

A study of social capital: How much do relationships matter in farmland leasing?

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Allison Leigh Pitts

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Major Professor  
Dr. Mykel Taylor

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## **Abstract**

Social capital is important in many business relationships, the agricultural sector especially. With almost 40% of the farmland in the United States leased from someone else, these relationships are an integral part of many farming operations. In this paper, social capital can be thought of as the idea that a person's relationships can impact economic outcomes. The goal of this study is to find the impact of social capital on farmland leasing relationships in Kansas, using data from a survey sent to both producers and landowners.

The survey was sent to members of the Kansas Farm Management Association (KFMA) in late January 2018, with the receiving period ending in mid-May 2018. The survey provided data on the rental rate of farmland, characteristics of the lease, the land and the relationship between the producer and landowner. Utilizing a snowball method, a second survey was given to the producer to send to their landowner with the intention of collecting a database of matched pairs. An OLS regression was used to analyze producer data to determine the impact of producer characteristics, landowner characteristics and land characteristics on cash rental rates.

Various factors such as lease length, a family relationship, land productivity, how the landowner obtained the land and the location of the land were thought to impact the rental rate paid to the landowner in a cash rent lease. However, results estimate that doubling the length of lease may result in a 9% discount on the rental rate as compared to market value and that if the landowner inherited the land there could be up to a 20% discount on the rental rate as compared to market value. As well as the fact that productivity of the land has a positive effect on rental rate, meaning more productive land will cost more to rent. This supports the hypothesis that longer leasing relationships, those with higher social capital, have a negative impact on rental rate paid to the landowner. It disproves the hypothesis that when land changes hands from one

landowner to the next, the previous social capital is lost, instead it appears that the relationships continue unaffected.

These results present an opportunity to better prepare landowners and producers for conversations about farmland leasing. For producers who rely on leased land, being aware of current relationships and their value is important, as well as knowing how to have conversations about estate planning. For beginning farmers, this information can be used as a building block, in place of monetary capital they may not have. Being able to form strong relationships with the people around them can prove to have value in the future. The results show that social capital has a significant impact on farmland rental rates in Kansas.

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## **Chapter 1 - Introduction**

Relationships are important in many business ventures, the agricultural sector especially. Almost forty percent of farmland in the United States is rented or leased from someone else (USDA NASS, 2015). In Kansas, this means for some tenants and landlords to make a living, a lease agreement must be in place – this agreement is likely the result of some level of relationship, or social capital. Social capital can have a variety of definitions because of the various disciplines that find the idea relevant (Neira, Vázquez, and Portela, 2009). Robison, Myers, and Siles (1999) defined social capital as “a person or group’s sympathy or sense of obligation for another person or group”. Based on that definition, the social capital between a tenant and landlord has the opportunity to influence major pieces of their agreement, including the rental rate.

The purpose of this research is to build off Taylor and Featherstone (2018) to further examine the effects and value of social capital in farmland leasing relationships and answer questions regarding the subject. Specifically, does a long-term and/or close relationship affect the cash rental rate at which land is leased (Taylor and Featherstone, 2018)? Furthermore, are there other identifiable factors in a tenant landlord agreement that affect the rental rate, beyond the relationship itself? In order to answer these questions, characteristics of leasing relationships are identified and analyzed. Similar studies used to help shape this research have focused on landlord and tenant satisfaction with the relationship, contract choice and valuing farmland rental contracts.

The data used for this analysis are the results from a survey sent to members of the Kansas Farm Management Association (KFMA) in January of 2018. The survey was sent to tenants and their landowners and asked questions about land the tenants own and land they rent. Information about their lease, conservation preferences and demographic information was also

gathered. Summary statistics indicate that the average rental rate is \$65.41 per acre of cropland, with the average lease relationship spanning over 16 years.

An ordinary least squares regression is used to identify which characteristics most affect the rental rate. The results show that both lease length and how the landlord acquired the land are significant factors in leasing relationships, as well as land productivity and where the land is located. An increase in the lease length by 100% results in a 9% discount on rental rate as compared to the market rate and if the landlord inherited the land there can be roughly a 15% discount on rental rate versus the market rate. Productivity of the land influences rental rate in the opposite direction, accounting for up to a 40% higher rental rate, however that is intuitive because more productive land is expected to have a higher rental rate.

By identifying and analyzing these characteristics that impact rental rate, tenants and landlords alike can be better prepared to make informed decisions when it comes to negotiating rental rates.

## Chapter 2 - Literature Review

Social capital is an integral part of many business relationships, farmland leases especially. The often-informal nature of these farmland lease contracts means that the strength of relationship between the two parties can be the difference between the lease agreement taking place or not. While research has been done about social capital from an economic standpoint, as well as in the agricultural economics literature, the idea that this social capital can impact these farmland leases is less researched. This chapter will explore articles, studies and other research that focus on defining social capital, the importance of rented land, landlord – tenant relationships and previous studies that have looked at social capital. Upon reviewing the literature, it can be seen that there are lapses in the literature, and an opportunity for this research to fill those gaps.

### 2.1 What is Social Capital?

Social capital can have various definitions, and as stated before social capital, or relationships are the foundation on which most farmland leases take place. When looking at business relationships, social capital can be defined as “the potential benefits, advantages, and preferential treatments resulting from one person or group’s sympathy and sense of obligation toward another person or group” (Neira, Vázquez, and Portela, 2009). As defined by Nan Lin in his book, *Social Capital: A Theory of Social Structure and Auction*, “the principle behind social capital is simple: investment in social relations with expected returns in the marketplace” (Lin, 2001). Lin suggests that this can be true of almost any type of market whether economic, political or even a community. Individuals put effort into interacting with one another in order to gain something, in some cases profits, in other cases, savings. This can be translated to the farmland leasing relationships when lengthy and/or stronger relationships emerge between tenants and landlords. In short, social capital can best be described by Robison, Myers and Siles

(1999) as “a person or group’s sympathy or sense of obligation for another person or group” (Robison et al., 1999).

Paul Wilson (2000) stated that social capital, similar to other economic assets, requires input or investment. With this investment comes the opportunity for the economic value, and for that value to fluctuate. Social capital may depreciate if not sustained or it may flourish if certain relationships are maintained (Wilson, 2000). Meaning, if a relationship between a producer and a landlord is well maintained, there are potential benefits for both. For example, a flat rental rate for the producer or the peace of mind for the landlord to know their land is being cared for properly is mutually beneficial for both parties.

## **2.2 Importance of Rented Land**

According the USDA NASS’s 2014 TOTAL (Tenure, Ownership, and Transition of Agricultural Land) Survey more than 2 million landowners rented out 353.8 million acres of land for agricultural purposes in the U.S. An overwhelming majority of those landowners (87%) were landlords who do not operate a farm (USDA NASS, 2015). In Kansas alone, 23.7 million acres were rented out in 2014, the largest in the Plains region of Kansas, Nebraska, North Dakota, Oklahoma, South Dakota and Texas (USDA NASS, 2015). This signals the importance of rented land to many farming operations, especially here in Kansas.

The TOTAL Survey asked landowners about their plan for the land in the next five years - if the land would be transferring hands, and if so, through what method. Options included selling the land to a relative, selling to a non-relative, putting it in a trust, putting it in a will and other options (USDA NASS, 2015). The results showed that operator landlords, those who also operate their own farm, expected to transfer 15 percent of their land in the next five years. While non-operator landlords also expect to transfer 14 percent of the land they currently rent out in the next five years. The acreage expected to transfer is about 10 percent of all land used for

agriculture, or around 91.5 million acres (USDA NASS, 2015). It is also worth noting that the five year period of transfer would be happening this year, in 2019, making this research a valuable resource for those on the receiving end of the land or tenants who will see their landlord change.

