

## Farmland Leasing Decisions and Successful Debt Repayment Strategies

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### Abstract

Risk-return and cash flow profiles of farmland leasing options determine effectiveness of debt repayment plans. Cash-leasing farms set higher farm income benchmarks in making leasing decisions; thus they benefit more from revenue enhancement strategies. Risk-sharing and favorable cash-flow arrangements provide share-leasing farms with flexibility in setting benchmarks and choosing alternative debt repayment strategies.

Periods of high farm income volatility can potentially diminish farm borrowers' ability to adequately service maturing loan amortizations, as deteriorating profit margins contribute to the further erosion of business liquidity conditions. Farm lenders might be apt to enforce stricter credit rationing policies to guard against a growing number of farm borrowers with poorer credit risk ratings.

During these times, farmers devise alternative payment plans that rely less on revenues generated by the farm business. These options might include, among others, maximization of off-farm income opportunities, minimization of withdrawals from owners' equity funds, asset liquidation, and reliance on federal subsidy grants. For some farms, business resiliency is enhanced through enterprise diversification that involves venturing into auxiliary farm products and services, such as forestry products, to generate additional cash reserves.

Among grain farmers, existing farmland control arrangements could influence preferences for certain debt repayment strategies. Aside from owning land, farmers can expand the size of their farms through either share or cash leasing. These three alternative arrangements entail different risk-return profiles and liquidity mechanisms, which are important considerations in determining debt-servicing plans for the farm business.



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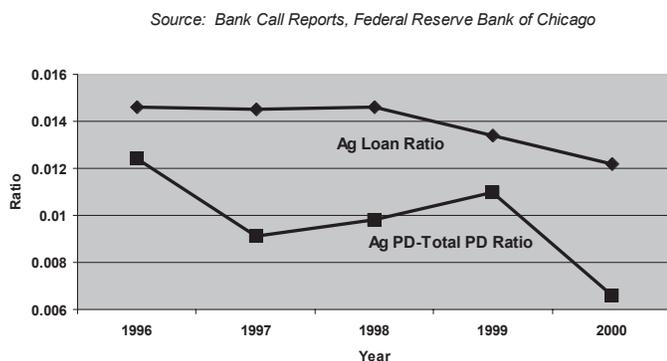
This study utilizes information on the financial conditions of Illinois grain farms during the latter part of the nineties. The increasing income risk conditions experienced by grain farms during this period will provide an appropriate setting for the analysis of debt servicing plans under more financially stressful conditions. This study will discern farmers' preferences for particular debt servicing strategies influenced by the type of existing farmland control arrangement(s). The following sections discuss details of important concepts and issues relevant to this study, develop the econometric model, and present the results and their implications.

### The Farm Debt Repayment Experience

Market conditions in the late nineties ushered in a period of significant financial stress that affected the operations of grain farms, as commodity prices steadily plunged downward. Most critics of the last farm bill attribute the increasing income risk conditions in the farm sector to the bill's "freedom to farm" provision that resulted in high production and large carry-over stocks.

In spite of the resulting deterioration of the farm sector's credit ratings, most farm lenders did not make downward adjustments in their agricultural lending volumes during such period (USDA; Monson). Instead, some farm lenders resorted to reducing the average maturity of intermediate and long-term loans granted in an effort to protect credit exposures to their much riskier farm borrowers (Monson). This, however, creates a much more serious liquidity problem for farmers who had to

Figure 1: Agricultural loan ratios versus contributions of ag loan portfolio to total Past Due (PD) ratios, U.S. Commercial Banks, 1996-2000.

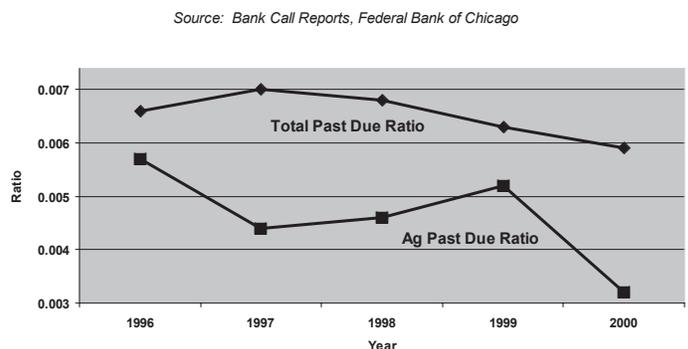


deal with larger periodic loan amortization payments arising from the reduced loan maturities.

