Factors Influencing Borrowers' Preferences for Lenders

Travis A. Farley and Paul N. Ellinger

Abstract

Data from a survey of Midwest producers are used to examine the credit-source decisions of farm borrowers. The lender attributes preferred by producers are identified in terms of their importance in selecting credit providers. The influence of farm business information on farmers' interest rate sensitivity and loyalty is investigated. Regression results indicate that patrons of the Farm Credit System are more likely to be highly price-sensitive. Furthermore, the likelihood for strong borrower loyalty is found to be higher for smaller, less leveraged, and more tenured farms and by those who source financing from bank institutions.

Key words: binomial logit, interest rate sensitivity, lender attributes, lender-borrower relationships

Changes in the agricultural and financial sectors continue to impact the delivery of financial services and products and alter the roles that agricultural lenders play in the market. Increased competition among lenders acts as a major catalyst for change in the agricultural credit market. The Farm Credit System's (FCS's) Horizons project exemplifies the nature of the competitive landscape. In an effort to better understand the financial needs of agricultural producers, the FCS undertook this research initiative to identify factors driving change in U.S. production agriculture. Although competitive pressure is not a new characteristic of the financial industry, certain aspects of the evolving market structure represent a recent degree of heightened competition. Competitive forces are not only changing, but coming from a wider range of market participants as the dominance of traditional lenders—domestic commercial banks and the FCS—is being challenged through various dimensions.

The emergence of alternative sources of agricultural credit pressures existing lenders to be more responsive to the needs of borrowers. Captive finance companies continue to offer innovative financing alternatives, while the U.S. market entry of international financial institutions is reshaping the competitive arena. One such multinational bank, Rabobank, exemplifies the increase in transnational lending in U.S. agriculture. This Dutch finance company has made substantial investments in the U.S. farm credit sector through purchases of banks, agricultural mortgage firms, and crop input lenders. New credit suppliers to the farm market, as well as traditional ones, need to understand the attributes of the

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lender-borrower relationship highly valued by different borrower segments to compete successfully in the evolving credit marketplace.

In light of the changes occurring in agricultural production and finance, it is important for lenders to understand the factors that influence producers' decisions in selecting sources of farm credit. Lending relationships can affect profitability over time through higher costs or enhanced customer service and loyalty. Hallowell (1996) uses data from 12,000 retail-banking customers to illustrate that customer satisfaction, customer loyalty, and profitability are related to one another. Using survey data on agricultural loans and simulation models, Gunderson, Gloy, and LaDue (2006) estimate the value of longer-term lending relationships. Their results suggest that after accounting for risk, large loan relationships generate more lifetime value, but smaller loans tend to add more value per dollar of loan.

As farmers' demographics change, so may their preferences for lender attributes. Some customer segments are more likely to be interest-rate sensitive, while other segments place considerable value on the lender-borrower relationship. Identifying and responding to borrower expectations and offering the proper product mix are important to lenders maximizing profits.

Prior studies on producers' preferences for lender attributes have focused primarily on evaluating the importance farmers place on certain factors associated with selecting a credit source. Bard, Craig, and Boehlje (2002) use attribute ratings and conjoint analysis to ascertain preferred lender characteristics. Their results indicate that the time-to-loan decision, amount of loan provided, lender's interest rate, and lender's specialization in agriculture are key attributes farmers prefer in a credit provider. This conjoint analysis confirmed that producers are not willing to trade a higher interest rate for some other lender qualities. Similar attribute rating research is regularly published in trade journals, such as *Ag Lender* and *American Banker*.

Theories on lending relationships generally conclude that establishing a relationship is valuable to small firms. Stiglitz and Weiss (1981) contend that banks may fail to allocate loans efficiently because of information problems, and they claim rationing is a likely outcome because of the difficulty in obtaining adequate information. This lack of sufficient information gives rise to adverse selection and moral hazard. As noted by Stiglitz and Weiss, banks cannot be adequately compensated by charging higher interest rates, and thus credit rationing occurs. Lending relationships have been viewed as a mechanism to reduce information problems in lending markets and potentially decrease credit rationing.

