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# Landlord Satisfaction with Arkansas Agricultural Land Agreements

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Landlord satisfaction levels with agricultural land-leasing agreements are examined with a 1998 sample of Arkansas landowners. Ordered probit models are estimated identifying which factors significantly affect satisfaction levels. Results indicate that the type of lease is not a significant determinant of landlord satisfaction levels. Proportion of landlord's income from leasing, tenant educational background, social capital variables, presence of irrigation equipment, and perceptions about the FAIR Act were found to significantly affect lease satisfaction in at least one of the three satisfaction models estimated. A comparison with an earlier study of Arkansas tenants indicates landlords have generally higher satisfaction levels.

**Key Words:** cropland contracts, landlord satisfaction, leasing, probit models

**JEL Classifications:** L14, Q12, Q24

Although leasing plays an important role in the structure of U.S. agriculture, the U.S. land leasing literature lacks extensive empirical analysis at the lease level, as noted by Bierlen and Parsch. Most existing research using U.S. data focuses on leasing contract design and the motivations for using specific leasing arrangements. Empirical analyses of U.S. leasing include Allen and Lueck (1992, 1993), Bierlen

et al., Brown and Atkinson, and Gwilliam. The scarcity of studies at the lease level is likely due to a lack of good lease-level data. Lease-level data are difficult to collect because of the private nature of the agreements and the highly localized markets within which they are negotiated. Also, Rainey et al. note the potential unwillingness of tenants and landlords to release proprietary information and the reluctance of data-collecting agencies to overburden potential respondents with numerous or long surveys.

The extent and continuation of leasing as an institution depend on adequate tenant and landlord satisfaction with leasing. A major shortcoming of most empirical leasing behavior studies that use data from individual leases is the lack of data about the landlord. Typically, data are gathered from tenants about their farming operation and personal characteristics. The landlords are not interviewed, and the only information gathered about them is through the tenant, which clearly could be

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subject to bias or simple ignorance. As the landowner and the second party in the lease, landlords are an important component in the leasing process.

Landlord satisfaction is important. In perfect markets, one would expect landlords to be satisfied because they can do no better than their present arrangement. However, land markets are local in nature and information about rental prices and land supply can be hard to obtain (Barry et al.). Lessees might be few. In addition, landlords can be distant from the property and not possess much knowledge about the parcel or agriculture in general. Information asymmetries between landlord and tenant might be present. Hence, dissatisfaction could arise and presage changes in contract type, terms, or ownership of the parcel. The objective of this study is to identify the determinants of landlord satisfaction. In particular, the question of whether lease terms or other factors are the more important determinants of satisfaction is explored.

An ideal sample would consist of data on both landlord and tenant for a given parcel. However, such data would be very difficult to gather because both parties would have to consent. In this study, data are obtained from a mail and telephone survey of landlords leasing land in Arkansas. As such, the sample provides a complementary study to that of Bierlen and Parsch, who used tenant data. However, the two samples are from distinctly different points in time (1998 versus 1991 in Bierlen and Parsch) and are not for the same parcels as in the prior study. The policy settings between the 1991 sample and the 1998 sample are quite different, too. The 1991 sample was for a policy regime characterized by target prices and deficiency payments. The 1998 sample was observed more than two and a half years after the passage of the Federal Agriculture Improvement and Reform (FAIR) Act of 1996. In addition, the 1991 farm economy was still recovering from the bust of the 1980s, whereas by 1998, the farm economy had recently experienced much better economic conditions. Schertz and Johnston advance the hypothesis that landowners benefited more than operators did from the Act. Thus, we

must also consider whether the FAIR Act has an effect on landlord satisfaction.

### **Conceptual Approach**

As observed above, local real estate markets are imperfect on both the supply and demand side of the market. There are relatively few tenants for any given parcel, and even land within a farming community can vary in quality by soil characteristics or improvements such as irrigation. Moreover, the risk preferences and income positions of the tenant and landlord can vary dramatically. For instance, the educational and agricultural knowledge bases of the two parties can be strikingly different from one tenant–landlord pairing to another.

Bierlen and Parsch argue that some tenant dissatisfaction might arise when tenants lack alternatives in the short run because their knowledge applicable to agriculture is specialized. This can generate few employment alternatives and compel tenants to accept lease terms they view as exploitative. Such sources of dissatisfaction are probably less compelling factors for landlords because farmland can generally be sold at close to prevailing market rates. Although landlords might have sentimental reasons for not selling land, this form of exit from leasing allows them an easier way of remedying their dissatisfaction.