Contrary to expectations, the past due experience of commercial banks among their farm clientele has not been alarming. Based on loan performance data from call reports compiled from commercial banks nationwide (Federal Reserve Bank of Chicago), farm borrowers have actually been able to maintain better repayment records than banks' average borrowing clients. Figure 1 shows that the proportion of delinquent agricultural loans to the entire portfolio of past due obligations has always been lower than the proportion of agricultural to total loans granted (agricultural loan ratio) during the latter half of the last decade. The gap between these ratios was narrower in 1999 but started to widen again in 2000. The trends in Figure 2 corroborate these results. During the same period, the past due ratio among farm borrowing accounts has always been below the banks' overall past due ratio. This suggests that more serious cases of loan delinquencies among borrowers from other industries could have brought up the resulting past due ratio levels.

Moreover, the USDA's Agricultural Resource Management Survey (ARMS) reports overall positive debt servicing margins for farms nationwide (Figure 3). Maturing debt obligations seemed to have slightly increased in 1998 and 2000, but the resulting margins during these years remained even higher than the 1996 level.

Figure 2: Ag loan and total Past Due ratios, U.S. commercial banks, 1996-2000.



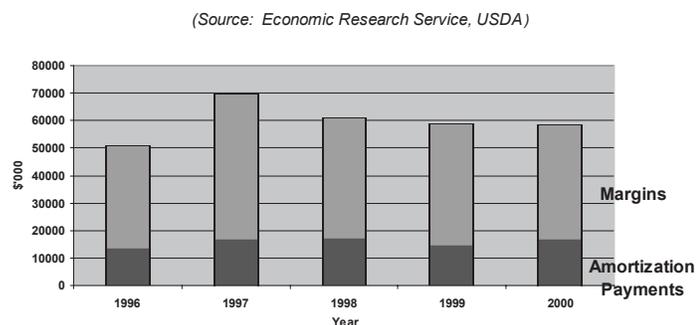
These results demonstrate that the capacity to repay loans does not solely depend on returns generated by the farm business. Alternative liquidity-generating mechanisms devised by farmers during such difficult times have enabled them to maintain good repayment records and credit relationships with their creditors.

Beyond alternative repayment strategies that are within the farmers' control, larger ad hoc federal appropriations of payment subsidies were disbursed during such period when provisions for decoupled government payments under the last farm bill provided very little cushion against downswings in farm commodity prices. These unexpected payments indirectly benefited the lenders by allowing them to maintain the quality of their farm loan portfolios. Interestingly, even in a predominantly crop-producing region like Illinois, farm income variability still remained relatively high despite the larger ad hoc government payments made after 1996 (Ellinger, et al., 1999, 2000).

### Farmland Control Arrangements

Farmland leasing, either through payment of cash rents or sharing of production revenues and costs, has become an increasingly popular alternative for gaining additional farm acreage outside the land purchase option. The USDA's 1998 ARMS study indicates that 43.8% of farmland acres in the United States was operated under a leasing contract. Leasing is an even more dominant practice in Illinois where the average tenure ratio (proportion of land owned to total acreage operated) for participating farms under the Illinois Farm Business Farm Management (FBFM) program is only 19 percent over the

Figure 3: Debt servicing levels and margins, U.S. farms, 1996-2000.



period 1998-2000 dropping from an average of 24 percent in the late eighties (Ellinger, et al.)

The potential influence of existing farmland control arrangement(s) on the choice of debt servicing plans depends on the risk-return tradeoff and liquidity profiles inherent in each of the land control options.

Between the two leasing arrangements and debt-financed land ownership, share leasing is considered the most highly risk efficient financing option for farmers (Barry, et al.). The positive correlation between the value of harvested crops and the tenant farmer's rental obligation to the landowner stabilizes the farmer's net income, thus resulting in greater risk-reducing benefits for the farm operator. Cash leasing, on the other hand, offers farmers simpler, more flexible bidding opportunities for greater farmland control, though the farmer ends up assuming all production and income risks (Barry, Sotomayor and Moss).

