenants grow corn and wheat on the share leased land. The landlord receives a 33% output share and pays a 33% share of fertilizer and chemicals.

Landlords and tenants agree to a variety of input and output shares when they share lease in extension regions of the Lake states (Minnesota, Wisconsin, Michigan, and Ohio). The terms of the share contracts most significantly vary by crop within these extension regions.

When the tenant grows corn and soybeans on share leased land in the lake states, the landlord can receive either a 50%, 40%, or 33% share of output. In all the lake states, at least one extension region has the landlord receiving 50% of output and paying 50% of all variable inputs as the most common share contract. Generally, the regions with this share contract most common are located next to the border of the corn belt states. In addition, at least one extension regions in each of the Lake States has the landlord receiving a 33% output shares and paying no variable inputs as the most common share contract. Generally, the regions with this share contract most common are also located next to the corn belt states border. Landlords also receive 33% output shares and pay a 33% share of all inputs in share contracts in Wisconsin and Michigan. The landlord also receives 40% output shares and pays 40% of all variable inputs in share contracts in Wisconsin and Ohio when the tenant grows corn and soybeans.

When the tenant grows hay on share leased land in the lake states, the landlord receives a 50% share of output and pays no variable inputs in the most common share contract. All ten extension regions that grow hay in the extension regions of the lake states have the same terms of the share contract. Generally, the regions with this share contract most common are located in the extension regions of the lake states that are farthest from the borders of the corn belt states.

A few extension regions in the lake states grow sugar beets. The landlord receives a 40% output share and pays a 40% share of all variable inputs in areas of Minnesota that grow wheat and sugar beets. In eastern Michigan, the landlord receives a 20% output share when the tenants grow sugar beets.

Landlords and tenants agree to a variety of input and output shares when they share lease in the extension regions of Missouri. Extension regions of Missouri are located on the edges or between the Corn Belt States and The Great Plains. Some of these regions grow corn and wheat. Other extension regions grow corn and soybeans. The landlord receives a 33% output share and pays a 33% shares fertilizer as the terms of the share contract when the tenant grows corn and wheat. The landlord agrees to either receiving 50% of output and paying 50% of all variable inputs or receiving 33% of output and paying no inputs when the tenant grows corn and soybeans.

Landlords and tenants agree to a variety of input and output shares when they share lease in extension regions of the Great Plains (Kansas, Nebraska, South Dakota, and North Dakota). The terms of the share contracts most significantly vary by crop within these extension regions.

When the tenant grows wheat and barley or wheat and sorghum on share leased land in the Great Plains, the landlord receives a 33% share of output. However, the landlord generally pays no variable inputs when the tenant grows wheat and barley in North and South Dakota. In contrasts, the landlord generally pays at least a 33% share of fertilizer when the tenant grows

wheat and sorghum in Kansas.

In Nebraska and South Dakota in extension regions bordering the corn belt states, the tenant grows corn and soybeans on share leased land. In these extension regions, the landlord receives either a 40%, or 33% share of output. The landlord most often receives a 40% output share and pays a 40% share of all variable inputs when the tenant grows corn and soybeans. Yet, the landlord may receive a 40% or 33% share of output and share none or only seed in the most common share contract of some extension regions in Nebraska.

In western Nebraska sugar beets are also grown. In this region, the landlord receives a 30% output share and pays a 30% share of all variable inputs when corn and sugar beets are grown. When the tenant grows hay on share leased land in western South Dakota, the landlord receives either a 50% or 40% share of output and pays no variable inputs in the most common share contract.

4.3. Similarities or differences of leasing characteristics of extension regions in the NCR

In reading this chapter, one may begin to notice similarities and differences between the patterns the different leasing characteristics show in the extension regions of the NCR. Cash rents and output share are the only leasing characteristics found to be correlated in the extension regions of the NCR. The patterns of cash rents and output shares generally showed that landlords receive high, medium, and low cash rents in extension regions where landlords receive high (50%), medium (40%), and low (33%) output shares.

Landlords receive cash rent as a return for leasing in a cash rent contract. Landlords receive a share of output for leasing in a share contract. Landlords who receive a higher output share generally receive a higher share return than landlords who receive a low output share.

Therefore, since landlords seem to receive higher cash and share returns in the same extension region, little information is learned on how landlords choose between a cash rent and share contract by examining the cash rents and output shares across the region.

The relationship between cash rents, output shares and the percentage of farmland that landlords lease in a cash rent contract suggests that other factors are influencing landlords' and tenants' contract preferences than only the level of the leasing payment in a cash rent or share contract.

Few similarities are found between the patterns of cash rents, output shares and the percentage of farmland landlords lease in a cash rent contract across the NCR. Extension regions of the southern Great Plains and southern Corn Belt States have the lowest proportions of landlords leasing in cash rent contract leased. Landlords in these extension regions receive high cash rents and 50% output shares as well as low cash rents and 33% output shares. Similarly, landlords also receive a wide range of cash rents and output shares in extension regions that have landlords leasing medium and high proportions of farmland in cash rent contracts.

Landlords lease when they receive a higher return in leasing in a cash rent or share contract than when they farm their own land. Landlords generally receive a higher farming income on more productive land. However, cash rents and output shares are also higher on more productive land. Therefore, regions with high cash rents and output shares should have high farming returns although more data is needed to confirm this finding. Therefore, since landlords seem to receive higher farming returns, cash rents, and share returns in the same area, little information is learned on how landlords choose between leasing in cash rent or share contracts and the landlord farming the himself.

Similar to landlord and tenant contract preferences, the inference that landlords generally receive higher farming cash rents and share returns in the same extension region suggest that

other factors are influencing landlords' leasing decisions than only the level of the leasing payment. This inference that other factors must be influencing landlords' leasing decisions is apparent by examining the patterns of cash rents, output shares, and the percentage of farmland that landlords lease in the extension regions of the NCR.

Few similarities are found between the level of cash rents, output shares and the percentage of farmland leased across the NCR. Landlords in extension regions of the Corn Belt, northern Great Plains, and southern Great Plains lease the highest percentage of farmland. Landlords in these regions receive high cash rents and output shares as well as low cash rents and output shares. Similarly, extension regions where landlords lease medium and low percentages of farmland also have a wide range of cash rents and output shares.

4.4. Summary

This chapter has shown many characteristics of local leasing markets across the North Central Region. The data shows the diversity of crops and cash rents across the NCR. The input and output shares of common share contracts found in each state also show great diversity. Cash rents and output shares seem to be correlated across the regions of the NCR. Regions with high, medium, and low cash rents tend to have respectively high (50%), medium (40%), and low (33%) output shares.

The percentage of farmland leased and the percentage of leased farmland that is cash leased also shows a high variation among the regions in the NCR. However, the percentage of farmland leased and the percentage of leased farmland that is cash leased do not follow similar patterns as cash rents and output shares across the NCR. Neither do the percentage of farmland leased and the percentage of leased farmland that is cash leased follow similar patterns with each

other.

The inference that landlords generally receive higher cash rents and share returns in the same extension region suggest that other factors are influencing landlord and tenant contract preferences than only the level of the leasing payment. Similar to landlord and tenant contract preferences, landlords generally receive higher farming income, cash rents, and share returns in the same extension region suggests that other factors are influencing landlords' leasing decisions than only the level of the leasing payment. These inferences that other factors must be influencing landlords' leasing decisions and landlord and tenant contract preferences are apparent examining the leasing characteristics of the NCR. In Chapter 5, factors respondents reported to influence landlords' and tenants' contract preferences and landlords' decisions to lease are identified.