Empirical research suggests small businesses benefit from a strong lender-borrower relationship in both credit availability and credit terms. Petersen and Rajan (1994) find that a small firm's access to financing increases as its relationship with the credit institution matures. However, they do not observe a significant association between the duration of the lender-borrower relationship and the pricing of credit. Specifically, through close and continued interaction, a firm may provide a lender with sufficient information that ultimately leads to lower interest costs, an increase in the availability of credit, and a reduction in credit rationing.

Berger and Udell (1995) investigate only lines of credit to analyze the link between loan rates and collateral and the length of the banking relationship. They conclude that small firms with longer credit relationships pay less for borrowing, except for very small businesses (firms with less than $500,000 in total assets). Moreover, borrowers with longer banking relationships are less likely to pledge collateral to secure loans.

Cole (1998) explores how a preexisting relationship between a small business and a potential lender influences the likelihood

of the business receiving credit. Based on Cole's findings, interacting with a lender through the use of savings accounts and financial management services improves the firm's chance of securing financing from the lending institution.

The empirical evidence suggests small businesses using debt capital have incentives to develop a relationship with a lender. Furthermore, the literature argues that these incentives increase as the lender-borrower relationship progresses, thereby explaining the motivation for the relationship to evolve into strong borrower loyalty. Our study extends the analysis to farm businesses in an effort to investigate if the relationship plays a significant role in producers' selection of a lending institution.

Most of the statistically based research on relationships in agricultural lending explores how these interactions influence customer loyalty. Barry, Ellinger, and Moss (1997) collected data from a survey of Midwestern agricultural banks. Their study employs an ordered probit method to regress each respondent's loyalty rating for agricultural borrowers against three groups of predictor variables comprised of different lender attributes. According to their findings, lenders consider the relationship with the loan officer to be the most important factor in determining borrower loyalty. Furthermore, relationship-intensive financing is found to be essential to a bank's ability to secure business volume. Ninety-one percent of respondent banks rated long-term service from the same loan officer as highly important to maintaining a competitive position in the farm lending market. Using the lender-borrower relationship as a proxy for customer loyalty, their investigation can be extended by identifying loyal farm borrowers and examining their farm business information.

This study provides an analysis of the attributes that factor into producers' credit-source decisions. In an effort to build upon previous research, we examine the statistical influence of selected farm business and financing characteristics in identifying which producers are likely to be highly price sensitive and which ones may exhibit strong loyalty to a single lender.

The primary objective of this research is to assess the information used by farmers in selecting agricultural lenders. Specific objectives are to: (*a*) compare mean lender attribute importance ratings among producers with different credit preferences, (*b*) identify farmers who are highly interest-rate sensitive and those who exhibit strong degrees of borrower loyalty, and (*c*) determine how levels of farm business and financing characteristics influence borrower price sensitivity and loyalty.

Data and Methods

Data were generated through a mail survey of producers in Illinois, Indiana, and Iowa. Respondents were randomly selected from the Progressive Insight database, a market research database of 1.2 million farm operators. This list is maintained by *Progressive Farmer*, a company that interacts extensively with agricultural producers through farm magazines, surveys, and other channels. The database allows for segmentation by demographic criteria. Accordingly, the criteria established for this study required that the farmer operate more than 300 acres and reside in Illinois, Indiana, or Iowa.

Several previous surveys seeking similar information and a pilot study administered through a community bank contributed to survey development. Items in the survey investigate farm business information, financing characteristics, incidence of changing lending institutions, and the importance of selected lender attributes. (A copy of the survey instrument is available from the authors upon request.) Surveys were distributed whereby 1,500 Illinois farmers, 750 Indiana farmers, and 750 Iowa farmers received the questionnaire.

A total of 538 usable surveys were returned; yielding an effective response rate of 18%.[1]

Variables analyzed include age, education, farm size, tenure, leverage, off-farm income, and sources of credit. The anticipated influences of these measures on the price sensitivity and loyalty of producers are explored in the following discussion.

Age and Education[2]

Little empirical evidence exists regarding the price sensitivity of banking services by age (Amel and Starr-McCluer, 2001). Older producers are hypothesized to have built a relationship with a specific debt capital provider and may have experienced the benefits of the lender-borrower relationship through periods of poor and strong economic times. Furthermore, the credit relationship is likely to strengthen as farmers age, resulting in less sensitivity to marginal changes in debt costs. Therefore, agricultural borrowers greater in age are anticipated to be less interest-rate sensitive.