Different provisions for the payment of obligations under the three alternative arrangements also have important liquidity implications. Under share leases, the landlord is obligated to disburse his/her share of the variable costs when payment is due.<sup>1</sup> This offers a significant liquidity relief for the farm operator who only has to shoulder his share as stipulated in the leasing contract. In contrast, farmers are often required to pay cash rents partially or fully in advance, thus contracting the farm's cash reserves even before cash operational requirements are fully accounted for. Debt-financed land ownership is a similar case with loan amortization payments being made at particular dates as stipulated in a loan contract.

As a whole, however, increasing proportions of leased acres of farmland have been associated with higher liquidity and accounting rates of return to farm assets (Ellinger and Barry; Scott). Current (realized) returns to owned land have been traditionally low due to its non-depreciability and the accrual of capital gains that are only realized when the asset is liquidated (Barry and Robison).

## Empirical Design

The empirical analysis focuses on the debt servicing plans of Illinois grain farmers during the period 1997 to 1999 that captures the drastic transition from high to falling crop prices. This study utilizes farm-level information on Illinois grain farms participating under FBFM record-keeping program. The FBFM system has an annual membership of about 7,000 farmers. However, rigorous certification procedures implemented by FBFM field staff usually results in much fewer farms with both certified financial and family living records. Hence, the annual sample size for the three-year period ranges from about 190 to 440 grain farms.

Ideally, the econometric framework is designed to compare strategies between subsets of farms that exclusively operate under one of the three land control options. However, the dearth of farm observations in each of these three classes (less than the critical sample size of about thirty observations required for econometric analysis) does not allow for this type of analysis. Hence, this study is constrained to instead analyze only farms operating under hybrid land control arrangements such as share-cash leasing-land ownership, share leasing-land ownership, and cash leasing-land ownership combinations.<sup>2</sup> Econometric analysis focusing on the differences in debt servicing plans employed by these three group of farms, however, could only be made for the year 1999, as other years produced smaller subsets of farms (thirty-three and nineteen farms in 1997 and 1998, respectively) that are partially owned and under cash leasing contracts.<sup>3</sup>

### Measuring Repayment Capacity

The Farm Financial Standards Council (FFSC) recommends two criteria, a ratio and a margin measure, in the evaluation of a farmer's debt repayment capacity. These measures accommodate both farm and non-farm sources of funds to realistically capture all possible sources of debt repayment.

The term debt and capital lease coverage (TDLC) ratio is calculated as follows:

$$\text{TDLC} = \frac{\text{CAPACITY} + \text{INT}}{(\text{P} + \text{INT})} \quad (1)$$

where CAPACITY is defined as sum of net farm income, total non-farm income and depreciation expense less income tax expense and owner withdrawals; INT is interest on term debt and capital leases, and P is annual scheduled payments on term debts and capital leases. A ratio of at least 1 indicates that the farm's cash reserves could adequately cover maturing term loan and capital lease obligations for the year.

The margin measure (MARGIN), on the other hand, is calculated as:

$$\text{MARGIN} = \text{CAPACITY} - (\text{POD}_{t-1} + \text{PTD}_t + \text{PCL}_t + \text{PDT}) \quad (2)$$

where  $\text{POD}_{t-1}$  is payment on prior period's unpaid operating debt,  $\text{PTD}_t$  is principal payment on current portion of term debt,  $\text{PCL}_t$  is principal payment for current portion of capital leases, and PDT is total annual payment on personal debt.

This study adopts the margin measure to determine a farmer's repayment capacity. Positive margins indicate adequate debt servicing capacity while negative margins suggest liquidity problems that could prevent the farm business from sufficiently covering debt repayment obligations.

### Binomial Logistic Model

This study uses the following binomial logistic framework involving a dichotomous dependent variable and continuous explanatory variables:

$$Y = \text{logit}(p) = \log\left(\frac{p}{1-p}\right) = a + BX = e \quad (3)$$

where Y is the event of interest that takes on an ordered value of 1 if the event happens and 0 if otherwise; p is the probability of the occurrence of the event ( $Y=1$ ); while a, B, X, and e are the usual components of right-hand side of an estimating equation (Greene).

In this study, the binary dependent variable takes on an ordered value of 1 if the farm realizes a positive MARGIN level and 0 if the MARGIN level is zero or negative. Equivalently, the structure of the "event" variable creates a distinction between cases of successful debt repayment and loan delinquency, without dwelling on the magnitude of liquidity surpluses and

deficiencies after debt servicing, operational, and personal expenditures have been accounted for.