CHAPTER 5

IDENTIFYING FACTORS THAT AFFECT LEASING BEHAVIOR

5.1. Introduction

For years, economists have proposed many explanations of why tenants and landlord lease in both cash rents and share contracts. However, today's economists still debate why cash rent and share contracts coexist. Although many theories have been developed, more data are still needed to test and build models to explain leasing behavior. This study intends to fill the data void that explains landlord and tenant leasing behavior. The results of this study will provide empirical data for use of researchers building contract choice models.

This chapter will explain the data collected on four questions of landlord and tenant leasing behavior. The first section will describe the factors that respondents in each state reported to explain why landlords decide to lease. The section will show the factors that respondents in each state reported on why landlords who lease prefer a cash rent or share contract. The third section will explain the factors that respondents in each state reported on why tenants who lease prefer a cash rent or share contract. The fourth section will explain the factors the respondents reported on how tenants and landlords who lease in a share contract determine input and output shares. The last section is a summary. In addition, each section shows the frequency with which each factor was reported to influence leasing behavior, and explains some most common reasons why the respondent's reported a factor to influence leasing behavior.

5.2. Major factors influencing the landlord to lease his or her property

The survey respondents reported many factors that explain why landowners lease instead of farming their land. The factors most frequently reported: 1) landowners' age, 2) landowner's farming experience and distance from the farm, 3) landowners' motivation to purchase farmland as an investment, 4) landowners' off-farm opportunity cost, 5) landowners' cost structure, and 6) landowners' motivation to purchase farmland for recreation. The frequency of each factor is shown in table 5.1 for each state along with the average frequency in the North Central region.

The frequency each factor was reported for each state is simply the number of respondents who listed the factor in each state divided by the total number of responses collected in the state. Each factor's frequency for the North Central region is the total number of respondents' who reported the factor divided by the total number of respondents in the survey. The frequency a factor was reported is an indication of how likely a factor is to influence leasing behavior.

Table 5.1 **The frequency respondents reported a factor influences landlords decision to lease his or her property**

State	Landowner's age	Landowner's farming experience or distance off farm	Landowner's purchase motivation investment	Landowner's off farm income opportunity	Landowner's cost structure	Landowner's purchase motivation recreation
Illinois	83%	83%	67%	0%	17%	0%
Indiana	90%	55%	25%	25%	40%	0%
Kansas	96%	100%	44%	26%	22%	0%
North Dakota	100%	100%	17%	11%	55%	11%
Iowa	93%	61%	35%	48%	22%	9%
Ohio	100%	100%	57%	39%	9%	35%
Nebraska	95%	95%	45%	45%	30%	15%
Missouri	100%	93%	43%	50%	43%	21%
Minnesota	94%	94%	35%	65%	41%	12%
South Dakota	96%	82%	30%	30%	22%	13%
Michigan	100%	71%	29%	43%	0%	71%
Wisconsin	100%	89%	47%	35%	12%	76%
Average	96%	86%	38%	36%	27%	20%

The landowner's age was the most frequently reported factor to influence the landowner's leasing decision across the NCR. Ninety six percent of the respondents reported that landlords are more likely to lease as they grow older. Respondents stated that older farmers or their widows lease because they have physical limitations, lose their spouse, or desire to retire. Older farmers also do not invest in new equipment because they anticipate retiring or health problems. Therefore, many older landlords start leasing when their equipment wears out. Although aging farmers do not farm, they do not sell their land. Elderly landlords typically keep their property because they have high capital gains tax liabilities and desire to pass on the land to their heirs.

The landowner's farming experience and distance from the farm were the second most frequently reported factors to influence the landowner's leasing decision in the NCR. Eighty six percent of the respondents reported that landlords are more likely to lease when they have little farming experience or they live further off the farm. The respondents suggest inexperienced landlords' do not have the skills or equipment to farm. In addition, some landowners live far away from their farm and would have high traveling cost to farm. However, landlords who live

far away are typically not experienced in farming anyway, unless they are older retired farmers. Often, inexperienced landowners inherited their property. Inexperienced heir landlords' do not sell because they have high tax liabilities or an emotional attachment to the land.

The landowner's motivation to purchase land as an investment was the third most frequently reported factor to influence the landowner's leasing decision. Thirty eight percent of the respondents reported that landlords are more likely to lease their land when they view the land more as an investment than as an employment opportunity or source of recreation. The respondents suggested that some landowners purchase land as strictly an investment. These investor landlords have no desire to farm and have no emotional attachment to the land. Generally, investor landlords are not experienced farmers, earn high incomes off farm, live far away, and may be a financial institution. Investor landlords are more likely to purchase and lease farmland as its potential capital gains and leasing return increases compared with other investments. In many case, investors purchase and lease land close to newly developed urban areas because developments offer high capital gains when land is switched from its agricultural use to urban use. Still, some investor landlords do lease for long term stable income.

Landowners' opportunity for off farm income was the fourth most frequently reported factor to influence the landowner's leasing decision. Thirty six percent of the respondents reported that landlords are more likely to lease their land as landowners have better off farm job opportunities compared with their farming income. The respondents suggested that both experienced and inexperienced landowners lease if they can earn a higher income from their off farm employment than their on farm income. Landowners experienced in farming earn a higher income farming than landowners inexperienced in farming. Therefore, experienced landowners must receive higher off farm incomes if they are going to lease their land than the off farm income necessary to induce inexperienced landowners to lease their land. Some landlords who

work off the farm reside on their property. Other landlords who work off the farm become absentee landlords when better job opportunities are farther away.

The landowner's cost structure was the fifth most frequently reported factor to influence the landowner's leasing decision. Twenty seven percent of the respondents reported that landlords are more likely to lease and not farm their land as the landowner's cost of farming increases. The respondents stated that some farmers can only get a small land base to farm or own less efficient equipment. These farmer landlords lease because they have high cost per acre and their farming return is low. Although not currently farming, many farmer landlords do not sell their land. Some of these landlords believe they can return to farming in the future when they accumulate higher capital for investment.

The landowner's motivation to purchase land for recreation was the sixth most frequently reported factor to influence the landowner's leasing decision. Twenty percent of the respondents reported that landlords who purchase land for a source of recreation or hobby are more likely to lease their land when their recreational benefits decrease. The respondents concluded hobby farmer landowners farm for the utility they derive from farming as a hobby. Hobby farmer landowners typically are not experienced farmers, have jobs off the farm, have small land bases, have little or inefficient equipment, and earn a low income farming the land. In addition, landowners who acquire farmland for outdoor activities use the farm to substitute land cost for recreational expenditures. Although after some time, many of these landowners will lease their land because the benefits they receive from hobby farming or using the land for recreation decrease over time. However, many of these landowners retain ownership. These landowners' keep the land because they can still farm a smaller portion of their land, or they can use the land for recreation sparingly, or between growing seasons.

5.3. Factors influencing landlords who lease to lease in a cash rent or share contract

The survey collected data on factors the respondent's reported to influence landlords who lease to choose between a cash rent and share contract. The respondents were asked two questions on landlord leasing behavior rather than only one general question. The respondents were asked: 1) Which factors influence the landowner into a cash rent contract? 2) Which factors influence the landowner into a share contract?.