Young and beginning farmers are particularly impacted by land leasing because of their reliance on rented ground when they are just starting their farming operations. Katchova and Ahearn (2014) use data from three agricultural censuses (1997, 2002, and 2007) to show just how important rented acres are to beginning and young farmers. They separate out those two groups – using “young” as an age descriptor, someone who is less than 35 years old and using “beginning” to describe those who have 10 years or fewer of farming experience. The assumption is that beginning farms tend to be smaller and more reliant on rented land. While Katchova and Ahearn (2014) found that young farmers tend to use farmland leasing as a method of entry into farming. This puts further emphasis on the importance of social capital not only for established farmers, but also those who are younger or just beginning and rely heavily on rented ground (Katchova and Ahearn, 2014).

### **2.3 Current Landlord – Tenant Relationships**

While rented land is important for beginning and young farmers, established farmers and landlords rely on the relationships they have already built. An indicator of a successful relationship is an open line of communication. This can be especially important for non-farming landlords or those who may be a generation, or more, removed from the farm. These conversations can be about the crops and livestock being grown on the land, improvements and maintenance needed on the property and opinions on conservation practices. The idea is that the landowner and tenant have a two-way relationship not simply one where the tenant puts a rent check in the mail with the Christmas card every year. Instead, it is encouraged that the tenant

gets to know the landowner on a personal level; meet for coffee, send school pictures of the kids or even pictures of young livestock or crops being planted and harvested. Landlords are much more willing to work with a tenant when they need rent decreased or a fence mended if they know that the tenant has been taking care of their land while leasing it (Taylor, 2019 – Extension meetings).

Other strategies being communicated to tenants include having a written lease, providing the landlord with a resume of your farming operation and providing cost information as well as other general information on agriculture as needed. For landlords, they are encouraged to have a written lease, not hesitating to ask questions, scheduling yearly meetings and remembering to be rational – whether it be about the current market rental rate or a potential tenant. While not all of these apply to every relationship, the written lease for instance, it is good to know what other tenants and landlords are doing and be on the lookout for new practices that could strengthen the relationship. (The Ohio State University, 2001)

The goal is for the tenant and landlord relationship to look more like a friendship or a mutually beneficial agreement rather than just a business transaction.

## **2.4 Previous Work on Leasing Relationships**

There are a few notable papers that have studied portions of this project. Paulson and Schnitkey (2013) looked at farmland markets and rental valuation; Bryan, Deaton, and Weersink (2015) conducted a landlord-tenant relationship survey in Ontario, Canada; and Rainey, Dixon, Parsch, Ahrendsen, and Bierlen (2003) researched the value of landlord perceptions in a relationship study. Taylor and Featherstone (2018) have also done a study of the value of social capital using KFMA data, with this current research being built off their model.

The rental valuation, or rent paid to the landlord, is often determined by the perceived productivity of the land. In their work on farmland rental markets, Paulson and Schnitkey (2013)

found that rental rates may not always adjust to reflect the annual changes in that productivity. The land could be worth more or less, depending on the crop being grown and the market for said crop in any given year. With some lease agreements being multi-year contracts, an adjustment to account for these changes cannot be made and instead tenants and landlords rely on negotiations that may have taken place years prior (Paulson and Schnitkey, 2013). This may lead to rental rates being higher or lower than the market rate at any given point in the contract.

Rainey et al. (2003) studied landlord satisfaction levels in farmland leasing using a sample of Arkansas landowners. This work revisits a previous study performed using Arkansas tenants by Bierlen and Parsch in 1996 that studied their lease satisfaction. The results from the tenant survey showed that lease type had little influence on tenant satisfaction but instead factors such as lease length, tenant dependence on agriculture for income, education, yield variability and kinship to landlord were important (Rainey et al., 2003).

The Rainey et al. (2003) study then asked the landlords questions on leasing behavior, background information on the tenant and their relationship as well as the length and terms of the leasing agreement. There were also questions about the perception of the tenant's managerial ability. The variables used to estimate lease satisfaction in the landlord study were similar to those in the tenant survey and include variables such as type of lease, age of landlord, quality of land, social closeness (relatedness), lease length, and number of acres leased. The results of the landlord study show that the variable indicating social closeness or relatedness, or how close the relationship is between the two parties, supports the idea that the closer the relationship the more likely the landlord is to be satisfied with the lease. This, along with the results from the tenant survey confirm the importance of a social capital related variable in lease satisfaction (Rainey et al., 2003). It should be noted, that both the 1996 study and current study found positive coefficients for length of lease and relationship, with length of lease being significant.

A unique aspect of the Rainey et al. (2003) paper is the mention of an “ideal sample” that includes data from both the landlord and tenant perspectives for a given parcel. This is adopted in this research, as the use of a snowball method of sampling allows for the gathering of information from both parties (Rainey et al., 2003).

Bryan et al. (2015) conducted a study in Ontario, Canada that involved nonfarmer landlords and whose aim was to provide an understanding of whether the landlord-tenant relationships impacted rental contract choice and/or the value of cash rent. They separated variables into four categories – social capital, landlord characteristics, tenant characteristics and land or market characteristics. Social capital was defined using two variables, a binary family relationship variable and a length of time variable. The family variable was chosen as a proxy for trust, assuming that family members involved in a rental contract share a relatively higher level of trust. The length of time variable, in years, was used to show experience between the landlord and tenant. Length of time was also used to represent trust and thus a higher level of social capital (Bryan et al., 2015). Their results showed no statistically significant relationship between rental rate and family relationship or length of lease. They maintain that social capital is reciprocal, in short, there is no reason to expect the landlord to give the tenant a reduced rate. They also found no statistically significant relationship between length of relationship and choice of contract. They did find that family members are less likely to cash rent, and this was statistically significant.

Taylor and Featherstone (2018) used data from a 2015 survey of Kansas farmers to determine the role social capital plays in farmland leasing relationships. The farmers were asked about their leasing relationships, the design of the land leases and characteristics of their landlord. The conceptual framework of their paper states that landowners face certain monitoring costs when working with any tenant, but this can fluctuate depending on the amount of social



capital, or trust, between the two. There are also potential search costs of finding a new tenant should the current one proves to be unfit. The idea is that the landowner will make certain tradeoffs when it comes to the rent they receive, given the monitoring costs (affected by where they live, their mobility, agricultural knowledge, etc.) and the search costs associated with finding a new tenant. Taylor and Featherstone's hypothesis was as social capital, measured by length of leasing relationship, increases, the rental rate paid by the current tenant will decrease (Taylor and Featherstone, 2018). Their conceptual model is explained in the next chapter as it is the basis for this research.

Taylor and Featherstone used multiple variables including the productivity of the land, lease length, a binary variable showing if the landowner and tenant are related, a binary variable showing if the landowner lives in the same county as their land and number of crop acres in the lease. The data were from a 2015 survey of Kansas Farm Management Association (KFMA) members. The average cash rent was \$64.71 per acre and the average lease length was 16.1 years. Almost one third of the landowners were related to the tenants. The results from the study showed that for every 100 percent increase in length of leasing relationship (in years) there was a 10 percent decrease in the rental rate paid versus market value. At the average rental rate paid, \$64.71 per acre, that results in a \$6.47 per acre discount. This statistically significant finding confirms the importance of social capital to rented agricultural land in Kansas. According to the USDA, there is strong potential for land to change hands in the coming years. It is important that both established and beginning farmers realize the significance of strong relationships with their landowners, as well as the next generation that may own the land (Taylor and Featherstone, 2018).