A backward elimination procedure is also applied to the logistic model to arrive at abbreviated estimating equations that only involve significant explanatory variables that satisfy the prescribed 10 percent confidence criterion used in this study. This procedure starts with the original model consisting of twelve (12) explanatory variables: three (3) farm operations-related measures, two (2) variables capturing influences of non-farm factors, four (4) asset management measures, and three (3) leverage-related measures.

### Farm Business-Related Factors

Greater capacity to repay debt can result from higher net farm income ratios, NFIRAT, calculated by dividing net farm income by gross farm income. Higher NFIRAT can be a result of effective marketing strategies that maximize the gap between the unit production cost and the price of the final farm output.

The farm business can also benefit from diversifying into different enterprises that result in an overall reduction in business risk in return for some tradeoffs in farm returns. Substantial reductions in the volatility of farm returns, achieved at the expense of lower farm returns, could result in more effective liquidity management for the farm business. In this study, the level of enterprise diversification (DIVER) is calculated using the Herfindahl index (H) of industry concentration calculated as:

$$H = \sum_{i=1}^n (\text{share}_i)^2$$

Under this approach, a fully specialized farm takes on an index value of 1 while smaller index values indicate more diversified business portfolios.

High levels of operating efficiency (OPRAT) measured here as the ratio of operating expenses to gross farm returns can also enhance debt servicing capacity. Low OPRAT values, signifying high levels of operating efficiency, could be a result of the adoption of cost-saving inputs, technologies and production practices.

### Non-Farm Factors

Incremental cash flows from sources outside the farm business can significantly augment the farm's debt servicing capacity. Net cash flow receipts from off-farm employment and investments will be represented by the ratio of net off-farm income to gross off-farm revenues/receipts (NETOFF). Huge withdrawals for family living expenses, however, could offset the liquidity enhancing effect of off-farm income receipts. It is therefore important to also consider the minimization of annual family living withdrawals from retained earnings and accumulated net worth. This could entail adjustments in lifestyle and spending patterns according to changing financial conditions of the farm business. This effect is represented in this study by the ratio of family living expenses to the family's disposal income (FAMLIV), defined as the sum of retained earnings (net farm income) and net non-farm income.

### Asset Liquidation and Productivity

Four (4) asset management measures are also included in the estimating equation. These measures capture the tradeoff between decisions to dispose of certain assets to increase liquidity and maintain high levels of asset productivity. On one hand, higher proportions of sold to purchased machineries (MACH) as well as farm building structures, securities, real estate, and breeding livestock (OTHPROP) have favorable liquidity implications. Moreover, asset sale decisions are further justified if pursued at the most opportune time when prevailing asset market conditions maximize the potential capital gains to be realized from such transactions. The capital gains effect is represented in this study by the ratio of realized capital gains to total value of assets sold by the farm (GAIN).

On the other hand, the attainment of high asset productivity levels is an equally important performance benchmark for the farm business. In this study, asset productivity is measured by the asset turnover ratio (ATO), calculated as the ratio of gross farm returns to total farm assets. In implementing changes in the farm's fixed asset complement, therefore, the priorities of enhancing debt service capacity and maintaining high asset productivity need to be both carefully considered. In this case, prudent asset management decisions should involve only the

liquidation of idle, obsolete, unproductive assets to generate additional cash receipts and/or acquire additional or replacement assets that result in substantial increases in overall asset productivity. Ultimately, the latter strategy indirectly leads, in the long run, to improvements in debt servicing capacity through increased revenues and higher operating efficiencies.

### Leverage-Related Decisions

Decisions concerning the farm's leverage position that could affect debt-servicing capacity are represented by three (3) variables. The ratio of the annual proceeds of operating/production loans to total operating expenses for the year (OPTGLN) indicates how much the farm business relies on external debt in financing its short-term production cash requirements. Its long-term counterpart, TERMLN, measures the reliance of the farm business on intermediate- and long-term loans in financing its capital expenditures for a particular year. TERMLN is calculated as the ratio of the annual proceeds of intermediate- and long-term loans to the total value of assets purchased (i.e., machineries, real estate, new building structures, breeding livestock, and securities) during that year. In general, heavy reliance on external debt results in larger

periodic amortization payments that lead to diminished debt servicing capacity.