This section is divided into two subsections, one for each question. Each subsection will present the factors reported to influence one of the leasing behavior questions. The most frequently reported factors were grouped into the following five categories: 1) farming experience; 2) risk aversion and expected income variance; 3) financial security; 4) relationship; and 5) land quality. The frequencies of each factor for each question are shown in tables 5.2-5.3 for each state along with the average frequency in the North Central region. The factors reported with less than a 15% frequency to influence leasing landlords' contract choice decision are not reported in this section, and their frequencies are displayed in appendix C.

The frequency each factor was reported for each state is simply the number of respondents who listed the factor in each state divided by the total number of responses collected in the state. Each factor's frequency for the North Central region is the total number of respondents' who reported the factor divided by the total number of respondents in the survey. The frequency a factor was reported is an indication of how likely a factor is to influence leasing behavior.

5.3.1. Factors that influence landlords who lease to prefer a cash rent contract

Table 5.2 shows the frequencies of the most common factors the respondents reported to influence landlords to lease in a cash rent contract.

Table 5.2 The frequency respondents reported a factor influences landlords who lease to lease in a cash rent contract

State	Risk aversion and expected variance	Farming experience	High land quality	Relationship	Low land quality	Financial security
Kansas	96%	43%	13%	13%	4%	4%
Illinois	83%	83%	83%	0%	0%	33%
Missouri	86%	86%	7%	29%	21%	14%
Indiana	75%	45%	15%	5%	15%	20%
Iowa	48%	91%	43%	22%	0%	4%
Nebraska	79%	86%	21%	36%	7%	14%
Minnesota	76%	53%	59%	24%	6%	6%
Michigan	71%	100%	29%	0%	14%	0%
South Dakota	65%	74%	13%	13%	17%	4%
Ohio	78%	96%	9%	13%	13%	17%
North Dakota	83%	56%	17%	22%	0%	0%
Wisconsin	59%	94%	0%	0%	47%	0%
Average	73%	71%	22%	15%	12%	9%

The landlord's level of risk aversion and the zero expected income variance in a cash rent contract were the most frequently reported factors to influence landlords who lease to prefer a cash rent contract in the NCR. Seventy three percent of the respondents reported that the landlord is more likely to enter a cash rent contract as the landlord's level of absolute risk aversion increases or his desire for zero income variance increases. The respondents stated landlords on a fixed income, such as widows, leased in a cash rent contract because they fear about meeting their basic expenses in a bad year. Landlords who are inexperienced in farming also have a hard time accessing income variance in a share contract and are not experienced with risk reducing instruments such as future or crop experience. Many inexperienced landlords also

do not like worry about what level of return to expect, and they prefer a cash rent contract because they are sure of their return. Although experienced landlords are sure how to access expected income, some experienced landlords cash rent. Some experienced landlords feel that cash renting offers them a higher return because they have in their area a high probability of receiving a low return from high price and yield volatility.

Landlord and tenant's farming experience were the second most frequently reported factors to influence landlords who lease to prefer a cash rent contract. Seventy one percent of the respondents reported that the landlords are more likely to cash rent as the landlord or tenant have less farming experience. The respondents concluded that inexperienced landlords do not keep records, monitor farming practices, market crops, or make other decisions in a timely or cost efficient manner. Inexperienced landlords earn a higher overall income in a cash rent contract because they can spend more time working off the farm. Inexperienced landlords also typically believe the extra paperwork in a share contract is not worth any small additional return over a cash rent contract. In addition, landlords with unskilled tenants cash rent because they do not want to be dependent on their tenant's production. Landlords' believe inexperienced tenants misuse inputs, untimely plant and harvest, and poorly market crops that lower the landlord's share return.

The landlord's land quality was the third most frequently reported factor to influence landlords who lease to accept a cash rent contract. Twenty two percent of the respondents reported that landlords are more likely to lease in a cash rent contract as the quality of his land increases. However, twelve percent of the respondents reported that landlords are more likely to lease in a cash rent contract as the quality of his land decreases. Therefore, the influence of land quality on the landlords decision remains a question. However, the respondents reported that landlords preferred to cash lease on high land quality because they felt they received a high

cash rent. In contrast, the respondents reported that landlords lease low quality land in a cash rent contract at a low cash rent. The landlord leases at a low cash rent to get a tenant because few tenants demand land in the area. The landlord must accept the low rent or the land may go idle.

The landlord's relationship with the tenant was the factor reported fourth most frequently to influence the landlord to lease in a cash rent contract. Fifteen percent of the respondents reported that the landlord is more likely to lease on a cash rent contract as his relationship with the tenant is more distant. The respondents suggested landlords who are unrelated, not friends, or unfamiliar with their tenant cash lease because they have lower trust, less information on tenant skills, and lower concern for the tenants income. Landlords who do not trust their tenant are afraid their tenant will cheat them in a share contract. These landlords fear their tenant will take the best quality crop, he will not apply his share of variable inputs, or the tenant will not apply farming practices on the landlord's land at crucial moments but will farm elsewhere. Landlords who are unfamiliar with the tenant cash rent because they do not know the level of the tenants farming experience, his farming practices, or his type of moral character.

5.3.2. Factors that influence landlords who lease to prefer a share contract

Table 5.3 shows the frequencies of the most common factors the respondents reported to influence landlords lease in a share contract.

Table 5.3 **The frequency respondents reported a factor influences landlords to lease in a share contract**

State	Relationship	Farming experience	Risk aversion and expected variance	Financial security	Low land quality
Kansas	70%	48%	70%	13%	4%
Illinois	83%	83%	33%	17%	0%
Missouri	71%	57%	50%	7%	0%
Indiana	35%	85%	10%	15%	5%
Iowa	87%	65%	39%	22%	9%
Nebraska	92%	70%	55%	15%	5%
Minnesota	76%	71%	29%	6%	29%
Michigan	86%	57%	43%	29%	0%
South Dakota	83%	65%	35%	13%	0%
Ohio	74%	78%	22%	17%	4%
North Dakota	72%	56%	44%	11%	11%
Wisconsin	18%	6%	0%	0%	0%
Average	70%	62%	36%	13%	6%

The landlord's relationship with the tenant was most frequently reported factor to influence landlords who lease to prefer a share contract across the NCR. Sixty three percent of the respondents reported that the landlord is more likely to lease in a share contract as his relationship with the tenant is more close. The respondents suggested that landlords who have a close relationship with their tenant share lease because they highly trust their tenant, they feel share contracts are fair to both participants, and they want to help their tenant get starting in farming. Landlords who are close to their tenant feel sharing income volatility is fair because tenants do not have the whole risk of a potential loss. Retired landlords who are close to their tenant also lease in a share contract because they understand how hard it is for a young tenant to become established in farming, especially being able to get financing. In addition, landlords close to their tenant are not worried about the tenant cheating them out of output or not using timely farming practices. Further, these landlords have less uncertainty about their tenant's farming practices and production capability.

The landlord and tenant's farming experience were the second most frequently reported factors to influence landlords who lease to prefer a share contract. Sixty two percent of the respondents reported that the landlord is more likely to lease in a share contract as the landlord or tenant have more farming experience. The respondents stated experienced landlords keep records, monitor farming practices, market crops, and negotiate contracts easily and at a low cost. Many of these highly experienced landowners are retired farmers. These retired landlords have the time and skill necessary to help manage the farm and increase their overall income in a share contract. In addition, landlords with experienced tenants prefer to share lease because high skilled tenants increase their income by properly using inputs, timely planting and harvest, and effectively market crops.