In measuring landlord satisfaction/dissatisfaction (S/D) with their leases, we adopt the approach of Bierlen and Parsch.<sup>1</sup> In their study, they reject the descriptive-cognitive S/D theory that is essentially a function of prepurchase expectations compared with postpurchase measures of the actual performance. Such an approach is highly impractical for land leasing studies because most leases run for numerous years, and most tenants and landlords would be hard pressed to accurately recall their preleasing expectations. Instead, we adopt a structural approach based on economic theory that relates satisfaction levels to

<sup>1</sup> For further description of satisfaction/dissatisfaction methods, see Oliver (1980, 1981).

variables representing relevant economic forces.

### Major Findings of the Tenant Study

Bierlen and Parsch investigated tenant satisfaction levels with a 1991 survey of Arkansas farm tenants. The study investigated whether factors other than lease type and terms are important in determining tenant satisfaction and whether nonlease characteristics are more important in determining satisfaction with crop-share and costshare leases than satisfaction with cash rent leases.<sup>2</sup>

The results from the tenant study indicated that lease type is unimportant in explaining satisfaction but that tenants who pay lower cash rents, receive higher cropshares, or pay lower costshares tended to be more satisfied. Other factors that were important in explaining tenant satisfaction included whether the lease was written or oral, lease length, tenant dependency on agriculture for income, educational level, land quality, yield variability, kinship to landlord, and tenant-owned acreage. As hypothesized, these factors tended to be more important in determining satisfaction with cropshare and costshare leases than satisfaction with cash rent leases. This supports the notion that cash rent better reflects land and tenant characteristics than tenant share levels. Because the landlord survey used in this study and the Bierlen and Parsch tenant survey were administered to similar regions, the results of the tenant study are compared with the findings of the present study.

### Methodology

The estimation and statistical testing uses ordinally ranked, limited dependent variable (ORLDV) models (Nelson). This is the same approach used by Bierlen and Parsch. The observed dependent variable numerical values

indicate an ordinal ranking of satisfaction level, with higher values indicating a greater level of satisfaction than lower values.

The underlying model of ordinally ranked models assumes that the true value of the dependent variable ( $y_i^*$ ) is unobservable. With the survey, we can obtain the observable response ( $y_i$ ), which represents the unobservable outcome for a defined range. The framework is

$$y_i^* = \beta' \mathbf{x}_i + \epsilon_i,$$

where  $y_i^*$  represents the unobserved value,  $\mathbf{x}_i$  is the vector of explanatory variables on the  $i$ th observation, and  $\epsilon_i$  is the error term (normally distributed with mean zero and unit variance). The observable  $y_i$  is defined as follows for the ordered probit model:

If  $y_i^* \leq 0$ , then  $y_i = 0$ ;

If  $0 < y_i^* \leq \lambda$ , then  $y_i = 1$ ;

If  $\lambda < y_i^*$ , then  $y_i = 2$ .

For the ordered probit model,  $\lambda$  is an unknown “threshold” parameter to be estimated along with  $\beta$ . An intercept must be included to estimate the  $\lambda$  parameter (Kennedy).

The models are estimated using maximum likelihood methods by relying on the assumption that the error terms are normally distributed. The signs of the coefficients only indicate direction of changes in the highest and lowest ranked categories of  $y_i$  for changes in  $\mathbf{x}_i$ . That is, for a positive component of  $\beta$ , an increase in the corresponding  $\mathbf{x}_i$  means that the probability that  $y = 0$  decreases and the probability that  $y = 2$  increases. Interpretations of the changes in the probabilities of the interior category are unclear because they depend on the net change in probabilities of the exterior categories (Greene).

### Landlord Satisfaction Model

The independent variables used to estimate the lease satisfaction model are presented in Table 1. These variables are similar to those used in Bierlen and Parsch, with some variations to

<sup>2</sup> In a cropshare lease, the landlord receives some percent share of the crop as a form of compensation. In a costshare lease, the landlord receives a cropshare but also pays some proportion of specified production costs.