## Chapter 3 - Conceptual Model

The decision of which tenant to choose can be complex for a landowner. In some cases, there may be multiple tenants to choose from, all with varying motives. There are two types of lease that are most popular: fixed cash and crop share. A fixed cash lease allows for an exchange of a fixed dollar amount per acre, typically for a single growing season. This can create an issue for the landowner as that fixed amount is not based on profitability or production, rather it just gives the tenant access to the ground. However, with this type of lease, there is a possibility the tenant will not take good care of the land, as they only intend to farm it for a short period of time. There is opportunity for the tenant to overuse the nutrients in the soil and not replenish them because they do not own the ground or do not intend to use it in the next growing season. There is also opportunity for the tenants to neglect other features of the land, such as fences or terraces, and fail to ensure they are in the same condition as when they first gained access.

For the landowner, this creates a problem of monitoring costs. Landowners who live close to the land may have the chance to check up or keep tabs on their tenants, but those living further away, outside the county or even the state, may encounter issues. These costs are monitoring costs and can be said to be non-zero for the landowner. This is regardless of where they reside and will likely be higher the further away the landowner lives (Taylor and Featherstone, 2018).

The conceptual framework for a landowner's choice in tenant can best be explained by using a utility maximization model. This comes from Taylor and Featherstone's (2018) paper on the value of social capital.

$$\max U = U(r, l(m)) \quad (1)$$

Where  $r$  is the market rental rate for cropland,  $l$  is the long run, intrinsic productivity of the cropland and  $m$  is the cost of monitoring a tenant's behavior in terms of long run value of the cropland, such as soil nutrients and other characteristics.

The landowner can maximize utility by trading a higher rental rate against monitoring costs to preserve the long run value of the land. There is the chance that the tenant will offer a very high cash rent but overuse the land and deplete the nutrients because they only intend to farm the cropland for a single growing season.

This is where social capital may be useful, an alternative to monitoring cost is a level of social capital or trust between the tenant and landowner. This is represented by  $s$  and is typically the result of a relationship built over time. The sign of the social capital coefficient is positive for the current tenant as the landowner has had the opportunity to see how they manage and take care of the land over the years. The presence of social capital allows the monitoring costs to decrease for the current tenant. The equation can be seen below:

$$\frac{\delta m}{\delta s_a} < 0 \quad (2)$$

where  $m$  is the monitoring costs and  $s_a$  is the social capital of tenant **a**, the current tenant. An alternative to reduce monitoring costs is to search for a new tenant (b), one that would require less monitoring time and effort because they already have a proven record of land preservation.

This proven record, along with other forms of reference from previous landlords can be used in place of social capital and results in Equation 1 being rewritten as follows:

$$\max U = U \left( r, l(m(s, n)) \right) \quad (3)$$

where  $n$  is the search costs associated with finding a new tenant.

To decrease monitoring costs in this equation though, a higher level of search cost is required:

$$\frac{\delta m}{\delta n_b} < 0 \quad (4)$$

where  $n_b$  is the search cost for the new tenant, **b**. The current tenant, **a**, has positive social capital as they have a relationship with the landowner, and the search costs are assumed to be zero because they are already in an agreement. For the potential tenant, **b**, the social capital is assumed to be low because there is no existing relationship or trust and the search costs are thought to be positive as the landowner will use time and effort to find and select a new tenant.

The landowner's choice can be made by analyzing two key points, the returns to their land,  $r$  and the monitoring costs,  $m$ . Under the assumption that monitoring costs are equal to the search costs plus social capital, the landowner will likely choose the tenant that maximizes the returns on their land  $R$ , as follows:

$$R_a = r - [s_a + n_a] \geq R_b = r - [s_b + n_b]. \quad (5)$$

The returns to the landowner for either tenant are simply a function of rental rate paid minus the monitoring costs. The current tenant will be chosen if the social capital they possess is less than or equal to the projected cost of searching for, vetting and selecting a new tenant. The existence of positive search costs for a new tenant may allow the current tenant to pay below market rate and continue leasing the land.

In simple terms, Taylor and Featherstone's study, as well as this study, look at the value of the social capital variable and how strongly it effects the tenant's ability to pay below market value because of the current leasing relationship and the associated costs with finding a new tenant.

## **Chapter 4 - Survey Methods and Data Collection**

This chapter will focus on the survey methods used to collect the data needed to determine the effect of social capital on farmland leasing relationships. In order to collect this information a paper survey was used. The sample consisted of Kansas farmers who were Kansas Farm Management Association (KFMA) members and the respective landowner of their largest lease.

### **4.1 Survey Creation**

The survey was designed by Dr. Mykel Taylor (Kansas State University), Dr. Leah Palm-Forster (University of Delaware) and Dr. Simanti Banerjee (University of Nebraska – Lincoln). Each survey was approximately 16 pages long and asked questions about Farmland Owned, Farmland Leased, Choice Experiment of Lease Scenarios, and Demographic Information in four separate sections.

From the review of the literature, there were certain questions that researchers knew would be important such as length of lease, the type of relationship the landowner and tenant had (family, friend, business only, etc.), landowner gender, distance from the rented ground, contract type and quality or productivity of the ground. Demographic questions including highest level of education, marital status and proportion of household income earned through farming were included. Other questions about risk preferences, opinions on conservation and other farm management practices were also asked in hopes of learning more about the relationship shared between landowners and tenant.

The survey was split into four sections, with the sections about farmland leased (B) and the demographic information (D) being used most heavily in analysis. Sections B and D of the tenant survey can be found in Appendix A.

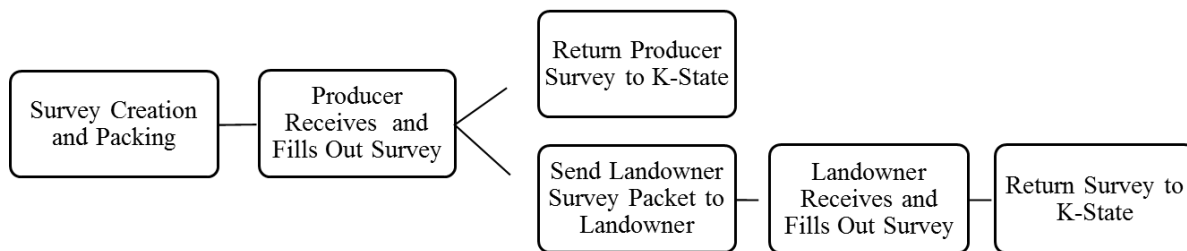
Photos of the survey packets can be found in Appendix B. Each return envelope had a number on it so that each survey could be identified by version letter and number. There were 166 surveys of version A – E and 165 surveys of version F – L.

## **4.2 Selection of Respondents**

The Kansas Farm Management Association (KFMA) works with farmers and their families by providing access to economists that work cooperatively with the families to disperse production and financial management information for use in decision making. This information can come in many forms, for example: on-farm visits, financial benchmarking comparing performance with similar size farms, year-end tax planning and guidance for business entity and structure planning. Because of the wide variety of offerings, KFMA is able to reach almost 2,000 producers in Kansas. Using the KFMA member list, surveys were sent to producers who were then asked to forward a second survey on to the landowner of their largest lease.

## **4.3 Method of Dispersion**

Snowball sampling is a convenience mechanism that involves collecting a sample from a population in which a standard sampling approach is not possible or is unreasonable from a financial standpoint (Handcock and Gile, 2011). Snowball sampling can help researcher find a group of people who may otherwise not be reachable directly by the researcher. With the goal of surveying leasing information on both sides of the relationship, KFMA producers and their landlords were needed. Producers were sent a packet that included a survey, a return envelope and one dollar, as well as a second prepared packet that included a landowner survey, a return envelope and one dollar. The producers were asked to send the landowner packet to the landlord of their largest lease by acres. A diagram of the dispersion can be seen below as Figure 4.1.