The landlord's absolute level of risk aversion and his expected income variance in a share contract were the third most frequently reported factors to influence landlords who lease to prefer a share contract. Thirty six percent of the respondents reported that the landlords are more likely to enter a share contract as the landlord's absolute level of risk aversion or his expectation of an income variance in a share contract decrease. The respondents stated retired landlords are typically experienced in hedging price volatility, or aid in developing more consistent farming practices for the tenant to use on the land. Therefore, experienced landowners believe the income in a share contract is worth the higher expected income variance, because they know how to lower the income variance. Many retired landlords are less risk averse than inexperienced landlords since retired landlords are used to experiencing income volatility from their days farming. In addition, landlords with higher wealth are less risk averse because they can handle income volatility in a share contract. Landlords in an area with less yield and price variations are also more likely to share contract.

5.4. Factors influencing tenants who lease to lease in a cash rent or share contract

The survey collected data on factors the respondent's reported to influence tenants who lease to choose between a cash rent and share contract. The respondents were asked two questions on tenant leasing behavior rather than only one general question. The respondents were asked: 1) Which factors influence the tenant into a cash rent contract? 2) Which factors influence the tenant into a share contract?.

This section is divided into two subsections, one for each question. Each subsection will present the factors reported to influence one of the leasing behavior questions. The most frequently reported factors were grouped into the following five categories: 1) farming experience; 2) risk aversion and expected income variance; 3) financial security; 4) relationship; and 5) land quality. The frequencies of each factor for each question are shown in tables 5.2-5.3 for each state along with the average frequency in the North Central region. The factors reported with less than a 15% frequency to influence leasing landlords' contract choice decision are not reported in this section, and their frequencies are displayed in appendix C.

The frequency each factor was reported for each state is simply the number of respondents who listed the factor in each state divided by the total number of responses collected in the state. Each factor's frequency for the North Central region is the total number of respondents' who reported the factor divided by the total number of respondents surveyed. The frequency a factor was reported indicates of how likely a factor is to influence leasing behavior.

5.4.1. Factors that influence tenants who lease to prefer a cash rent contract

Table 5.4 shows the frequencies of each most common factors the respondents reported to influence tenants to lease in a cash rent contract.

Table 5.4 The frequency respondents reported a factor influences tenants to lease in a cash rent contract

State	Farming experience	High land quality	Risk aversion and expected variance	Financial security	Low land quality	Rela- tionship
Kansas	43%	65%	43%	26%	17%	0%
Illinois	50%	83%	17%	50%	0%	0%
Missouri	64%	79%	21%	29%	14%	0%
Indiana	65%	60%	60%	55%	5%	0%
Iowa	61%	57%	26%	43%	0%	0%
Nebraska	65%	55%	45%	45%	15%	5%
Minnesota	76%	76%	35%	41%	12%	0%
Michigan	86%	29%	71%	0%	43%	14%
South Dakota	52%	43%	13%	39%	9%	9%
Ohio	87%	52%	30%	26%	22%	0%
North Dakota	61%	44%	39%	50%	17%	0%
Wisconsin	53%	41%	47%	18%	18%	0%
Average	63%	56%	37%	36%	13%	2%

The tenant's farming experience was the most frequently reported factor to influence tenants who lease to prefer a cash rent contract across the NCR. Sixty three percent of the respondents reported that the tenant is more likely to enter a cash rent contract when the tenant has much farming experience. The respondents stated high skilled tenants feel they are successful producers, and therefore they gain no managerial advantage with making joint decisions with the landlord. These tenants prefer a cash rent contract for control of farming practices without being second guessed, wasting time meeting with the landlord, keeping separate records, and paying cost to divide output.

The landlord's land quality was the second most frequently reported factor to influence

tenants who lease to prefer a cash rent contract. Fifty six percent of the respondents reported that the tenant is more likely to lease in a cash rent contract as the quality of the land leased increases. However, thirteen percent of the respondents reported that the tenant is more likely to lease on a cash rent contract as the quality of the land leased decreases. Therefore, the influence of land quality on the tenant's decision still remains a question. Many respondents reported that tenants cash lease high quality land because the landlord will only accept a cash rent contract. Therefore, the tenant must cash lease to acquire the land. The respondents also reported landlords require the tenant to cash lease when demand for the land is high and the landlord believes he is receiving a high cash rent. In contrast, the respondents reported that tenants prefer to cash rent low quality land. Here, the tenant wants to cash rent because he believes the cash rent is low and the tenant feels he can earn a high return on this land. Therefore, the landlord must cash rent at a low rent if he is to find a tenant.

The tenant's level of risk aversion and his expected income variance in a cash rent contract were the third most frequently reported factor to influence tenants who lease to prefer a cash rent contract. Thirty seven percent of the respondents reported that the tenant is more likely to enter a cash rent contract as the tenant's absolute level of risk aversion decreases or his expectation of an income variance in a cash lease decreases. The respondents stated that experienced tenants believe they have a lower income variance because they are familiar in hedging price volatility, enter crop insurance programs, and have developed consistent farming practices that lower yield volatility. Experienced tenants believe the additional income volatility in a cash rent contract is worth taking for an extra return at their current expectation of an income variance. In addition, experienced tenants are typically also less risk averse because they are used to handling income volatility. Tenants with higher wealth are also less risk averse because they are more able to withstand higher income volatility. The tenant's integrated with

cattle or dairy enterprises also have lower income volatility in a cash rent contract than non integrated farms. Integrated tenants need to buy feed. Tenants who have an integrated feed source are less susceptible to feed price volatility. Lastly, tenants are also more likely to cash rent in an area with less yield and price variation.

The tenant's financial security was the fourth most frequently reported factor to influence tenants who lease to prefer a cash rent contract. Thirty six percent of the respondents reported that the tenant is more likely to enter a cash rent contract when the tenant has more income, wealth, or available credit. The respondents stated tenants need a large land base to spread their fixed cost over to increase their farming return. However, only tenants with high available financing can get a large land base and still pay all the variable inputs. Therefore, tenants with high income, wealth, or available credit enter a cash rent contract because they can finance a large land base at a low interest cost. Tenants with a high financial security derive no fixed cost or interest cost savings from having the landlord help finance his operation in a share contract. Instead, financially secure tenants feel they have to waste time meeting with the landlord and spending cost to divide output.

5.4.2. Factors that influence the tenant into a share arrangement

Table 5.6 displays the frequencies the respondents reported factors to influence tenants to lease in a cash rent and not a share contract.

Table 5.6 **The frequency respondents reported a factor influences tenants to lease in a share contract**

State	Financial security	Risk aversion and expected variance	Low land quality	Relationship	Farming experience
Kansas	65%	83%	13%	22%	0%
Illinois	83%	83%	0%	33%	0%
Missouri	86%	86%	29%	7%	7%
Indiana	65%	65%	20%	25%	5%
Iowa	83%	70%	0%	9%	4%
Nebraska	93%	100%	50%	14%	7%
Minnesota	88%	65%	12%	35%	12%
Michigan	57%	57%	29%	29%	0%
South Dakota	82%	82%	26%	17%	4%
Ohio	61%	61%	17%	17%	4%
North Dakota	83%	83%	28%	28%	5%
Wisconsin	35%	24%	29%	24%	0%
Average	71%	69%	20%	18%	4%

The tenant's financial security was the most frequently reported factor to influence tenants who lease to prefer a share contract across the NCR. Seventy four percent of the respondents reported that the tenant is more likely to enter a share contract and not a cash rent contract as the tenant has little income, cash flow, wealth, or available credit. The respondents suggested that tenants with low income, cash flow, wealth, or available credit can only finance a small land base or have high interest cost financing a large land base with a cash rent contract. Therefore, less financially secure tenants prefer a share contract because they save cash flow requirements that allow them to finance a larger land base to lower fixed cost. Many tenants less financially secure are young and have trouble getting financing from a bank because they lack collateral or a proven track record.