**Table 1.** Model Variable Definitions

Variable	Definition
Dependent Variable	
<i>SAT</i>	Landlord satisfaction level with current lease: 0 if adequate, 1 if good, 2 if excellent
Independent Variables	
<i>CASH</i>	1 if lease type is a cash rent contract, 0 otherwise
<i>CROPSHARE</i>	1 if lease type is a cropshare contract, 0 otherwise
<i>COSTSHARE</i>	1 if lease type is a costshare contract, 0 otherwise
<i>CROPCROP</i>	Landlord's share (%) of crop if cropshare contract
<i>COSTCROP</i>	Landlord's share (%) of operating expenses if cost-share contract
<i>AGE</i>	Age of landlord in years
<i>LEASES</i>	Number of different leases the landlord has contracted
<i>LEDU</i>	Landlord highest education attained: 1 if less than 8 years; 2 if some high school; 3 if completed high school; 4 if vo-tech school; 5 if some college; 6 if completed college
<i>BILL</i>	Landlord perception of who benefits most from the passage of FAIR Act: 0 if more advantage to tenant; 1 if no change or opinion; 2 if more advantage to landlord
<i>VALUE</i>	Total value (\$1,000) of the cropland that landlord owns and leases out to others: 1 if under 100; 2 if 100–249; 3 if 250–499; 4 if 500–999; 5 if 1,000 and above
<i>INCOME</i>	Percent of landlord income from leasing: 1 if less than 25%; 2 if between 25 and 49%; 3 if between 50 and 75%; 4 if greater than 75%

**Table 1.** Continued

Variable	Definition
<i>KNOW</i>	Relative landlord knowledge compared with tenant of current agricultural prices and production methods: 1 if less than; 2 if equal to; 3 if more than
<i>TEDU</i>	Tenant highest education attained: 1 if less than 8 years; 2 if some high school; 3 if completed high school; 4 if vo-tech school; 5 if some college; 6 if completed college
<i>IRRIGATE</i>	1 if leased parcel is irrigated, 0 otherwise
<i>QUALITY</i>	1988–1997 county average soybean yield (bu/acre)
<i>DECIS</i>	1 if landlord is involved in managerial decisions, 0 otherwise
<i>RELATE</i>	Social closeness of the contracting parties: 0 if stranger or institution; 1 if acquaintance; 2 if close friend; 3 if relative
<i>YEARS</i>	Number of years parcel has been leased to tenant
<i>ACRES</i>	Number of acres in leased parcel
<i>WRITTEN</i>	1 if lease contract is written, 0 otherwise
<i>ANNUAL</i>	1 if lease length is annual, 0 otherwise

account for the inherent differences between tenants and landlords. These variables are suggested by the theoretical implications of moral hazard and risk aversion (Allen and Lueck 1992, 1993, 1995; Bierlen, Parsch, and Dixon; Dasgupta, Knight, and Love), managerial ability/human capital (Bierlen and Parsch; Brown and Atkinson), social capital (Gwilliam), and credit constraints (Bierlen et al.) on landlord lease satisfaction. The major innovation in the landlord model from the tenant model is the variable *BILL*, which accounts for landlords' perceptions of whether the FAIR Act favored landlords over tenants or vice versa. It is defined to take on a value of 0 if landlords be-

lieved the *BILL* favored tenants more than landlords, 1 if landlords perceived no change or had no opinion, and 2 if the landlords believed the *FAIR* Act favored them. The *FAIR* Act introduced the production flexibility contract that assured an income stream regardless of output. These payments continue under the new farm bill, *Farm Security and Rural Investment Act of 2002*. Feelings of satisfaction are generally relative to perceptions of how others are doing. If landlords feel they were favored by a new policy affecting the contract, they should feel better off relative to the tenant; thus, their satisfaction should increase.

## **Data**

This study uses a 1998 survey of 706 landlords who likely had leases in five Arkansas crop-reporting districts that make up the Delta (eastern third of state) and the River Valley (along the Arkansas River) regions of the state. The 706 landlords were identified from partial lists generated by Arkansas Agricultural Statistics Service in their administration of the 1997 Census of Agriculture. Selection into this sample required that landlords operate no more than 80 acres themselves, so that they were essentially not involved in production agriculture. Of the 706 sampled, 199 usable questionnaires were returned, with 125 of these having sufficient information to use in the ORLDV models. Of the 125 usable questionnaires, only 11 landlords indicated farming any land themselves. The regions include almost all of the State's cropland operations because row crops are extensively produced in these two areas with little livestock production.