**Figure 4.1: Survey Dispersion Diagram**

The purpose of this snowball method was to have matched pair surveys from the producer and landlord perspectives on farmland leased and operated, conservation practices and rental agreement details. This would allow for an analysis of the impact of the relationship. This was mentioned by Rainey et al. (2003) in their paper, calling a sample of both landlord and tenant results an “ideal sample”. While there were not enough matched pairs (tenant and matching landlord) returned that selected cash lease as their contract type to be useful in this research, this proved to be doable and in further research could be tried again.

An initial contact letter was sent in early January 2018, letting KFMA members know that a survey would be sent to them shortly. The surveys were sent out in late January of 2018. Approximately 1,985 survey packets were sent during a one week period. With responses coming in from the first week of February until mid-May. A reminder letter and postcard were sent to members who had not sent back a survey in mid-April that asked them to send back surveys if they had them and asked if they would like a new survey sent to them. There were 74 responses from the postcards, with 43 of them requesting a new survey and the remainder choosing not to participate. Response collection concluded mid-May and surveys were then double entered by Kansas State Department of Agricultural Economics graduate students using

an online tool created to mimic a virtual version of the survey. The data were entered into an Excel database and then cleaned in three phases. Initial cleaning took place by the creator of the online tool, checking for simple errors such as misspelled county names or missing responses. Further cleaning was performed to eliminate data entry error and inaccurate responses. In some cases, responses were checked against the paper surveys to be sure unusual responses were accurate.

#### **4.4 Response Rate and Selected Variables**

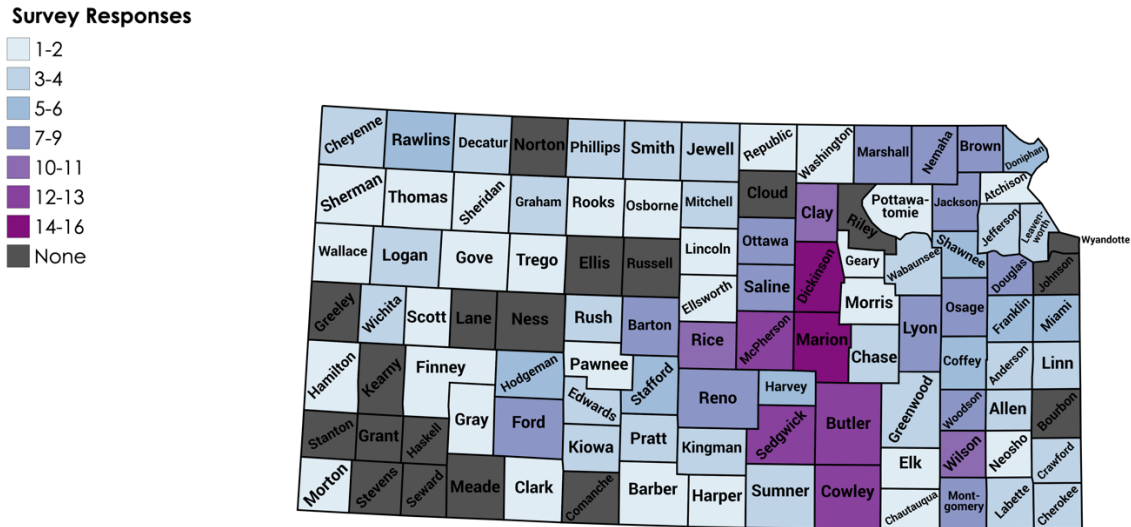
In total, 518 producer surveys and 405 landowner surveys were returned for a response rate of 26% for producers and 20% for landowners. The variable definitions for selected variables can be found in Table 4.1. The dependent variable is the cash rental rate. Selected independent variables are split into four categories similar to the Bryan et al. (2015) study that found social capital, tenant characteristics, landlord characteristics and land, or market, characteristics influence the cash rental rate. Social capital includes a relationship variable, specifically if the landowner and tenant are family, how long the landowner has been leasing to the tenant and the number of acres in that lease. Landlord characteristics include if the landlord is a retired farmer, if the landowner inherited the land (versus purchasing it), if the landowner is a female (as identified by the producer) and if the landowner lives locally, defined as on the farm or in the same county. The tenant characteristic included is the tenant's years of farming. Land characteristics that inherently influence rental rate include productivity of the land and a fixed effect variable that accounts for location, soil type and elevation.



**Table 4.1 Variable Definitions**

<b>Variable</b>	<b>Definition</b>
<b>CashRent</b>	1 if a rental contract is cash rent
<b>RentalRate</b>	\$ per acre
<b>lnRent</b>	Natural log of RentalRate
<b>Social Capital (R)</b>	
FamilyRel	1 if tenant considers landlord family
FriendAcquaint	1 if tenant considers the landlord a friend or an acquaintance
NeighborRel	1 if tenant considers the landlord a neighbor
BusinessRel	1 if the tenant considers the relationship with the landlord business only
LeaseLength	Number of years land has been rented
LeaseAcreage	Number of acres in the largest lease
lnAcreage	Natural log of LeaseAcreage
lnLeaseLength	Natural log of LeaseLength
<b>Landlord Char. (L)</b>	
LO_RetiredFarmer	1 if yes, landlord is a retired farmer – tenant’s perspective
Inherit	1 if yes, landlord inherited the land – tenant’s perspective
LO_Female	1 if yes, landlord is a female – tenant’s perspective
LO_Local	1 if yes, landlord lives on the farm or in the same county – tenant’s perspective
<b>Tenant Char. (T)</b>	
YearsFarming	Producer’s years of farming experience
lnYearsFarming	Natural log of YearsFarming
<b>Land Char. (M)</b>	
Productivity	Average of Corn, Soybean and Wheat Yields/County Average Yields
lnProductivity	Natural log of Productivity
NW	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 10
WC	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 20
SW	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 30
NC	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 40
C	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 50
SC	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 60
NE	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 70
EC	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 80
SE	National Agricultural Statistics Service – Agricultural Statistics District (ASD) - 90

**Figure 4.2: Survey Response Map**



Using a mapping software, a color-coded map of tenant survey responses was created (<https://mapchart.net/usa-counties.html>). Figure 4.2 serves as a visual representation of where in the state the responses came from. Surveys were sent to 102 of the 105 counties in Kansas, with Stanton, Stevens and Seward not surveyed. Nineteen counties had zero surveys returned, those are shown in dark grey on the map above. Over 60% of counties had between one and four responses and 10% had ten or more responses. Dickinson County had the most responses with 16 and Marion County had 14 returned surveys.

## Chapter 5 - Model Development and Data

This chapter presents summary statistics, explanation of the variables chosen, and the empirical model used to analyze the survey data. The survey responses were analyzed using an ordinary least squares (OLS) regression with the selected variables defined in Chapter 4. Two different models were estimated using the full set of producer data, one with the *Inherit* variable and one without the *Inherit* variable.