The tenant's level of risk aversion and his expectation of a lower income variance in a share contract were the second most frequently reported factors to influence tenants who lease to prefer a share contract. Sixty nine percent of the respondents reported that the tenant is more

likely to enter a share contract as the tenant's level of risk aversion increases or his expected income variance in a share contract decreases. The respondents stated that the tenants who are young have low wealth, or high debt are typically highly risk averse because they cannot handle high losses without severe financial damage. Many young tenants expect higher income variability in a cash rent contract because they are not as experienced with futures market, or they are not as confident about their ability to adjust farming practices to respond to adverse conditions. In addition, tenants are also more likely to share contract in an area with high yield and price variation.

The landlord's land quality was the third most frequently reported factor to influence tenants who lease to prefer a share contract. Twenty percent of the respondents reported that the tenant is more likely to lease on a share contract as the landlord's quality of land decreases. The respondents typically reported that tenants typically prefer to share lease low quality land because they do not want to bare the entire yield risk. Low quality land is typically in flood areas, or has other attributes that make it difficult to farm. Further, this low quality land typically offers more probability of high losses than high upside potential.

The tenant's relationship with the landlord was the fourth most frequently reported factor to influence tenants who lease to prefer a share contract. Eighteen percent of the respondents reported that the tenant is more likely to lease in a share contract as his relationship with the landlord is closer. The respondents suggested tenants who are related, or long time friends with the landlord will share contract to receive help financing, risk reduction, and a higher return. Many of these tenants are young farmers who are starting in farming and need help financing their operation. However, the respondents state that young tenants typically can only get a share contract if the landlord feels a close relationship with them because their lack of experience and smaller scale may only allow the landlord a low return. Tenants with a close relationship are

aware of the importance of trust, and they do not want to do things to destroy the landlord's trust.

5.5. How tenants and landlords who share lease determine input and output shares

The survey respondents reported many factors that affect how landlords and tenants who lease in a share contract determine input and output shares. The respondents identified four main factors that influence input and output shares: 1) participants' input contributions, 2) tradition, 3) land productivity, and 4) side arrangements.

The frequency of each factor is shown in table 5.2 for each state along with the average frequency in the North Central region. Each state's frequency for each factor was the number of respondents who listed the factor divided by the total number of respondents in the state. Each factor's frequency for the North Central region is the total number of respondents' who reported the factor divided by the total number of respondents in the survey. The frequency a factor was reported is only an indication of how likely a factor is to influence leasing behavior.

Table 5.5 **The frequency respondents reported a factor influences how landlords and tenants who share lease determine input and output shares**

State	Participant's input contributions	Tradition	Land productivity	Side arrangements
Minnesota	59%	53%	47%	6%
Michigan	57%	29%	29%	0%
Illinois	83%	67%	33%	33%
Missouri	71%	86%	21%	21%
Kansas	65%	70%	43%	22%
Indiana	45%	45%	40%	30%
Iowa	57%	78%	22%	4%
North Dakota	72%	72%	28%	11%
Ohio	61%	70%	17%	17%
Nebraska	85%	45%	40%	5%
South Dakota	71%	65%	35%	17%
Wisconsin	35%	41%	6%	18%
Average	63%	62%	30%	15%

The respondents generally stated that in all share contracts the tenants and landlords may supply some inputs jointly and other inputs individually. The respondents stated that landlords supply the land for production. The tenant supplies the labor and equipment. The tenant and landlord may share the variable production inputs or the tenant may supply all variable inputs.

The value of the inputs contributed by the landlord and tenant was the most frequently reported factor to influence how landlords and tenants who share lease determine input and output shares in the NCR. Sixty three percent of the respondents reported that the landlord's output share increases as the landlord contributes more valuable land or the tenant applies less total labor or equipment cost toward production. The landlord's output share is approximately equal to the value of the landlord's individual contribution of land for one year production divided by the total value of one year land, labor, and equipment costs. The tenant's output share is equal to his contribution of labor and equipment divided by the sum of the tenants and landlords total individual contributions. Generally, the respondents stated that the land input is valued at the

cash rent level. The labor input is valued by an estimate of total hours per acre times the wage rate. The equipment input is generally valued by some estimate of depreciation plus interest per acre. The landlord and tenant share the variable inputs the same as their output shares when the output share is close to a common fraction as $1/2$, $1/3$, etc. If the value of input contributions are not close to a common fraction, the landlord and tenant share variable inputs at a different percentage than output. In this case, the output share is approximated by the nearest common fraction, but the landlord pays a greater share of the variable inputs than his output share. Therefore, the landlord paying a greater share of variable inputs brings each participant's total contributions to equal their output share.

Local tradition in the area was the second most frequently reported factor to influence how landlords and tenants who share lease determine input and output shares. Sixty two percent of the respondents reported that landlord's output and input shares are based upon local customs or rules of thumb that have developed in the area. The respondents reported that input and output shares are decided upon the norms in the area rather than any valuation of inputs. Generally, the respondents believed that the tradition in the area did create input and output shares roughly in line with the value of the inputs. However, landlords and tenants may receive higher or lower input and output shares determined by tradition than shares based on inputs contributions. Traditional shares have developed from historical costs, past productivity levels and older farming practices while input contributions are valued based on today's cost, prices, and productivity. Traditional output shares change slowly over the years. However, tradition provides a low cost method of computing input and output shares.

Land productivity was the third most frequently reported factor to influence how landlords and tenants who share lease determine input and output shares. Thirty percent of the respondents reported that landlords receive a higher output share as the productivity his land

increases. The respondents stated that landlords receive an output share equal to a percentage of average past yields produced on the land. The values of inputs change with crop price, wage rates, equipment depreciation schedules, interest rates, competition, inflation, taxes, and other influences. However using the land productivity to determine output shares, the landlord's output share does not change because output shares are based on production not the valuation of inputs. The landlord usually does not share variable inputs when output shares are determined by productivity. Respondents did not clearly state how inputs were shared in the rare cases where variable inputs were shared using land productivity to determine output shares.

Fixed input and output shares with side arrangement was the fourth most frequently reported factor to influence how landlords and tenants who share lease determine input and output shares. Fifteen percent of the respondents reported that the landlord's output share is fixed but landlords increase their income from receiving favorable side arrangements. The landlord receives a more favorable side arrangement to increase his income as more tenants compete to receive the fixed terms of input and output shares in the share contract. The respondents stated that additional side arrangements are added to the share contract rather than changing the input and output shares. Side arrangements include mending fences, mowing the yard, or paying an extra privilege rent. In Illinois, tenants pay a privilege rent between \$5 and \$15 per acre just to get a share contract with 50% output and input shares. Using side arrangements to adjust the terms of share contracts lower the landlords and tenants cost of determining output and input shares. However, the cost of negotiating a contract is still high as the participants evaluate which changes to offer or accept.