A third variable, the ratio of interest expense to gross farm returns (INTRAT), is included to represent strategies to reduce interest payments on existing loan obligations. For instance, this can be achieved through strategic loan restructuring decisions under favorable credit market conditions.

### Descriptive Results

The three-year mean values (1997 to 1999) of important financial measures are reported in Table 1 for each group of cash leasing, share leasing, and cash-share leasing farms. Based on the summary, share-leasing farms have been able to consistently experience more favorable farm and non-farm business returns, achieve higher operating efficiency, and implement more specialized production plans than cash leasing farms during the three-year period.

Among the asset management decision variables, cash leasing farms maintain higher asset turnover ratios consistent with their higher machinery sale-purchase ratios compared to the results for share leasing farms. This latter group of farms, however,

*Table 1: Financial determinants of probability of positive debt repayment margins, mean values, by type of farmland control arrangement, Illinois grain farms, 1997-1999.*

Variable	Cash Leasing		Share Leasing		Share-Cash Leasing	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Number of Farms	97		270		536	
Cash Leasing Ratio (Acres)	0.7204	0.2832	0	0	0.2936	0.2199
Share Leasing Ratio (Acres)	0	0	0.7949	0.2064	0.5182	0.2473
Net Farm Income Ratio (\$)	0.2806	0.3848	0.4038	0.4049	0.3611	0.4063
Operating Expense Ratio (\$)	0.8052	0.1512	0.6152	0.1674	0.7265	0.1418
Interest Expense Ratio (\$)	0.089	0.0713	0.0866	0.0728	0.0812	0.0671
Net Off-Farm Income Ratio (\$)	-0.2297	6.9168	0.7247	1.4364	0.7065	1.2258
Family Expense Ratio (\$)	0.3499	1.6618	0.1878	0.4049	0.2912	1.6524
Enterprise Diversification Index	0.8004	0.1874	0.874	0.1342	0.8649	0.1449
Asset Turnover Ratio (\$)	0.5254	0.4283	0.3714	0.2564	0.4275	0.2195
Machinery Sale-Purchase Ratio (\$)	0.431	1.7152	0.1851	0.9401	0.1291	0.4953
Property Sale-Purchase Ratio (\$)	1.1021	4.7261	1.9069	8.8992	1.455	7.9404
Realized Capital Gains Ratio (\$)	0.155	0.5915	0.1467	0.3393	0.1347	0.2798
Operating Credit Line Ratio (\$)	0.906	0.5897	0.8193	0.6635	0.7127	0.587
Term Loan Ratio (\$)	84.769	421.398	23.555	126.667	13.376	78.6447

has higher property sale-purchase ratios than cash leasing farms. These results suggest the possibility that cash leasing farms may have opted for higher rates of machinery liquidation to be able to adequately service rising loan obligations while share leasing farms resort to liquidation of other farm properties.

In terms of borrowing practices, cash-leasing farms generally rely more on term loan financing for their capital expenditures given their average term loan ratio of 84.77 compared to 23.56 for share-leasing farms. They also maintain a slightly larger operating loan ratio than share-leasing farms, thereby suggesting that the favorable liquidity-enhancing arrangement enjoyed under share lease contracts allow such farms to refrain from drawing heavily on their operating lines of credit than cash-leasing farms normally do.

### Econometric Results

Table 2 summarizes the results of the binomial logistic model applied to subsets of cash leasing, share leasing, and (simultaneous) cash-share leasing farms in 1999. The summary includes only the remaining variables that passed the significance criterion under the backward elimination procedure. Standardized logit coefficients, equivalent to beta weights in ordinary least squares regression, are presented to

compare the relative strength of the independent variables. Since logit coefficient estimates could merely be interpreted relative to the "log odds ratio" and do not provide any direct reference to rate of change in values of the dependent variable, the marginal effect of each regressor was derived as:

$$\frac{\delta\beta}{\delta p} = f(\beta X)\beta$$

where  $p$  is the probability of obtaining positive debt repayment margins,  $\beta$  is the logit coefficient, and  $f$  is the density function of the cumulative probability distribution function (Greene). The marginal effect provides more intuitive information on the effect of each unit change in the value of the variable on the probability of obtaining positive debt repayment margins.