### 5.1 Use of OLS Regression and Multiple Models

As seen in the literature certain variables are thought to influence rental rate paid. These can include lease length and family relationships, but others may play a role as well. An ordinary least squares (OLS) regression model was used to measure how closely the variables chosen are to those that actually impact the rental rate paid. Two models were estimated, the first empirical model is below:

$$\begin{aligned} \ln Rent = & \alpha + \beta_1 FamilyRel + \\ & \beta_2 FriendAcquaint + \beta_3 NeighborRel + \beta_4 BusinessRel + \beta_5 \ln Acres + \\ & \beta_6 \ln LeaseLength + \beta_7 LO_{RetiredFarmer} + \beta_8 LO_{Female} + \beta_9 \ln YearsFarming + \\ & \beta_{10} LO_{Local} + \beta_{11} \ln Productivity + \beta_{12} NW + \beta_{13} WC + \beta_{14} SW + \beta_{15} NC + \\ & \beta_{16} SC + \beta_{17} NE + \beta_{18} EC + \beta_{19} SE \end{aligned} \quad (1)$$

In the second model, the *Inherit* variable is left out. The idea is that when farmland changes hands, the previous relationships and social capital that has been built is then lost and the new landowner and tenant must rebuild that relationship. In the second model, *Inherit* is added to the regression to test this hypothesis. The second model can be found below:

$$\begin{aligned} \ln Rent = & \alpha + \beta_1 FamilyRel + \\ & \beta_2 FriendAcquaint + \beta_3 NeighborRel + \beta_4 BusinessRel + \beta_5 \ln Acres + \\ & \beta_6 \ln LeaseLength + \beta_7 LO_{RetiredFarmer} + \beta_8 LO_{Female} + \beta_9 \ln YearsFarming + \\ & \beta_{10} LO_{Local} + \beta_{11} \ln Productivity + \beta_{12} NW + \beta_{13} WC + \beta_{14} SW + \beta_{15} NC + \\ & \beta_{16} SC + \beta_{17} NE + \beta_{18} EC + \beta_{19} SE + \beta_{20} Inherit \end{aligned} \quad (2)$$

## 5.2 Data and Summary Statistics

The dependent variable is the cash rental rate. *CashRent* is a binary variable indicating that the lease type is cash rent. *RentalRate* is the dollar per acre price paid by the tenant to the landowner and *lnRent* is the natural log of *RentalRate* in order to make interpretation post-regression more straightforward. The use of log-log regression coefficient estimates allows the coefficients to be interpreted as elasticities.

There are six social capital variables: (1) a binary family relationship variable named *FamilyRel*, (2) a binary variable indicating a friend or acquaintance relationship named *FriendAcquaint*, (3) a binary variable indicating if the tenant and landowner were neighbors named *NeighborRel*, (4) a binary relationship indicating if the relationship is business only named *BusinessRel*, (5) a variable indicating the number of years the land has been leased from the landowner to the current tenant named *LeaseLength* and (6) *LeaseAcres* indicating the number of acres leased from the landowner to the tenant. Both *LeaseLength* and *LeaseAcres* were estimated as the natural log.

There are four landlord characteristic variables: (1) *LO\_RetiredFarmer* a binary variable stating the landlord is a retired farmer from the tenant's perspective, (2) *Inherit* a binary variable if the landowner inherited their land, versus purchasing it, (3) *LO\_Female* a binary variable for if the landowner is a female and (4) *LO\_Local* which is a binary variable for if at least one landowner the producer works with lives on the farm or in the same county as the rented land. There is one tenant characteristic variable: (1) *YearsFarming* indicating the producer's years of farming experience. *YearsFarming* was estimated as the natural log.

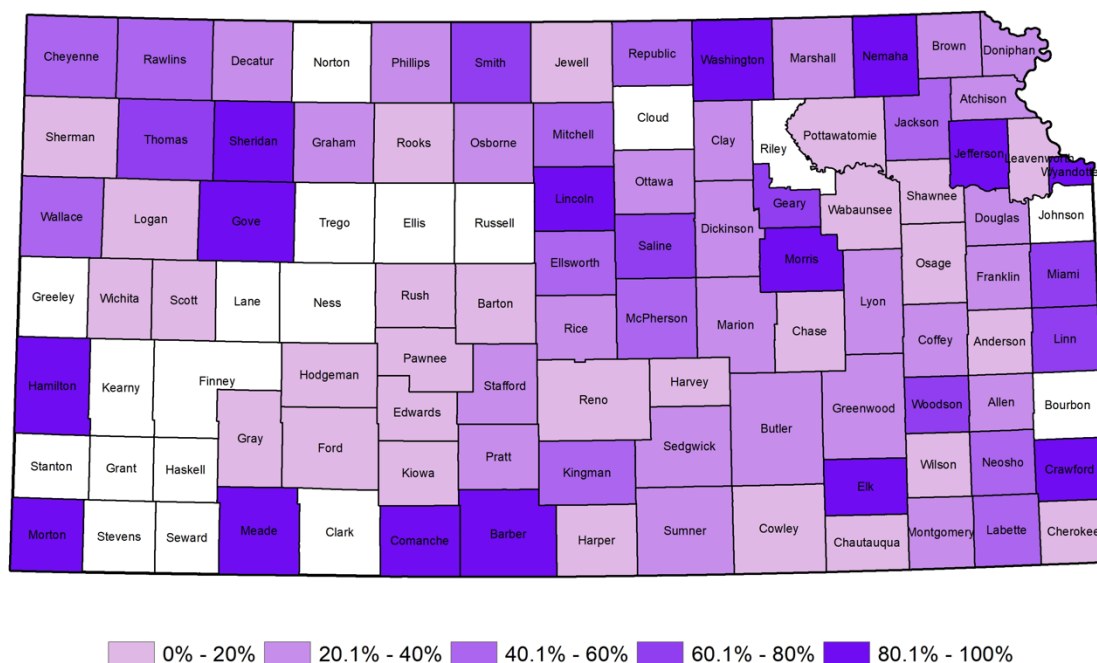
Finally, there are land characteristic variables: (1) *Productivity*, a weighted average of the corn, soybean and wheat yields for the farm divided by the county average yields from USDA

NASS and (2) fixed effect variables for each USDA NASS geographical region to account for differences in location, soil type, rainfall, elevation, etc.

To interpret the results for binary variables, the coefficients were transformed according to Feathertsone et al. (1993) that states that when the dependent variable is logged, a transformation must occur. This transformation is:  $g_j = \exp(c_j) - 1$ , where  $c_j$  is the estimated coefficient.

The summary statistics for the selected producer data set, which consisted of 101 observations, can be found below in Table 5.1. Summary statistics not included in the selected variable set include the average producer being almost 58 years old with the average landowner age being 72 years old. Only cash rent leases were used in the analysis because they were the only ones that provided a rental rate paid to the landowner. However, for the complete producer data set, crop share was the lease type selected most often at 60%, with 35% being cash rent and the remaining 5% being flex leases. Figure 5.1 below shows the percentage of cash rent leases across the state, as compared to the total leases for that county. This serves as a visual representation of the fact that crop shares tend to be more prevalent in most counties in Kansas. The darker the county, the higher percentage of leases in the county are cash rent.

**Figure 5.1 Percent of Cash Rent Leases Compared to All Leases**



The table below shows that the average cash rental rate is \$65.41 an acre but that can vary across the state, and by crop type and land type (irrigated vs. non-irrigated), it can be as low as \$20 and as high as \$250 per acre. The average number of acres rented in the producer's largest lease was 441 acres. The average relationship lasted a little over 16 years and is not unexpected given the theory that most tenants and landowners stay in relationships for long periods of time. This is further seen with the longest lease spanning 50 years. When asked about what type of relationship the tenant had with the landowner, 44% said there was a family relationship, 40% said they were friends or acquaintances, 21% said they were neighbors and 14% said the relationship was business only – it should be noted that respondents were allowed to check all the relationships that apply. Producers said that 46% of their landowners are retired farmers and almost 28% of the landowners are female. It can also be seen that 57% of the landowners are

thought to have inherited at least part, if not all, of the land they lease out. Producers said that 86% of their landowners live locally meaning on the farm or in the same county as the land.