5.6. Summary

This chapter has helped to explain: why landowners lease; why landlords who lease prefer a cash rent or share contract; why tenants who lease prefer a cash rent or share contract; and how tenants and landlords who lease in a share contract determine input and output shares. The landowner's age, farming experience, and distance off the farm were the factors reported most frequently to influence landlords to lease.

The respondents reported that landlords who prefer to lease in a cash rent contracts most are often highly risk averse, expect a high income variance in a share contract, are inexperienced in farming, or have a tenant inexperienced in farming. Landlords who prefer to lease in a share contract usually have a close relationship with their tenant, are experienced in farming, have a tenant highly experienced in farming, are less risk averse, and expect a low income variance.

Tenants who prefer to lease in a cash rent contract are usually experienced in farming, are less risk averse, expect a low income variance in a cash rent contract, and have higher financial security. In addition, some tenants lease in a cash rent contract only because the landlord requires it to lease the land. Tenants who prefer to lease in a share contract are often more risk averse, expect a high income variance in a cash rent contract, and have lower financial security.

Most landlords and tenants who share lease determine input and output shares according to the value of inputs each of them contributes to production. However, many landlords and tenants determine input and output share according to how tradition in their local area dictates the terms of the share contract.

CHAPTER 6

CONCLUSION

6.1. The problem

Economists have struggled over the years to answer the question of why cash rent and share contracts coexist in the lease market. Some landlords and tenants lease in a cash rent contract. Other landlords and tenants lease in a share contract. Many economists believe the debate why cash rent and share contracts coexist can be solved when detailed data on leasing behavior and local leasing markets are collected.

6.2. What was done to solve the problem?

This thesis is intended to be the first of a series of studies which will aid to develop a more generally accepted theory that explains contract preferences. This study contributed in two ways toward the efforts to explain the coexistence of cash rent and share contracts. The first contribution was a literature review to provide a background of existing leasing studies. This review basically shows economists have no consensus of why the participants in the land leasing market have different contract preferences.

The second contribution was to gather data on landlord and tenant leasing behavior across the North Central Region (NCR). This information will help next research to develop a model of landlords and tenants contract options to better understand the leasing market. In addition, the

data reported in the study will help to inform landlords and tenants about alternative contract options.

6.3. Summary of findings

6.3.1. Literature review

Economists describe theories in the literature review explaining why cash rent and share contracts coexist. In early models, economists argued over whether the tenant used fewer inputs maximizing his income in a share contract than in a cash rent contract. Later, Chueng seemed to solve this argument. Chueng argued that tenants use the same inputs and produce the same outputs in both contracts. Chueng also explained that tenants and landlords would receive the same income either the cash rent or share contract. However, why one contract was preferred to the other was not explained.

With each contract supposedly offering tenants and landlords equal incomes, economists now searched for factors that explains the tenant and landlords' contract preferences. In current models, economists rely on risk aversion, land quality, output division costs, the tenants' management skill, and the landlords' opportunity cost to explain the participants contract preferences. In addition, some studies have observed relationships affecting landlords leasing decision. Still, relationships have not yet been included in contract choice models. Relationship studies have shown that relationships influence individuals risk aversion, financing opportunities, and work effort. Since risk aversion, financing opportunities, and work efforts are important factors affecting the participants' contract preferences, relationships are thought to play a role in explaining the coexistence of both contracts.

6.3.2. Methods of research

This study conducted a telephone survey in twelve states in the NCR of the United States to gather data on leasing behavior. The NCR was selected for the study because of its importance in agricultural production and the large amount and diversity of leasing activity. Agricultural extension (AE) agents were selected for this study because they were the most qualified to answer the survey.

The questionnaire asked the AE agents both closed ended questions about leasing characteristics of their extension areas and open-end questions about tenant and landlord leasing behavior. The open-ended questions collected information on: 1) why landlords decide to lease, 2) why landlords who lease prefer a cash rent or share contract, 3) why tenants who lease prefer a cash rent or share contract, and 4) How landlords and tenants who share lease determine input and output shares.

The survey contacted 437 agricultural extension agents and 211 agents responded. This achieved a 48% response rate of the agricultural agents contacted. The responding AE agents consisted of county, cluster, district, and regional extension agents. Each agent responded over their entire extension area. The responding AE agents described local leasing conditions within 68 of the 69 extension regions and 55% of the counties in the NCR.

6.3.3. Characteristics of leasing markets in NCR

The respondents reported data on the characteristics of their local leasing markets across the NCR. The data shows extension regions across the NCR are diverse in: 1) the crops tenants grow; 2) the percentage of farmland that landlords lease; 3) the percentage of leased farmland

that landlords lease in a cash rent contract; 4) the cash rents landlords receive leasing in a cash rent contract; 5) the input and output shares landlords and tenants agree to in a share contract.

Although the NCR is diverse, each leasing characteristic shows a definite pattern across the extension regions of the NCR. Landlords lease high percentages of farmland in extension regions of the northern corn belt and northern great plains. Landlords lease medium percentages of farmland in extension regions of the surround the borders of the northern corn belt and northern great plains. Landlords lease low percentages of farmland in the extension regions of the central great plains and lake states.

Landlords lease high percentages of farmland in a cash rent contract in extension regions of the southern corn belt and southern great plains. Landlords lease medium percentages of farmland in a cash rent contract in extension regions of the northern corn belt, central great plains, and Missouri. Landlords lease low percentages of farmland in a cash rent contract in extension regions of the lake states and northern great plains.

Generally, landlords receive high cash rents and output share in the corn belt states. Landlords receive medium cash rents and output share in the extension regions bordering the corn belt states. Landlords receive low cash rents and output share in the extension regions of the great plains and lake states.

Some leasing characteristics showed similar patterns across the NCR. Other characteristics were un-correlated with other leasing characteristics. The extension regions that have high, medium, and low cash rents tend to be extension regions that have high (50%), medium (40%), and low (33%) output shares. Yet, extension regions with high percentages of farmland leased are un-correlated with the extension regions cash rents, and output shares. Neither do extension regions with high, medium, and low percentages of farmland that is cash leased correspond to extension regions with high, medium, and low cash rents and outputs shares.

Landlords generally receiving higher cash rents and output shares in the same extension region suggest that other factors are influencing landlord and tenant contract preferences than only the level of the leasing payment. Similar to landlord and tenant contract preferences, landlords generally receive higher farming income, cash rents, and output shares in the same extension region suggests that other factors are influencing landlords' leasing decisions than only the level of the leasing payment. Factors that may explain the participants' contract preferences and landlords' leasing decisions were identified in chapter 5.

6.3.4. Factors identified that influence leasing behavior

This study identified many factors to influence landlord and tenant leasing behavior. The respondents reported that landowners most frequently decide to lease because of their age, farming experience and distance off the farm, motivation to purchase land as an investment, and off farm job opportunities.

Landlords are more likely to lease as they grow older because they have physical limitations, lose their spouse, or desire to retire.

Landlords are more likely to lease when they have little farming experience or they live further off the farm because they do not have the skills or equipment to farm. In addition, some landowners lease because they live far away from their farm and have high traveling cost.

Landlords are more likely to lease when they view the land more as an investment than as an employment opportunity or source of recreation. These investor landlords are not experienced farmers, earn high incomes off farm, live far away, or may be a financial institution.

Landlords are more likely to lease as they have better off farm job opportunities. Experienced and inexperienced landowners both lease if they can earn a higher income from their

off farm employment than their on farm income.