The expected relationship of price sensitivity and educational attainment was not assigned. A well-educated borrower is likely to be better informed about loan terms. A positive relationship may suggest a better understanding of the farm's financial position and how lower interest rates relate to financial performance. However, a negative relationship could imply a better understanding of the importance of establishing advisory teams of professionals and how knowledge of agriculture in general and knowledge of the borrower's specific business relate to the long-run success of the business.

Farm Size[3]

Acres Farmed serves as a proxy for the size of the farm business. Managers of larger farm operations are hypothesized to be more price sensitive and demonstrate less borrower loyalty. Larger commercial farms tend to carry greater amounts of debt and are generally more highly leveraged (Ellinger et al., 2005; U.S. Department of Agriculture, 2006). Hence, producers with larger farms may be more price sensitive. With larger outstanding loan balances, and therefore greater interest expenses, these producers are expected to be more concerned about marginal changes in interest rates and less committed to a specific financial source. Moreover, lenders will likely compete more aggressively for larger borrowers, and consequently provide more opportunities for these borrowers to switch lenders.

Farmland Lease Ratio

The *Farmland Lease Ratio* is the percentage of acres operated under a lease arrangement. The anticipated relationships between this measure and both price sensitivity and relationship strength are ambiguous. On the one hand, producers leasing a larger percentage of acres farmed may be less responsive to marginal changes in debt costs and more inclined to build loyalty with a single lender. Greater reliance on leased farmland may reflect a weaker financial position, thereby placing more importance on the operator's creditworthiness in a lender's decision to extend debt capital. As a result, farmers leasing a high proportion of acres may value a solid credit relationship by exhibiting strong customer loyalty. In contrast, profit margins on leased acres are often lower than owned acres (Schnitkey and Lattz, 2006). Hence,

[1] Using a standard power test, the authors are confident within 4.22% that the sample of respondents accurately reflects the study population.

[2] The age variable is excluded from the borrower loyalty analysis because respondent age is used to build the loyalty-dependent variable.

[3] This study explored the use of annual farm sales as a measure of farm size. Results from incorporating *Acres Farmed* and *Annual Farm Sales* separately into the regression equations are not significantly different. Furthermore, *Acres Farmed* yields stronger levels of significance.

farmers may strive to acquire the lowest price credit available to maintain profit margins or to allow them to increase cash rent bid prices.

Leverage

Leverage is measured by the debt-to-asset ratio. The expected relationships between leverage and both price sensitivity and relationship strength are also ambiguous. Farm operators with higher levels of debt compared to assets may exhibit strong borrower loyalty. Highly leveraged producers may have access to a limited number of lenders willing to serve their credit needs, thereby reducing their opportunities to secure lower-cost financing. This situation may encourage borrowers to build a strong credit relationship with a single supplier to ensure a dependable source of capital. On the other hand, higher degrees of leverage may result in credit rationing through price and nonprice responses. These borrowers may not exhibit strong lender loyalty and attempt to acquire the lowest cost of credit.

Off-Farm Income

Higher levels of *Off-Farm Income* contribute to the financial stability of the farm business. Thus, producers with greater earnings from nonfarm sources (by the farm operator and/or spouse) may choose to be more price conscious when selecting a credit provider and less loyal to a single financing source. Moreover, nonfarm credit sources and financial services may be more readily available to businesses with higher levels of off-farm income, also leading to less loyalty to a single financing source.

Credit Sources

Sources of agricultural operating credit are represented by two primary categories of lenders: the FCS and bank institutions. Respondents are asked to indicate the use of one or both lenders in financing operating activities during a three-year period. Consequently, these two credit sources are not mutually exclusive. The directions of the effect of credit sources on price sensitivity and customer loyalty are ambiguous.