On average, the tenants have 36 years of farming experience with some having close to double that, the maximum being 66 years. The average productivity rating was 106% with 100% meaning that the tenant met the county average for yields on soybeans, wheat and corn. The Central, South Central, East Central and South East districts had the most observations with 60 percent of the responses.

**Table 5.1 Summary Statistics for Producer Data with Cash Leases**

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Minimum</b>	<b>Maximum</b>
<b>RentalRate</b>	65.419	33.090	20	250
<b>lnRent</b>	4.084	0.418	2.995	5.521
<b>Social Capital (R)</b>				
FamilyRel	0.445	0.498	0	1
FriendAcquaint	0.406	0.493	0	1
NeighborRel	0.210	0.409	0	1
BusinessRel	0.140	0.349	0	1
LeaseLength	16.031	11.434	1	50
LeaseAcreage	441.611	407.677	18	2160
lnAcreas	5.708	0.906	2.890	7.677
lnLeaseLength	2.451	0.900	0	3.912
<b>Landlord Char. (L)</b>				
LO_RetiredFarmer	0.460	0.500	0	1
Inherit	0.570	0.496	0	1
LO_Female	0.289	0.455	0	1
LO_Local	0.867	0.340	0	1
<b>Tenant Char. (T)</b>				
YearsFarming	36.148	14.909	3	66
lnYearsFarming	3.457	0.588	1.098	4.189
<b>Land Char. (M)</b>				
Productivity	1.064	0.312	0.127	1.820
lnProductivity	0.003	0.393	-2.061	0.599
NW	0.085	0.281	0	1
WC	0.015	0.124	0	1
SW	0.039	0.194	0	1
NC	0.101	0.303	0	1
C	0.171	0.378	0	1
SC	0.132	0.340	0	1
NE	0.125	0.332	0	1
EC	0.148	0.356	0	1
SE	0.171	0.378	0	1



## Chapter 6 - Results and Discussion

The complete results from the analysis can be found in tables 6.1 and 6.2. Highlighted below are statistically significant findings that show the value of social capital on rental rate. As a reminder, the coefficients for binary variables were transformed, as they cannot be interpreted as elasticities without this change (Featherstone et al., 1993).

In the first analysis, the length of the lease is found to be statistically significant with a 9% discount on the rental rate as compared to market value for every 100% increase in lease length. This could mean a relationship that has successfully lasted from year one to year two or one that has existed from 5 years to 10 years. At the average rental rate of \$65.41 an acre, the discount amounts to \$5.88 per acre. For a 100 acre lease, this could amount to a savings of almost \$600, a sum that could especially benefit a young or beginning farmer.

In the second analysis, a variable to indicate whether or not the landowner inherited the land is included. The hypothesis is that when a new landowner inherits land, the previous relationship and social capital is lost, and the tenant must begin the relationship again. This land could be passed to a child or grandchild or could simply change hands to a brother or sister of the previous landowner. It is seen that if the landowner inherited the land there is an 15% discount on the rental rate as compared to market value. This was statistically significant, however when *Inherit* is included, *LeaseLength* is no longer statistically significant at the 95% confidence interval, indicating that the length of the lease and the discount associated with the relationship is already being accounted for in the *Inherit* variable. This 15% discount amounts to \$9.81 per acre and again using a 100 acre lease, this leads to a very sizable savings of almost \$1000. This, combined with the fact that the average acreage for these leases was 441 acres, indicates both discounts could prove to be key components for successful farmers, young and old.

In both analyses the variable *Production* is also found to be statistically significant and positive, as expected, because the rental rate on farmland is often a function of profitability. Better land is going to bring a higher rental rate, in this case, up to 40% percent above market value can be expected.

The other variables included, while not statistically significant, may still impact rental rate. A family relationship may be thought to be another form of social capital, whether it is a son or daughter renting ground from their parents or a brother or sister renting from one of their siblings. There is the idea that this relationship holds some value. This variable was placed into the social capital category and is found to be negative, indicating a discount but at a very small value. Other relationships such as friend, acquaintance, neighbor or business only were also thought to have value, however they all proved to have positive, indicating they would result in a higher rental rate if present. These results were not statistically significant in either regression. There was also indication that if the landlord was a retired farmer or female, they may provide discounts to the tenant, again they were not statistically significant, but do seem to be possibilities for discounts.

Certain agricultural districts were found to have statistically significant differences as compared to the Central district that was removed to control for collinearity. Those two districts were the Southwest district with a significant 75% lower rental rate as compared to the Central district and the Northeast district which was found to have a 55% higher rental rate as compared to the Central district. While this doesn't match exactly to what is reported in the most updated rental rate research for Kansas, the same concept holds that the Northeast district has the highest rental rate and the Southwest district holds the lowest (Taylor, 2019).

**Table 6.1 OLS Regression One with Producer Data**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>P-Value</b>	<b>Transformation</b>
<b>lnLeaseLength</b>	-0.090*	0.044	0.048	-
<b>FamilyRel</b>	-0.050	0.111	0.652	-0.048
<b>FriendAcquaint</b>	0.011	0.096	0.903	0.011
<b>NeighborRel</b>	0.061	0.096	0.523	0.062
<b>BusinessRel</b>	0.061	0.129	0.635	0.062
<b>lnAcres</b>	0.048	0.045	0.289	-
<b>P_RetiredFarmer</b>	-0.003	0.070	0.959	-0.002
<b>Inherit</b>	-	-	-	-
<b>LO_Female</b>	-0.001	0.074	0.981	0.000
<b>LO_Local</b>	0.050	0.108	0.646	0.051
<b>lnYearsFarming</b>	0.007	0.064	0.913	-
<b>lnProductivity</b>	0.404*	0.089	0.000	-
<b>NW</b>	0.058	0.138	0.674	-
<b>WC</b>	0.167	0.245	0.498	-
<b>SW</b>	-0.771*	0.204	0.000	-
<b>NC</b>	0.077	0.137	0.577	-
<b>SC</b>	-0.161	0.128	0.210	-
<b>NE</b>	0.598*	0.115	0.000	-
<b>EC</b>	0.025	0.106	0.814	-
<b>SE</b>	-0.064	0.108	0.555	-
<b>Intercept</b>	3.930*	0.365	0.000	-
Dependent Variable: ln(Rent)				
Observations: 101		$R^2 = 0.5658$		

Note: \* represents significance at the 95 percent confidence interval

**Table 6.2 OLS Regression Two including Inherit with Producer Data**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>P-Value</b>	<b>Transformation</b>
<b>lnLeaseLength</b>	-0.071	0.044	0.113	-
<b>FamilyRel</b>	-0.055	0.108	0.610	-0.053
<b>FriendAcquaint</b>	0.011	0.093	0.903	0.011
<b>NeighborRel</b>	0.082	0.094	0.381	0.085
<b>BusinessRel</b>	0.070	0.125	0.576	0.072
<b>lnAcres</b>	0.028	0.044	0.531	-
<b>P_RetiredFarmer</b>	-0.051	0.071	0.475	-0.049
<b>Inherit</b>	-0.163*	0.070	0.023	-0.150
<b>LO_Female</b>	-0.018	0.072	0.803	-0.017
<b>LO_Local</b>	0.051	0.105	0.629	0.052
<b>lnYearsFarming</b>	-0.008	0.062	0.892	-
<b>lnProductivity</b>	0.379*	0.087	0.000	-
<b>NW</b>	0.074	0.135	0.581	-
<b>WC</b>	0.238	0.241	0.326	-
<b>SW</b>	-0.744*	0.199	0.000	-
<b>NC</b>	0.085	0.134	0.524	-
<b>SC</b>	-0.140	0.125	0.264	-
<b>NE</b>	0.546*	0.114	0.000	-
<b>EC</b>	-0.009	0.104	0.927	-
<b>SE</b>	-0.077	0.105	0.467	-
<b>Intercept</b>	4.179*	0.371	0.000	-
Dependent Variable: ln(Rent)				
Observations: 101		$R^2 = 0.5930$		

Note: \* represents significance at the 95 percent confidence interval

## Chapter 7 - Conclusions

Relationships are important in many industries. The agricultural industry is especially reliant on relationships because of the nature of the work. Farmers rely on people who sell seed, fertilizer and farm equipment, as well as extension agents and soil scientists to provide helpful information. Farmers also form relationships with those who they rent or buy land from. All of these relationships produce social capital. Social capital has a variety of definitions but can simply be described as “a person or group’s sympathy or sense of obligation for another person or group” (Robison et al., 1999).