The respondents reported that landowners most frequently decide to lease in a cash rent contract because of their farming experience and their tenant's farming experience, and their level of an absolute risk aversion or expected income variance.

Landlords are more likely to cash lease as their level of absolute risk aversion increases or their desire for zero income variance increases. Landlords cash rent when they are on a fixed income, have difficulty accessing an income variance, are not familiar with risk reducing instruments, and do not like worry about the level of return to expect. Some experienced landlords cash rent when there is high price and yield volatility in their area.

Landlords are more likely to cash lease as they or their tenant have less farming experience. Inexperienced landlords do not make timely or cost efficient management decision, earn a higher income not managing and spending more time at their off farm employment, believe the extra paperwork is not worth any small additional return. Landlords with unskilled tenants cash rent because they do not want to be dependent on their tenant's production.

The respondents reported that landowners most frequently decide to lease in a share contract because of their relationship with their tenant, their or their tenant's farming experience, and their level of an absolute risk aversion or expected income variance.

Landlords are more likely to share lease as they have a closer relationship with their tenant. Landlords who have a close relationship enter share contracts because they highly trust their tenant, feel share contracts are more fair, and want to help their tenant get started farming.

Landlords are more likely to share lease as they or their tenants have more farming experience. Experienced landlords make management decisions easily and have time to help manage the farm. Landlords with experienced tenants prefer to share lease because high skilled tenants increase their income through good marketing and management.

Landlords are more likely to share lease as their absolute level of risk aversion decreases or their expectation of an income variance in a share contract decreases. Retired farmers and other landlords who share lease have lower volatility because they are experienced in hedging, develop more consistent farming practices, or live in an area with less yield and price variation. Retired landlords or landlords with higher wealth are less risk averse because they are used to experiencing income volatility or can handle income volatility.

The respondents reported tenants most frequently prefer a cash rent contract because of their farming experience, level of absolute risk aversion or expected income variance, financial security, and the land quality.

Tenants are more likely to cash lease when they have much farming experience. High skilled tenants want control and feel they gain no advantage making joint decisions with the landlord. These tenants do not like being second guessed, wasting time meeting the landlord, keeping separate records, and paying division cost.

Some tenants are more likely to cash lease as the quality of the land leased increases. However, other tenants are also likely to cash lease as the quality of the land leased decreases. Therefore, the influence of land quality on the tenant's decision still remains a question.

Tenants are more likely to cash lease as their absolute level of risk aversion decreases or their expectation of an income variance in a cash lease decreases. Experienced tenants have lower volatility in a cash lease because they are familiar in hedging, enter crop insurance programs, develop consistent farming practices, are integrated with cattle enterprises, and live in an area with less yield and price variation. Experienced tenants and wealthy tenants are less risk averse because they are used to handling income volatility or have the wealth to sustain low returns.

Tenants are more likely to cash lease as they have more income, wealth, or available

credit. Tenants with high income, wealth, or available credit enter a cash rent contract because they can finance a large land base at a low interest cost. Financially secure tenants do not receive increased benefits in a share contract from the landlord providing financing, and they feel they waste time meeting with the landlord and spending cost to divide output.

The respondents reported tenants most frequently prefer a share contract because of their financial security, level of an absolute risk aversion, and expected income variance.

Tenants are more likely to share lease as the tenant has little income, cash flow, wealth, or available credit. Tenants with low income, cash flow, wealth, or available credit can only finance a small land base or have high interest cost financing a large land base with a cash rent contract. Less financially secure tenants save cash flow requirements that allow them to finance a larger land base to lower fixed cost.

Tenants are more likely to share lease as the tenant's level of risk aversion increases or his expectation of an income variance in a cash rent contract increase. Tenants have a higher income variance when they are not experienced with futures, cannot adequately adjust farming practices to adverse conditions, or live in areas with high yield and price variation. Tenants who are young have low wealth, or high debt are highly risk averse because they can afford high losses.

The respondents reported that landlords and tenants who share lease most frequently determine input and output shares based on input contributions and tradition.

The respondents reported most frequently that the value of the inputs landlords and tenants contribute in a share contract determines each of their respective input and output shares. Landlords' output shares increase as a landlord contributes more valuable land or the tenant applies less total labor or equipment cost toward production.

The respondents reported most frequently that tradition in the local area determines each

of their respective input and output shares. Local tradition is based upon local customs or rules of thumb that have developed in the area. Traditional shares developed from historical costs, past productivity levels and older farming practices while input contributions are valued based on today's cost, prices, and productivity. Tradition lowers the computational cost of determining input and output shares.

6.4. Implications of this study on future research

This study has identified many factors useful in understanding leasing behavior. The next step is for future researchers to design and test a contract choice model incorporating these factors identified. Further, the roles of relationships in participants contract preference should be explored, and a model of contract choice using relationships should be created.

In addition, this study may have implications on how businesses are organized outside agriculture. Many of these same factors identified to influence landlords and tenants contract preference seem relevant to business owners and operators. For example, my father and brother are shareholders of a small steel treating company. Lacking capital to fund the start up cost, my father set up a corporation with his cousin. His cousin put up the capital and my father and brother renovated the equipment and ran the business. My father is experienced and has a good reputation. My second cousin is also familiar with steel treating but looking to retire in a few years.

Similar to this study, relationships, experience, and financial security are major influences on the organization of my father's business. Therefore, the factors collected in this study may have similar importance for types of business organizations as well as leasing contracts.

APPENDIX A.

Questionnaire

Hello Mr/Ms _____

My name is Brian Paterson. Last week I sent you a card introducing you about a leasing survey we are conducting at Michigan State University. I would like to ask for your participation, with the understanding your participation is purely voluntary and you have the right to not answer in full or part on all questions without repercussion. Can I take 10 minutes of your time and ask you some questions about leasing in your county? If yes, but not now is there a time to call you back. If not thank you for your time.

State _____ County _____

Name _____ Phone _____

Call Back _____

PART I

1. What percentage of farmland is leased in your county?

2. What percentage of leased land in your county is on a cash rent basis?

3. What percentage of leased land in your county is on a share lease basis?

4. What is the typical current cash rent in your county?

5. What is the typical allocation in a share arrangement?

Output Landlord ----- Tenant -----

Input Landlord ----- Tenant -----

Inputs shared:

1. -----

2. -----

3. -----

4. -----

6. What are 4 or 5 other typical leasing arrangements in your area? (List in order of most common to least common)

1. -----

2. -----

3. -----

4. -----

PART II

For the last few questions, we are interested in your opinion on factors that determine whether land is leased or farmed and the type of lease arrangement.

7. What factors determine whether the owner farms his land or leases his land?

Farm land
1.
2.
3.
4.
5.

Lease land
1.
2.
3.
4.
5.

8a. What factors determine whether a landlord's land is leased on cash or share basis?

Cash lease
1.
2.
3.
4.
5.

8b. What factors determine whether a landlord's land is leased on cash or share basis?

Share lease
1.
2.
3.
4.
5.

9a. What factors determine whether a tenant leases land on cash or share basis?

Cash lease
1.
2.
3.
4.
5.

9b. What factors determine whether a tenant leases land on cash or share basis?

Share lease
1.
2.
3.
4.
5.

10. What factors determine the share splits in share arrangements?

1. _____
2. _____
3. _____
4. _____
5. _____

I really appreciate you taking the time to share your expertise and if I can just check your address

I can mail you a copy of the results when we are finished.