The landlords were asked to provide detailed information about their largest 1998 lease for a specific crop. The lease had to be for one of three crops: rice, full-season soybean, or cotton. The survey gathered data on Arkansas leasing behavior, including location of leased acreage, background information describing the tenant and the landlord-tenant relationship, the longevity and terms of the leasing arrangement, questions examining landlord perception of tenant managerial ability, relative financial con-

ditions between landlord and tenant, and an examination of landlord and tenant relative managerial participation levels. Summary statistics for the variables used in the study are presented in Table 2 across lease types and satisfaction levels.

The summary statistics reveal that the typical landlord was near retirement age (63 years old) and leased out an average of 635 acres. The landlords maintained more than one lease (1.52), and they had contracted with their current tenant for a number of years (9). USDA's 1999 Agricultural Economics and Land Ownership Survey (AELOS) reports similar numbers for landlord age and number of leases contracted for the nation. In addition, AELOS reports confirm our findings that most landlords are not overly dependent on leasing income. Almost half of the leases in the sample were costshare (47%), whereas cropshare leases made up 42% of the sample. Only 10% of the leases in the sample were cash rent contracts, whereas AELOS reports 43% of leases being cash contracts for Arkansas.<sup>3</sup> Thus, our findings are weighted toward share agreements.

The mean satisfaction levels are reported in Table 2 for the full-sample, cash rent, crop-share, and costshare subsamples. Mean satisfaction levels for the two share-type contracts are significantly higher than for cash rent. Further tests show that landlord satisfaction levels are statistically significantly higher ( $p = .05$ ) than the tenant levels in Bierlen and Parsch when adjusted for scale for both the full-sample and share contracts. The satisfaction difference for cash rent is not significantly different between the two studies. Two implications can be drawn by comparing the landlord and tenant satisfaction levels. The first is that landlords are probably more satisfied because it is easy to withdraw from the land leasing business by selling the land. Tenants, on the other hand, typically have considerable human capital in being a farm operator, so exiting farming has a much higher opportunity cost. Also, tenants can be restricted by

<sup>3</sup> AELOS includes all leases on agricultural lands, including both crop and livestock production.

**Table 2.** Model Variable Means by Lease Type and Satisfaction Level

Variable	Lease Type			Satisfaction Level			
	Full Sample	Cash Rent	Cropshare	Costshare	Adequate	Good	Excellent
Dependent Variable							
<i>SAT</i>	1.08	0.92	1.06	1.13	0	1	2
Independent Variable							
<i>CASH</i>	0.10	1	0	0	0.13	0.11	0.08
<i>CROPSHARE</i>	0.42	0	1	0	0.40	0.47	0.38
<i>COSTSHARE</i>	0.47	0	0	1	0.47	0.42	0.55
<i>CROPCROP</i>	—	—	25.40	—	23.75*	26.00*	25.67*
<i>COSTCROP</i>	—	—	—	31.55	30.07*	30.00*	34.05*
<i>COSTCOST</i>	—	—	—	15.57	13.53*	12.54*	20.02*
<i>AGE</i>	63.31	63.38	63.08	63.51	62.57	66.25	59.83
<i>LEASES</i>	1.52	1.54	1.43	1.59	1.47	1.67	1.35
<i>LEDU</i>	4.71	4.08	4.70	4.86	4.83	4.47	4.95
<i>BILL</i>	0.99	1.15	0.96	0.98	0.83	0.98	1.13
<i>VALUE</i>	3.24	3.00	3.23	3.31	3.40	3.22	3.15
<i>INCOME</i>	1.85	1.54	1.87	1.90	1.30	1.93	2.15
<i>KNOW</i>	1.52	1.54	1.38	1.64	1.63	1.51	1.45
<i>TEDU</i>	4.26	3.15	4.53	4.25	3.93	3.96	4.90
<i>IRRIGATE</i>	0.86	0.77	0.87	0.86	0.87	0.82	0.90
<i>QUALITY</i>	27.85	26.30	27.94	28.11	27.85	27.85	27.85
<i>DECIS</i>	0.33	0.08	0.23	0.47	0.20	0.38	0.35
<i>RELATE</i>	1.74	1.69	1.75	1.75	1.30	1.71	2.13
<i>YEARS</i>	9.33	6.08	7.49	11.69	7.73	8.60	11.53
<i>ACRES</i>	635.39	592.15	596.80	679.59	583.01	664.76	634.30
<i>WRITTEN</i>	0.46	0.54	0.55	0.37	0.60	0.49	0.33
<i>ANNUAL</i>	0.21	0.38	0.23	0.15	0.20	0.22	0.20
Observations (n)	125	13	53	59	30	55	40