This study set out to identify and quantify the effects of social capital in farmland leasing relationships. More specifically, does a long-term leasing relationship or a close relationship with a landlord influence the rental rate paid by the tenant? Additionally, are there other characteristics of the relationship between tenants and landlords that impact the rental rate paid such as if the landlord is male or female, retired farmer or not or the tenant’s farming experience?

To collect data for this analysis a survey of KFMA members was performed in January 2018. The survey was sent to tenants and they were asked to send a second survey onto the landowner of their largest lease. The survey asked questions about land the tenants own and land they lease, as well as demographic information. The landowner survey asked for complementing information. The data was analyzed using two OLS regression models.

The results from the first model showed that doubling lease length, for example going from a one year relationship to two or from five years to ten, resulted in a 9% discount on rental rate as compared to market value. A second model showed that if the landlord inherited the land, versus buying it there was almost a 15% discount on rental rate as compared to market value. Productivity of the land also proved to be a driving factor in rental rate, but that is not

uncommon as the idea is that the rental rate itself is derived from the expected productivity of the land. If history shows the land to be productive, the landowner should be able to market it as such and thus charge a higher rental rate. There were also fixed effects relating to the location of the land. NASS agricultural statistic districts were used to account for changes in soil types, elevation, rainfall and other characteristics specific to where the land was located.

These findings are important for a few reasons. First, the hypothesis that a longer leasing relationship results in higher social capital and a lower rental rate is confirmed. The relationships that farmers build in year one are just as important as maintaining those relationships in year fifteen. These relationships translate into social capital and eventually potential savings. The second hypothesis, that when farmland changes hands by passing on to the next generation i.e. inherited, not sold, the previous social capital is lost, is found to not be true. It is seen that when a new landowner inherits land, the relationship built by the first landowner and the tenant is carried over to the new landowner and the discount may actually increase. This could be because the new landowner has little knowledge of the farm or are a generation or further removed from the farm and simply keeps the same agreement in place. Alternatively, it could be because they did not purchase the land, so there is less incentive to charge the market rate because they don't have to make payments to the bank, they already own the land outright.

The findings also present a unique opportunity to better educate farmers and landowners in current leasing relationships and to prepare them to build relationships in the future. Farmers that currently depend on leased land need to be aware of the value of social capital and what it means for their current business strategies, as well as being aware of what happens when the land they currently lease changes hands. Knowing how to have successful conversations and a plan in place is important and should be emphasized by extension agents and other outreach materials. It is also important for young and beginning farmers to understand how social capital can be

utilized when they are lacking other forms of capital. Investing in strong relationships with landowners can be the first step into a successful farming venture and can prove to be of value for many years. The relationships formed by tenants both young and old can turn into longer leasing relationships and being selected for leases not because they can produce the highest bid, but because they take care of the land and have rapport with the landowner.

Finally, it should be noted that there were limitations to this research, first, the goal of using a matched pair data set was unable to be achieved, as not enough respondents from the matched pair group use a cash lease. This resulted in only using producer data, which included using the producer's perspective for variables such as if the landowner is a retired farmer, if they are female, how they obtained the land and if they are local. Another limitation is that only producers and landowners in Kansas were surveyed. The relationships between tenant and landowner in Kansas may differ as compared to other states, this is proven by the fact that the results of this study were different than those of the Bryan et al. (2015) study performed in Ontario, Canada. In future research, more emphasis should be placed on obtaining the matched pair data set, using the snowball method it proved to be doable, and in the future should be tried again. This would allow for landlord characteristics to come directly from the landlord, as well as confirm the responses of both the tenant and landlord for a single parcel of land.

In conclusion, relationships do matter in farmland leasing and in some cases maintaining relationships for a long period of time can result in a discounted rental rate.

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## Appendix A - Survey Instruments – Tenant Version



### Producer/Tenant Questionnaire

A SURVEY OF YOUR OPINIONS



*The **goal** of this research is to understand tenants' and landowners' opinions about agricultural management and their interest in participating in Farm Bill programs. Results will help to identify ways to improve programs for long-term agricultural profitability and environmental sustainability.*

**Your opinions matter! Please help us learn from you by completing this questionnaire.**

***Remember, all individual responses are anonymous and confidential.***

**Thank you** for taking our survey. You are helping to inform the design of future Farm Bill Programs that better reflect the views and concerns of producers and landowners in Kansas.

## WHO SHOULD FILL OUT THIS SURVEY?

Do you grow grain crops (*ex. corn, soybeans, wheat*) on land that you own or land that you lease?

- ☐ NO    ➡ If "NO," we do not need you to complete this survey, but it is very important for us to know that you received this questionnaire. Please return this questionnaire to us using the postage-paid envelope provided. Thank you!
- ☐ YES    ➡ If "Yes," please continue to the next question.

Do you consider yourself mainly a **landlord** (you lease your land to another producer) or a **tenant/producer** (you grow crops on land that you own and/or lease)?

- ☐ I am mainly a **landlord**    ➡ Please complete the enclosed purple "Landowner Survey." Using the postage-paid envelope provided, please send this survey to the producer who leases the largest amount of land from you.
- ☐ I am mainly a **tenant**    ➡ Please answer the following question and then continue to Section A on the next page.

Q1

How many total acres do you operate, including land that you own and lease?  
\_\_\_\_\_ # of acres of grain crops    \_\_\_\_\_ # of acres of hay or pasture

### Please help us complete this project by taking two actions:

**Step 1:** After completing this questionnaire, please use the pre-addressed and stamped envelope to return the questionnaire to us at:  
331 Waters Hall Manhattan, KS 66506.

**Step 2:** If you lease farmland from someone else, please seal, address, and mail the enclosed purple, postage-paid questionnaire to the landowner of your largest lease (in acres).

## SECTION B-1: FARMLAND YOU LEASE

**B1**

Do you produce crops on land that you lease from someone else?

- ☐ NO    ➡ If 'NO', please skip the next section and move to Section C
- ☐ YES   ➡ If 'YES', please continue with Section B-1 and B-2

**B2**

How many acres of farmland did you lease from someone else in 2017?

\_\_\_\_\_ # of acres of grain crops    \_\_\_\_\_ # of acres of hay or pasture

**B3**

How many landlords did you have across all of the land that you leased? \_\_\_\_\_

**B4**

How many of those landlords live in the following locations

(please enter the number of your landlords living at these locations):

- \_\_\_\_\_ live on their own farmland
- \_\_\_\_\_ live off the farm, but in the same county as their farmland
- \_\_\_\_\_ live in the same state, but in a different county than their farmland
- \_\_\_\_\_ live outside of the state in which they own their farmland

## SECTION B-2: YOUR LARGEST LEASE

Please answer the following questions about cropland in your largest lease (in acres).