The mean importance scores of lender attributes are compared across two measures of borrower price sensitivity and loyalty using a multiple comparison procedure. The Tukey-Kramer means separation test is employed to detect significant differences between individual treatment means.[4]

The examination of survey data is expanded through logit analysis by utilizing regression models to investigate the characteristics of price sensitivity and loyalty of agricultural borrowers. The econometric techniques explore how selected farm business and financing characteristics of survey respondents explain the outcomes of two dichotomous response variables: (*a*) high versus not high borrower price sensitivity, and (*b*) strong versus not strong borrower loyalty.

Because these decisions are reflected by discrete outcomes, a binary logit model is employed to determine the significance of relationships. The results of the logit analysis indicate the probability of association between the independent variables and the dependent variables. Binomial logistic regression describes the relationships between a dichotomous dependent variable and a set of discrete explanatory measures (Greene, 1993).

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[4] The Tukey-Kramer test is applicable for pairwise comparisons of unequal sample sizes. Two means are considered significantly different if

$$\frac{|\bar{y}_i - \bar{y}_j|}{s\sqrt{\frac{|1/n_i - 1/n_j|}{2}}} > q[\alpha; k, \upsilon],$$

where $\bar{y}_i$ and $\bar{y}_j$ are the respective means for groups i and j, s is the root mean squared error (also known as the pooled standard deviation), n_i and n_j are the number of observations in the ith and jth groups, and $q[\alpha; k, \upsilon]$ is the critical value for the studentized distribution of k normally distributed variables with υ degrees of freedom at the α significance level.

The *Price Sensitivity* dependent variable is mapped using respondents' reasons to switch primary lending institutions. Respondents were asked to rate the importance of 13 different incentives for changing credit providers. The influence of a 50-basis-point interest rate difference between lenders is used to define price sensitivity for the price sensitivity logit model. The dependent *Price Sensitivity* variable for an interest rate difference of 50 basis points has a value of 1 (highly sensitive) for importance ratings of 4 and 5, and a value of 0 (not highly sensitive) for importance ratings of 1, 2, and 3.[5,6]

In the borrower loyalty model, loyalty is a function of three respondent characteristics: age, years with current primary lender, and borrowing life. Borrowing life is defined as the maximum number of years a producer could have been borrowing. Responding farmers are classified as highly loyal if they satisfy at least one of three judgmentally determined criteria: (*a*) the farmer is at least 26 years old and has spent five years or more with the current lender, (*b*) the farmer is 40 years of age or older and has spent 10 years or more with the current lender, or (*c*) at least half of the farmer's borrowing life has been spent with the current lender.

Borrower Loyalty serves as a binary response variable by equating "strong loyalty" with 1 and "not strong loyalty" with 0. The loyalty measure relies primarily on the duration of the financial relationship with respect to borrower age. Akhavein, Goldberg, and White (2004) provide support for the length of the lender-borrower relationship serving as a proxy for the strength of the credit relationship. Furthermore, Moss, Barry, and Ellinger (1997), and Hanson, Robison, and Siles (1996) conclude that the borrowers' relationship with a financial institution is a significant factor in building customer loyalty.[7]

This study considers price sensitivity and loyalty to not be mutually exclusive. A producer can rate both price and the lender-borrower relationship as important attributes when selecting a credit source. The statistical analyses examine the price sensitivity and strength of loyalty exhibited by all respondents using debt capital.

Results

Tables 1–4 convey the results from the evaluation of survey participants who demonstrate a high degree of price sensitivity and a strong level of customer loyalty. Because respondents in this research can fall into both categories—high price sensitivity and strong loyalty—a cross-tabulation indicating the joint distribution of the two dependent variables is reported in Table 1. Of these borrowers classified as highly price sensitive, 60% also fall under the strong loyalty label. Twenty-four percent of producers not considered to be highly price sensitive are also regarded as not demonstrating strong borrower loyalty. When examining respondents who are characterized as very loyal, 69% belong to the high price sensitivity group. Finally, of those farmers described as displaying less loyalty, 49% are also less sensitive to price.

Table 2 reports the frequency distribution of respondent demographic and farm business information categorized by "high" versus "not high" price sensitivity and "strong" versus "not strong" loyalty. Significantly different proportions between the two levels of price sensitivity and loyalty are denoted by superscript

[5] Importance ratings are based on a five-point Likert scale, where 1 = not important and 5 = very important.