\* Mean calculations only include those leases with the indicated lease characteristic.

the distance they are willing to travel to rented land, thus narrowing their potential to increase satisfaction. Additionally, landlords are older than tenants and might be willing to accept lower returns, as well as have a sentimental attachment to owning the land, which tenants lack. The second implication is that cash rents require the least cooperation between tenants and landlords and do not involve the uncertainty and trust of share arrangements. Also, cash rents are more easily compared with perceptions of going market rates than the relatively more detailed share agreements. Therefore, cash leases are readily adjusted to a level of mutual satisfaction.

### Estimation Results

To investigate whether lease type and/or other characteristics are related to satisfaction, three

different ORLDV models are estimated. The dependent variable for all three models is landlord satisfaction (*SAT*) with the lease. The variable takes on a value of 0 if satisfaction is adequate, 1 if good, and 2 if excellent.<sup>4</sup> The landlords reported relatively high satisfaction levels with their leases, indicating 24% adequate, 44% good, and 32% excellent. This is not surprising considering the almost 10-year average length of the contracting relationship.

The first ORLDV model, which is called the full-sample model, includes all the observations in the sample and has satisfaction as a function of lease type, as well as all of the other variables hypothesized to determine satisfaction levels. The other two ORLDV mod-

<sup>4</sup> A lease satisfaction rating of "poor" was also available, but no landlords reported a poor rating.

els are subsamples taken from the full sample. The first subsample contains all the observations on cropshare leases, and the second subsample includes all the observations on cost-share leases.<sup>5</sup> The estimated coefficients are presented in Table 3 with estimated asymptotic standard errors in parentheses.

An important question answered by the full-sample model is whether type of lease selected is exogenous to satisfaction. In the context of the full-sample model, this hypothesis is tested with a Wu-Hausmann test as in Lin or Maddala. The test statistic indicates that the exogeneity hypothesis cannot be rejected at the .05 level. This finding supports the belief that satisfaction is not jointly determined with the selection of lease type but that lease type can be considered an independent variable among the forces determining satisfaction level. The result also implies that it is appropriate to consider the three lease types as independent variables when estimating the full model.

The full-sample model correctly classifies 59% of the 125 lease satisfaction observations. The coefficients of the binary variables indicating lease type (*CASH*, *CROPSHARE*, and *COSTSHARE*) are all statistically insignificant. This indicates that choice of lease type is not an indicator of satisfaction and that satisfaction is determined by other factors. This is similar to the finding in Bierlen and Parsch that tenant lease satisfaction is not determined by lease type selection. Thus, we must look to other factors to determine level of lease satisfaction.

The full-sample model estimated coefficients show that landlord perceptions about who benefited most from the FAIR Act (*BILL*), percentage of landlord income derived from leasing (*INCOME*), tenant education level (*TEDU*), and the initial relationship of the contracting parties (*RELATE*) significantly explain landlord satisfaction with their current leases.

Landlord beliefs that they benefit relatively more than tenants from the FAIR Act (*BILL*)

are positively associated with satisfaction level. Schertz and Johnston found that landlords were changing their existing leases to extract the benefits of the FAIR Act, but only a small percentage (7%) of the surveyed landlords indicated changing their lease as a result of the FAIR Act. In addition, only 7% of the landlords in this sample felt the FAIR Act favors landlords, and none of these landlords reported changing their lease. Therefore, our results give no support for Schertz and Johnston's finding. However, the results here show that landlords with a favorable view of the FAIR Act are more likely to have higher levels of satisfaction with their lease than landlords with an unfavorable view.

The positive and significant coefficient on *INCOME* suggests that, as the landlord's proportion of income from leasing increases, satisfaction levels increase. This result likely stems from the relatively increased dependence of the landlord's income on the lease. A similar result was reported in the 1991 tenant survey. Bierlen and Parsch reported a positive and significant sign for the variable representing the percentage of tenant income derived from farming. Because the lease in question is the landlord's largest lease for a particular crop, landlords could recognize the greater importance of the lease to their income and, therefore, might more critically negotiate favorable lease terms.