This batch of results reveals important differences in preferred strategies by cash versus share leasing farms in 1999. Among cash leasing farms, two (2) farm-business related factors significantly affect the probability of successful debt repayment. NFIRAT is positively signed, thus suggesting a direct relationship between revenue enhancement and successful debt repayment. In terms of marginal effect, a 1 percent increase in NFIRAT can lead to an increase of 0.2968 in the probability of successful debt repayment.

*Table 2: Binomial logistic regression results, probability of obtaining positive debt repayment margins under different farmland control options, Illinois grain farms, 1999.*

Variable	Farms		Farms		Leasing Farms	
	Standardized Estimate (Std. Error)	Change in Probability	Standardized Estimate (Std. Error)	Change in Probability	Standardized Estimate (Std. Error)	Change in Probability
Intercept	2.2833 (1.6231)	0.8709	9.3495*** (2.0841)	1.8372	7.2711*** (1.1364)	2.5471
Net Farm Income Ratio (NFIRAT)	0.7782*** -3.1791	0.2968				
Operating Expense Ratio (OPRAT)			-0.8236*** (1.9746)	-0.1618	-0.8556*** (1.6386)	-0.2997
Family Living Withdrawals (FAMLIV)			-0.2248* (0.7688)	-0.0442		
Asset Turnover Ratio (ATO)					0.2437*** (0.8725)	0.0854
Enterprise Diversification Index (DIVER)	-0.4798** (2.1050)	-0.183	-0.2169* (1.4865)	-0.0426		
Operating Credit Line Ratio (OPTGLN)			-0.5204*** (0.3646)	-0.1023		
Realized Capital Gains Ratio (GAINS)					0.1387* (0.5403)	0.0486
Likelihood Ratio (-2 Log L)	44.901***		126.788***		271.169***	
Correct Predictions (Percent)	84		84		82.6	
Number of Observations (Farms with Positive Margins/ Negative Margins)	45 (19 / 26)		128 (56 / 72)		259 (130 / 129)	

The diversification index, DIVER, also has a significant coefficient estimate, which is negatively signed in the cash-leasing model, thus suggesting that lower values of the index (indicating more diversified operations) increase the probability of successful debt repayment. The marginal effect of -0.1830 indicates that a unit increase in the diversification index could lead to a decrease of 0.1830 in the probability of successful debt repayment.

In contrast, three of the four categories of factors are represented in the results for share-leasing farms. Effective cost reduction strategies at the farm and non-farm business levels (negative OPRAT and FAMLIV) could lead to greater likelihood of debt repayment. Unit increases in operating efficiency and FAMLIV could result in changes in the probability of obtaining positive debt repayment margins of 0.1618 and -0.0442 respectively, as the derived marginal effects indicate.

Moreover, a leverage-related variable (OPTGLN) and another farm-business related factor (DIVER) also have significant effects on the dependent variable among share-leasing farms. OPTGLN is negatively signed, thus suggesting that reduced reliance on operating credit for cash operational requirements could increase the probability of obtaining positive debt repayment margins. The same result for DIVER obtained for cash-leasing farms is also evident here, although with relatively lower significance and smaller marginal effect. Nonetheless, this suggests that enterprise diversification is also an important liquidity enhancing strategy for share leasing farms.

The implications of these results are consistent with the basic risk-return framework under these two leasing arrangements. Under more stressful, more volatile farm income conditions, farmers that continue farming under cash leasing contracts become more concerned about the probability of realizing acceptable farm incomes. In the absence of a risk-sharing mechanism, these farmers are expected to set high income probability benchmarks for making such leasing decisions. Others could have resorted to certain contingency marketing plans, such as forward contracting arrangements, with risk reduction benefits not available under cash leasing contracts.

These income benchmarks have been expected to remain high in spite of the larger ad hoc federal subsidies that were

disbursed to crop farmers during this period. Prior to each production year, farmers devised strategic plans to cope with decreasing prices and increasing income risk without any knowledge of the extent of government support they would receive the following year.

On the other hand, share-leasing farmers are able to transfer a portion of the income risk to the landlords. Thus, relative to cash leasing farms, they could afford to lower their income probability benchmarks when making leasing decisions. In this study's dataset, more farms have entered into share leasing versus cash leasing contracts in 1999 (128 versus 45 farms), with much fewer cash leasing farms in the two previous years. This suggests that a cash-leasing decision is a more intricate process under riskier times.