[6] Other methods for gauging interest rate sensitivity were investigated, such as the importance of a 25-basis-point margin in considering switching lenders. The alternative measures were each separately incorporated as dependent variables in the price sensitivity model. However, the regression analyses produced no statistically significant differences in results among the different measures.

[7] The authors recognize that producers whose financial institution has merged could be loyal borrowers, but do not fall under the "strong loyalty" classification according to the variable definition.

Table 1. Price Sensitivity and Loyalty Cross-Tabulation (%)

	Price Sensitivity		Loyalty	
Description	**High**	**Not High**	**Strong**	**Not Strong**
Strong Loyalty	60	76	—	—
Not Strong Loyalty	40	24	—	—
High Price Sensitivity	—	—	69	51
Not High Price Sensitivity	—	—	31	49

Table 2. Respondent Characteristics by Price Sensitivity and Loyalty (%)

	Borrower Price Sensitivity		Borrower Loyalty	
Demographics	**High**	**Not High**	**Strong**	**Not Strong**
Age:				
< 35	4	4	3	6
36–45	18[A]	25[B]	17[A]	27[B]
46–55	41	38	40	37
56–65	24	22	27[A]	18[B]
> 65	13	11	14	12
Tillable Acres:				
< 500	13	13	13	15
500–1,500	51[A]	59[B]	56	51
1,501–2,500	25	20	23	21
2,501–5,000	8	6	7	9
> 5,000	3	2	1[A]	5[B]
Bank Use:				
Yes	72	77	76[A]	68[B]
No	28	23	24[A]	32[B]
FCS Use:				
Yes	37[A]	28[B]	32	34
No	63[A]	72[B]	68	66
Education:				
Less than high school	0	1	1	0
High school	24[A]	34[B]	32	26
Some college	23	22	22	21
2-year degree	16	12	12	17
4-year degree	29	30	29	28
Graduate degree	7	2	4	7
Farmland Lease Ratio:				
0.00–0.10	14	15	16	14
0.11–0.20	7	7	8	4
0.21–0.50	25	21	23	21
0.51–0.75	26	23	25	22
> 0.75	29	34	28[A]	39[B]
Leverage:				
0.01–0.10	32[A]	23[B]	29	28
0.11–0.40	48[A]	59[B]	54	48
0.41–0.70	18	15	15	18
> 0.70	2	3	1[A]	5[B]

(continued . . .)

Table 2. Continued

Demographics	Borrower Price Sensitivity		Borrower Loyalty	
	High	Not High	Strong	Not Strong
Off-Farm Income:				
$0	18	18	19	18
< $25,000	37	40	40	36
$25,000–$50,000	24	28	25	24
$50,001–$75,000	14[A]	8[B]	11	14
> $75,000	8	5	6	8

Note: Sample proportions denoted by superscript alphabetical letters A and B within each dependent variable are significantly different ($p > 0.05$).

alphabetical letters A and B. Findings from these descriptive statistics are largely consistent across each classification for both dependent variables. The largest percentage of respondents is between 46 and 55 years of age. The majority of producers manage between 500 and 1,500 acres. A significantly greater portion of "not highly price-sensitive" farmers fall within this acreage bracket compared to the percentage of "highly price-sensitive" producers. A majority of respondents source financing from bank institutions, while a smaller proportion patronize the FCS.[8] Statistically proportional differences are identified between the two loyalty levels for the *Bank Use* variable and between the two price-sensitivity levels for the *FCS Use* variable.

The education level of responding producers is less consistent between each class within both dependent variables. Of the farmers who demonstrate high price sensitivity and low customer loyalty, the largest percentage have a four-year degree, while most of the highly loyal and less price-sensitive respondents have only a high school education. Across measures of interest rate sensitivity and loyalty, the largest percentage of survey participants lease more than 75% of total acres operated, exhibit a debt-to-asset ratio between 0.11 and 0.40, and earn less than $25,000 in annual off-farm income.

[8] The level of borrowing for the sample cannot be compared directly to market share data since the amount of borrowing from each lender was not obtained.