The significant coefficient for *TEDU* indicates that landlords are sensitive to lessee educational background. The positive coefficient for *TEDU* indicates that as the tenant's education increases, so does the landlord's satisfaction level. This result could stem from the landlord's perception of having contracted a good manager.

The statistically significant, positive coefficient for the initial relationship of the contracting parties (*RELATE*) provides empirical support for the social capital paradigm, indicating that as the contracting relationship grows closer, the landlords are more likely to rate lease satisfaction as excellent. Combining this finding with the results in the 1991 tenant survey indicates the important role of social

<sup>5</sup> Lack of a sufficient number of observations for cash rent contracts precluded estimation of a cash rent subsample model.

**Table 3.** Maximum Likelihood Coefficient Estimates of the Ordinally Ranked Limited Dependent Variable Models

Variable	Full Sample	Cropshare	Costshare
<i>CASH</i>	-0.0297 (1.8259)		
Cash rent contract			
<i>CROPSHARE</i>	-0.04782 (1.8458)		
Cropshare contract			
<i>COSTSHARE</i>	-0.0425 (1.8757)		
Costshare contract			
<i>CROPCROP</i>		0.0300 (0.0391)	
Crop shared for cropshare (%)			
<i>COSTCROP</i>			0.0014 (0.0500)
Crop shared for costshare (%)			
<i>COSTCOST</i>			0.0420 (0.0548)
Cost shared for costshare (%)			
<i>AGE</i>	-0.0101 (0.0131)	-0.0390 (0.0293)	0.0207 (0.0240)
<i>LEASES</i>	0.0417 (0.1441)	0.1005 (0.2906)	-0.0938 (0.4301)
<i>LEDU</i>	0.0909 (0.1023)	-0.0492 (0.2742)	0.2794 (0.2182)
<i>BILL</i>	0.7686** (0.3387)	2.2108* (1.3108)	1.6639** (0.7408)
<i>FAIR</i> perceptions			
<i>VALUE</i>	-0.2227 (0.1505)	-0.2870 (0.2840)	-0.0273 (0.4382)
Landlord farmland value			
<i>INCOME</i>	0.4394*** (0.1512)	0.3146 (0.3339)	0.5762 (0.3810)
Landlord leasing income			
<i>KNOW</i>	-0.1662 (0.2212)	-0.1884 (0.7611)	-0.5432 (0.4459)
Landlord agricultural knowledge			
<i>TEDU</i>	0.2474*** (0.1044)	0.2996 (0.2605)	0.4086** (0.1984)
Tenant education			
<i>IRRIGATE</i>	-0.2941 (0.3480)	0.7879 (0.7943)	-2.3061** (1.2111)
<i>QUALITY</i>	-0.0771 (0.0565)	-0.2676 (0.1815)	-0.1355 (0.1017)
Farmland quality			
<i>DECIS</i>	0.3501 (0.3074)	0.2580 (0.9543)	0.0594 (0.5387)
Managerial decisions			
<i>RELATE</i>	0.4496*** (0.1656)	0.4961 (0.4024)	0.7127* (0.3846)
Landlord and tenant relationship			
<i>YEARS</i>	0.0293 (0.0200)	0.0266 (0.0537)	0.0928** (0.0463)
Length of contracting relationship			
<i>ACRES</i>	-0.5E-04 (0.0005)	0.0005 (0.0011)	-0.0008 (0.0008)
Size of lease			
<i>WRITTEN</i>	-0.2202 (0.3417)	0.1380 (0.9238)	-0.2097 (0.6757)
Lease is written			
<i>ANNUAL</i>	0.4297 (0.3559)	-0.0410 (0.7127)	0.7516 (1.0578)
Lease has annual terms			
$\lambda$	1.6326*** (0.2162)	2.0970*** (0.5958)	2.0532*** (0.7255)
Model Significance ( $\chi^2$ )	60.180***	36.541***	52.941***
Observations ( <i>n</i> )	125	53	59

Notes: Estimated standard errors are in parentheses below coefficient estimates. Asterisks denote levels of significance from two-tailed *t*-tests. Values were significant at the \*\*\* .01, \*\* .05, or \* .10 probability level.

capital-related variables in lease satisfaction from both landlord and tenant perspectives.<sup>6</sup>

The cropshare model has only one statistically significant variable and only at the .10 level. This is surprising because several factors (length of lease, relationship, income from farming, whether lease was written and/or annual) were significant at .05 in the 1991 study. The model classifies 76% of the observations correctly, and the overall chi-square statistic for model significance is significant at the .01 level. Pairwise correlation coefficients of the independent variables do not indicate any obvious multicollinearity. The one significant variable, *BILL*, implies that a favorable view of the FAIR Act leads to higher levels of satisfaction among landlords with cropshare leases. Percentage of the cropshare was not significant, as in the 1991 study, indicating that the contract terms for these contracts are not major determinants of lease satisfaction.