→ In this section, we want to know about your lease with the most acreage.

**B5**

How many acres of cropland is in your largest lease? \_\_\_\_\_ acres

**B6**

In which county and state is your largest lease located? \_\_\_\_\_ (Co.) \_\_\_\_\_ (State)

**B7**

How far away from your house is the land in your largest lease? \_\_\_\_\_ miles

**B8**

Who do you lease this ground from?

- ☐ Individual   ☐ Family   ☐ Trust   ☐ Other \_\_\_\_\_ (please specify)

**B9**

If leasing from an individual, what is your landowner's age and gender?

\_\_\_\_\_ Approximate age   ☐ Male   ☐ Female   ☐ Prefer not to answer

**B10**

Is this landowner a retired farmer/rancher?   ☐ Yes   ☐ No

**B11** Which best describes your relationship with this landowner? (check all that apply)  
☐ Family ☐ Friend ☐ Neighbor ☐ Acquaintance ☐ Business only

**B12** How did this landowner obtain this land? ☐ Inherit ☐ Purchase ☐ Not sure

**B13** How long have you been leasing from this person/entity? \_\_\_\_\_ years

**B14** How often do you meet or interact with the landowner of your largest lease to discuss issues related to the land that you lease from them?  
☐ Less than once per year ☐ 2-4 times per year  
☐ Once per year ☐ 5+ times per year

**B15** Contract type for your largest lease: ☐ Crop share ☐ Fixed cash ☐ Flex lease  
 If you pay rent, please answer the 4 questions below.

- What was the cropland rent for 2017? \$ \_\_\_\_\_ per acre of cropland
- Number of installments** in which rent is paid: \_\_\_\_\_
- In which year** was this rental rate negotiated? \_\_\_\_\_
- In which year** will you negotiate the next rental rate for this lease? \_\_\_\_\_

**B16** List the top 3 crops that you grew in 2017 on land in your largest lease?

Crop Name Please write double cropped acreage on one line, Example: wheat / soybeans	# Total Acres	# of acres irrigated	Yield (bushels/acre)	% share of crop yield going to landlord
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Fallow land (not in production)	_____	_____	n/a	n/a

**B17** What proportion of the cropland in your largest lease is tile drained? \_\_\_\_ (%)

**B18** Are any of the following production costs shared between you and the landowner of the acreage in your largest lease?

	No	Yes	If yes, what % of costs are paid by the landlord yearly?
Fertilizer	<input type="checkbox"/>	<input type="checkbox"/>	_____
Chemicals (herbicide, fungicide, insecticide, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other input ( <i>please specify</i> ) _____	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other input ( <i>please specify</i> ) _____	<input type="checkbox"/>	<input type="checkbox"/>	_____

**B19** What is a typical 5-year crop rotation on the biggest field in your largest lease?

\_\_\_\_\_

**B20** Are you aware that there are federal and state conservation programs that can help support the use of environmentally-sustainable management practices on land that you lease? ☐ Yes ☐ No

**B21** How does the landowner of your largest lease feel about conservation programs and environmentally sustainable management practices?

- ☐ This landowner requires that I use certain conservation management practices.
- ☐ This landowner is in favor of conservation, but does not require specific practices.
- ☐ This landowner is indifferent regarding conservation management practices.
- ☐ This landowner is opposed to me using conservation management practices.
- ☐ I do not know my landowner's motivations regarding conservation management practices.
- ☐ Other (Please specify) \_\_\_\_\_

**B22****Is the land in your largest lease enrolled in any of the following programs?**

No

Yes

**If yes, how many acres?**

Conservation Stewardship Program (CSP)

☐☐

Environmental Quality Incentives Program (EQIP)

☐☐

Conservation Reserve Program (CRP)

☐☐

Other conservation/environmental program

(please specify) \_\_\_\_\_

☐☐

Other conservation/environmental program

(please specify) \_\_\_\_\_

☐☐**B23****Do you use any of the following management practices on the land in your largest lease?**

No

Yes

**If yes, how many treated acres?**

Cover crops during the winter (ex: rye, radish, clover, etc.)

☐☐

Filter strips, riparian buffers, or grassed waterways

☐☐

Conservation tillage or no-till

☐☐

Control structures for subsurface drain water

☐☐

Nutrient management plan

☐☐

Wildlife / pollinator habitat restoration

☐☐

Other practices: (please specify) \_\_\_\_\_

☐☐

Other practices: (please specify) \_\_\_\_\_

☐☐

## SECTION D: QUESTIONS ABOUT YOU

**D1**

How many years have you been farming? \_\_\_\_\_ (Years)

**D2**

Are/were your parents or grandparents farmers?

☐ No    ☐ Yes, parents    ☐ Yes, grandparents    ☐ Yes, parents and grandparents

**D3**

What is the highest level of education you have completed?

☐ Less than 12 years                      ☐ Bachelor's degree  
☐ High school or GED                      ☐ Graduate degree  
☐ Associate's degree and/or technical training

**D4**

How strongly do you agree with the following statements?

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
By their choice of management practices, crop farmers can affect the environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Farmers have a responsibility to manage cropland in a way that protects their local environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel good about using management practices that improve the environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental stewardship only makes sense on my farm if it also contributes to income.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental stewardship makes sense on my farm because my neighbors and other family and community members do so.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Being an environmental steward is an important part of my identity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The landowner of my largest lease thinks that I should participate in conservation programs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I work closely with conservation agencies/groups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**D5**

Please rank the factors that influence your decisions about how you manage your owned and leased farmland (*1 = most important and 4 = least important*)

Owned      Leased

\_\_\_\_\_ Financial returns from the property

\_\_\_\_\_ Environmental stewardship

\_\_\_\_\_ Other; please specify \_\_\_\_\_

\_\_\_\_\_ Other; please specify \_\_\_\_\_

**D6**

Rate your willingness to take financial risks with respect to your farm operation on a 10-point scale, with 1=completely unwilling & 10=completely willing. (Circle one)

Completely  
unwilling to  
take risks

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

Completely  
willing to  
take risks

**D7**

What is your age and gender? \_\_\_\_\_ (Years)      ☐ Female    ☐ Male  
☐ Prefer not to answer

**D8**

What was your household's annual gross income in 2016? (mark one box)  
 Include pretax income from all sources (salary, wages, social security, rental properties, and investment income). This number can be found on IRS Form 1040.

☐ Less than \$25,000

☐ \$80,000 to \$99,999

☐ \$25,000 to \$49,999

☐ \$100,000 to \$149,999

☐ \$50,000 to \$79,999

☐ \$150,000 and above

**D9**

What proportion of your household's annual gross income was earned through farming? (mark one box)

☐ Less than 25%

☐ 25%-50%

☐ 50%-75%

☐ 75%-100%

**D10**

What is the primary source of income for your household? \_\_\_\_\_

**D11**

What is the 5-digit zip code of your current residence? \_\_\_\_\_

**Thank you for participating in this project!**

**Please help us complete this project by taking two actions:**

**Step 1:** After completing the questionnaire, please use the pre-addressed and stamped envelope to return it to us at 331 Waters Hall Manhattan, KS 66506.

**Step 2:** If you lease farmland, please seal, address, and mail the enclosed postage-paid questionnaire to the landowner of your largest lease (in acres).

If you have questions about this research or this questionnaire,  
please contact Dr. Mykel A. Taylor at  
(785) 532-3033 or by email at [mtaylor@ksu.edu](mailto:mtaylor@ksu.edu)

## Appendix B - Survey Packets