Table 3 reports the average importance scores for selected lender attributes. These attributes are listed in order of importance according to the average ratings from all survey respondents. Although differences in preference scores between each category are observed for each treatment variable, only two attributes exhibit significantly different mean ratings, according to the Tukey-Kramer means separation test. Highly price-sensitive respondents provide a statistically higher mean rating to the lender's interest rate compared to farmers less sensitive to financing costs. All other attributes have insignificantly different mean scores between the two classes. In the borrower loyalty variable analysis, the only lender characteristic with a statistically significant difference in ratings between the two groups is the lender's dependability as a source of credit. Respondents strongly committed to a single financial institution rate this attribute significantly higher in importance.

Results from the means tests support the validity of the methods used to build the treatment variables. One would expect highly price-sensitive respondents to assign a significantly higher average importance score to the *Interest Rate* attribute compared to their counterparts. Furthermore, as one would anticipate, borrowers with stronger customer loyalty place greater importance on their *Lender's Dependability* as a credit source than producers who exhibit less customer loyalty.

Table 3. Importance of Lender Attributes by Price Sensitivity and Loyalty

	Borrower Price Sensitivity		Borrower Loyalty	
Lender Attributes	**High**	**Not High**	**Strong**	**Not Strong**
Interest rate	4.54[A]	4.37[B]	4.43	4.56
Institution's stability	4.46	4.39	4.42	4.45
Lender's dependability	4.37	4.41	4.45[A]	4.27[B]
Ability to meet needs	4.35	4.32	4.34	4.31
Knowledge of agriculture	4.23	4.26	4.24	4.27
Timeliness in loan decisions	4.23	4.20	4.21	4.21
Lender relationship	4.19	4.14	4.20	4.13

Notes: Importance ratings are based on a five-point Likert scale (1 = not important, 5 = very important). Means denoted by superscript alphabetical letters A and B within each treatment variable are significantly different ($p > 0.05$).

Table 4. Econometric Results for Price Sensitivity and Loyalty Models

	Borrower Price Sensitivity			Borrower Loyalty		
Variable	**Coefficient**	***p*-Value**	**Mean**	**Coefficient**	***p*-Value**	**Mean**
Constant	-2.2334	0.0501		1.8223	0.0506	
Acres Farmed	0.000107	0.2709	1,494	-0.00017*	0.0693	1,471
Bank Use	0.244	0.4306	0.74	0.5321*	0.0888	0.74
Education	0.0915	0.1338	13.98	-0.0298	0.6318	13.93
FCS Use	0.5564*	0.0539	0.35	0.098	0.7416	0.34
Farmland Lease Ratio	0.0731	0.8501	0.52	-0.6596*	0.0920	0.52
Leverage	-0.6229	0.3021	0.26	-1.337*	0.0601	0.26
Off-Farm Income	0.00000591	0.1861	27,594	-0.00000448	0.3214	27,195
Age	0.0127	0.2128	52.09	—	—	—
Likelihood Ratio	13.9527	0.0830		16.6936	0.0195	

Note: An asterisk (*) denotes significance at the 10% level.

Table 4 gives the estimated logit coefficients, *p*-values, and associated means for the borrower price sensitivity and loyalty models. The two dependent variables reflect "high price sensitivity" versus "not high price sensitivity" and "strong loyalty" versus "not strong loyalty." Positive (negative) coefficient estimates of independent variables indicate that the variables increase (decrease) the likelihood of high price sensitivity in the borrower price sensitivity model and high loyalty in the borrower loyalty model.

The results from Table 4 suggest sourcing financing from the FCS significantly increases the likelihood of high price sensitivity at the 10% level. None of the remaining variables significantly influence farmers' interest rate sensitivity. In the borrower loyalty equation, Table 4 reveals that loyalty of borrowers declines with the rise of farmed acres, debt-to-asset ratios, and tenure (as measured by the farmland lease ratio). Use of bank financing also significantly increases the likelihood of strong producer loyalty.

The findings in Table 4 also reveal the absence of statistical significance, particularly in the price sensitivity results where *FCS Use* reflects the only significant difference between the two groups. Highly and not highly interest-rate

sensitive borrowers are not statistically different in farm size, tenure, leverage, off-farm income, or age. The FCS's reputation of being price competitive likely explains its popularity with cost-driven borrowers.