The costshare model correctly classifies 69% of the satisfaction observations. Coefficient estimates indicate that landlord perceptions about who benefits from the FAIR Act (*BILL*), tenant education level (*TEDU*), presence of irrigation equipment (*IRRIGATE*), the initial relationship of the contracting parties (*RELATE*), and the length of the contracting relationship (*YEARS*) significantly explain landlord satisfaction with their costshare leases. Unlike the tenant study, terms of the agreements (*COSTCROP* and *COSTCOST*) are not significant. Apparently, landlord satisfaction is not affected by the terms of the costshare lease.

The positive and significant sign for *BILL* indicates that a landlord's perception that the FAIR Act's passage disproportionately benefited landlords leads to higher levels of satisfaction. The magnitude of the *BILL* coefficient implies FAIR Act perceptions were very important to landlord satisfaction levels.<sup>7</sup>

<sup>6</sup> Bierlen and Parsch obtained positive coefficients for length of lease and relationship, with length of lease being significant.

<sup>7</sup> In probit models with a unit variance on the error term, the magnitude of the binary variable coefficients indicates the relative importance, compared with other binary variables and  $\lambda$ , the threshold parameter.

The significant coefficient for tenant education supports the opinion that education and management expertise are important components of landlord satisfaction. Increasing tenant formal education, *TEDU*, significantly increases the probability of landlords rating a lease excellent. This focuses on the role of tenant managerial ability, with landlords rating leases higher when a "better" manager is contracted.

Productive capabilities of the land, asset-enhancing characteristics, or both also are important determinants of lease satisfaction. The negative and significant coefficient for *IRRIGATE* implies that landlords are less satisfied when this asset-enhancing characteristic is present. Interestingly, this variable is not significant in the other two estimated models. In addition, it is insignificant for all models in the 1991 tenant study. Irrigation not only can be seen as a risk-reducing asset for both the landlord and tenant, but it also allows for more managerial flexibility in terms of planting decisions. Therefore, its presence should indicate higher returns and greater satisfaction. Irrigation's negative sign suggests that landlords in costshare contracts might negotiate more intensely for favorable terms and therefore might evaluate the returns of their leases more critically for irrigated parcels. The surprisingly negative coefficient suggests that landlords are unsuccessful in achieving their goals.

The positive and significant signs on *RELATIVE* and *YEARS* imply that as the relationship between the contracting parties grows closer and longer in duration, the landlords are more likely to rate a lease excellent. These results provide strong support for social capital playing a significant role in landlord satisfaction with costshare leases. A similar result is reported in the tenant study. Both of these findings could result from a decrease in information asymmetry between landlord and tenant and an overall increase in the comfort level and communication between the contracting parties.

## Summary and Conclusions

This study examines factors explaining landlord satisfaction levels with their 1998 crop-

land leases in Arkansas. Findings are most applicable to share agreements because 90% of leases analyzed were of this type. The analysis specifically examines whether the type of lease, the terms, or both are significant explanatory factors of lease satisfaction. The study results indicate that lease type is not a significant indicator of satisfaction. Likewise, percentages of cropshare and costshare are not significant determinants of landlord satisfaction levels. Although lease type was not significant for tenant satisfaction in an earlier study, lease terms were important in costshare leases for tenants. Moreover, mean satisfaction levels were significantly higher for landlords than for a sample of tenants for the same region taken in 1991. One explanation for these results is that landlords can exit from leasing more easily than tenants can from farming, so only more satisfied landlords remain in leasing.