As the econometric results indicate, farms that continued to operate under share leasing contracts in 1999 relied more on liquidity improvement strategies that are not farm revenue-related. Cost reduction strategies, among others, bailed out some farms from liquidity problems after being locked into share leasing contracts that proved to be less profitable ventures. As expected, share-leasing farms enjoy greater flexibility in controlling short-term credit borrowings than cash leasing farms due to differences in timing of certain inflows (landlord's share of production expenses to share leasing tenants) and outflows (cash rent advances).

Among farms that simultaneously engage in share and cash leasing, two of the four categories of factors are represented in the final abbreviated version of the econometric model. The remaining significant variables represent farm business and asset productivity-related factors. Strategies that balance liquidity benefits of high asset productivity (positive ATO) and asset liquidation (positive GAINS) significantly increase the probability of successful debt repayment. The significance of these variables suggests the effectiveness of collective asset management strategies identified with each lease contract option. As the descriptive results in Table 1 indicate, cash-leasing farms tend to engage heavily in liquidation of idle farm machinery to raise additional funds for debt servicing. In contrast, share-leasing farms have been observed to maintain relatively higher sale-purchase ratios for other farm property. Moreover, operation cost reduction strategies (negative OPRAT) is also a significant factor enhancing the probability of

successful debt repayment. The smaller cash-leasing ratio (0.2936 versus share leasing ratio of 0.5182 in Table 1) of this group of farmers explains the relative dominance of the OPRAT result (earlier identified as a significant variable for share-leasing farms) and the lack of significance of farm revenue-related strategies that worked effectively for cash-leasing farms.

In all three models, income contributions from off-farm sources (NETOFF) did not produce any significant effect on the dependent variable, although a related measure, FAMLIV, was an important factor for share leasing farms. The variable's lack of significance could somehow imply that perhaps an absolute measure for non-farm income receipts, instead of the ratio measure, could have been a more effective regressor. However, the significance of FAMLIV (also a ratio measure) in the share-leasing model could suggest that between revenue generation and cost reduction, an emphasis on the latter strategy carries more weight in the estimating equation when both variables are expressed in comparable (ratio) terms.

Another variable, INTRAT, was also insignificant in all three models. This can be explained by the relative stability of values for this interest-related variable across all three groups of farms and its lowest variability among all factors presented in the summary in Table 1. This trend could imply either effective interest rate management strategies or homogeneity in the credit risk classifications of the farm borrowers in this sample reflected in minimal differences in the ratio of their borrowing costs to gross farm revenues.

### Concluding Remarks

This study's results demonstrate that the type of leasing contract entered into by farm operators can define a choice set of probable debt repayment plans especially during periods of high income risk. Preferences for certain liquidity enhancing strategies are influenced by the inherent differences in the risk-return and cash flow structures resulting from cash and share leasing arrangements.

Farm operators are expected to set higher farm income benchmarks in making cash leasing decisions especially under more volatile farm income conditions. As a result, these farms

tend to emphasize farm revenue enhancement strategies for generating positive debt repayment margins.

The benefits of potential risk sharing provide farm operators with some flexibility in defining such income benchmarks for making share-leasing decisions. Thus, alternative debt repayment plans that involve farm and non-farm cost reduction have more significant relevance to share-leasing farms. Moreover, the more convenient cash flow structure enjoyed by share leasing farms allows them to exercise prudent management of short-term borrowings.

Further research could focus on collecting more extensive farm-level data that would allow the isolation of the influence of farmland ownership versus leasing options on preferred strategies over a longer time period.

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### Endnotes

- 1 Share leasing contracts in Illinois, for instance, provide for the sharing between landowners and tenant farmers of the cost of fertilizers, pesticides, seeds, and other crop expenses (Bullen; Reiss; Reiss and Koenig), although the cost of drying, storing, and insuring crops could be shared as well in some cases.
- 2 For brevity and simplicity, the type of leasing contracts shall be used to label these subsets of farms, although portions of the farm acreage are actually owned by the farm tenants. For example, "cash leasing farms" actually operate a combination of cash-leased and owned farmland.
- 3 The original intention was to further break down the farms into size classes within the groups of share and cash leasing farms to compare the preferences for certain debt repayment plans of small and large farms. However, the resulting size groups consist of very few farms for which sound econometric analysis becomes infeasible.

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