Figure 1 portrays the marginal effects on the likelihood of strong borrower loyalty for different levels of treatment variables. Only statistically significant measures are reported: acreage, farmland lease ratio, and leverage. Each graph depicts the probability of strong loyalty as one independent variable changes while holding all other explanatory variables at their mean values. Response probabilities for each depiction sum to 100%.

The graphs in Figure 1 illustrate the decreasing likelihood of responding producers' loyalty to a single credit provider as levels of the independent variables increase. For instance, as *Acres Farmed* increases from the mean level of 1,471 to 3,000, the probability of strong borrower loyalty decreases from 69.5% to 63.7%. The maximum rates of change across the ranges of *Acres Farmed*, *Farmland Lease Ratio*, and *Leverage* are 24.3%, 13.9%, and 25.7%, respectively.

The regression analyses help identify producers who are likely to be sensitive to marginal interest rate changes and those who may demonstrate strong degrees of borrower loyalty. The econometric models reveal a significant, negative association for both *Leverage* and the *Farmland Lease Ratio* in the loyalty model. One plausible explanation suggests that the desire to reduce costs when profit margins are tight overwhelms the perceived benefits of lender relationships.

This study produces intriguing findings on the behavior of FCS and bank patrons. Regression results indicate that respondents who secure financing from the FCS are more likely to be highly price sensitive, while users of bank-supplied credit are more likely to be highly loyal producers. As noted earlier, the FCS tends to be price competitive, and therefore may attract borrowers who place a high value on price.

The farm business characteristics found to influence producers' decisions to be price-sensitive and/or loyal borrowers are similar to the factors compelling farmers to use FCS and/or bank financing. Dodson and Koenig (2003) explore a related issue by examining the customers of the FCS and commercial banks using the USDA's 2001 and 2002 Agricultural Resource Management Survey (ARMS). They conduct multivariate analysis using a binomial logit model to test the null hypothesis that the characteristics of FCS customers are statistically different from the attributes of bank patrons. The authors' findings reveal significant differences between borrowers receiving loans from the FCS and those receiving credit from commercial banks in 2001 and 2002. FCS borrowers manage larger farm operations, carry lower debt-to-asset levels, and exhibit less financial stress compared to bank customers.

Findings from our analysis show that FCS borrowers are more likely to be highly sensitive to debt costs, even though the farm size and leverage variables are not significant predictors of price sensitivity. Dodson and Koenig (2003) argue that these variables are significant characteristics of FCS customers. In the evaluation of borrower loyalty, customers of bank institutions are more likely to be strongly committed to a single lender. Furthermore, survey participants displaying strong loyalty are more likely to manage fewer acres and be less financially leveraged. The impact of the farm size variable in the regression equation is consistent with Dodson and Koenig's finding that commercial bank customers operate smaller farms. However, leverage has a significantly negative relationship. While beyond the initial scope of our study, clearly the relationships and differences between the FCS and commercial banks warrant further investigation.