Landlord perceptions about whether the FAIR Act benefits landlords over tenants, landlord dependence on leasing income, tenant educational background, presence of irrigation equipment, and length and nature of the contracting relationship are significantly associated with landlord satisfaction levels in at least one of the three models estimated. The social capital findings suggest that the dynamics of the relationship play an important role in lease satisfaction. In addition, a landlord's perception that the FAIR Act benefits landlords over tenants is significant for all of the estimated models and positively associated with satisfaction. Thus, the continuation of the 1996 FAIR Act fixed payments under the 2002 farm bill should please landlords.

There appear to be symmetries and asymmetries between landlords and tenants in terms of factors determining satisfaction. The existence of asymmetries is not surprising because the roles are very different. These differences indicate that a fuller understanding of the tenant-landlord relationship requires information on both landlords and tenants. Future empirical studies of agricultural land leasing should include data gathering on both tenants and landlords to the extent possible.

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## References

Allen, D.W., and D. Lueck. "Contract Choice in Modern Agriculture: Cash Rent Versus Crop-share." *Journal of Law and Economics* 35(1992):397-426.

—. "Transaction Costs and the Design of Cropshare Contracts." *Rand Journal of Economics* 24(1993):78-100.

—. "Risk Preferences and the Economics of Contracts." *American Economic Review* 85(May 1995):447-51.

Barry, P.J., L.M. Moss, N.L. Sotomayor, and C.L. Escalante. "Lease Pricing for Farm Real Estate." *Review of Agricultural Economics* 22(2000):2-16.

Bierlen, R., and L.D. Parsch. "Tenant Satisfaction with Land Leases." *Review of Agricultural Economics* 18(1996):505-13.

Bierlen, R., L.D. Parsch, and B.L. Dixon. "How Cropland Contract Type and Term Decisions are Made: Evidence from an Arkansas Tenant Survey." *International Food and Agribusiness Management Review* 2(1999):103-21.

Bierlen, R., L.D. Parsch, B.L. Dixon, and B.L. Ahrendsen. "The 1996 FAIR Act: Measuring the Impacts on Land Leasing." *Review of Agricultural Economics* 22(Fall/Winter 2000):336-54.

Brown, D.J., and J.H. Atkinson. "Cash and Share Renting: An Empirical Test of the Link Between Entrepreneurial Ability and Contracting Choice." *Bell Journal of Economics* 12(1981):296-99.

Dasgupta, S., T.O. Knight, and H.A. Love. "Evolution of Agricultural Land Leasing Models: A Survey of the Literature." *Review of Agricultural Economics* (Spring/Summer 1999):148-76.

Greene, W.H. *Econometric Analysis*, 4th ed. Upper Saddle River, NJ: Prentice Hall, 2000.

Gwilliam, K. "Farmland Leasing and Contract Choice in Michigan: The Influence of Social Distance." Ph.D. dissertation. Michigan State University, East Lansing, 1993.

Kennedy, P. *A Guide to Econometrics*, 3rd ed. Cambridge, MA: The MIT Press, 1996.

Lin, J.Y. "Endowments, Technology and Factor Markets: A Natural Experiment of Induced Institutional Innovations from China's Rural Reform." *American Journal of Agricultural Economics* 77(May 1995):231-42.

Maddala, G.S. *Introduction to Econometrics*, 2nd ed. New York: Macmillan, 1992.

Nelson, E.D. "On a Computer Algorithm for the

Analysis of Models with Limited Dependent Variables." *Annals of Economic and Social Measurement* 5(1976):493-509.

Oliver, R.L. "A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions." *Journal of Marketing Research* 17(November 1980):460-69.

\_\_\_\_\_. "Measurement and Evaluation of Satisfaction Processes in Retail Settings." *Journal of Retailing* 57(Fall 1981):25-48.

Rainey, R.L., B.L. Dixon, B.L. Ahrendsen, L.D. Parsch, and R. Bierlen. "Contract Choice Selection with Land-Leasing Agreements." *Agr Econ Search, Research in Agricultural and Applied Economics* @ [www.agecon.lib.umn.edu](http://www.agecon.lib.umn.edu) (2001):26. Selected paper, American Agricultural Economics Association annual meetings, Chicago, IL, August 2001.

Schertz, L.P., and W.E. Johnston. "Managing Farm Resources in the Era of the 1996 Farm Act." Economic Research Service Staff Report Number 9711, December 1997. U.S. Department of Agriculture-National Agricultural Statistics Service. Agricultural Economics and Land Ownership Survey. Internet site: <http://www.nass.usda.gov/census/census97/aelos/aelos.htm> (Accessed November 2002).