APPENDIX B.

Leasing characteristics of each extension region in the NCR

Table B. Leasing characteristics of each extension region in the NCR

State	Extension region	Cash rent	Crops grown \\a	Land-lord's output share	Land-lord input share \\b	% of land leased	% of land cash leased
WI	W	47	H	0.50	TT	19	95
WI	W	47	CS	0.33	TT	19	95
WI	SE	64	H	0.50	TT	35	95
WI	SE	64	CS	0.50	SPT	35	95
WI	S	67	H	0.50	TT	35	91
WI	S	67	CS	0.50	SPT	35	91
WI	NE	45	H	0.50	TT	33	95
WI	N	39	H	0.50	TT	19	94
WI	C	30	CS	0.25	TT	22	93
WI	C	30	H	0.50	TT	22	93
WI	C	30	CS	0.40	SPT	22	93
SD	W	19	WB	0.33	TT	28	72
SD	W	19	H	0.40	TT	28	72
SD	W	19	WB	0.33	SPT-F	28	72
SD	SE	38	CS	0.40	SPT	45	67
SD	NW	19	WB	0.33	TT	27	78
SD	NW	19	H	0.50	TT	27	78
SD	NE	28	WB	0.33	SPT-FC	45	54
OH	SW	82	CS	0.50	SPT	50	75
OH	S	61	CS	0.50	SPT	41	67
OH	NW	91	CS	0.33	SPT	61	64
OH	NW	91	CS	0.50	SPT	61	64
OH	NE	39	CS	0.33	TT	46	84
OH	NE	39	H	0.50	TT	46	84
OH	NE	39	CS	0.33	SPT	46	84
OH	E	53	H	0.50	TT	25	70
OH	E	53	CS	0.40	SPT	25	70
NE	WC	34	WG	0.33	TT	35	63
NE	W	26	CS	0.33	TT	51	13
NE	W	26	WG	0.30	SPT	51	13
NE	W	26	CBSG	0.30	SPT	51	13
NE	SE	71	CS	0.40	SPT	51	45
NE	SC	54	CS	0.40	SPT	49	51

Table B. Leasing characteristics of each extension region in the NCR

State	Extension region	Cash rent	Crops grown \\a	Land-lord's output share	Land-lord input share \\b	% of land leased	% of land cash leased
NE	NE	73	CS	0.40	TT	38	52
NE	NE	73	CS	0.40	SPT-S	38	52
NE	NE	73	CS	0.40	SPT	38	52
ND	SW	31	WB	0.33	TT	44	71
ND	NW	27	WB	0.33	TT	53	78
ND	E	27	WB	0.33	TT	55	46
ND	C	30	WB	0.33	TT	50	76
MO	WC	49	CS	0.33	TT	46	23
MO	WC	49	CS	0.50	SPT	46	23
MO	SW	50	CW	0.33	SPT-F	38	50
MO	SE	58	CW	0.33	SPT-F	61	37
MO	SC	45	CS	0.33	LL-CH	23	75
MO	NW	56	CS	0.50	SPT	35	20
MO	NE	66	CS	0.50	SPT	40	35
MO	EC	25		N/A	N/A	48	N/A
MO	C	46	CS	0.50	SPT	29	38
MN	WC	63	WB	0.33	SPT-FC	28	70
MN	WC	63	WBSG	0.40	SPT	28	70
MN	SW	88	CS	0.50	SPT	55	69
MN	SE	74	CS	0.33	TT	40	86
MN	NW	48	WB	0.33	SPT-SF	35	68
MN	NW	48	WBSG	0.40	SPT	35	68
MN	EC	59	H	0.50	TT	30	74
MN	EC	59	CS	0.33	TT	30	74
MI	WC	53	CS	0.33	TT	10	90
MI	WC	53	CS	0.50	SPT	10	90
MI	UP	11		N/A	N/A	23	95
MI	SW	58	CS	0.33	SPT	40	70
MI	SE	48	CS	0.33	TT	60	85
MI	N	21	H	0.50	TT	38	90
MI	N	21	CS	0.33	TT	38	90
MI	EC	83	CS	0.33	TT	33	80
KS	SW	28	WG	0.33	SPT	49	23

Table B. Leasing characteristics of each extension region in the NCR

State	Extension region	Cash rent	Crops grown \a	Land-lord's output share	Land-lord input share \b	% of land leased	% of land cash leased
KS	SE	44	WG	0.33	SPT-FC	62	12
KS	SC	34	WG	0.33	SPT-FC	57	31
KS	NW	34	WG	0.33	SPT-F	38	18
KS	NE	40	WG	0.33	SPT-FC	55	27
IN	SW	92	CS	0.50	SPT	54	27
IN	SE	80	CS	0.5	SPT	50	39
IN	NW	96	CS	0.50	SPT	60	55
IN	E	81	CS	0.50	SPT	47	64
IN	C	106	CS	0.50	SPT	47	75
IL	WC	109	CS	0.50	SPT	78	26
IL	SC	75	CW	0.33	SPT-FC	68	36
IL	S	60	CW	0.33	SPT-FC	55	30
IL	NW	103	CS	0.50	SPT	74	59
IL	NE	70	CS	0.50	SPT	57	43
IL	EC	113	CS	0.50	SPT	61	37
IA	WC	94	CS	0.50	SPT	53	52
IA	SW	86	CS	0.50	SPT	42	54
IA	SE	103	CS	0.50	SPT	46	47
IA	SC	92	CS	0.50	SPT	47	38
IA	NW	99	CS	0.50	SPT	44	63
IA	NE	106	CS	0.50	SPT	46	80
IA	NC	99	CS	0.50	SPT	55	68
IA	EC	111	CS	0.50	SPT	58	70
IA	C	110	CS	0.50	SPT	51	60
note a/		note b/					
H-hay		spt- split seed, fertilizer &					
C-corn		chemical					
S-soybean		spt-s-split seed					
W-wheat		spt-f-split fertilizer					
B-barley		spt-fc-split fertilizer &					
G-sorghum		chemical					
SG-sugarbeet		spt-sf-split seed & fertilizer					
		tt-tenant pay all					
		ll-ch-landlord pay chemical					
		n/a- not available					

APPENDIX C.

**Factors reported by the respondents with less than 15 percent frequency
to influence landlord and tenant contract choice**

Table C1. Frequency of factors that influence landlords into cash rent contracts with less than 15 percent average frequency over all the states in the MCR

State	Local tradition	Location of land	Want to conserve land quality	Passive /active income for social security benefits	Specialty crops	Land in Conservation Reserve Program (CRP)
Average	6%	12%	4%	8%	2%	3%

Table C2. Frequency of factors that influence landlords into share contracts with less than 15 percent average frequency over all the states in the MCR

State	Need feed for dairy/cattle enterprise	Location of land	Want to conserve land quality	Passive /active income for social security benefits	Specialty crops	Local tradition
Average	11%	9%	14%	9%	1%	14%

Table C3. Frequency of factors that influence tenants into cash rent contracts with less than 15 percent average frequency over all the states in the MCR

State	Need feed for dairy/cattle enterprise	Location of land	Local tradition	Specialty crops
Average	12%	7%	3%	6%

Table C4. Frequency of factors that influence tenants into share contracts with less than 15 percent average frequency over all the states in the MCR

State	Need feed for dairy/cattle enterprise	Location of land	Local tradition	Bank requires for financing
Average	1%	2%	6%	9%

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