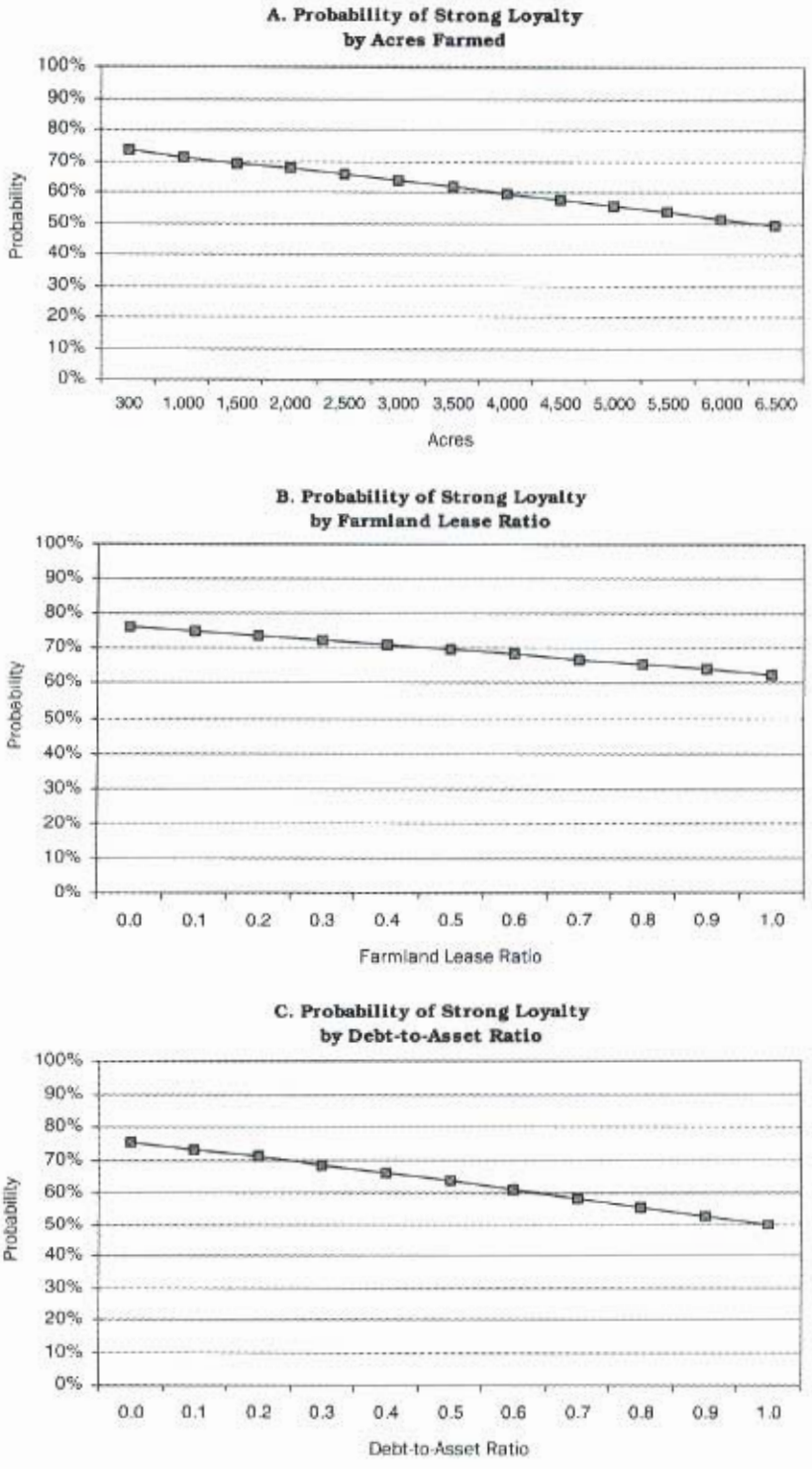

Figure 1. Effects of Acres Farmed, Farmland Lease Ratio, and Debt-to-Asset Ratio on the Probability of Strong Borrower Loyalty

Conclusions

The results from this study of Midwestern U.S. agricultural producers reveal the farm business characteristics of borrowers who are likely to be highly price-sensitive purchasers of credit and those who tend to demonstrate strong loyalty to a single credit provider. Our findings suggest FCS customers are more likely to be highly responsive to the lender's interest rates, whereas farmers who are less leveraged and tenured, operate fewer acres, and patronize bank institutions are more likely to have longer strong, loyal credit relationships. Our results provide empirical support for theories in the financial economics literature predicting that small firms benefit from establishing credit relationships and progressing these interactions to high levels of borrower loyalty.

From a lender's perspective, the knowledge of farm borrowers' profiles will help isolate the factors producers consider when making credit-source decisions. In an industry characterized by intense competition, as indicated by the recent growth of captive finance companies and the emergence of international financial institutions, the need for agricultural credit providers to differentiate themselves on various attributes is becoming necessary to enhance market strength.

Business success will depend on developing borrower-driven marketing strategies where market segmentation is based on perceived customer needs and preferences. The ability of agricultural lenders to attract new clients and retain existing customers depends on an understanding of the aspects of the lender-borrower relationship most important to credit users.

Future studies could further address the lender preferences of FCS and commercial bank borrowers. Supplemental research could evaluate the credit attributes valued by each group and identify significant similarities and differences in preferred lender characteristics. Based on findings from this survey, it would be interesting to examine why FCS patrons are more likely to be highly cost-driven and why users of bank financing are more likely to build strong loyalty.

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